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

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

ORDER APPROVING IN PART AND DENYING IN PART A PETITION FOR TEMPORARY URGENCY CHANGES TO LICENSE AND PERMIT TERMS AND CONDITIONS REQUIRING COMPLIANCE WITH DELTA WATER QUALITY OBJECTIVES IN RESPONSE TO DROUGHT CONDITIONS

BY THE EXECUTIVE DIRECTOR

1.0 INTRODUCTION

On January 23, 2015, the Department of Water Resources (DWR) and the United States Bureau of Reclamation (Reclamation) (collectively Petitioners) jointly filed a Temporary Urgency Change Petition (TUCP) pursuant to Water Code section 1435 et seq., to temporarily modify requirements in their water right permits and license for the State Water Project (SWP) and Central Valley Project (CVP) (collectively Projects) for the next 180 days, with specific requests for February and March of 2015. The TUCP requests temporary modification of requirements included in State Water Resources Control Board (State Water Board) Revised Decision 1641 (D-1641) to meet water quality objectives in the Water Quality Control Plan (Plan) for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta). Specifically, the TUCP requests modifications to water right requirements to meet the Delta outflow, San Joaquin River flow, Delta Cross Channel (DCC) Gate closure, and export limits objectives. The Petitioners are requesting these temporary modifications in February and March in order to respond to unprecedented critically dry hydrological conditions as California enters its fourth straight year of below average rainfall and snowmelt runoff. The TUCP also identifies possible future modification requests for the period from April to September. Changes after the 180 day effective period of this Order would require a renewal of the TUCP.

[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.

According to the TUCP, the proposed changes are being requested to: 1) conserve storage in upstream reservoirs for use later in the year if the drought continues; 2) ensure that salinity levels in the Delta are maintained at levels that protect public health and safety; and 3) lessen critical economic losses to agricultural, municipal, and industrial uses due to water shortages through project water deliveries and by facilitating voluntary water transfers and exchanges to the extent possible, while balancing the needs of upstream storage, fishery and wildlife resource protection, and operational flexibility.

The State Water Board issued a notice of the TUCP and notice of public workshop on January 27, 2014. Objections to the TUCP are due by February 13, 2015. To date, the State Water Board has received one objection from the Natural Resources Defense Council objecting to allowing export limits above 1,500 cubic-feet per second (cfs) when D-1641 requirements are not being met and objecting to the approval of any changes during March. These comments were considered in reaching the decisions in this Order.

This Order makes the following temporary modifications to D-1641 requirements during February and March:

- Modifies minimum monthly Delta outflows to 4,000 cfs;
- Modifies minimum monthly San Joaquin River flows at Vernalis to 500 cfs;
- Allows the DCC Gates to be opened consistent with triggers to protect fish species;
- Adds export constraints to allow exports of 1,500 cfs when Delta outflows are below 7,100 cfs regardless of DCC Gate status and allows exports up to D-1641 limits when Delta outflows are above 7,100 cfs and the DCC Gates are closed.

This Order also includes additional requirements to assure that the changes: do not impact other legal users of water, do not have unreasonable impacts of fish and wildlife and other beneficial uses; and are in the public interest.

The workshop on this matter is planned for February 18, 2015. At the workshop, the State Water Board will receive public comment and input on the January 15, 2015 Drought Contingency Plan, the TUCP request, this Order, and any potential future TUCP requests. The Board will not take formal action at the workshop, but may provide further direction regarding the TUCP and this Order.

The TUCP, notice of the TUCP and workshop, and supporting information are available via the State Water Board's website at: www.waterboards.ca.gov/waterrights/water_issues/programs/drought/index.shtml.

2.0 BACKGROUND

2.1 Bay-Delta Plan and D-1641

The Bay-Delta Plan specifies water quality objectives for the protection of beneficial uses of water in the Bay-Delta, including fish and wildlife, agricultural, and municipal and industrial uses. In part, D-1641 assigns responsibility for meeting the water quality objectives included in the Bay-Delta Plan.[2] D-1641 places responsibility on DWR and Reclamation for measures to

[2] D-1641 originally implemented the 1995 Bay-Delta Plan. Later, minor modifications were made to the plan in the 2006 Bay-Delta Plan.

ensure that specified water quality objectives included in Tables 1, 2, and 3 of D-1641 are met, in addition to other requirements. The flow and water quality requirements established by the State Water Board 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 (Agricultural Beneficial Uses), and Table 3 (Fish and Wildlife Beneficial Uses). Included in Attachment 1 are the footnotes to Table 3 that refer to definitions and other requirements contained in Figure 1 (Sacramento Valley Water Year Hydrologic Classification), Figure 2 (San Joaquin Valley Water Year Hydrologic Classification), Figure 3 (Formulas for NDOI and Percent Inflow Diverted), and Table 4 (Chipps Island and Port Chicago Maximum Daily Average Electrical Conductivity). The objectives are intended to protect fish and wildlife living in or migrating through the Bay-Delta, and also to keep the Delta and water exported from the Delta from getting too salty for municipal and agricultural uses. Flow and salinity objectives in the Bay-Delta Plan and D-1641 were developed based on historic hydrologic conditions. Provisions for the extreme dry conditions currently being experienced were therefore not considered in either the Bay-Delta Plan or D-1641.

Delta Outflow Requirements

The Delta outflow objective is intended to protect estuarine habitat for anadromous fish and other estuarine dependent species. Delta outflows affect migration patterns of both estuarine and anadromous species and the availability of habitat. Freshwater flow is an important cue for upstream migration of adult salmon and is a factor in the survival of smolts moving downstream through the Delta. The populations of several estuarine-dependent species of fish and shrimp vary positively with flow, as do other measures of the health of the estuarine ecosystem. Freshwater inflow also has chemical and biological consequences through its effects on loading of nutrients and organic matter, pollutant concentrations, and residence time.

The Delta outflow objectives include requirements for calculated minimum net flows from the Delta to Suisun and San Francisco Bays (the Net Delta Outflow Index or NDOI) and maximum salinity requirements (measured as electrical conductivity or EC). Since salinity in the Bay-Delta system is closely related to freshwater outflows, both types of objectives are indicators of the extent and location of low salinity estuarine habitat. Listed in Table 3 of the Bay-Delta Plan and D-1641, the Delta outflow objectives vary by month and water year type. With some flexibility provided through a limited set of compliance alternatives, the basic outflow objective sets minimum outflow requirements that apply year round.

The Delta outflow objectives included in the Bay-Delta Plan and D-1641 for the February through June time frame are identified in footnote 10 of Table 3 and Table 4 of footnote 10. Pursuant to footnote 10, the minimum daily NDOI during February through June is 7,100 cfs calculated as a 3-day running average. This requirement may also be met by achieving either a daily average or 14-day running average EC at the confluence of the Sacramento and San Joaquin Rivers of less than or equal to 2.64 millimhos per centimeter (mmhos/cm) (Collinsville station C2). If the best available estimate of the Eight River Index[3] for January is more than 900 thousand acre-feet (TAF), the daily average or 14-day running average EC at station C2 is required to 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

[3]Pursuant to footnote 9 of Table 3 of D-1641, 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.

between 650 TAF and 900 TAF, the Executive Director of the State Water Board is delegated authority to 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 Reclamation, subject to the approval of the Executive Director. Additional Delta outflow objectives are also contained in Table 4, which requires a certain number of days of compliance with specified flows or EC requirements at specified stations (Chipps Island and Port Chicago) based on the previous month's Eight River Index. The final Eight River Index for January is expected to be 813 TAF, which will result in a requirement for 9 days of compliance at Chipps Island pursuant to Table 4.

San Joaquin River Flow Requirements

The San Joaquin River Flow objectives at Airport Way Bridge, Vernalis from February through June are included in Table 3 of the Bay-Delta Plan and D-1641 and are intended to provide minimum net downstream freshwater flows in the San Joaquin River to protect fish and wildlife beneficial uses. The objectives require a specified minimum monthly average flow rate based on the San Joaquin Valley Water Year Hydrologic Classification (at the 75 percent exceedance level) and include two levels. The higher flow level applies when the 2 parts per thousand isohaline is required to be at or west of Chipps Island pursuant to Table 4 discussed above. The current San Joaquin Valley Water Year Hydrologic Classification is critically dry. As such, per Table 3, the San Joaquin River flow requirement for February and March is 710 or 1,140 cfs.

DCC Gate Closure Requirements

The DCC Gates are located near Walnut Grove and at times allow for the transport of up to 3,500 cfs of water from the Sacramento River to Snodgrass Slough and the North Fork Mokelumne River to the interior Delta. The DCC was constructed in the early 1950s to convey Sacramento River water to the interior and southern Delta to improve water quality at the SWP and CVP export facilities. The DCC Gates also benefits recreational uses by providing boat passage. The DCC Gate objective was designed to protect fish and wildlife beneficial uses (specifically salmonids) while simultaneously recognizing the need for fresh water to be moved through the interior Delta to the southern Delta for SWP and CVP uses. The current objective is included in Table 3 of the Bay-Delta Plan and D-1641and requires that the DCC Gates be closed as follows: for a total of 45 days for the November through January period; from February through May 20; and for a total of 14 days for the May 21 through June 15 period. Opening the DCC Gates during winter and spring months can negatively affect juvenile salmonid survival by causing straying of those fish into the interior and then southern Delta where survival is much lower than for fish that stay in the mainstem of the Sacramento River. Opening the DCC Gates, however, significantly improves water quality (e.g. lowers salinity) in the interior and southern Delta including at the SWP and CVP export facilities and Contra Costa Water District's diversions, particularly when Delta outflow is low.

Export Limits

The export limits objective listed in Table 3 of the Bay-Delta Plan and D-1641 includes requirements to limit the quantity of inflow that is diverted from the south Delta by the SWP and CVP pumping facilities to protect fish and wildlife uses. Unless an exception for the month of February applies, for the February through June time period, exports are required to be limited to 35 percent of Delta inflow. Footnote 21 specifies that if the best available estimate of the Eight River Index for January is less than or equal to 1.0 million acre-feet (MAF), the export limit for February is 45 percent of Delta inflow. Export levels between 35 and 45 percent may be set with

higher inflows. Based on the above indicated Eight River Index, the Export Limits during February are 45 percent of Delta inflow.

2.2 Drought Conditions and Water Supply Effects

California is entering its fourth consecutive year of below-average rainfall and very low snowpack. Water Year 2015 is also the eighth of nine years with below average runoff, which has resulted in chronic and significant shortages to municipal and industrial, agricultural, and refuge supplies and historically low levels of groundwater. As of January, 78 percent of the state is experiencing an Extreme Drought and 39 percent is experiencing an Exceptional Drought, as recorded by the National Drought Mitigation Center, U.S. Drought Monitor.

Of particular concern is the state's critically low snow pack which provides much of California's seasonal water storage. The South Section (San Joaquin, Kings, Kaweah, Kern, and Mono River watersheds) snow pack on February 2, 2015 was 23 percent of average for that date (California Data Exchange Center (CDEC), February 2, 2015). Central Section snowpack (Carson, Yuba, American, Mokelumne, Stanislaus, Tuolumne, Merced and Walker River watersheds) was 22 percent of average, and Northern Section snowpack (Trinity, Eel, Sacramento, Feather, and Truckee River watersheds) was 21 percent of average for this date.

In the Sacramento River watershed, Water Year 2012 was classified as below normal, Water Year 2013 was dry, and Water Year 2014 was critically dry. Historically, January is one of the three wettest months of the year. As of January 29, 2015, however, the Northern Sierra 8-Station Index was at 23.1 inches, 89 percent of average for this time of year (CDEC, February 2, 2015), despite the wet conditions in December due to the lack of any significant precipitation during the entire month of January. The lack of precipitation the last several years has also contributed to low reservoir storage levels in the Sacramento watershed. Shasta Reservoir on the Sacramento River, Oroville Reservoir on the Feather River, and Folsom Reservoir on the American River were at 44, 41, and 46 percent of capacity, respectively, on February 1, 2015 (60, 59, and 82 percent of average for February, respectively). Trinity Lake (water from the Trinity system is transferred to the Sacramento River system) on the Trinity River is at 36 percent of capacity and 48 percent of the February average. Precipitation events in the northern portion of the State are expected later this week that may improve conditions to some extent in the Sacramento and Trinity River watersheds.

The San Joaquin River Watershed in particular has experienced severely dry conditions for the past three years. Water Year 2012 was classified as dry and Water Years 2013 and 2014 as critically dry. As of January 29, 2015, the San Joaquin Valley 5-Station Index is at 9.3 inches, 46 percent of average for this time of year (CDEC February 2, 2015). The lack of precipitation in the last few years has contributed to low reservoir storage levels throughout the watershed. New Exchequer Reservoir on the Merced River, New Don Pedro Reservoir on the Tuolumne River, New Melones Reservoir on the Stanislaus River, and Millerton Reservoir on the upper San Joaquin River were at 6, 41, 23, and 36 percent of capacity, respectively (12, 57, 38, and 55 percent of average for February, respectively). The precipitation events expected later this week are expected to provide little precipitation in the San Joaquin Valley watershed.

Current storage in Shasta and Folsom reservoirs is greater than in January 2014, but as discussed above remains low compared to long term historical conditions. Storage in Trinity, Oroville, and New Melones reservoirs remains lower than January 2014 storage levels in these reservoirs. The January 50 percent, 90 percent, and 99 percent exceedance forecasts for 2015

projects reservoir volumes throughout spring and summer operations that are below their historic averages for those months. These low initial storage and historically dry conditions will likely lead to critical water shortages in 2015. Forecasts for Water Year 2015 indicate it is increasingly likely to again be one of the more severe drought years in California's history with the January 2015 hydrology trending significantly drier than the 90 percent forecast. Due to the expected dry hydrology, Reclamation and DWR state that there is great risk that water supplies will not be adequate to meet all of the obligations of the Projects.

With respect to water supplies, in 2014, DWR delivered 5 percent of its long-term contractor delivery requests and 100 percent to its Feather River senior settlement contractors. In 2014, Reclamation delivered no water to its (non-settlement) agricultural contractors and 50 percent to municipal and industrial contractors. Reclamation also delivered 75 percent to its settlement contractors and 65 percent to the exchange contractors on the San Joaquin River. Wildlife refuges received 65 to 75 percent depending on the location.

On January 15, 2015, DWR increased the allocation of 2015 SWP water for its long-term contractors from 10 to 15 percent of most SWP contractors' requests for (Table A) water, which is an increase of 217 TAF, for a total initial allocation of nearly 636 TAF. In 2015, the Table A requests total nearly 4.2 MAF. This increase in the initial allocation was due to precipitation from early-December storms and the subsequent increase in reservoir storage from that runoff. In 2015, DWR currently expects to deliver 100 percent of requests to its Feather River settlement contractors. These projections are based on a 90 percent probability of exceedance hydrology and may change as water supply conditions change. Reclamation forecasts are not yet available. According to the Drought Contingency Plan, Reclamation will be evaluating available supplies to its contractors based on February forecast projections.

2.3 Governor's Executive Orders

On January 17, 2014, Governor Brown issued a Drought Emergency Proclamation that directed the State Water Board, among other things, to consider petitions, such as the TUCP, to modify requirements for reservoir releases or diversion limitations that were established to implement a water quality control plan. As indicated in the Proclamation, 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 supplies, and to improve water quality. As authorized by Government Code section 8571, the Governor's Proclamation also suspended the California Environmental Quality Act (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. In addition, the Governor's Proclamation 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.

On April 25, 2014, the Governor issued a Proclamation of a Continued State of Emergency to strengthen the state's ability to manage water and habitat effectively in drought conditions and called on all Californians to redouble their efforts to conserve water. In the April Proclamation, the Governor ordered that the provisions of the January 17, 2014 Proclamation remain in full force and also added several new provisions.

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.

2.4 2014 TUCPs and Drought Contingency Plan

On January 31, 2014, the Executive Director conditionally approved a TUCP to modify the conditions of the water right permits for the SWP and the water right license and permits for the CVP. 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 TUCP Order, the Executive Director modified the 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 at that time and in the future if dry conditions were to continue. Specifically, the Order required the preparation of a Water Year 2015 Drought Contingency Plan in the event of continued drought conditions. The Order required the Drought Contingency Plan 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 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 Drought Contingency Plans were submitted as required. The January 15, 2015 Drought Contingency Plan identifies 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 project monthly storage levels, reservoir releases, Delta pumping rates, and Delta outflow through the end of September 30, 2015. The January 15, 2015 Drought Contingency Plan indicates that much is still unknown about the hydrology for this year; therefore all specific changes to water right requirements that may be requested are also still unknown.

2.5 Substance of the Temporary, Urgency Change Petition

The Petitioners have requested the following temporary modifications to D-1641 requirements:

- The Petitioners request modification of the minimum monthly NDOI during February and March to be no less than 4,000 cfs. The Petitioners request a minimum monthly San Joaquin River flow of 500 cfs during February and March.

- The Petitioners request modification of the DCC Gate closure requirements to allow the DCC Gates to be opened during February and March as necessary to reduce intrusion of high salinity water into the Delta in order to preserve limited storage in upstream reservoirs. The Petitioners propose to use the DCC Gate Triggers Matrix as described in

Appendix G of the April 2014 Drought Operations Plan and Operational Forecast to determine operation of the DCC Gates in consultation with the Real Time Drought Operations Management Team (RTDOMT) (described below).

- The Petitioners propose to add the following additional export requirements, to be applicable when different levels of Delta outflow are maintained:

    a. When an NDOI of at least 5,500 cfs is not being met or the DCC Gates are open, the combined maximum SWP and CVP export rate for SWP and CVP contractors at the Clifton Court Forebay Intake and C.W. “Bill” Jones Pumping Plant SWP and CVP export rate would be no greater than 1,500 cfs.

    b. When footnote 10 of Table 3 of D-1641 is not being met, but NDOI is greater than 5,500 cfs and the DCC Gates are closed, the combined maximum SWP and CVP export rate for SWP and CVP contractors at the Clifton Court Forebay Intake and C.W. “Bill” Jones Pumping Plant would be no greater than 3,500 cfs on a 3-day running average.

    c. When precipitation and runoff events occur that allow the DCC Gates to be closed and footnote 10 of Table 3 of D-1641 is being met [3-day average Delta outflow of 7,100 cfs, or electrical conductivity of 2.64 mmhos/cm on a daily or 14-day running average at the confluence of the Sacramento and the San Joaquin Rivers (Collinsville station C2) if applicable], but any additional Delta outflow requirements contained in Table 4 of D-1641 are not being met, then exports of natural and abandoned flows would be permitted up to D-1641 export limits contained in Table 3, and in compliance with other applicable laws and regulations including the federal Endangered Species Act (ESA) and California ESA (CESA).

- Additional potential changes from April through September 30 are described in the January 15, 2015 Drought Contingency Plan and referenced in the TUCP, which may be considered by the Executive Director or the State Water Board in the future. Specifically, these additional potential changes are planned for discussion at the February 18, 2015 workshop. Potential future requests under various hydrologic scenarios (50, 90, and 99 percent exceedances) are identified in the Drought Contingency Plan and TUCP, but will depend on actual hydrology. According to the TUCP, potential future requests to modify D-1641 requirements include: (1) additional requests to modify Delta outflows to balance upstream storage and fish protection, (2) requests to move the compliance point for the Western Delta agriculture salinity objective from Emmaton to Three-Mile Slough, (3) additional requests to modify San Joaquin flows at Vernalis, and (4) requests to modify Rio Vista flow requirements. Additionally, the Petitioners may exercise the flexibility provided in D-1641 to adjust the export limits to modify required averaging periods for sporadic storm events.

The TUCP also identifies a number of additional actions the Petitioners plan to take in response to the dry conditions including: managing upstream reservoirs to conserve storage; water supply actions for contractors and refuges; preferential pumping at the SWP and CVP facilities to reduce fisheries impacts; temporary emergency drought barriers to reduce the need for upstream storage releases to repel salinity; hatchery operations to mitigate for drought impacts

to fish resources; transfers and exchanges to mitigate for water supply impacts; and actions related to Trinity River releases consistent with existing requirements.

2.6 Status of Fish Species and Biological Reviews

The extreme drought conditions that have been occurring for the last four years are having significant impacts on fish and wildlife. Reclamation submitted two reviews dated January 27, 2015, entitled "Smelt Supporting Information for Endangered Species Act Compliance for Temporary Urgency Change Petition Regarding Delta Water Quality" and "Salmonid and Green Sturgeon Supporting Information for Endangered Species Act Compliance for Temporary Urgency Change Petition Regarding Delta Water Quality" (Biological Reviews) evaluating the potential effects of the TUCP on fish species listed as threatened or endangered under the ESA and CESA. These species are also thought to be indicators of conditions for aquatic species in general in the Delta. Below is a summary of some of the significant conclusions from the Biological Reviews related to the status of the species and the potential effects of the TUCP.

Delta Smelt

The population of delta smelt, which is listed as threatened under both ESA and CESA, has reached record low numbers, as measured by the Fall Midwater Trawl (FMWT),[4] which began in 1967, and the first survey of the Spring Kodiak Trawl (SKT).[5] Further, according to the Biological Reviews submitted with the TUCP, monitoring has not detected any delta smelt in the Cache Slough and Liberty Island complex, a location that in previous years has been considered a spatial refuge for delta smelt, especially from the effects of entrainment and the Project pumping facilities. According to the Biological Reviews, this has shifted the centroid of the delta smelt population distribution south and closer to the Project export facilities, making the condition of and risks to the delta smelt in the lower Sacramento River and San Joaquin River of greater importance to the overall status of the species. Storm events in December are thought to have stimulated a pre-spawning migration of delta smelt that has expanded the population west and east of its centroid, which led to increased entrainment at Project facilities this water year that was not observed last water year. Further, delta smelt captured in trawl surveys during 2014 were reported to have been in relatively poor condition and of smaller size than in previous years, which indicates a potential for lower fecundity and survival of offspring in 2015.

Because of elevated water temperatures from the drought and the pre-spawn migration that has occurred, an early spawning event is expected this year, which will expose both adult delta smelt and eggs to the changes considered under the TUCP. The Smelt Working Group (SWG)[6]

[4] The California Department of Fish and Wildlife has conducted the FMWT survey to index the fall abundance of pelagic fishes nearly annually since 1967. FMWT equipment and methods have remained consistent since the survey's inception, which allows the indices to be compared across time. The FMWT conducts monthly surveys from September through December. The annual abundance index is the sum of the September through December monthly survey indices.

[5] The SKT has sampled annually since its inception in 2002. The SKT determines the relative abundance and distribution of spawning delta smelt. The SKT samples 40 stations each month from January to May. These 40 stations range from San Pablo Bay upstream to Stockton on the San Joaquin River, Walnut Grove on the Sacramento River, and the Sacramento Deep Water Ship Channel.

[6] The SWG consists of experts in delta smelt biology from the U.S. Fish and Wildlife Service (USFWS), Reclamation, U.S. Environmental Protection Agency, DWR, National Marine Fisheries Service and California Department of Fish and Wildlife. The SWG evaluates up-to-date biological and technical issues regarding delta and longfin smelt and

expects that delta smelt will remain in the central and south Delta in preparation for spawning as long as conditions remain turbid during February and March (SWG notes, January 5, 2015). Continued minimal reservoir releases proposed in the TUCP are expected to cause the centroid of the delta smelt population to shift inland, exposing a greater proportion of the population to entrainment if the distribution does not shift back into the Sacramento River in response to lower outflow and higher water transparency. Potential impacts from entrainment are expected to be higher in February than March because more delta smelt will be spawning in February than in March.

According to the Biological Reviews, with the DCC Gates closed it is expected that adult delta smelt entrainment will be low if NDOI is between 4,000 cfs and 5,500 cfs and pumping remains at 1500 cfs. However, under turbid conditions, if pumping increases on the ascending limb of the hydrograph in response to increased NDOI between 5,500 and 7,100 cfs, model results indicate that if delta smelt are east of Franks Tract, upward of 70 percent of adults are at risk of entrainment. However, according to the Biological Reviews, the December and January SKT surveys showed that the majority of Delta Smelt were distributed around Decker Island and the confluence of the Sacramento and San Joaquin Rivers. As such the Biological Reviews conclude that adult delta smelt would only be expected to shift their distribution towards the south Delta if another rain event occurs and turbidity is dispersed again into the southern Delta. The Biological Reviews conclude that as long as the proposed operations do not draw delta smelt into the San Joaquin River in the vicinity of Prisoner's Point, it is unlikely that delta smelt distribution will change in a way that increases their entrainment risk. The Biological Reviews call for continued monitoring and evaluation to inform real-time operations. As discussed above, rain events are expected later this week that may increase turbidity in the Delta.

Longfin Smelt

Longfin smelt, which is listed as threatened under CESA and is a candidate for listing as threatened or endangered under ESA, experienced its second lowest FMWT index in 2014. According to the Biological Reviews, reductions in flows associated with the TUCP are expected to shift the centroid of the longfin smelt population inland which will expose a greater proportion of the adult population to entrainment at the Project facilities. The primary concern for entrainment however is for larval and juvenile longfin smelt. Based on the current longfin smelt distributions, a reduction in outflows is expected to result in an elevated risk of entrainment of larvals and juveniles during February and March. The strong and consistent relationship between outflows and survival of juvenile to age-1 longfin smelt, also supports the conclusion that reductions in outflows this year will reduce the survival of these fish (Jassby et al. 1995, Kimmerer 2002, McNally et al. 2010). However, detection of larval longfin smelt in the Cache Slough Complex and the current distribution of adults indicate that the larval population is likely to be widely dispersed during February and March. Therefore, operations are not expected to affect the species population as heavily as may be the case with delta smelt unless a greater percentage of the population migrates into the lower San Joaquin River. The Biological Reviews conclude that entrainment risk of adult longfin smelt is likely to be low unless their distribution narrows and shifts further into the interior and south Delta, which may occur as a result of the expected precipitation.

Salmonids and Green Sturgeon

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develops recommendations for consideration by the USFWS in its implementation of the Operational Criteria and Plan (OCAP) Biological Opinion.

The endangered winter-run Chinook salmon is of particular concern during dry years. Winter-run inhabit the upper reaches of the Sacramento River below Keswick Dam and are entirely dependent on adequate temperature and flow conditions below the dam for their survival. Despite temperature modeling that indicated that temperatures could be maintained below 56 degrees throughout the 2014 temperature control season immediately below the dam under the conditions that existed last year, temperature control was lost several weeks before the end of the egg incubation life stage last year. As a result, the 2014 winter-run brood year (BY) is estimated to have experienced 95 percent mortality. This is of particular concern given winter-run's endangered status and extremely limited distribution, reducing the resilience of this species to withstand impacts, especially during a prolonged drought. According to the Biological Reviews, it is currently estimated that 95 percent of the surviving winter-run are in the Delta and rearing extensively in the lower Sacramento River and Delta with some fish in the south Delta waterways. At this time, adult winter-run are also starting to enter the Sacramento River system and have begun to migrate to the upper reaches of the river. These adult winter-run must hold in the upper Sacramento River below Keswick Dam until they are ready to spawn during the summer. These fish require cold water holding habitat for several months prior to spawning to allow for maturation of their gonads, and then subsequently require cold water to ensure the proper development of their fertilized eggs, which are highly sensitive to thermal conditions during this embryo development period. Adults returning to the river in 2015 are predominantly members of the cohort from BY 2012 (assuming a 3-year cohort cycle). Based on cohort replacement rate (CRR)[7] estimates, BY 2012 had the fifth lowest CRR since 1992, making this run of particular concern.

The 2014 spawning run of spring-run Chinook salmon returning to the upper Sacramento River also experienced significant impacts due to drought conditions as well as from sedimentation resulting from rain events in late October through December that covered eggs leading to mortality. According to the Biological Reviews, the run was lower in four of seven locations compared to the 2013 escapement,[8] with considerably lower escapement observed in the Butte Creek and Feather River Hatchery. Spring-run eggs in the Sacramento River underwent significant, and potentially complete, mortality due to high water temperature downstream of Keswick Dam starting in early September when water temperatures exceeded 56 degrees Fahrenheit. Extremely few juvenile spring-run Chinook salmon have been observed this year migrating downstream on the Sacramento River during high winter flows, when spring-run originating from the upper Sacramento River, Clear Creek, and other northern tributaries are typically observed, which presents a significant concern for the population. Based on the currently available data, the majority (80-90 percent) of yearling spring-run are estimated to be in the Delta, while less than 5 percent remain upstream of Knights Landing on the upper Sacramento River and less than 15 percent have already exited the Delta. Up to half (25-50 percent) of young of the year spring-run are estimated to be in the Delta, while 50-75 percent remain upstream, and less than 5 percent are estimated to have already exited the Delta.

[7] An evaluation of one spawning generation compared to the next is known as the CRR. It is a parameter used to describe the number of future spawners produced by each spawner. This spawner-to-spawner ratio is defined by the number of naturally produced and naturally spawning adults in one generation divided by the number of naturally spawning adults in the previous generation. The ratio describes the rate at which each subsequent generation, or cohort, replaces the previous one, and can be described as a natural cohort replacement rate.

[8] Escapement refers to that portion of an anadromous fish population that returns from the ocean and reaches the freshwater spawning grounds.

Steelhead and green sturgeon have also likely been affected by the drought, but given the difficulty in sampling for these fish it is problematic to determine exactly how the species have been affected. Impacts to other species, including commercially important fall-run are also expected to be realized as a result of the drought. If these impacts are severe enough they could result in significant impacts to the commercial and recreational fishing industry.

According to the Biological Reviews, both positive and negative effects of the TUCP are expected on salmonids and green sturgeon during February and March. The TUCP changes are expected to affect the abundance and spatial distribution of juvenile winter-run and spring-run Chinook salmon, steelhead, and green sturgeon. The modifications to outflows and DCC Gate operations may affect the spatial distribution and abundance of adult winter-run Chinook salmon and green sturgeon. Life history diversity of steelhead may be affected due to reduced survival through the San Joaquin River migration corridor. The modification of outflow, exports, and Vernalis flows may reduce survival of juvenile listed salmonids, steelhead and green sturgeon, and may modify their designated critical habitat. The modification of juvenile winter-run and spring-run Chinook salmon and steelhead survival due to changes in outflow would occur primarily in migratory corridors in the north Delta due to increased entrainment into the interior Delta. Steelhead survival may also be reduced along the mainstem of the San Joaquin River downstream of the Stanislaus River leading to increased entrainment of steelhead toward the Project pumping facilities.

There may be impacts from opening the DCC Gates on Sacramento River origin salmonids from straying and entrainment. However, the Biological Reviews conclude that those effects will be minimized due to compliance with the DCC Gate operations matrix which limits opening of the DCC when migrating ESA-listed salmonids are present in the lower Sacramento River region. Further, during the period the gates are open, exports are proposed to be limited to 1,500 cfs. This export limit along with the implementation of the DCC Gate Triggers Matrix is expected to minimize entrainment of existing rearing fish in the interior and south Delta. However, the Biological Reviews conclude that operations of the DCC Gates may still cause straying of adult winter-run and green sturgeon.

While there may be impacts from modifications to outflows, San Joaquin River flows and opening of the DCC on salmonids and other species, the Biological Reviews conclude that these effects would be offset by increased storage in Project reservoirs which will help to maintain water temperatures necessary for Chinook salmon, steelhead, and green sturgeon over the summer and fall of 2015. The Biological Reviews conclude that without the changes to outflows, the low reservoir storage conditions are likely to result in extremely high egg mortality or even complete failure of natural BY 2015 spring-run Chinook and winter-run Chinook below Keswick Dam due to high water temperatures. Relaxation of Delta outflow requirements and San Joaquin River flow requirements, while still continuing to meet required tributary releases from Oroville, Folsom, and New Melones, is projected to enhance the opportunities for summertime cold water management across Project reservoirs in 2015.

With respect to the proposed modifications to exports, the Biological Reviews find that unmeasured mortality of salmonids in the south Delta region may increase as a result of increased entrainment towards the Project facilities under the proposed intermediate export rate of 3,500 cfs when NDOI is between 5,500 and 7,100 cfs. The Biological Reviews also find that mortality may increase due to long transit times on the San Joaquin River where exposure to degraded habitat and predaceous species is constant. The Biological Reviews conclude that under exports of 1,500 cfs with NDOI of 5,500 or less, reduced entrainment and salvage of

listed species at the Project fish collection facilities adjacent to the South Delta export facilities would be expected due to increased positive flows in the south and central Delta.

3.0 APPLICABILITY OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) AND WATER CODE SECTION 13247

Ordinarily, the State Water Board must comply with any applicable requirements of CEQA 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 December 22, 2014 Executive Order 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. Absent suspension of section 13247, the State Water Board could not approve a change petition that modifies permits and licenses in a way that does not provide for full attainment of the water quality objectives in the Bay-Delta Plan, even during a drought emergency.

4.0 PROCEDURAL REQUIREMENTS CONCERNING THE TEMPORARY URGENCY CHANGE PETITION

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.)[9]

The State Water Board issued a notice of the TUCP and notice of public workshop on January 27, 2014. Objections to the TUCP are due by February 13, 2015. The workshop is scheduled for February 18, 2015. At the workshop, the State Water Board will receive public comment and input on the January 15, 2015 Drought Contingency Plan, the TUCP request for February and March, this Order, and any potential future requests pursuant to the TUCP. The Board will not take formal action at the workshop, but may provide further direction regarding the TUCP and this Order. In addition to the Board providing public notice of the TUCP, the Petitioners will be required to publish the notice in newspapers in accordance with Water Code section 1438, subdivision (b)(1).

5.0 REQUIRED FINDINGS OF FACT

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 change petitions. (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

[9] 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.)

point of diversion, place of use, or purpose of use may be filed, subject to the same filing and procedural requirements that apply to changes in point of diversion, place of use, or purpose of use. (*Id*., § 791, subd. (e).)

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

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

(Wat. Code, § 1435, subd. (b)(1-4).)

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.)

5.1 Summary of the Ordering Conditions that Support the Required Findings of Fact

This Order approves most of the changes requested in the TUCP for which an urgent need has been demonstrated and also includes other conditions intended to ensure that the changes can be made (1) without injury to other legal users of water; (2) without unreasonable effects on fish, wildlife, or other instream beneficial uses; and (3) in the public interest. Specifically, this Order modifies the minimum Delta outflow requirement to 4,000 cfs during February and March, and also provides for a higher pulse flow to be scheduled to benefit fish species. The magnitude, timing, and duration of this pulse flow will be determined through the consultation process discussed below. This Order also modifies the minimum monthly San Joaquin River flow requirement to 500 cfs. This Order allows the DCC Gates to be opened from February through March to reduce the need for upstream releases to maintain salinity conditions in the interior Delta. To ensure that gate opening avoids impacts to fish, this Order requires the gates to be operated in compliance with the DCC Gate Triggers Matrix as described in Appendix G of the April 2014 Drought Operations Plan and Operational Forecast, and decisions regarding gate operations to be coordinated in accordance with the consultation process discussed below. This Order includes export limits in addition to those included in D-1641 that limit SWP and CVP exports to SWP and CVP contractors to 1,500 cfs when outflows are below 7,100 cfs. This Order also allows for diversions of natural and abandoned flows up to the export limits identified in D-1641 when NDOI is at least 7,100 cfs and the DCC Gates are closed. These export limitations do not apply to transfers under non-Project permitted or licensed water rights because those transfers will require the State Water Board's independent review and approval. This Order does not approve the requested interim export level of 3,500 cfs when NDOI is at least 5,500 cfs at this time.

During the effective period of this Order, Petitioners propose to continue to consult with members of an ad hoc team, referred to as the RTDOMT. RTDOMT is comprised of representatives from Petitioners, the State Water Board, the Department of Fish and Wildlife

(DFW), U.S. Fish and Widlife Service (USFWS), and National Marine Fisheries Service (NMFS) (collectively fisheries agencies). RTDOMT was formed in 2014 for purposes of coordinating real-time Project operations during the drought in accordance with applicable legal requirements. This Order requires the Petitioners to continue to consult on a regular basis with designated representatives of the State Water Board and fisheries agencies to coordinate real-time operations based on current conditions and fisheries information to ensure that the proposed changes pursuant to this Order will not unreasonably affect fish, wildlife, and other instream uses of water.

This Order requires that DWR and Reclamation calculate and maintain a record of the amount of water conserved through the changes authorized by this Order, as well as to describe where that water is being conserved. This Order requires the use of the water to be coordinated through the RTDOMT process described above. To inform future decisions, this Order also requires DWR and Reclamation to develop monthly water balance estimates indicating actual and proposed operations through the end of the water year. In addition, this Order requires DWR and Reclamation to conduct necessary modeling and monitoring to inform real-time operational decisions. This Order further requires Reclamation to conduct additional temperature modeling and planning to ensure that temperature control for salmonids is maintained throughout the year and that issues encountered last year with temperature control are factored into that planning. This Order reserves the Executive Director's authority to require modifications to the Order to protect fish and wildlife or other uses of water based on additional information, including information that may be presented during the State Water Board workshop on February 18, 2015, concerning this Order and the Drought Contingency Plan.

5.2 Urgent Need for the Proposed Changes

Under Water Code section 1435, subdivision (c), an "urgent need" means "the existence of circumstances from which the board may in its judgment conclude that the proposed temporary change is necessary to further the constitutional policy that the water resources of the state be put to beneficial use to the fullest extent of which they are capable and that waste of water be prevented . . . ."

An urgent need exists for changes in the Petitioners' requirement to meet specified Delta outflows, San Joaquin River flows, export limits and the DCC Gate closure objective pursuant to D-1641. As described above and in the Governor's drought proclamations and the TUCP, California is experiencing prolonged unprecedented dry conditions that are having significant impacts to surface and groundwater supplies for various uses. It is critical to conserve stored water now in the event that precipitation events are limited for the remainder of the year. Failure to act quickly to reduce releases from storage will further deplete already low storage levels in the reservoirs available for use throughout the year. Already, January 2015 was the driest January on record, which is a significant concern given that this is historically one of the wettest months.

Operations to meet the Delta outflow, San Joaquin River flow and DCC Gate closure objectives, starting in February, could significantly reduce stored water supplies, making those supplies unavailable for the remainder of the season, primarily to water supply contractors and prior water right holders, and to some extent for fisheries protection, control of Delta salinity and refuge supplies. Without the changes, the Projects would likely need to reduce deliveries more than they would with the changes in order to satisfy D-1641 requirements. It is unclear to what extent the changes would benefit storage conditions only for temperature control because there

are existing temperature control requirements on the Sacramento and Stanislaus Rivers that might require other actions if the D-1641 Delta outflow and San Joaquin River flow requirements are not modified to improve storage. Further, while conservation of storage resulting from the changes may benefit temperature control to the extent that existing temperature requirements would not otherwise be met (which is not a given), temperature control releases are non-consumptive uses and as such the flows released for temperature control are available for diversion by inbasin users, salinity control, or export from the Delta. Accordingly, the primary beneficiaries of the changes will be water users. Reductions in supplies to water users upstream of the Delta would reduce the ability of those water users to provide much needed transfers during the drought, which would adversely affect south of Delta export users and potentially refuges. Reductions in surface water supplies would also place additional strain on already significantly depleted groundwater basins.

The allowance of continued exports of 1,500 cfs when outflows are below 7,100 cfs and exports up to D-1641 limits when outflows of 7,100 cfs are maintained (but not additional Table 4 requirements) was made to mitigate to some extent the significant water supply reductions to municipal, industrial, and agricultural water users that are likely to occur due to the drought. The water supply considerations discussed above are considered urgent due to the significant impacts to water supplies that occurred last year and the associated severe economic impacts in some communities, especially given that foregone opportunities to conserve storage for later use cannot be regained.

5.3 No Injury to Any Other Lawful User of Water

The proposed changes will not injure any other lawful user of water. 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. (*Id*. at pp. 738, 743, 771.) Accordingly, other legal users will not be injured to the extent that the Projects release less previously stored water as a result of the changes.

To the extent that the Projects divert natural or abandoned flows during the effective period of this Order, other lawful users will not be injured by the proposed changes because the Projects will continue to meet modified Delta outflow and San Joaquin River flow requirements, and adequate flows are expected to remain in the system to meet the demands of other lawful users of water. Moreover, approval of the proposed changes does not affect the Petitioners’ obligation to curtail their diversions of natural and abandoned flows to the extent necessary to protect senior water right holders. Further, this Order requires that the Petitioners’ bypass adequate natural and abandoned flows to prevent injury to senior water right holders.

At the present time, DWR and Reclamation have proposed changes to requirements to meet certain water quality objectives established to protect fish and wildlife beneficial uses. DWR and Reclamation have not yet requested any changes to requirements to meet water quality objectives established to protect municipal, industrial, or agricultural beneficial uses. For this reason, the proposed changes will not injure other water users due to a change in water quality. (See *State Water Resources Control Bd. Cases, supra*, at pp. 744-745.)

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

As conditioned by this Order, the changes to Delta outflows, export limits, San Joaquin River flows, and DCC Gate closure requirements approved in the Order will not unreasonably impact fish, wildlife, or other instream beneficial uses of water. The fisheries agencies submitted concurrence letters on January 29 (NOAA) and January 30 (USFWS and DFW) indicating that the changes proposed in the TUCP are in compliance with ESA and CESA requirements. The NOAA letter states that it is difficult to quantify the effects of the TUCP due to uncertainties associated with the specific timing of any action, specific migration timing of any species and uncertainty in the quantitative relationship between the TUCP actions and the response of the species. The letter also calls for improved measures to avoid impacts to species. The USFWS and DFW letters also identify the need to further evaluate evolving scientific information to better understand the effects of the kinds of actions included in the TCUP. It should be noted that while the fisheries agencies indicated that the changes proposed in the TUCP could be made in compliance with ESA and CESA requirements, those letters did not determine whether the potential impacts of the changes would unreasonably affect fish and wildlife. The ESA and CESA standard of avoiding jeopardy to the continued existence of a threatened or endangered species is a minimal standard, and as such may differ from the Water Code requirement that the changes must not unreasonably affect fish and wildlife, especially when many species have already experienced extreme impacts from the drought for several years.

In determining whether the impact of the proposed changes on fish and wildlife is reasonable, the short-term impact to fish and wildlife must be weighed against the long-term impact to all beneficial uses of water, including irrigated agriculture, municipal and industrial use, use by wildlife refuges, salinity control in the Delta, and other fish and wildlife uses, if the changes are not approved. Further, the effects that have occurred to the species over several years must be considered.

As discussed above, dry conditions during this winter are expected to adversely affect spawning and rearing conditions for delta smelt and longfin smelt, and migration conditions for winter-run Chinook salmon, spring-run Chinook salmon, steelhead trout, and North American green sturgeon. While maintaining the D-1641 Delta outflows and San Joaquin River flow requirements would provide some short term benefits to these species, the overriding effects of the drought would persist. Further meeting those requirements would reduce the storage available in Project reservoirs later in the year primarily for agricultural and other water supply users, as well as potentially for salinity control and cold-water flows for fish.

While the Projects' ability to maintain temperature control for fish and salinity control in the Delta may be improved by the changes, there are existing regulatory requirements that would likely ensure that these minimal requirements are met regardless of the changes. Specifically, Project operators are unlikely to operate Delta facilities, or to be permitted to operate Delta facilities, in a manner that results in salinity intrusion. With respect to temperature control, State Water Board Order WR 90-5 requires Reclamation to operate its facilities on the Sacramento River to ensure temperature control for salmonids. The NMFS Biological Opinion for the Long-Term Operations of the CVP and SWP also includes temperature requirements on the Sacramento and Stanislaus Rivers. Further, as discussed above, releases for temperature control are non-consumptive and as such are available for downstream water supply and salinity control uses. Accordingly, whether or not the changes result in more stored water available for temperature control, the changes will primarily benefit water supplies.

Those water supplies include allocations to senior water right holders and senior water supply contractors on the Sacramento and Stanislaus Rivers, as well as refuges. As discussed above, increased water supplies available to users upstream of the Delta are also likely to benefit users south of the Delta who engage in transfers. Transfer supplies are critically important sources of supply to south of Delta users during dry conditions when there are low to no contract allocations. These transfers help to ensure that permanent crops and other economically important agricultural uses are sustained. Transfers also reduce the reliance on groundwater to some extent. As mentioned previously, groundwater supplies after four years of drought are significantly depleted. Prolonged overdraft of groundwater basins may result in a permanent reduction in the capacity of those storage basins, subsidence, and associated significant infrastructure effects. All of these effects present a significant concern.

In summary, the changes to Delta outflows and San Joaquin River flow requirements approved in this Order balance the various uses of stored water in Project reservoirs over the year by improving water supplies for water allocations, wildlife refuges, salinity control and at the same time meeting temperature control requirements. Given the persistent drought conditions and associated impacts that have occurred to groundwater, agriculture, refuges and salmonids, such balancing is reasonable and as such the changes approved in this Order will not have unreasonable effects on fish and wildlife. As mentioned above, this Order requires Reclamation to conduct additional modeling and planning for temperature control to ensure that any tradeoffs for temperature control will be realized this year. This matter will also be further discussed at the State Water Board's workshop on February 18, 2015.

With respect to the DCC Gates, the Petitioners propose to open the gates as necessary to reduce intrusion of high salinity water into the Delta while preserving limited storage in upstream reservoirs and reducing impacts to migrating Chinook salmon through use of the DCC Gate triggers and consultation with the RTDOMT. The principal benefit of opening the DCC Gates in February and March is to move more fresh water to the interior Delta, using less storage releases than would be needed to achieve the same salinity with the gates closed. This freshening of the Delta will maintain water quality at the CVP and SWP export pumps and the intakes of Contra Costa Water District that are needed for the protection of public health and safety. With the DCC Gates open, there is potential for decreased survival of Sacramento River-origin species as they move through the central Delta. Potential hazards include increased entrainment, predation, and salvage. These impacts will be reduced by implementing the DCC Gate closure criteria proposed in the TUCP. Further, the tradeoff with maintaining upstream storage will also reduce impacts to other uses as discussed above. The State Water Board concludes that the potential for impairment to instream beneficial uses from this temporary change is not unreasonable considering the potential impacts to agricultural and municipal water supplies and potentially fish and wildlife that could occur if the temporary change is not approved.

With respect to the export limits, as stated in the TUCP and discussed above, unlike Water Year 2014, winter-run Chinook salmon and delta smelt are currently at an elevated risk of entrainment impacts due to their spatial distribution, abundance, and productivity, as well as predicted storm events later in the week. Spring-run Chinook and steelhead are also predicted to have an increased risk of entrainment in the south Delta as their migration increases through February and March. Given this heightened concern, this Order does not approve the requested interim pumping level of 3,500 cfs when NDOI is at least 5,500 cfs. This Order does allow for exports of 1,500 cfs when NDOI is at least 4,000 cfs, regardless of whether the DCC Gates are open. This Order also allows for exports of natural and abandoned flows above

1,500 cfs consistent with D-1641 when NDOI is at least 7,100. These approvals are consistent with export levels approved in 2014, which balanced water supply needs with the need to protect of fish and wildlife. While there may be impacts to fish and wildlife from entrainment and associated effects associated with the approved export levels, these changes are reasonable given the extremely limited water supply conditions that water supply contractors and wildlife refuges are likely to face this year and the prolonged depletions of groundwater resources that have occurred associated with the drought.

With respect to the interim export level, there is not currently adequate information to indicate that this export level is reasonable given the current status of species and their distribution in the Delta and the potential additional risk of entrainment from the interim pumping level on various species, especially given the precipitation events that are projected this week, which may increase turbidity and associated entrainment risks as discussed above and in the Biological Reviews. While the TUCP and Biological Reviews state that additional monitoring will be conducted to evaluate this issue, it is not clear if that monitoring would be adequate to avoid entrainment impacts given the concerns with the accuracy of entrainment estimates due to the extensive amount of water hyacinth in the vicinity of the export facilities, especially for eggs and larvae. Further, the water supply tradeoffs are not clear given the unknown water contract allocations that will occur this year. This matter will be further discussed at the Board's workshop on February 18, 2015. If adequate information is developed to determine that the interim pumping level could be allowed in a way that would not have unreasonable impacts on fish and wildlife, this Order may be amended to allow for the interim pumping level.

Based on the above, the State Water Board concludes that the potential for impairment to instream beneficial uses from the approved temporary changes is not unreasonable considering the impacts to agricultural, municipal and wildlife refuge supplies or fish and wildlife that could occur if the temporary changes are not approved.

5.5 The Proposed Change is in the Public Interest

The temporary modifications authorized in this Order will make the best use of limited water supplies and are accordingly in the public interest. Hydrologic and water supply conditions in the Sacramento and San Joaquin River basins continue to be highly impacted by the drought and are inadequate to meet all of the demands for water in the basin this year and heading into next year if conditions continue to be dry. To respond to these conditions, the changes in the Order are warranted to reduce to some extent the significant water supply related impacts expected if conditions remain dry. The proposed changes will help conserve stored water so that it can be released throughout 2015 for multiple purposes, including municipal and agricultural supply, wildlife refuge supplies, temperature control on the Sacramento River, and salinity control in the Delta. The changes approved in this Order balance the various uses of water now and in the future while preserving water right priorities and protecting the public interest. The Order also continues reporting, consulting, and monitoring requirements and authority to modify the Order to ensure that it remains in the public interest.

6.0 CONCLUSIONS

The State Water Board has adequate information in its files to make the findings required by Water Code section 1435, as discussed above.

I conclude that, based on the available evidence:

1. The Petitioners have an urgent need to make the proposed changes that are approved by this Order;

2. The approved changes, as conditioned by this Order, will not operate to the injury of any other lawful user of water;

3. The approved changes, as conditioned by this Order, will not have an unreasonable effect upon fish, wildlife, or other instream beneficial uses; and,

4. The approved changes, as conditioned by this Order, are in the public interest.

ORDER

NOW, THEREFORE, IT IS ORDERED that the petition for temporary urgency change in permit and license conditions under 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); is approved in part, subject to the following terms and conditions. Except as otherwise provided below, 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. This Order shall be effective from February 4, 2015, until March 31, 2015.

1. Except as otherwise provided in condition 2, below, during February and March of 2015, or until such time as this Order is amended or rescinded, the requirements of Decision 1641 (D-1641) for DWR and Reclamation (or Petitioners) to meet specified water quality objectives are amended as follows:

    a. The minimum Delta outflow levels specified in Table 3 are modified as follows: the minimum Net Delta outflow Index (NDOI) described in Figure 3 of Decision 1641 during the months of February and March shall be no less than 4,000 cubic-feet per second (cfs) on a monthly average. The 7-day running average shall not be less than 1,000 cfs below the monthly average. In addition to base Delta outflows, pursuant to this Order, a higher pulse flow may also be required through the consultation process described in Condition 2 below.

    b. The San Joaquin River Flow requirements at Airport Way Bridge, Vernalis, specified in Table 3 are modified as follows: the minimum flow rate during the months of February and March shall be no less than 500 cfs on a monthly average.

    c. The Delta Cross Channel (DCC) Gate Closure requirements specified in Table 3 are modified as follows: the DCC Gates may be opened during the months of February and March as necessary to preserve limited storage in upstream reservoirs and reduce infiltration of high salinity water into the Delta while reducing impacts to migrating Chinook salmon. Requirements for closure of the DCC Gates during the months of February and March shall be informed and shall be conducted in compliance with the DCC Gate triggers matrix described in Appendix G of the April 2014 Drought Operations Plan and Operational Forecast and shall be coordinated in accordance with the process described in Condition 2, below.

d. The maximum Export Limits specified in Table 3 are modified as follows: When precipitation and runoff events occur that allow the DCC Gates to be closed and Footnote 10 of Table 3 of D-1641 is being met [3-day average Delta outflow of 7,100 cfs, or electrical conductivity of 2.64 mmhos/cm on a daily or 14-day running average at the confluence of the Sacramento and the San Joaquin Rivers (Collinsville station C2) if applicable], but any additional Delta outflow requirements contained in Table 4 of D-1641 are not being met, then exports of natural and abandoned flows are permitted up to D-1641 Export Limits contained in Table 3 at the SWP Banks Pumping Plant and the CVP Jones Pumping Plant, subject to other applicable laws and regulations including the federal Endangered Species Act (ESA) and California ESA (CESA). When an NDOI of at least 7,100 cfs is not being met as specified above or the DCC Gates are open, the combined maximum exports at the SWP Banks Pumping Plant and the CVP Jones Pumping Plant shall be no greater than 1,500 cfs. During the effective period of this Order, if precipitation events occur that enable DWR and Reclamation to fully comply with the Delta outflow and DCC Gate Closure requirements contained in D-1641, then D-1641 requirements shall be operative, except that any SWP and CVP exports greater than 1500 cfs shall be limited to natural or abandoned flow, or transfers as specified in condition 1e.

e. These export limitations do not apply to water transfers under non-SWP or non-CVP permitted or licensed water rights. Based on additional information or changed circumstances, the export limits imposed pursuant to this Order may be modified through the consultation process described in condition 2, below.

2. DWR and Reclamation shall 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 SWP and CVP operations to meet health and safety requirements and to reasonably protect all beneficial uses of water. The Executive Director will designate a representative who will be authorized to make real-time operational decisions to modify requirements to meet pulse flows associated with the modification to the Delta outflow requirement described above, San Joaquin River flow requirements, DCC Gate closure requirements, Export Limits, and the associated requirements of this Order, including how often DWR and Reclamation need to consult with representatives of the State Water Board and fisheries agencies. If the State Water Board approves any additional temporary urgency changes pursuant to the temporary urgency change petition that is the subject of this Order, or otherwise modifies this Order, the State Water Board will provide notice and an opportunity for interested persons to comment or object. Based on public comments or objections, further changes may be made to this Order. Information concerning changes to this Order will be posted on the State Water Board's website within 24 hours.

3. DWR and Reclamation shall calculate and maintain a record of the amount of water conserved through the changes authorized by this Order, as well as a record of where that water was conserved, and shall submit such records on a monthly basis to the State Water Board and fisheries agencies within 20 working days after the first day of the following month. The use of such water shall be determined by the Executive Director or his representative, taking into consideration input from DWR, Reclamation, the fishery agencies, and other interested persons.

4. DWR and Reclamation shall develop monthly water balance estimates indicating actual and proposed operations through the end of the water year. Specifically, actual and projected inflows, north and south of Delta deliveries (contract deliveries and transfers), other channel depletions, exports, and Delta outflows shall be identified under at least the 50 percent, 90 percent, and 99 percent hydrologic exceedance scenarios. The water balance shall be posted on DWR's website and updated as necessary based on changed conditions. Monthly updates shall be posted and provided to the State Water Board and fisheries agencies within 20 working days after the first day of the following month.

5. DWR and Reclamation shall conduct necessary modeling and monitoring and prepare other necessary technical information to inform operational decisions. Required modeling and monitoring shall be determined by the Executive Director or his representative, taking into consideration input from the relevant agencies, including DWR, Reclamation, and the fishery agencies. DWR and Reclamation shall make available, upon request of State Water Board or fisheries agency staff, technical information to inform these operational decisions, including planned operations, temperature models, modeling and monitoring information, water quality modeling and monitoring information, and information about potential impacts of operational changes on other water users and fish and wildlife. DWR and Reclamation shall report to the Board monthly at its Board meetings on their drought operations and the information discussed above beginning with the second February 2015 Board meeting.

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

    a. Perform hindcast temperature modeling of the water year 2014 temperature control season to verify Reclamation's temperature model accuracy. Model inputs will reflect observed water year 2014 conditions, including, but not limited to, observed air temperatures, inflows, inter-basin transfers, and all other relevant operations. Reclamation will perform further analysis to identify the source of any significant discrepancies between modeled and observed temperatures. Reclamation shall prepare a report comparing the results of the aforementioned hindcast model run(s) to the observed Sacramento River temperatures during the water year 2014 temperature control season. This report will include the full model input and output files used in the hindcast. The report shall be submitted to the State Water Board and Sacramento River Temperature Task Group by March 4, 2015.

    b. Reclamation, in coordination with the fisheries agencies, shall update the Temperature Management Plan for the Sacramento River for the 2015 winter-run Chinook salmon spawning and rearing period that considers other fisheries

needs, including spring- and fall-run Chinook salmon. That plan shall identify and evaluate all available options for reducing temperature and redd dewatering impacts to winter-run Chinook salmon on the Sacramento River for the remainder of the 2015 Water Year. As part of the development of the Temperature Management Plan, Reclamation shall include three temperature model run scenarios: (a) Reclamation's preferred operations, (b) the fisheries agencies' preferred operations and (c) an optimal operation for which temperature control pursuant to Order 90-5 is the primary objective for operations in Water Year 2015 without consideration for contract deliveries and other demands for water from Shasta Reservoir. Reclamation shall follow direction from the fisheries agencies for the assumptions that should be made for model run scenario (b) and shall follow direction from State Water Board staff to determine the assumptions that shall be made for model run scenario (c). The 2015 temperature management plan shall be submitted to the Sacramento River Temperature Task Group (SRTTG) for review no later than March 15, 2015, with updates as necessary to reflect changing conditions. The final Temperature Management Control Plan shall be submitted to the State Water Board by June 1, 2015. Temperature model input and output files for all scenarios shall be included as an appendix to the Temperature Management Plan.

c. Reclamation shall update the plan as conditions change or upon the request of the fisheries agencies or Executive Director or his designee. Any updates to the Temperature Control Plan shall include updated model results for all three scenarios. For the remainder of the drought, Reclamation shall meet weekly with the SRTTG to discuss operations and options for reducing or avoiding redd dewatering, stranding and temperature impacts to winter-run Chinook salmon. Reclamation shall confer on recommendations from the SRTTG during the consultation process and other applicable CVP and SWP operational decision-making meetings. Reclamation shall immediately make available technical information requested by the Executive Director or his designee through the consultation process. Reclamation shall report monthly to the State Water Board during its Board meeting on actions that have been or will be taken to reduce impacts to winter-run Chinook salmon, through the remainder of the drought.

7. DWR and Reclamation shall bypass natural and abandoned flows to the extent necessary to prevent injury to senior water right holders.

8. This Order may be further modified by the Executive Director or the State Water Board based on additional public input or changed circumstances.

9. This Order does not authorize any act that results in the taking of a candidate, threatened or endangered species, or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). If a "take" will result from any act authorized under this Order, the Petitioners shall obtain authorization for an incidental take permit prior to construction or operation of the project. Petitioners shall be responsible for meeting all requirements of the applicable Endangered Species Act for the temporary urgency changes authorized under this Order.

10. Petitioners shall immediately notify the Executive Director of the State Water Board if any significant change in conditions occurs that warrants reconsideration of this Order.

STATE WATER RESOURCES CONTROL BOARD

ORIGINAL SIGNED BY:

Thomas Howard
Executive Director
Dated: February 3, 2015

TABLE 1
WATER QUALITY OBJECTIVES FOR
MUNICIPAL AND INDUSTRIAL BENEFICIAL USES

COMPLIANCE LOCATION	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-				*W*		*240 (66%)*
San Joaquin River at Antioch Water Works Intake	*D-12 (near) (RSAN007)*			*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)*					

[1] River Kilometer Index station number.
[2] The Sacramento Valley 40-30-30 water year hydrologic classification index (see Figure 1) applies for determinations of water year type.
[3] The Cache Slough objective to be effective only when water is being diverted from this location.

TABLE 2
WATER QUALITY OBJECTIVES FOR AGRICULTURAL BENEFICIAL USES

COMPLIANCE LOCATION	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 ***-and-*** *San Joaquin River at Brandt Bridge site[5]* ***-and-*** *Old River near Middle River [5]* ***-and-*** *Old River at Tracy Road Bridge [5]*	*C-10 (RSAN112)* *C-6 (RSAN073)* *C-8 (ROLD69)* *P-12 (ROLD59)*	*Electrical Conductivity (EC)*	*Maximum 30-day running average of mean daily EC (mmhos/cm)*	*All*	*Apr-Aug Sep-Mar*	*0.7 1.0*
EXPORT AREA						
West Canal at mouth of Clifton Court Forebay ***-and-*** *Delta-Mendota Canal at Tracy Pumping Plant*	*C-9 (CHWST0)* *DMC-1 (CHDMC004)*	*Electrical Conductivity (EC)*	*Maximum monthly average of mean daily EC (mmhos/cm)*	*All*	*Oct-Sep*	*1.0*

[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 1) applies for determinations of water year type.

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

[5] The 0.7 EC objective becomes effective on April 1, 2005. The DWR and the USBR shall meet 1.0 EC at these stations year round until April 1, 2005. The 0.7 EC objective is replaced by the 1.0 EC objective from April through August after April 1, 2005 if permanent barriers are constructed, or equivalent measures are implemented, in the southern Delta and an operations plan that reasonably protects southern Delta agriculture is prepared by the DWR and the USBR and approved by the Executive Director of the SWRCB. The SWRCB will review the salinity objectives for the southern Delta in the next review of the Bay-Delta objectives following construction of the barriers.

TABLE 3
WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENEFICIAL USES

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
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						
Sacramento River at Collinsville ***-and-*** *Montezuma Slought 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						
Chadbourne Slough at Sunrise Duck Club ***-and-*** *Suisun Slough, 300 feet south of Volanti Slough*	*S-21 (SLCBN1)* *S-42 (SLSUS12)*	*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 [6]*	*Oct* *Nov* *Dec* *Jan* *Feb-Mar* *Apr-May*	*19.0* *16.5* *15.5* *12.5* *8.0* *11.0*
				Deficiency Period [6]	*Oct* *Nov* *Dec-Mar* *Apr* *May*	*19.0* *16.5* *15.6* *14.0* *12.5*

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

COMPLIANCE LOCATION	INTERAGENCY STATION NUMBER(RKI1[])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
DELTA OUTFLOW						
		Net Delta Outflow Index (NDOI) [7]	*Minimum monthly average [8] NDOI (cfs)*	*All*	*Jan*	*4,500 [9]*
				All	*Feb-Jun*	*[10]*
				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 [11] flow rate (cfs)*	*All*	*Sep*	*3,000*
				W,AN,BN,D	*Oct*	*4,000*
				C		*3,000*
				W,AN,BN,D	*Nove-Dec*	*4,500*
				C		*3,500*
San Joaquin River at Airport Way Bridge, Vernalis	*C-10 (RSAN112)*	*Flow rate*	*Minimum monthly average [12] flow rate (cfs) [13]*	*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 [14]*	*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 [15]*
EXPORT LIMITS						
		Combined export rate [16]	*Maximum 3-day running average (cfs)*	*All*	*Apr 15- May 15 [17]*	*[18]*
				All	*Feb-Jun*	*35% Delta inflow [21]*
			Maximum percent of Delta inflow diverted [19] [20]	*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*	*[22]*
					Feb-May 20	*----*
					May 21- Jun 15	*[23]*

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 1) 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% exceedence level. [Note: The Sacramento River Index refers to the sum of the unimpaired runoff in the water year as published in the 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] 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 MAF; 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 USBR as the final water year determination.

[7] Net Delta Outflow Index (NDOI) is defined in Figure 3.

[8] 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.

[9] 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.]

[10] The minimum daily net 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 9) 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 SWRCB is delegated authority to 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 SWRCB. 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% exceedence 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.

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

[12] 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.

[13] The water year classification for the San Joaquin River flow objectives will be established using the best available estimate of the 60-20-20 San Joaquin Valley Water Year Hydrologic Classification (see Figure 2) at the 75% exceedence 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.

[14] 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 NMFS, 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 SWRCB.

[15] 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 NMFS and the DFG. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement.

[16] 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.

[17] This time period may be varied based on real-time monitoring and will coincide with the San Joaquin River pulse flow described in footnote 18. The DWR and the USBR, in consultation with the USFWS, the NMFS 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.

[18] Maximum export rate is 1,500 cfs or 100% of 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 NMFS 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 SWRCB. If the Executive Director of the SWRCB does not object to the variations within 10 days, the variations will remain in effect. The Executive Director of the SWRCB 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.

[19] Percent of Delta inflow diverted is defined in Figure 3. 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 CVP or the SWP is making storage withdrawals for export, in which case both the export rate and the Delta inflow are 3-day running averages.

[20] The percent Delta inflow diverted values can be varied either up or down. Variations are authorized subject to the process described in footnote 18.

[21] If the best available estimate of the Eight River Index (described in footnote 9) 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 NMFS and the DFG. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement.

[22] 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 NMFS and the DFG. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement.

[23] For the May 21-June 15 period, close 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 NMFS and the DFG. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement.

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

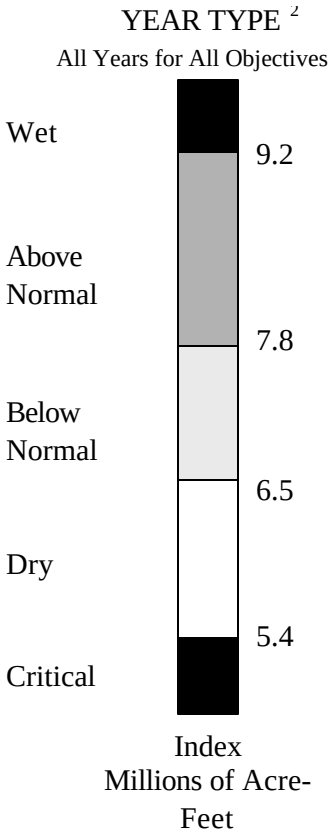
Where: X = Current year's April – July Sacramento Valley unimpaired runoff

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 current water year is available.

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

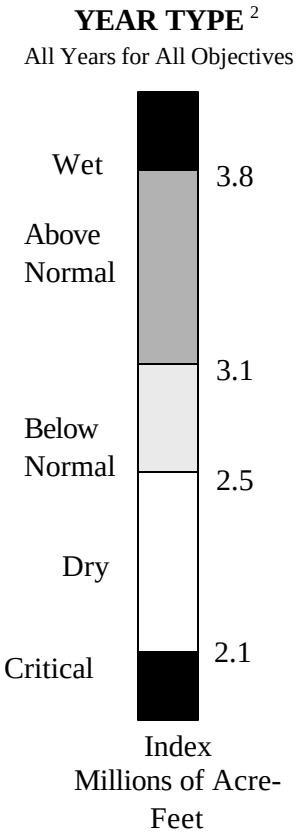
Where: X = Current year's April – July
San Joaquin Valley unimpaired runoff

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



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[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.

Figure 3
NDOI and PERCENT INFLOW DIVERTED [1]

The NDOI and the percent inflow diverted, as described in this footnote, 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 The DWR is currently developing new channel depletion estimates. If these new estimates are not available, 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 with 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.

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 description 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.