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National Oceanic and Atmospheric Administration
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JAN 2 9 2015

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Mr. Mark Cowin
Director
California Department of Water Resources
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Re: Interim Contingency Plan for February and March Pursuant to Reasonable and Prudent Alternative Action I.2.3.C of NOAA's National Marine Fisheries Service's 2009 Coordinated Long-term Operation of the Central Valley Project and State Water Project Biological Opinion

Dear Mr. Murillo and Mr. Cowin:

This letter is in response to your January 27, 2015, letter and enclosures: (1) Temporary Urgent Change Petition (TUC Petition) dated January 23, 2015; (2) Project Description for February – March 2015 Drought Response Actions To Support Endangered Species Act Consultations (Project Description); and (3) Salmonid and Green Sturgeon Supporting Information for Endangered Species Act Compliances for Temporary Urgency Change Petition Regarding Delta Water Quality (Biological Review). The TUC Petition outlines the U.S. Bureau of Reclamation's (Reclamation) and California Department of Water Resources' (DWR) requested approval from the State Water Resources Control Board (State Board) for temporary modification to the Water Rights Decision 1641 (D-1641) permit terms related to the Delta outflow, export limits, Delta Cross Channel (DCC) gate operations and Vernalis flow standards described in D-1641, Table 3, for the months of February and March 2015. The Project Description provides additional details regarding the specific TUC Petition requests for February and March 2015, and in addition, includes: (1) a description of a framework for future requests for Old and Middle River flow management flexibility; and (2) identification of potential operations that may be implemented in 2015 and beyond to address the ongoing drought conditions or to help recover from the conditions created from the previous three years of drought, in the event the hydrology becomes wetter.

Reclamation requests NOAA's National Marine Fisheries Service's (NMFS) concurrence that the TUC Petition, serving as the drought contingency plan is consistent with the provisions of NMFS' June 4, 2009, biological and conference opinion on the long-term operation of the Central Valley Project (CVP) and State Water Project (SWP, CVP/SWP Opinion), reasonable

and prudent alternative (RPA) Action I.2.3.C. NMFS received subsequent clarification from Reclamation that the Project Description, including the TUC Petition and the supporting Biological Review, serves as the interim contingency plan for February and March 2015.

We are aware that California continues to face critically dry conditions in the current water year in what could be its fourth straight year of below-average rainfall and very low snowmelt runoff. Water year 2014 was the fourth driest year in recorded history for California (after 1924, 1931, and 1977 based on the Sacramento Valley water year index), resulting in the low initial storage at the beginning of water year 2015. Although November and December 2014 storms brought much needed precipitation, the State's overall water storage levels remain far below that which would be necessary to supply human needs, repel saltwater intrusion to the Delta, and provide for cold water necessary for listed fish. In light of the continuing dry conditions, NMFS reaffirms its commitment to provide assistance in managing natural resources in California during the drought.

Considering the potential for extremely dry hydrological conditions to occur in California, NMFS built flexible drought provisions into the CVP/SWP Opinion and its reasonable and prudent alternative (RPA). The RPA Action I.2.3.C (pages 26-27 of the 2009 RPA with 2011 amendments) provides drought exception procedures and requires that Reclamation develop and submit to NMFS a contingency plan. The rationale for this action explicitly recognizes that in drought conditions, there is potential for conflict between the need to maintain storage at Shasta Reservoir and other legal and ecological requirements in the Delta, including outflow and salinity standards. This RPA provision is triggered if the February forecast, based on 90 percent hydrology, shows that the Clear Creek temperature compliance point or 1.9 million acre-feet (MAF) end of September storage at Shasta Reservoir is not achievable.

Although the February forecast will not be available for several weeks, the January 90 percent exceedance hydrology forecast, included with the January 15 Drought Contingency Plan (http://www.swrcb.ca.gov/waterrights/water_issues/programs/drought/docs/2015_drought_contingency_plan.pdf) indicates that the end of September 2015 storage in Shasta Reservoir will be approximately 1.875 MAF. The weather and lack of precipitation throughout January indicates that the February forecast will show reduced storage levels compared to those described in the January forecast. We agree with your determination that given the current and forecasted hydrology, Reclamation will not likely meet the Shasta Reservoir storage requirement and maintain Delta outflow and water quality standards requirements pursuant to D-1641, and that Action I.2.3.C is triggered.

The Project Description meets all of the required aspects of the contingency plan required in Action I.2.3.C, as follows:

- By March 1, 2015, Reclamation will update the interim contingency plan as per RPA Action I.2.3.C.
- Reclamation commits to target a navigation control point at Wilkins Slough not to exceed 4,000 cfs during the month of February.

- On January 23, 2015, Reclamation and DWR filed a TUC Petition to the State Board that considers additional technological and operational measures that may increase the ability to manage the cold water pool by modifying D-1641 requirements.
- The TUC Petition also serves to notify the State Board that meeting the biological needs of winter-run and the needs of resident species in the Delta, delivery of water to nondiscretionary Sacramento Settlement Contractors, and Delta outflow requirements per D-1641, may be in conflict in the coming season, and requests the Board's assistance in determining appropriate contingency measures and exercising their authorities to put these measures in place.

Based on Reclamation's January 27, 2015, transmittal letter, the TUC Petition, the Project Description, and the Biological Review, the following summarizes Reclamation's proposals for NMFS concurrence under RPA Action I.2.3.C:

- Outflow: The February and March outflow requirements would be modified to require the Net Delta Outflow Index (NDOI) be no less than 4,000 cubic feet per second (cfs) on a monthly average.
- Exports: Combined exports would be limited to a health and safety level (*i.e.*, 1,500 cfs) if the DCC gates are open or if outflow is between 4,000 cfs and 5,500 cfs. An intermediate combined export level of no greater than 3,500 cfs would apply if outflow is greater than 5,500 cfs but less than 7,100 cfs, and if the DCC gates are closed.
- DCC gate operations: The DCC gates may be opened during February and March as necessary to preserve limited storage in upstream reservoirs and reduce intrusion of high salinity water into the Delta, as determined through the Real-Time Drought Operations Management (RTDOT) process and the DCC gate triggers matrix[1] (enclosure).
- Vernalis: The Vernalis flow objective would be reduced to a minimum of 500 cfs on a monthly average.
- OMR: OMR measures in the Biop may be adjusted for limited periods to capture inflow associated with sporadic storms. The proposal contains a framework for developing specific requests for OMR flow management flexibility based on real-time forecasting of hydrology and fish conditions. If conditions warrant, these requests will be developed and analyzed as soon as the forecasts indicate that such flexibility may be utilized.
- Programmatic Considerations: The Project Description also identifies programmatic considerations that highlight specific actions and factors that may be considered throughout 2015, and identifies actions that may be included in future consultations, if necessary. The list was not intended to be a fully inclusive list, nor does inclusion in the list mean the agencies will implement these actions. Reclamation and DWR are not proposing these actions at this time, however these actions are considered in looking at the future status of the species in the accompanying Biological Review, in assessing the effects on species of the specific actions proposed in February and March 2015.

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[1] The Matrix of Triggers for Delta Cross Channel Gate Operations was provided as Appendix G to the April 8, 2014, Drought Operations Plan, and to be applied April 1 through November 15, 2014. However, in consideration of the DCC gate operations for water year 2015, Reclamation, DWR, NMFS, USFWS, and CDFW have agreed that the matrix would still be applicable and an important component of DCC gate operations when the default operation is for the DCC gates to be closed.

On or about February 15, Reclamation will consult with NMFS on its February forecast according to the process provided in RPA Action I.2.3. Consistent with past practice and the RPA, we expect that Reclamation will make its February 15 forecast of deliverable water based on at least as conservative as the 90 percent probability of exceedance. Reclamation's associated Sacramento River temperature modeling runs will provide a projection of temperature management operations for the summer months. As required by Action I.2.3, NMFS will review the draft February forecast to determine whether the predicted delivery schedule is likely to leave sufficient water for temperature management to meet ESA requirements. In addition, throughout much of the summer of 2014, actual water temperatures, as monitored through the California Data Exchange Center, were upwards of 4°F higher than Sacramento River temperature modeling results. As part of the February forecast, NMFS expects an update on Reclamation's effort to recalibrate its Sacramento River temperature model, as provided in monitoring action IV.B.i.2.b (page 23) in the *Central Valley Project and State Water Project Drought Contingency Biological Monitoring Plan for Water Year 2015 and Beyond* (WY2015 Monitoring Plan, http://ca.gov/drought/pdf/DCP-2015-Monitoring-Plan_12-12-14.pdf). As the Biological Review and NMFS' juvenile production estimate (JPE) letter[2] describe, the egg and fry life history stages of winter-run in broodyear 2014 experienced approximately 95% temperature-related mortality last year – far greater than what was predicted by last year's forecast. Therefore, it will be critically important to enhance the accuracy of temperature effects associated with this year's February forecast and associated allocation decisions.

In the TUC Petition, Reclamation and DWR have also proposed that anticipated future requests submitted to the State Board will be developed through the existing multi-party coordination process, the RTDOT. This team of managers from Reclamation, DWR, State Board, California Department of Fish and Wildlife, NMFS, and the U.S. Fish and Wildlife Service is tasked with coordinating the management of water supplies and the protection of natural resources during the course of the declared drought emergency. NMFS agrees with the recommendation that the RTDOT continue to meet at least weekly. Among other topics, the RTDOT should address the following:

- Implement the Old and Middle River (OMR) flow management consultation framework, and specifically, the streamlined OMR consultation framework, if OMR flexibilities are warranted, as follows:
    1. Identify upcoming storm events;
    2. Evaluate forecasted run-off and anticipated available in-Delta flows;
    3. Develop and model a specific OMR and outflow proposal, including specific proposed OMR flow and expected duration of action;
    4. Finalize proposed project description; and
    5. Prepare listed species and critical habitat biological review including:
        - Existing Delta conditions and supporting hydrodynamic modeling;
        - Species distribution and risk of entrainment in the South and Central Delta

[2] January 16, 2015, letter from NMFS to Reclamation providing the juvenile production estimate for winter-run Chinook salmon in broodyear 2014 (2015,http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/20150116_nmfs_winter-run_juvenile_production_estimate_nr.pdf).

- Particle Tracking Model (PTM) results, including enhanced PTM if available for salmonids;
- Discussion of any existing RPA action that may be in place and any associated effects analysis that provides biological support for a deviation from that action.

If Reclamation and DWR determine through the described streamlined process that OMR flexibility is warranted, then Reclamation and DWR will describe the requested flexibility in a written request to NMFS that provides the information described above. USFWS and NMFS will provide an evaluation of the anticipated effects of the action on listed species and critical habitats. DWR and CDFW will undertake a similar process for CESA. In addition, in anticipation of an OMR flexibility, Reclamation shall initiate the monitoring to support and evaluate OMR flow Management (starting on page 18 in the Central Valley Project and State Water Project Drought Contingency Biological Monitoring Plan For Water Year 2015 and Beyond, http://ca.gov/drought/pdf/DCP-2015-Monitoring-Plan_12-12-14.pdf).

- Implement the DCC gate operations matrix and evaluate whether adjustments are warranted to provide a reasonable balance between fisheries protection and providing operational flexibility for the operation of the DCC gates to ameliorate water quality issues in the central and southern Delta.
- Further delineate the programmatic considerations on pages 5-8 in the Project Description, for example, flexibility with San Joaquin inflow-to-export ratio RPA Action IV.2.1, preferential pumping, and temporary emergency drought barriers.

The Biological Review submitted with Reclamation's letter provides status updates on the abundance and distribution in water year 2015 of ESA-listed salmonids and sturgeon covered by the NMFS BiOp, and summarizes the generalized effects of project operations, including the proposed drought flexibilities, on those species. In anticipation of potential high water temperatures in 2014, NMFS developed the winter-run drought contingency plan for 2014 that was included as part of the April 8, 2014, Drought Operations Plan (see Attachment D in http://www.water.ca.gov/waterconditions/docs/2014-Operations-Plan.pdf). As mentioned above, winter-run eggs and juveniles in broodyear 2014 experienced approximately 95% temperature-related mortality of the egg and fry life history stages last year. NMFS included this high mortality rate in its JPE, and estimated that approximately 124,521 wild juvenile winter-run from broodyear 2014 are expected to enter the Delta. Based on discussions at the Delta Operations for Salmonids and Sturgeon Technical Work Group, >95% of young-of-year winter-run are currently rearing in the Delta, and <5% have exited the Delta (past Chipps Island).

In addition, Livingston Stone National Fish Hatchery increased its winter-run broodstock collection in 2014 by three-fold, and is currently rearing approximately three times (current estimate is 610,000) the typical hatchery production of juvenile winter-run, awaiting release into the upper Sacramento River in February. The hatchery winter-run are an important component of broodyear 2014, and therefore, are important to track as they migrate down the Sacramento River, and enter and exit the Delta. All of the hatchery winter-run have been coded-wire tagged and adipose fin clipped, so they could be tracked at various monitoring locations within the Sacramento River and Delta. In addition, a portion of the release groups will be implanted with acoustic tags as part of an ongoing survival study through the NMFS-Southwest Fisheries

Science Center. This year, several real-time monitoring stations will be established at various locations in the Sacramento River and Delta so the location of those fish can be detected in real time and better inform operational considerations.

Inherent in the interim contingency plan is the objective to meet multiple needs with limited water resources. Most of the adverse effects to species identified in the Biological Review (*e.g.*, the potential for reduced survival of outmigrating salmonids from the Sacramento Basin due to modifications to outflow criteria in D-1641) are the consequences of actions intended to result in conditions (*e.g.*, greater Shasta Reservoir storage and a greater cold water pool) that will pre-empt more severe adverse effects to species (*e.g.*, potentially running out of cold water in Shasta Reservoir to meet the needs of winter-run and spring-run egg incubation throughout the temperature management season). Some adverse effects to species identified in the Biological Review (*e.g.*, the potential for increased entrainment of salmonids in the South Delta region due to modifications to export limits that allow above-minimum exports when outflow is at least 5,500 cfs, but less than the requirement in footnote 10 of Table 3 of D-1641) are the consequences of actions intended to result in conditions (*e.g.*, greater south-of-delta storage) that will pre-empt adverse effects to non-fish-and-wildlife beneficial uses of CVP and SWP project water (*e.g.*, municipal and agricultural purposes).

The Biological Review describes the direction of effect expected and assigns a qualitative level of certainty to each effect conclusion. Quantifying the specific effects of any particular interim contingency plan element, or of the full suite of proposed actions, is difficult as a result of combined uncertainties relating to:

- specific timing and duration of any particular component of the modified action (for example, it is not known when or if the DCC might open, though the opening is provided for under certain conditions);
- specific migration timing of listed species and presence in the "footprint" of any particular component of the modified action (for example, a storm in mid-February could trigger migration of hatchery winter-run Chinook salmon and wild spring-run young-of-year Chinook salmon into the Delta, which will result in exposure of a greater fraction of those listed salmonid populations to Delta conditions);
- uncertainty in the quantitative relationship between any underlying factor (*e.g.*, outflow) and the response variable of interest (*e.g.*, survival).

The following are NMFS' summaries and expectations based on Reclamation's proposed interim contingency plan for February and March:

- NMFS supports the January 27, 2015, Project Description, including the January 23, 2015, TUC Petition, as the interim contingency plan pursuant to RPA Action I.2.3.C.
- When outflow is greater than 5,500 cfs but less than 7,100 cfs, the combined export limit of 3,500 cfs would only apply to natural or abandoned flow. Combined exports will be limited to 1,500 cfs if reservoir releases are necessary to meet D-1641 or other water quality requirements.
- DCC gate opening will only be considered if combined exports are (or will be) at 1,500 cfs.
- NMFS anticipates that the enclosed DCC gate matrix of triggers could be further refined to include more real-time data such as location information gained through the

acoustically-tagged winter-run hatchery releases. Information related to the operation of DCC gate will be continuously analyzed for changes in risk to species and relative to water quality.

- This response does not provide concurrence on any forecasted operations after March. NMFS expects the February forecast process to provide additional detail on spring and summer operations and allocations necessary to maintain minimum cold water pool, as provided in Action I.2.3. Throughout much of the summer of 2014, real water temperatures as monitored through CDEC were upwards of 4°F higher than Sacramento River temperature modeling results.
- NMFS will review Reclamation's updated contingency plan, which will be submitted by March 1, 2015, as provided in RPA Action I.2.3.C.
- NMFS expects that all actions within the anadromous fish section of the WY2015 Monitoring Plan will (continue to) be implemented. Due to the very low viability of this year's winter-run Chinook cohort and the general status of this species as affected by multiple years of drought, we expect Reclamation and DWR to work closely with us to track and assess the real-time distribution of both wild and hatchery juvenile winter-run Chinook salmon and continually assess whether additional measures may be implemented to minimize adverse effects of operations to this critically imperiled species.
- By March 15, Reclamation and DWR should work through a coordinated interagency effort to describe expected upstream operations, based on 50%, 90% and 99% exceedance forecasts. The planned operations throughout the summer and into the fall should help minimize the amount or extent of winter-run redd dewatering, and also maintain temperature compliance through September and into the first two weeks of October as cold water allows.
- In order to develop a Shasta temperature management plan, Reclamation and DWR should include a flow schedule for the Sacramento River with specific monthly range of Keswick releases from March through October, an end of May storage target, and an analysis of how depletions were analyzed and how water will be provided to settlement and other contractors is consistent with the interim contingency plan.

In conclusion, NMFS concurs that Reclamation's Project Description is consistent with Action 1.2.3.C and meets the specified criteria for an interim contingency plan. We are making this finding based on both the Biological Review attached to Reclamation's letter, which describes the additional adverse effects of the drought and drought operations, and our conclusion that the potential effects of the types of operations proposed in the interim contingency plan were considered in the underlying analysis of the CVP/SWP Opinion, which considered that droughts would occur and concluded that implementation of the RPA, including Action I.2.3.C, is not likely to jeopardize the continued existence of Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, California Central Valley steelhead, the Southern Distinct Population Segment of North American green sturgeon, and the Southern Resident killer whales, and will not result in the destruction or adverse modification of their designated critical habitats. Furthermore, the best available scientific and commercial data indicate that implementation of the interim contingency plan will not exceed levels of take anticipated for implementation of the RPA specified in the CVP/SWP Opinion.

We look forward to continued close coordination with you and your staff throughout this extremely challenging water year.

If you have any questions regarding this letter, please contact me at will.stelle@noaa.gov, (206) 526-6150, or contact Maria Rea at (916) 930-3600, maria.rea@noaa.gov.

Sincerely,

Maria Rea

William W. Stelle, Jr.
Regional Administrator

Enclosure: DCC gates matrix of triggers

cc: Copy to file

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