



June 29, 2021

Jeanine Townsend, Clerk to the Board  
State Water Resources Control Board  
P.O. Box 100, Sacramento, CA 95812-2000  
*Via electronic filing*

Re: Petition for reconsideration of the June 1, 2021 State Water Resources Control Board's Temporary Urgency Change Order for operation of the State Water Project and Central Valley Project

Dear Ms. Townsend:

The California Sportfishing Protection Alliance, AquAlliance, and the California Water Impact Network (collectively, CSPA et al.) respectfully submit a timely petition for reconsideration of the June 1, 2021 State Water Resources Control Board's Temporary Urgency Change Order (Order) for operation of the State Water Project (SWP) and Central Valley Project (CVP). On June 4, 2021, CSPA et al. submitted an objection to the May 17, 2021 Temporary Urgency Change Petition (TUCP) of the Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation). Since the State Water Resources Control Board (State Water Board) had already issued the Order approving the TUCP on June 1, CSPA et al. also styled their objection to the TUCP as a petition for reconsideration of the Order.

On review, we have become aware that CSPA et al.'s June 4, 2021 objection did not fulfill all of the procedural requirements for a petition for reconsideration. This present petition for reconsideration completes those procedural requirements and adds additional argument regarding the Order. We include CSPA et al.'s June 4, 2021 objection as Attachment 1 to the present petition, and include its arguments as the "statement of reasons" for the instant petition.

Please contact Bill Jennings, Executive Director of CSPA, at [deltakeep@mc.com](mailto:deltakeep@mc.com) if you have any questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Cheryl R. Smith", is written over a horizontal line.

Water Rights Advocate  
California Sportfishing Protection Alliance  
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Berkeley, CA 94703  
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**BEFORE THE  
STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD**

**In the Matter of Specified License and Permits of  
the Department of Water Resources and U.S. Bureau of Reclamation for the State  
Water Project and Central Valley Project**

**PETITION FOR RECONSIDERATION OF  
CALIFORNIA SPORTFISHING PROTECTION ALLIANCE,  
AQUALLIANCE AND  
CALIFORNIA WATER IMPACT NETWORK  
OF JUNE 1, 2021 ORDER OF THE STATE WATER RESOURCES CONTROL BOARD  
CONDITIONALLY APPROVING 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**

Pursuant to title 23, section 2867, of the California Code of Regulations, the California Sportfishing Protection Alliance, AquAlliance, and the California Water Impact Network (collectively, CSPA et al.) hereby petition the California State Water Resources Control Board (“State Water Board”) for reconsideration of the June 1, 2021 “Order Conditionally Approving 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.”<sup>1</sup>

### **Executive Summary**

CSPA et al. is a coalition of public interest, non-governmental resource conservation organizations that seek to protect the fisheries, habitat, water quality, and water resources of the Bay-Delta watershed.

In order to protect the beneficial uses and public trust resources of the Bay-Delta estuary and its watershed, the State Water Board must act swiftly to reverse the Order. CSPA et al. requests that the State Water Board grant reconsideration of the Order and promptly deny it, for reasons described in Attachment A hereto: “Protest, Objection, Petition For Reconsideration, Temporary Urgency Change Petition and Responding Order 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,

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<sup>1</sup> State Water Board, “Order Conditionally Approving 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” (Jun. 1, 2021), available at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2021/20210601\\_sw\\_b\\_tuco.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2021/20210601_sw_b_tuco.pdf)

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” (Hereinafter, also referred to as “CSPA et al. Objection”). This document serves as the required “Statement of Reasons” (Cal. Code Regs., title 23, § 3867, subd. (d)(4)) for the instant petition.

**1. Names, addresses and telephone numbers of the petitioners (Cal. Code Regs., title 23, § 3867, subd. (d)(1))**

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Michael Jackson  
Counsel to  
California Sportfishing Protection Alliance,



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**2. The specific action or failure to act which the State Board is requested to reconsider and a copy of any document that is referred to in the petition (Cal. Code Regs., title 23, § 3867, subd. (d)(2))**

The State Water Board is requested to reconsider its June 1, 2021 “Order Conditionally Approving 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” (hereinafter, “Order”). A copy of the Order is attached to this Petition as Attachment B. A copy of the Temporary Urgency Change Petition that the Order conditionally granted is attached hereto as Attachment C.<sup>2</sup>

**3. The date on which the certification action or failure to act occurred (Cal. Code Regs., title 23, § 3867, subd. (d)(3))**

The Executive Director of the State Water Board issued the Order on June 1, 2021.

**4. A full and complete statement of reasons why the action or failure to act was inappropriate or improper (Cal. Code Regs., title 23, § 3867, subd. (d)(4))**

As explained in detail Attachment A hereto (CSPA et al. Objection), the Order is inappropriate and improper because:

- It will not best serve the public interest.
- It is contrary to law.
- It will have unreasonable effects on fish and wildlife, including, non-exclusively, winter-run salmon, fall-run salmon, longfin smelt, and Delta smelt.
- It violates Article X, Section 2 of the California Constitution, which prohibits the unreasonable use of water.

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<sup>2</sup> 2021 Temporary Urgency Change Petition Regarding Delta Water Quality. Also available at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2021/20210517\\_dwr\\_usbr\\_tucp.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2021/20210517_dwr_usbr_tucp.pdf)

- It violates the public trust doctrine.
- Petitioners DWR and Reclamation were not diligent in conserving storage in SWP and CVP reservoirs or in limiting water deliveries in consideration of 2021 hydrology.
- It will not meet the goal stated in the TUCP of conserving storage in SWP and CVP. reservoirs.
- It will have further unreasonable effects on the Bay-Delta ecosystem, including impacts to the food web and expansion of harmful algal blooms, submerged aquatic vegetation and invasive species.
- It is not supported by substantial evidence.

**5. The manner in which the petitioner is aggrieved (Cal. Code Regs., title 23, § 3867, subd. (d)(5))**

As explained in more detail in the Attachments and Exhibit submitted in support of this Petition, TRT et al. is aggrieved by the Certification because:

- CSPA et al. is a coalition of public interest and resource conservation organizations that have invested thousands of hours of staff time and related expenses in the protection of the Bay-Delta watershed. They are therefore harmed by the issuance of the Order.
- Members of CSPA et al. enjoy fishing for salmon and other fishes that this Order will adversely affect. Members of CSPA et al. will suffer reduced quantity and quality of recreational angling opportunities as a result of the harm to fisheries that implementation of the Order will cause.
- CSPA et al. signed a Settlement Agreement with the State Water Board in June 2020 to resolve litigation of State Water Board's temporary urgency change orders in the 2014 and 2015 drought. The Settlement Agreement is attached hereto as Attachment D. In almost entirely failing to describe its analysis of how it evaluated impacts to public trust resources, the Order violates this Settlement Agreement.

**6. The specific action by the State Board which the petition requests (Cal. Code Regs., title 23, § 3867, subd. (d)(6))**

CSPA et al. requests that the State Water Board reconsider and rescind the Order. CSPA et al. also requests that the State Water Board order DWR and Reclamation to limit irrigation deliveries in the remainder of 2021 and manage the SWP and CVP to meet Decision 1641 standards in the Delta. CSPA et al. also requests that the State Water Board order DWR and Reclamation to limit irrigation deliveries in the remainder of 2021 to preserve sufficient storage

in SWP and CVP reservoirs to levels recommended on pages 36 and 37 of Attachment A. CSPA et al. further requests the State Water Board to initiate long overdue water rights hearings on the 2009 petitions for extension of time of DWR for the SWP and Reclamation for the CVP, especially for their operations before and during dry and critically dry years and sequences of years.

**7. A list of persons, if any, other than the petitioner and applicant, if not the petitioner, known to have an interest in the subject matter of the petition (Cal. Code Regs., title 23, § 3867, subd. (d)(7))**

The U.S. Environmental Protection Agency, Region 9. The Central Valley Regional Water Quality Control Board. The National Marine Fisheries Service. The California Department of Fish & Wildlife. The US Fish & Wildlife Service. The Sacramento River Settlement Contractors. The San Joaquin Exchange Contractors.

**8. A statement that the petition has been sent to the appropriate regional board or executive officer and to the applicant, if not the petitioner (Cal. Code Regs., title 23, § 3867, subd. (d)(8))**

Electronic copies of this Petition, and all materials submitted with this Petition, have been sent to the following:

Mr. Patrick Pulupa  
Executive Officer  
Central Valley Regional Water Quality Control Board  
11020 Sun Center Drive, Suite 200  
Rancho Cordova, California 95670  
[patrick.pulupa@waterboards.ca.gov](mailto:patrick.pulupa@waterboards.ca.gov)

Department of Water Resources, c/o James Mizell: [James.Mizell@water.ca.gov](mailto:James.Mizell@water.ca.gov)

Regional Solicitor's Office, c/o Amy Aufdemberge: [Amy.Aufdemberge@sol.doi.gov](mailto:Amy.Aufdemberge@sol.doi.gov)

Bureau of Reclamation, c/o Kristin White: [knwhite@usbr.gov](mailto:knwhite@usbr.gov)

**9. A copy of a request to the executive director or appropriate executive officer for preparation of the state board or regional board staff record, if applicable and available, which will include a tape recording or transcript of any pertinent**

**regional board or staff hearing (Cal. Code Regs., title 23, § 3867, subd. (d)(9))**

A copy of the June 29, 2021 letter sent to the Executive Director requesting the preparation of the administrative record is attached to this Petition as Attachment D.

**10. A summary of the manner in which and to what extent the petitioner participated in any process (e.g., public hearing testimony, discussion with agency personnel, correspondence), if available, leading to the action or failure to act in question (Cal. Code Regs., title 23, § 3867, subd. (d)(10))**

- A. On March 12, 2021, CSPA joined in a letter sent from NRDC et al. to the State Water Board requesting immediate enforcement of Water Rights Order 90-05.<sup>3</sup>
- B. On March 14, 2021, CSPA et al. sent a letter to the State Water Board requesting immediate enforcement of Water Rights Order 90-05.<sup>4</sup>
- C. On April 14, 2021, CSPA et al. sent a letter to the State Water Board commenting on Sacramento River water temperature management.<sup>5</sup>
- D. On April 17, 2021, CSPA et al. made a presentation and oral comments to State Water Board at a workshop on Sacramento River water temperature management in 2021.<sup>6</sup>
- E. On April 25, 2021, CSPA et al. sent a letter to the State Water Board requesting immediate enforcement of D-1641 Vernalis pulse flows.<sup>7</sup>

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<sup>3</sup> Available at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/wro90/2021-03-12\\_ngo\\_letter\\_to\\_swrcb\\_re\\_90-5\\_and\\_tucps.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/wro90/2021-03-12_ngo_letter_to_swrcb_re_90-5_and_tucps.pdf)

<sup>4</sup> Available at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/wro90/2021-03-14\\_cspa\\_et\\_al\\_request\\_swrcb.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/wro90/2021-03-14_cspa_et_al_request_swrcb.pdf)

<sup>5</sup> Available at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/wro90/2021-04-15\\_cspa\\_et\\_al\\_comments\\_on\\_2021\\_sac\\_riv\\_temp\\_mgmt.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/wro90/2021-04-15_cspa_et_al_comments_on_2021_sac_riv_temp_mgmt.pdf)

<sup>6</sup> The presentation is available at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/wro90/2021-04-21\\_item\\_10\\_cspa\\_jennings\\_cannon\\_st\\_bd\\_wkshop\\_april2021.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/wro90/2021-04-21_item_10_cspa_jennings_cannon_st_bd_wkshop_april2021.pdf)

<sup>7</sup> Available at: <https://calsport.org/news/wp-content/uploads/CSPA-et-al-ltr-to-Esquivel-re-2021-New-Melones-Ops.042521.pdf>

- F. On May 23, 2021, CSPA et al. submitted to the State Water Board an Alternative Temperature Management Plan for the Shasta-Trinity Division of the CVP and supporting documents.<sup>8</sup>
- G. On June 4, 2021, CSPA et al. submitted the previously referenced Objection.

### Conclusion

For the reasons set forth above and in the Objection submitted hereto as Attachment A, CSPA et al. requests that the State Water Resources Control Board grant reconsideration of the Order, rescind the Order, and require DWR and Reclamation to implement forthwith the measures requested above and in Attachment A.

Dated: June 29, 2021

Respectfully submitted,




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<sup>8</sup> Available at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/cspa\\_et\\_al\\_cvr\\_ltr\\_esquivel\\_re\\_proposed\\_cspa\\_tmp\\_2021\\_052321.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/cspa_et_al_cvr_ltr_esquivel_re_proposed_cspa_tmp_2021_052321.pdf);  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/cspa\\_tmp\\_052321.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/cspa_tmp_052321.pdf);  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/cspa\\_tmp\\_spreadsheet\\_052321.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/cspa_tmp_spreadsheet_052321.pdf);  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/cspa\\_tmp\\_spreadsheet\\_052321.xlsx](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/cspa_tmp_spreadsheet_052321.xlsx)



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/s/ Michael Jackson  
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**STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD**

**In the Matter of Specified License and Permits of  
the Department of Water Resources and U.S. Bureau of Reclamation for the State  
Water Project and Central Valley Project**

**CSPA ET AL'S JUNE 4, 2021**

**PROTEST, OBJECTION, PETITION FOR RECONSIDERATION, TEMPORARY  
URGENCY CHANGE PETITION AND RESPONDING ORDER 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.**

**SERVING AS THE  
STATEMENT OF REASONS WHY THE ACTION OR FAILURE TO ACT WAS  
INAPPROPRIATE OR IMPROPER  
(Cal. Code Regs., Title 23 § 3867, subd. (d)(4))**

**Attachment A  
In Support of**

**PETITION FOR RECONSIDERATION OF  
CALIFORNIA SPORTFISHING PROTECTION ALLIANCE,  
AQUALLIANCE AND  
CALIFORNIA WATER IMPACT NETWORK  
OF JUNE 1, 2021 ORDER OF THE STATE WATER RESOURCES CONTROL BOARD  
CONDITIONALLY APPROVING 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**

**STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD**

**In the Matter of Specified License and Permits of  
the Department of Water Resources and U.S. Bureau of Reclamation for the State  
Water Project and Central Valley Project**

**Order Conditionally Approving 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**

**Attachment B to**

**PETITION FOR RECONSIDERATION OF  
CALIFORNIA SPORTFISHING PROTECTION ALLIANCE,  
AQUALLIANCE AND  
CALIFORNIA WATER IMPACT NETWORK  
OF JUNE 1, 2021 ORDER OF THE STATE WATER RESOURCES CONTROL BOARD  
CONDITIONALLY APPROVING 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**



**STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD**

**In the Matter of Specified License and Permits of  
the Department of Water Resources and U.S. Bureau of Reclamation for the State  
Water Project and Central Valley Project**

**May 17, 2021 Temporary Urgency Change Petition 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**

**Attachment C to**

**PETITION FOR RECONSIDERATION OF  
CALIFORNIA SPORTFISHING PROTECTION ALLIANCE,  
AQUALLIANCE AND  
CALIFORNIA WATER IMPACT NETWORK  
OF JUNE 1, 2021 ORDER OF THE STATE WATER RESOURCES CONTROL BOARD  
CONDITIONALLY APPROVING 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**

**STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD**

**In the Matter of Specified License and Permits of  
the Department of Water Resources and U.S. Bureau of Reclamation for the State  
Water Project and Central Valley Project**

**Request for Preparation of the Administrative Record**

**Attachment D to**

**PETITION FOR RECONSIDERATION OF  
CALIFORNIA SPORTFISHING PROTECTION ALLIANCE,  
AQUALLIANCE AND  
CALIFORNIA WATER IMPACT NETWORK  
OF JUNE 1, 2021 ORDER OF THE STATE WATER RESOURCES CONTROL BOARD  
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CHANGES TO LICENSE AND PERMIT TERMS AND CONDITIONS  
REQUIRING COMPLIANCE WITH DELTA WATER QUALITY OBJECTIVES IN  
RESPONSE TO DROUGHT CONDITIONS**

**State of California**  
**State Water Resources Control Board**  
**DIVISION OF WATER RIGHTS**  
**P.O. Box 2000, Sacramento, CA 95812-2000**  
**Info: (916) 341-5300, FAX: (916) 341-5400**  
**Web: <http://www.waterboards.ca.gov/waterrights>**  
**[Erin.Foresman@waterboards.ca.gov](mailto:Erin.Foresman@waterboards.ca.gov)**  
**[Chris.Carr@waterboards.ca.gov](mailto:Chris.Carr@waterboards.ca.gov)**

**PROTEST – (Petitions)**  
**OBJECTION**  
**PETITION FOR RECONSIDERATION**

Temporary Urgency Change Petition and Responding Order 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.

We, Bill Jennings, Executive Director, California Sportfishing Protection Alliance (CSPA), 3536 Rainier Ave, Stockton CA 95204, [deltakeep@me.com](mailto:deltakeep@me.com), (209) 464-5067; Chris Shutes, Water Rights Advocate, CSPA, 1608 Francisco St., Berkeley, CA 94703, [blancapaloma@msn.com](mailto:blancapaloma@msn.com), (510) 421-2405; Barbara Vlamis, Executive Director, AquAlliance, P.O. Box 4024, Chico, CA 95927, [barbarav@aqualliance.net](mailto:barbarav@aqualliance.net), (530) 895-9420; Carolee Krieger, Executive Director, California Water Impact Network (CWIN), 808 Romero Canyon Rd., Santa Barbara, CA 93108, [caroleekrieger7@gmail.com](mailto:caroleekrieger7@gmail.com), (805) 969-0824; and Michael Jackson, counsel to CSPA, CWIN and AquAlliance, P.O. Box 207, 429 W. Main St., Quincy, CA 95971, [mjatty@sbcglobal.net](mailto:mjatty@sbcglobal.net), (530) 283-0712 (Protestants)

have read carefully an amended notice relative to a petition for Temporary Urgency Change (TUCP) of the Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation or USBR), dated May 19, 2021 for the above-cited water rights licenses and permits. We have also carefully read the State Water Resources Control Board's (State Water Board or SWRCB) June 1, 2021 Order conditionally approving the TUCP (Order or TUCO).

**The proposed TUCP and the State Water Board's Order will:**

- Not be within the State Water Resources Control Board's jurisdiction,
- Not best serve the public interest,
- Be contrary to law, and
- Have an adverse environmental impact.

We protest and object to the TUCP. In addition, we petition for reconsideration of the Order conditionally granting the TUCP. **We state the facts that support our allegations, our reasons for the objection, our terms for withdrawing the objection, and the grounds for our petition for reconsideration in the attached document entitled “Protest, Objection, and Petition for Reconsideration of CSPA et al.”**

A true copy of this protest has been served upon the petitioners by e-mail (see below).

Date: June 4, 2021

Bill Jennings, Executive Director  
California Sportfishing Protection Alliance



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Chris Shutes, Water Rights Advocate  
California Sportfishing Protection Alliance



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Barbara Vlamis, Executive Director  
AquAlliance



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Carolee Krieger, Executive Director  
California Water Impact Network



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Michael Jackson  
Counsel to California Sportfishing Protection Alliance,  
AquAlliance, and  
California Water Impact Network

/s/ Michael Jackson

We have filed this protest with: [Erin.Foresman@waterboards.ca.gov](mailto:Erin.Foresman@waterboards.ca.gov) and  
[Chris.Carr@waterboards.ca.gov](mailto:Chris.Carr@waterboards.ca.gov)

Pursuant to requirements that all protests must be served on the petitioner, we have filed this protest and objection via e-mail to:

Department of Water Resources, c/o James Mizell: [James.Mizell@water.ca.gov](mailto:James.Mizell@water.ca.gov)

Regional Solicitor's Office, c/o Amy Aufdemberge: [Amy.Aufdemberge@sol.doi.gov](mailto:Amy.Aufdemberge@sol.doi.gov)

Bureau of Reclamation, c/o Kristin White: [knwhite@usbr.gov](mailto:knwhite@usbr.gov)

## **PROTEST, OBJECTION, AND PETITION FOR RECONSIDERATION OF CSPA ET AL.**

The California Sportfishing Protection Alliance, California Water Impact Network, and AquAlliance (collectively, CSPA et al.) protest and object to the Temporary Urgency Change Petition (TUCP) of the Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation) relative to the 2021 operation of the State Water Project (SWP) and the Central Valley Project (CVP; collectively, the Projects), with the license, permit and application numbers cited above. CSPA et al. also petitions for reconsideration of the State Water Resources Control Board's (State Water Board) June 1, 2021 Order conditionally approving the TUCP.

We were here before in 2014 and 2015, and we are sickened to be here again. As in 2014 and 2015, the crisis facing the fisheries and ecosystems of the Central Valley, and the Trinity River and lower Klamath River watersheds, was predictable and entirely avoidable. Between them, the Projects delivered too much water in 2020. Reclamation delivered too much water in April and May of 2021. Reclamation's official policy of "maximizing deliveries," enshrined in the 2019 Biological Opinion for the long-term operation of the Projects, showed its recklessness in its first full year of implementation. The disastrous 2018 renegotiation of the Coordinated Operations Agreement (COA) between the Projects severely depleted DWR's storage in Oroville after a single dry year.

In the summer of 2020, Reclamation stonewalled the State Water Board in efforts to set up new defaults for water temperature management of the CVP's Shasta-Trinity Division. DWR and Reclamation dragged their way through the spring of 2021. The State Water Board, which needed a comprehensive approach to management of the Projects by April 1, still doesn't have a plan on June 1. Now DWR and Reclamation cry crisis, promoting collective amnesia of Project mismanagement and overallocation, and deflecting all attention to the here and now.

We incorporate by reference the following documents that CSPA et al. and others have submitted to the State Water Board in 2021:

- A. Letter from NRDC et al. requesting immediate enforcement of Water Rights Order 90-05 (March 12, 2021):  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/wro90/2021-03-12\\_ngo\\_letter\\_to\\_swrcb\\_re\\_90-5\\_and\\_tucps.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/wro90/2021-03-12_ngo_letter_to_swrcb_re_90-5_and_tucps.pdf);
- B. Letter from CSPA et al. requesting immediate enforcement of Water Rights Order 90-05 (March 14, 2021):  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/wro90/2021-03-14\\_cspa\\_et\\_al\\_request\\_swrcb.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/wro90/2021-03-14_cspa_et_al_request_swrcb.pdf)
- C. CSPA et al. letter commenting on Sacramento River water temperature management (April 14, 2021):  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/wro90/2021-04-15\\_cspa\\_et\\_al\\_comments\\_on\\_2021\\_sac\\_riv\\_temp\\_mgmt.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/wro90/2021-04-15_cspa_et_al_comments_on_2021_sac_riv_temp_mgmt.pdf);
- D. Save California Salmon letter commenting on Sacramento River water temperature management (April 14, 2021):

- [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/wro90/2021-04-15\\_scs\\_comment\\_on\\_2021\\_sac\\_riv\\_temp\\_mgmt.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/wro90/2021-04-15_scs_comment_on_2021_sac_riv_temp_mgmt.pdf);
- E. CSPA et al. presentation to State Water Board, April 17, 2021:  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/wro90/2021-04-21\\_item\\_10\\_cspa\\_jennings\\_cannon\\_st\\_bd\\_wkshop\\_april2021.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/wro90/2021-04-21_item_10_cspa_jennings_cannon_st_bd_wkshop_april2021.pdf);
- F. CSPA et al. letter requesting immediate enforcement of D-1641 Vernalis pulse flows (April 25, 2021): <https://calsport.org/news/wp-content/uploads/CSPA-et-al-ltr-to-Esquivel-re-2021-New-Melones-Ops.042521.pdf>;
- G. CSPA et al. Alternative Temperature Management Plan for the Shasta-Trinity Division of the CVP and supporting documents:  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/cspa\\_et\\_al\\_cvr\\_ltr\\_esquivel\\_re\\_proposed\\_cspa\\_tmp\\_2021\\_052321.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/cspa_et_al_cvr_ltr_esquivel_re_proposed_cspa_tmp_2021_052321.pdf);  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/cspa\\_tmp\\_052321.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/cspa_tmp_052321.pdf);  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/cspa\\_tmp\\_spreadsheet\\_052321.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/cspa_tmp_spreadsheet_052321.pdf);  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/cspa\\_tmp\\_spreadsheet\\_052321.xlsx](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/cspa_tmp_spreadsheet_052321.xlsx)

We also incorporate the Settlement Agreement between CSPA et al. and the State Water Board (July 17, 2021): <https://calsport.org/news/wp-content/uploads/2020.07.17-CSPA-v.-SWRCB-Settlement-Fully-Executed-1.pdf>

## **I. Summary of Requests in TUCP**

The TUCP proposes:

- June 1 through June 30: Reduce net delta outflow index (NDOI) requirements for salinity control from 4,000 cubic feet per second (cfs) to 3,000 cfs on a 14-day running average
- July 1 through July 31: Reduce NDOI requirements for salinity control from 4,000 cfs to 3,000 cfs on a monthly average. D-1641, Table 3, footnote 8 remains applicable
- June 1 through July 31: Cap the combined SWP and CVP exports at 1,500 cfs when Delta outflow is less than 4,000 cfs. SWP and CVP exports may exceed 1,500 cfs when Delta outflow meets D-1641 or for moving transfer water (after July 1)
- June 1 through August 15: Relocate the Western Delta Agriculture compliance point from Emmaton to Threemile Slough.

In addition, the TUCP is specifically assumes a plan to install a temporary barrier at False River in order to maintain sufficient compliance with outflow and salinity requirements.<sup>1</sup>

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<sup>1</sup> See TUCP, Att. 1, p. 6

## **II. Stated Rationale in the TUCP, and Response of CSPA et al.**

The TUCP provides poorly founded justification for the requested changes and mischaracterizes the TUCP's prospective benefits. For the reasons that CSPA et al. describe below, the TUCP is not warranted. The State Water Board should reverse its approval of the TUCP and order the remedies stated at the conclusion of this objection.

### **A. The Projects and the State Water Board Have Been Negligent, Not Diligent.**

The TUCP states that the State Water Board should grant the TUCP because the Projects have exercised "due diligence:"

Reclamation and DWR have exercised due diligence to avoid the circumstance necessitating this request by beginning this year with relatively high carryover storage after the dry year of 2020. Storage conservation measures in the beginning of water year 2021 helped to meet D-1641 requirements through the winter and early spring. In addition, the Projects exercised due diligence by both initially issuing very low allocations to its water supply contractors and then later further reducing allocations, when the worsening severe dry pattern began to emerge.<sup>2</sup>

The actions of DWR and Reclamation in April and May, 2021, tell a much different story. In complete denial of the trends of declining inflow, the Projects persisted in using 90% exceedance modeling in their runoff estimations.<sup>3</sup> And Reclamation, in April and May, released far more water from Shasta Reservoir than it did in 2014 and 2015 (Figure 1).

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<sup>2</sup> TUCP, Att. 1, p. 9.

<sup>3</sup> See Reclamation, Shasta Temperature Management Plan, May 5, 2021, Atts. 1-5:  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/Attachments%201%20to%205.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/Attachments%201%20to%205.pdf).



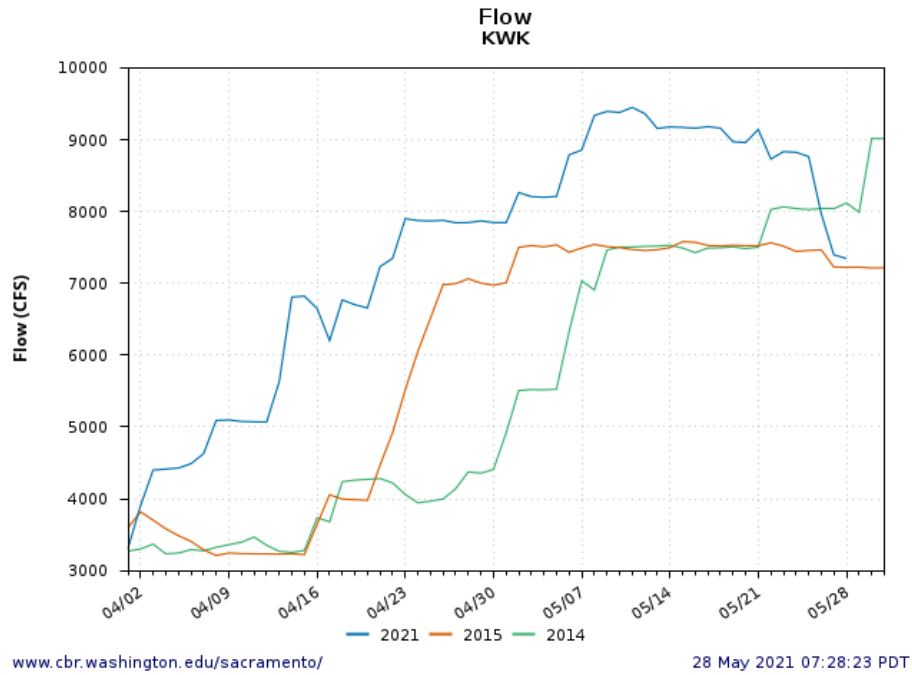


Figure 1. Keswick Reservoir April-May release, 2014, 2015, 2021

Reclamation made its April and May releases in spite of the fact that storage in Shasta was less in April and May 2021 than in 2014 and 2015 (Figure 2).

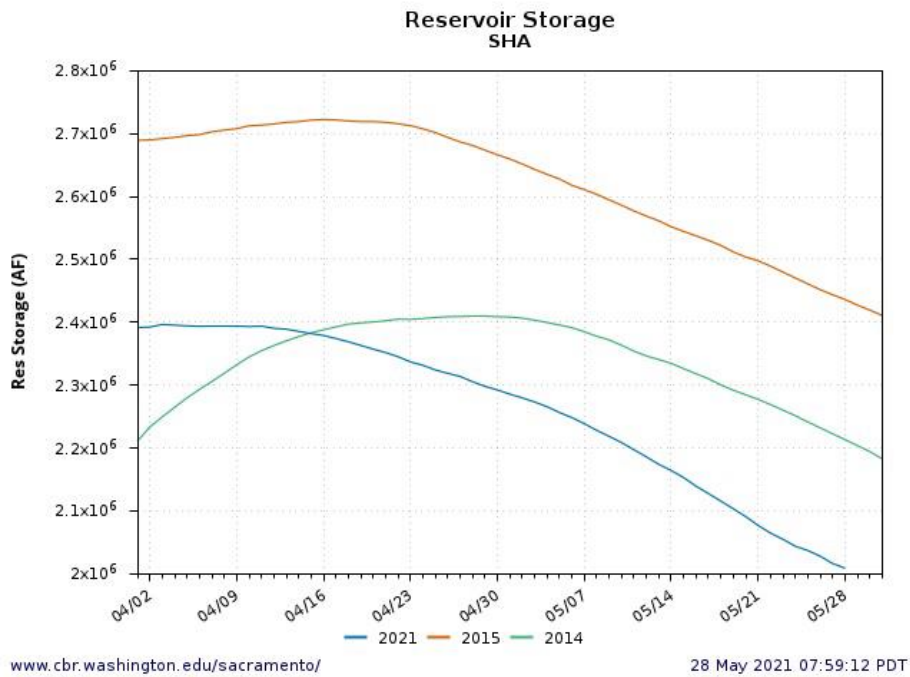


Figure 2. Shasta Reservoir storage, 2014, 2015, 2021

Reclamation's reckless release of water from Shasta storage in April and May 2021 severely circumscribed options for water management throughout the SWP and CVP system in the remainder of 2021. It was only diligent in the sense that it diligently delivered water to Sacramento River Settlement Contractors in excess of reductions that would have allowed DWR and Reclamation to meet their regulatory requirements, in the Delta and in the Sacramento and Trinity rivers. Reclamation's April and May releases from storage in Shasta Reservoir made the present TUCP a foregone conclusion. The State Water Board had every opportunity to put a stop to these excessive releases. CSPA et al., NRDC and associated organizations, and CSPA et al. put the State Water Board on notice as early as March 12 and March 14 of the urgent need to hold storage in Shasta Reservoir.<sup>4</sup>

On March 8, 2021, CSPA began a series of posts on its California Fisheries Blog about the National Marine Fisheries Service's summary of lessons learned from Sacramento River water management in 2014 and 2015.<sup>5</sup> Following NMFS' published conclusions, that first post made abundantly clear that the most important lesson from 2014 and 2015 was for the State Water Board to make protective decisions on Sacramento River temperature management in early April.<sup>6</sup> The second post concluded: "The Ides of March have passed, and there is every sign that the State Water Board will for a second straight year allow Reclamation to once again defy Lesson #1: Keswick releases need to be decided by April 15."<sup>7</sup>

There was no shortage of information on the need for the Board to act to limit releases from Shasta Reservoir in April 2021. Reclamation was not diligent. On the contrary, Reclamation negligently released too much water from Shasta Reservoir in April and May, severely constraining the entire SWP-CVP system. The State Water Board was not diligent. On the contrary, it deferred in the face of a hard decision and negligently failed to put a stop to Reclamation's storage releases. DWR and the California Department of Natural Resources failed to protest the negligence of Reclamation's releases and to actively oppose the crisis that these releases created.

Neither DWR, Reclamation, nor the State Water Board was diligent. All were negligent. Because they all knew the potential consequences of failures to change Reclamation's reckless storage releases and associated water deliveries, they were willfully negligent.

## **B. Hydrology Does Not Justify the TUCP**

On the first page of the TUCP, DWR and Reclamation mischaracterize the reasons for the TUCP: "[T]he continuation of extremely dry conditions in the Delta watershed mean there is not an adequate water supply to meet water right permit obligations for instream flows and water

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<sup>4</sup> See March 12 letter to the State Water Board from NRDC et al. and March 14 letter to the State Water Board from CSPA et al., cited, linked and incorporated by reference above.

<sup>5</sup> See NMFS Lessons Learned at <https://assets.documentcloud.org/documents/20475924/pages/exhibit-15-p43-xxlarge.gif?ts=1612911684137.199>.

<sup>6</sup> See first in series of posts on lessons learned about Sacramento River temperature management at: <https://calsport.org/fisheriesblog/?m=202103>

<sup>7</sup> See second post on lessons learned about Sacramento River temperature management at: <https://calsport.org/fisheriesblog/?m=202103>.

quality under Water Rights Decision 1641 (D-1641).”<sup>8</sup> Stated bluntly, this statement hides the ball.

The situation of the SWP and CVP is only partially due to hydrology. DWR and Reclamation have mismanaged an admittedly very poor hydrological situation into a crisis of their own making. The crisis for Reclamation and the Sacramento River Settlement Contractors is that they can't have meet the CVP's regulatory obligations and meet the Settlement Contractors' sense of what they need. Their solution is the TUCP.

There are other partial options, which Reclamation is tepidly employing. For example, Reclamation can meet much of its Delta obligations using water stored in New Melones Reservoir. This is a strategy that Reclamation can and should employ more aggressively in 2021.

However, the biggest part of the solution is to deliver less water to the Sacramento River Settlement Contractors. Limit releases from Shasta Reservoir to 5000 cfs. Limit exports of water from the Trinity River to the Sacramento River to 300 cfs, released down Clear Creek and not into the Spring Creek Tunnel and Powerhouse. Don't allow late-season transfers of water stored in Shasta Reservoir. Reduce Shasta releases in October and November overall, and prioritize water released from Shasta for Delta salinity control and outflow. Please see CSPA Proposed Alternative Shasta-Trinity Temperature Management Plan for 2021 (CSPA TMP), referenced and linked above, for additional detail. We also summarize our recommendations to the State Water Board below.

### **C. The Proposed TUCP Does Not Conserve Storage: It Subsidizes Agricultural Water Deliveries and Water Transfers.**

The TUCP could fairly be summarized in the phrase, the fish and people in the Delta giveth, upstream Project diverters taketh away. The TUCP says: “Reclamation and DWR believe the most prudent course of action is to conserve storage in upstream reservoirs until significant improvement of that storage is realized.” That sounds terrific. Unfortunately, continuing to over-deliver water to settlement contractors on the Sacramento and Feather rivers does not achieve that goal. As discussed in the CSPA TMP, the State Water Board's proposed 1.25 MAF end-of-September (EOS) storage target for Shasta Reservoir tentatively ordered by the State Water Board on May 21, 2021<sup>9</sup> will not adequately protect salmon in the Sacramento River downstream of Keswick Dam and is likely to lead to levels of egg and alevin mortality comparable to those of 2014 and 2015.

The State Water Board's May 21, 2021 letter to Reclamation states: “[A] 1.25 MAF end of September carryover storage target represents a reasonable balance between temperature control this year, maintaining some carryover storage going into next year, and providing for

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<sup>8</sup>TUCP, p. 1.

<sup>9</sup> Letter from Eileen Sobeck, Executive Director, State Water Board, to Kristin White, Reclamation (May 21, 2021), pp. 1-2 (“[A] 1.25 MAF end of September carryover storage target represents a reasonable balance between temperature control this year, maintaining some carryover storage going into next year, and providing for consumptive water supply needs.”)

consumptive water supply needs.”<sup>10</sup> Like the State Water Board’s Order conditionally approving the TUCP, this construction accepts DWR and Reclamation’s framing of considering balance in only in the here and now. Balance must consider how the current situation came about. Reclamation and many of its contractors drained their accounts of millions of acre-feet of water in a dry 2020. They spent recklessly in April and May of 2021, when Shasta releases were far more than Reclamation’s initial TMP proposed. Balance must consider more than just a snapshot in time.

Modeling by National Marine Fisheries Service suggests that close to 1.5 MAF EOS Shasta storage is needed to protect water temperatures in the spawning reach of the Sacramento River near Keswick.<sup>11</sup> The CSPA TMP suggests that elimination of June-October Trinity River exports through the Spring Creek Tunnel into Keswick Reservoir could allow slightly more water to be withdrawn from Shasta Reservoir (~1.35 MAF EOS) while still maintaining temperature control into the fall. However, the State Water Board’s May 21 letter to Reclamation mentions Trinity Reservoir exactly one time, where it vaguely asks Reclamation to show that its operations “will not impact critically low storage levels in other Project reservoirs” including Trinity. What such impact might mean is anybody’s guess. Reclamation’s May 5, 2021 draft TMP pegged Trinity EOS storage at about 600 TAF.

The State Water Board’s Order states: “The changes approved in this Order are expected to result in 60 - 120 TAF of water supply and storage benefits.” This is in a year when Sacramento River Settlement Contractors expect to receive about 60% of their allocation or about 1.2 MAF of deliveries and to transfer an additional 150 to 200 TAF. The transfers of water that the Sacramento River Settlement Contractors can clearly live without of themselves overwhelm the potential “savings” from approval of the TUCP. Pardon our third-grade math, but “savings” aren’t savings when one is spending twice or ten times as quickly as one is “saving.”

#### **D. Approving the TUCP Will Have Unreasonable Effects to Fish and Wildlife.**

The TUCP contends that it will not if approved have unreasonable effects on fish and wildlife. The TUCP argues that the incremental difference between drought conditions with D-1641 standards and drought conditions with weakened standards is overwhelmed by the overall poor conditions for fish under drought conditions.<sup>12</sup> The TUCP states that its analyses: “indicate that there would be no unreasonable impacts to fish, wildlife, or other instream resources in the Delta as a result of the 2021 TUCP relative to baseline conditions, as most of the negative effects described would occur primarily as a result of the overall drought conditions.”<sup>13</sup>

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<sup>10</sup> *Id.*, pp. 1-2.

<sup>11</sup> See Southwest Fisheries Science Center, Temperature Dependent Mortality Modeling, posted to State Water Board Sacramento River Temperature web page May 19, 2021, p. 2 (maintains water temperatures at ~56°F near Clear Creek through September. Available at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/lowest\\_tdm\\_scenarios\\_5-19-21.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/lowest_tdm_scenarios_5-19-21.pdf). Assumes high Trinity River Imports. See accompanying modeling scope summary, p. 2: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/tdm\\_modeling\\_scopesummary\\_20210519.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/tdm_modeling_scopesummary_20210519.pdf)

<sup>12</sup> TUCP, att. 1, p. 8.

<sup>13</sup> *Id.*

This flawed methodology of incremental comparison with a degraded baseline pervades the TUCP’s analysis of effects to fish and wildlife. It fails to account for the following factors:

- The extremely fragile condition of fisheries in the Delta and the Central Valley, and their inability to endure more adversity. There are few fish left to damage. There is not enough stock of many species to allow recovery through extensive recruitment in good years to sustainable levels. Under these conditions, the significance of the loss of small numbers is magnified (Figure 3, example for longfin smelt, below). Each recovery becomes a temporary plateau lower than its predecessor.

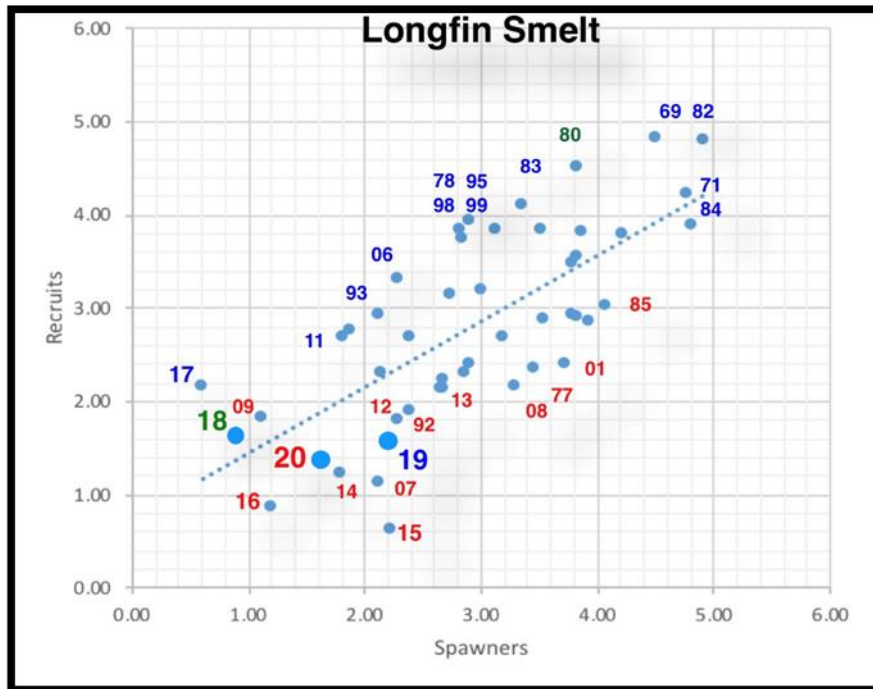


Figure 3. Longfin Recruits (Fall Midwater Trawl Index) vs. Spawners (Index from two years prior) in Log<sub>10</sub> scale by water year. The relationship is very strong and highly statistically significant. Note declining overall recruitment from 2011 through 2020. Figure generated by CSPA biologist Tom Cannon.

- The inability of fisheries to recover during “non-drought” years due to lack of ecosystem recovery and lack of hydrological recovery. The ecosystem and the fisheries don't have the opportunity to recover before the next drought hits.
- The semi-permanent condition of man-made drought in the Bay-Delta watershed due to the overappropriation of water resources (see Figure 18, below).
- The inadequacy of flow and other protections for fisheries during droughts, which occur about 40 % of the time in California.
- The fact that the current condition of Delta and Central Valley fisheries are not simply a function of drought.

- The TUCP treats baseline conditions as simply meteorological and single year hydrology: the drought. It does not consider cascading effects of droughts combined failure to protect fisheries and riverine and estuarine ecology. The same actions in the 2014 and 2015 drought are still having unreasonable effects on fish and wildlife. The fish and ecosystems have not recovered from the last TUCP's and Orders.

This flawed incremental methodology becomes abusive in its application to Delta smelt, which the State Water Board allowed the Projects to push close to extinction during the last drought. Attachment 2 of the TUCP does not include any monitoring data for Delta smelt in 2021, for the simple reason that there are not enough Delta smelt left to detect. The close-to-final decline of Delta smelt occurred under exactly the conditions in 2014 and 2015 that the TUCP says will have no unreasonable effects on fish. When the Delta smelt index is 0 (*see* Figures 8 and 9, below) and the number detected for the year is *de minimis*, incremental analysis is whistling past the graveyard. It is close to reaching that point for longfin smelt and winter-run Chinook salmon.

The TUCP notes that post-larval Delta smelt are positively related to June-August Delta outflow.<sup>14</sup> In 2014 and 2015, the SWRCB issued a series of temporary urgency change orders that reduced Delta outflow and moved X2 upstream into the Delta. CSPA's 2014-2015 comments on those order regarding the consequences of moving X2 upstream proved prescient. As predicted, the results were historically low Delta smelt abundances that are discussed below. Delta smelt have still not recovered from the effects of the 2014-2015 TUCP's and orders, and remain at record lows. CSPA fishery scientist Tom Cannon prepared a series of blog articles on the effects of actions taken in 2015.<sup>15</sup> Drawing Delta smelt upstream into habitat with elevated temperatures, reduced food supply, greater exposure to predators and effects of the export pumps is simply not a viable strategy given present abundances. Extinction is an unacceptable risk and cannot be in the public interest.

Attachment 2 of the TUCP narrowly treats the area of effects as being solely within the Delta. However, the TUCP will also have unreasonable effects to fisheries outside the Delta. The fisheries of the upper Sacramento River are directly at stake, because the underlying rationale of the TUCP is to maintain high deliveries to Sacramento River Settlement Contractors at the expense of water temperatures and fisheries in the Sacramento River downstream of Keswick Dam. The fisheries of the Trinity and Klamath rivers are at stake because the 2021 reservoir operations scheme that the TUCP is designed to support also relies on high exports from the Trinity River system to the Sacramento River system; these exports will severely deplete Trinity Reservoir's cold-water pool.<sup>16</sup> The planned over-delivery of water to Sacramento River Settlement Contractors in 2021 will reduce already severely depleted storage in Oroville

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<sup>14</sup> TUCP, Att. 2, p. 32

<sup>15</sup> *Summer 2015 Temporary Urgency Change Petition: Deadly for Delta Smelt.*

<https://calsport.org/fisheriesblog/?p=305>

*Record Heat in the Delta: A Challenge to Reclamation.* <https://calsport.org/fisheriesblog/?p=249>

*It is time to save the Delta Smelt.* <https://calsport.org/fisheriesblog/?p=349>

*Summer 2015 – Delta Smelt Update.* <https://calsport.org/fisheriesblog/?p=446>

<sup>16</sup> For further discussion, see the CSPA TMP.



and Folsom reservoirs, worsening a year of widely recognized high temperatures in the lower Feather and lower American rivers.

Most of the affected species in the Sacramento, Trinity, lower Klamath, Feather, and American rivers are salmon and steelhead. Sturgeon are also among the affected species. Many of these species are listed under the Endangered Species Act. There is no way that this TUCP can avoid causing take of listed species, notwithstanding the requirement not to do so in the Order conditionally approving the TUCP. That is unreasonable as a term of the Order. In addition, fall-run Chinook will be heavily impacted by the operation of Project reservoirs. Fall-run Chinook are the backbone of the recreational and commercial salmon fisheries and the tribal fisheries on the Trinity and Klamath rivers.

Several species in the Central Valley are in danger of following the spiraling decline of Delta smelt. Will this State Water Board rival its counterpart in 2014 and 2015 for the honor of presiding over extinction or near extinction of still another species? Which one will it be?

## **E. Approving the TUCP and False River Barrier Will Have Unreasonable Effects on the Bay-Delta Ecosystem.**

### **1. The TUCP Will Increase the Risk of Harmful Algal Blooms.**

In evaluating its potential effects on harmful algal blooms (HAB's), the TUCP adds an additional deception to the invocation of the flawed methodology of incremental comparison with a degraded baseline. The TUCP misrepresents the work of Lehman (2018, 2020) to downplay the effect of moving the salinity compliance point on the Sacramento River from Emmaton to Three Mile Slough.

The TUCP states: "The extent to which the TUCP's changed operations from baseline conditions would affect harmful algal blooms is uncertain but likely small given that water temperature is the main driver of bloom intensity (Lehman et al. 2020a)."<sup>17</sup> In fact, Lehman described water temperature as only part of the issue: "Regression analysis suggested the X2 index and water temperature were the primary factors controlling the *Microcystis* bloom during the two extreme water years, even though analysis suggested other environmental factors may have contributed to bloom development."<sup>18</sup> In fact, Lehman puts an explicit point on the issue of moving the salinity compliance point from Emmaton to Three Mile Slough: "A shift of the X2 index by only 3 km was associated with a factor of 3 increase in the percent abundance of subsurface *Microcystis* cells in the cyanobacterial community between the extreme drought years 2014 and 2015 (Lehman et al., 2018)."<sup>19</sup>

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<sup>17</sup> TUCP, p. 6.

<sup>18</sup> Lehman, P., T. Kurobe, and S. Teh. 2020a. Impact of extreme wet and dry years on the persistence of *Microcystis* harmful algal blooms in San Francisco Estuary, p. 8. Quaternary International. DOI: <https://doi.org/10.1016/j.quaint.2019.12.003>.

<sup>19</sup> *Id.* See also: Tom Cannon, "The Delta's Trophic Collapse Explained" (April 17, 2019). Available at: <https://calsport.org/fisheriesblog/?p=2570>; see also underlying reference, Hydrodynamic Modeling Coupled with Long-term Field Data Provide Evidence for Suppression of Phytoplankton by Invasive Clams and Freshwater Exports in the San Francisco Estuary, available at: <https://www.ucdavis.edu/news/clams-and-water-pumping-explain-phytoplankton-decline-san-francisco-estuary>.

The World Health Organization (WHO) call the cyanobacteria that make algal blooms harmful “among the most harmful substances widely found in waterbodies.<sup>20</sup> Beginning in 1999, the Delta is one of the world hot spots for the increasing proliferation of *Microcystis* blooms. High concentrations of the blooms produce toxic or harmful effects on people, dogs, fish, shellfish, marine mammals and birds.

The factors that cause HAB’s are prevalent in the Delta: high nutrient concentrations (nitrate, ammonium and phosphate), elevated water temperature and long residence time. The CVP and SWP deliveries have exacerbated all of these conditions. In a presentation to the Delta Independent Science Board, Dr. Lehman observed that zooplankton are affected by *Microcystis* and that there is a huge shift in the phytoplankton community when there are cyanobacteria present. Fish species, such as splittail and Delta smelt, don’t do well when *Microcystis* is in their diet. *Microcystis* blooms decrease bacterial diversity.<sup>21</sup> Figure 4 below is a slide Dr. Lehman used in her presentation to the Delta ISB.

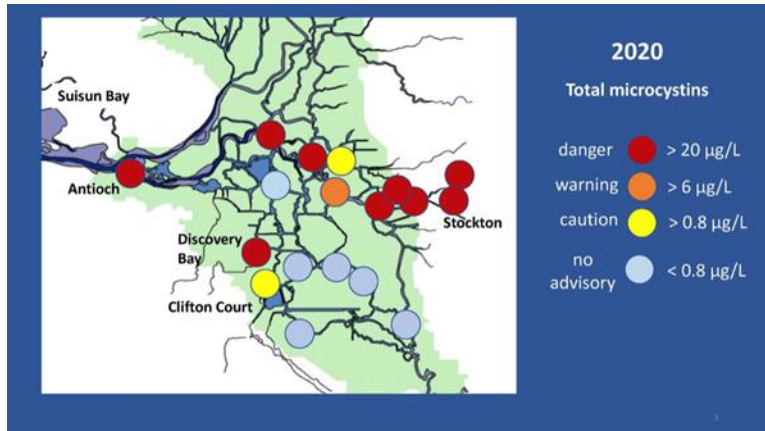


Figure 4: Delta *Microcystis* levels, 2020 (Lehman)

The TUCP acknowledges that *Microcystis* has expanded in the Delta and is a highly toxic cyanobacteria known to kill phytoplankton, zooplankton and compromise fish health (See TUCP at 31). It presents no substantial evidence that it will not unreasonably promote HAB’s. On the contrary, the TUCP’s cited expert says that exactly TUCP’s the proposed move of the Sacramento River salinity compliance point will have just such an effect.

## 2. The TUCP Will Expand the Abundance and Distribution of Non-Native Submerged Aquatic Vegetation.

It is common knowledge to anyone who boats on the Delta that non-native submerged aquatic vegetation like *Egeria densa* has been rapidly expanding throughout the Delta. It is also common knowledge that besides fouling boat propellers, submerged aquatic vegetation provides superb habitat for non-native fish species like largemouth bass and bluegill and Mississippi

<sup>20</sup> WHO, *Toxic Cyanobacteria in Water*, 2021. <https://www.who.int/publications/m/item/toxic-cyanobacteria-in-water---second-edition>

<sup>21</sup> <https://mavensnotebook.com/2021/04/14/delta-isb-harmful-algal-blooms-in-the-delta-and-elsewhere/>



silverside; the TUCP acknowledges this.<sup>22</sup> The TUCP also acknowledges that elevated temperatures and low flow conditions contribute to the proliferation of submerged aquatic vegetation that provide habitat for predators of Delta smelt.<sup>23</sup> Reducing flows, increasing residence time, elevating temperature resulting from approval of the TUCP and False River Barrier are likely to cause significant harm to salmon and pelagic species, given their current population levels.

### **3. The TUCP Will Increase the Abundance and Distribution of Asian Clams.**

The TUCP acknowledges that reducing Delta outflow under drought conditions would move X2 upstream and expand its range and overall grazing rate of *Potamocorbula amurensis*, if salinity remains high enough for several months.<sup>24</sup> *P. amurensis* has negatively affected the food web that support pelagic and salmonid species. Installation of the False River Barrier in 2014 and 2015 also contributed to increased salinity in the lower San Joaquin River from Jersey Point to Prisoners Point.<sup>25</sup>

### **4. The TUCP Will Reduce Important Parts of the Food Chain for Native Species.**

The TUCP acknowledges that “July–September Delta outflow is positively correlated with the density of the zooplankton *Pseudodiaptomus forbesi* (an important prey item for species including delta smelt and longfin smelt) in the low salinity zone...”<sup>26</sup> Reducing the abundance of key prey species for listed species hovering on the edge of extinction is simply too great a risk.

## **III. The TUCP Is Not in the Public Interest.**

The TUCP claims: “The public interest is best served by maintaining, for as long into the year as possible, storage to support minimum exports and water quality necessary for the protection of critical water supplies and species protections.”<sup>27</sup> We agree. That is one reason why the TUCP is not in the public interest. It is not in the public interest to deprive already decimated fisheries of already inadequate flow protections while delivering ten or more times the amount of water conserved to rice farmers and other agricultural producers in the Sacramento Valley who are in addition selling twice the amount of water taken from the fish.

Depriving fisheries means depriving the people and the economies that depend on them. Those who depend on fish for livelihoods and sustenance are also going to take a terrible hit in 2021, and not just in the area that this proposal addresses. These include commercial and recreational anglers, whose very industries are in jeopardy; tribes for whom salmon are integral to their ways of life; and Covid-decimated local economies dependent on recreation and tourism dollars.

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<sup>22</sup> TUCP, Att. 2, p. 45.

<sup>23</sup> *Id.*, p. 31.

<sup>24</sup> *Id.*, pp. 6 and 31.

<sup>25</sup> <https://calsport.org/fisheriesblog/?p=490>

<sup>26</sup> *Id.*, pp. 5-6.

<sup>27</sup> TUCP, Att. 1, p. 8.

And, as discussed above and below, it is not only fisheries that are at play. In the Delta and in the Klamath-Trinity system, HAB's and other foundational failures of the ecosystems are becoming more and more commonplace. Drought mismanagement accelerates the impacts of this systemic disintegration. This has immediate effects on human health and on the health of fish, wildlife and plant life.

The TUCP and associated actions of DWR and Reclamation

#### **IV. The TUCP Is Contrary to Law.**

##### **A. The TUCP Is Deliberately Designed to Enable Reclamation to Make Water Deliveries to Sacramento River Settlement Contractors in Excess of their Water Rights.**

The underlying water rights on which the Sacramento River do not justify the level of deliveries that Reclamation is making to them. Those underlying water rights are limited to natural flows, and must be further reduced by flows devoted to riparian diverters and senior appropriative diverters. The fact that Reclamation has a contract with the Sacramento River Settlement Contractors does not exempt Reclamation or those contractors from compliance with Reclamation's water right obligations, even in the underlying Settlement Contractor rights are senior to Reclamation's. Reclamation's delivery to the Sacramento River Settlement Contractors of water needed to meet Reclamation's public trust obligations violates the terms of Reclamation's water rights.

##### **B. The TUCP Violates the Public Trust Doctrine and the Requirement under the California Constitution that Use of Water Be Reasonable.**

The Sacramento River Settlement Contractors and any other water rights holders do not have the right to have Reclamation deliver water to them when that water needs to be held in storage to maintain temperature control in Shasta Reservoir or released into and through the Delta to protect public trust uses. While the Delta salinity requirement that the TUCP proposes to change temporarily is ostensibly an agricultural requirement, there is no question of its necessity to protect public trust resources, including fisheries, recreation, and public health. The Delta outflow requirement that the TUCP proposes to reduce is explicitly a requirement to protect public trust resources.

Public trust uses are superior to uses under a water right, including senior rights and riparian rights. These principles are clearly spelled out in [\*Light v. State Water Resources Control Board\*](#) (2014) 226 Cal.App.4th 1463 [173 Cal.Rptr.3d 200]:

[T]he Board has the ultimate authority to allocate water in a manner inconsistent with the rule of priority, when doing so is necessary to prevent the unreasonable use of water. (El Dorado, supra, 142 Cal.App.4th 937, 966.) Because "no one can have a protectible interest in the unreasonable use of water" [citation] . . . when the rule of priority clashes with the rule against unreasonable use of water, the latter must prevail." (Ibid.) {Slip Opn. Page 23}

This case, moreover, involves more than traditional water rights. As the Supreme Court held in *Audubon Society*, no party can acquire a vested right to appropriate water in a manner harmful to public trust interests and the state has "an affirmative duty" to take the public trust into account in regulating water use by protecting public trust uses whenever feasible. (*Audubon Society*, supra, 33 Cal.3d at pp. 446--447.) Although the *Audubon Society* court considered the public trust doctrine only in relation to permitted appropriative water rights, subsequent decisions have assumed the doctrine applies as well in the context of riparian and pre-1914 appropriator rights. (*United States*, supra, 182 Cal.App.3d at p. 106 [in *Audubon Society*, "the court determined that no one has a vested right to use water in a manner harmful to the state's waters"]; *El Dorado*, supra, 142 Cal.App.4th at p. 966 ["when the public trust doctrine clashes with the rule of priority, the rule of priority must yield"].)

As described above, it is a violation of the California Constitution's prohibition of unreasonable use of water for Reclamation to prioritize agricultural water deliveries over minimal protection for instream resources.

The Order does not show how it considered whether protecting public trust resources through conditions of approval would be feasible and in the public interest, taking into consideration all relevant factors. The failure of the Order to make even the most minimal effort to show its work violates the public trust doctrine.

### **C. The TUCP's Treatment of Water Transfers is Unlawful.**

The TUCP requests and the Order approves exemption of water transfers from Delta water quality requirements.<sup>28</sup> It makes no difference to fish if the increased risk of entrainment or other causes of mortality in the central and south Delta is caused by export of transferred water rather than export of Project water. The Board should disallow transfers of *any* water through Project facilities when D-1641 standards are not being met. It should also require the same import-export mitigations it requires of the Projects. What is unreasonable for Project water is no less unreasonable for anyone else's water.

Moreover, the proposed transfer of water from Sacramento River Settlement Contractors south of Delta is unreasonable on its face. The very purpose of the TUCP is to maintain storage. That storage is needed for temperature control throughout 2021 and for carryover storage for 2022. Transferring water does not maintain storage. Allowing the Sacramento River Settlement Contractors to transfer water at the end of 2021 defeats the very purpose of the TUCP and discloses the underlying unlawful transfer of public trust water to these CVP diverters.

It is worthy of note that Reclamation disallowed water transfers by senior diverters on the Stanislaus River in 2021. Although not published, this was apparently because Reclamation determined that such transfer water would have transferred water that would not otherwise have

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<sup>28</sup> TUCP, pp. 1-2. Order, p.

been available to senior Stanislaus River water rights holders and CVP contractors to divert locally: stored water belonging to Reclamation.

The same logic applies to the Sacramento River Settlement Contractors. Transfer water assumes that water would have been otherwise available for diversion. In order to evaluate whether water is available for transfer, the State Water Board must first determine how much water Reclamation could deliver to Sacramento River Settlement Contractors in 2021 at their stated places of use and still remain within the requirement that all use of water must be reasonable. That amount should be the ceiling for release from Shasta to meet 1) north of Delta deliveries to Sacramento River Settlement Contractors, **PLUS** 2) transfers from Sacramento River Settlement Contractors. The Board must not allow Sacramento River Settlement Contractors to transfer water they could not use north of Delta while still complying with the requirements of the public trust and reasonable use. Stated differently, transfers must not be a workaround to evade reasonable use. Stated still differently, the Sacramento River Settlement Contractors cannot sell Reclamation's water. Stated still more differently, the Sacramento River Settlement Contractors cannot limit Reclamation's ability or obligation to meet its public trust responsibilities by earmarking water for buyers.

In the Order, the Executive Director of the State Water Board defers a decision on the reasonableness of water transfers by requiring information on a case-by-case basis rather than making a programmatic decision.<sup>29</sup> In addition, the Order does not directly respond to the request for exemption of transfer water from Delta export limits and other export constraints. This approach lacks clarity, but appears to make export requirements apply to approved transfers.

#### **D. The TUCP and Order Are beyond the SWRCB's Jurisdiction.**

Delta water quality criteria are promulgated pursuant to requirements of the federal Clean Water Act. There is an acknowledged disagreement between the State Water Board and U.S. EPA regarding whether the flow requirements contained in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary are subject to federal approval. The federal Clean Water Act covers flows, since flow and water quality are flip sides of the same coin. However, notwithstanding flows, neither the Governor nor the State Water Board has authority to unilaterally waive water quality standards that protect designated uses under the federal Clean Water Act.

#### **E. Summary of why the TUCP and Order Conditionally Approving the TUCP are Contrary to Law.**

The TUCP and Order contravene the public trust doctrine by failing to balance a relatively healthy Central Valley agricultural sector that represents somewhat less than 2% of the state's gross domestic product with critically depressed public trust resources hovering on the brink of extinction. Extinction cannot be balanced! They also violate the public trust doctrine by prioritizing water rights priority over public trust uses and the doctrine of reasonable use

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<sup>29</sup> Order, p. 38.

(Article X, Section 2 of the California Constitution). In addition, they violate the public trust doctrine by failing to show how more effective measures to protect carryover storage were not feasible.

The TUCP and Order contravene the federal Clean Water Act by arbitrarily weakening criteria without following mandated processes and ignoring federally promulgated water quality criteria.

The TUCP and Order violate California Fish and Game Code § 5937 by failing to keep fish downstream of dams in good condition.

The TUCP and Order accept Reclamation's unlawful failure to limit the Sacramento River Settlement Contractors to delivery under their underlying water rights, prioritizing federal contracts over the doctrines of public trust and reasonable use.

The TUCP and Order violate the state and federal Endangered Species Acts. Notwithstanding the letters of concurrence from fisheries agencies, the record clearly demonstrates that the TUCP and Order will harm and result in the take of listed species.

#### **V. The State Water Board is Continuing Its Pattern and Practice of Elevating Irrigated Agriculture Over Fisheries, Water Quality, Cities and Climate Reality.**

A crystal ball was not required to predict the SWRCB's response to the current TUCP. As it has previously, the Board noticed a brief public comment period and midway through the period issues its TUCP Order (TUCO). Nor was a mind reader needed to predict the response of SWP and CVP operators to the current critically dry year. As they have previously, they recklessly delivered water under the assumption that the following year would be wet and, when it wasn't, they knew the SWRCB would bail them out by approving TUCPs to weaken regulatory flow and water quality standards. This has been the prevailing pattern and practice over decades.

Equally predictable is the fact that fish and wildlife and water quality will grievously suffer the consequences, and that municipal inhabitants will be subject to stringent water conservation requirements during the drought while irrigated agriculture will emerge relatively unscathed.<sup>30</sup> It is also predictable that the SWRCB will hold a hearing on the various protests and objections at the end of the season and declare that its actions were legal and defensible, while pointing out that the waivers of water quality objectives failed to provide reasonable protection to fish and wildlife. They will also assure everyone that it will be different next time, just as they did in Water Rights Order 2015-0043 (corrected), page 39, at the conclusion of the last drought.

However, the State Water Board also determines that the status quo of the past two years is not sustainable for fish and wildlife and that changes to the drought planning and

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<sup>30</sup> See *Status of Agriculture in the Central Valley* below. Also see U.S. Department of Agriculture, *2021 California Almond Forecast*, predicting record almond production, 12 May 2021, p. 1. <https://www.almonds.com/sites/default/files/2021-05/2021SubjectiveForecast.pdf>

response process are needed to ensure that fish and wildlife are not unreasonably impacted in the future and to ensure that various species do not go extinct.

But nothing changes. The SWRCB will predictably continue its longstanding pattern and practice of weakening water quality objectives established for droughts and native fisheries will continue on their path to extinction. The SWRCB is acting as if it is a subsidiary of the SWP and CVP and no longer an independent regulatory agency. Below, we discuss this decades-long pattern and practice and the resulting degradation of public trust resources: a pattern and practice that does not comport with constitutional, statutory or regulatory requirements.

Water rights are subject to compliance with constitutional mandates of reasonable use and public trust protection, as well as compliance with promulgated water quality standards. The SWRCB has already determined that existing Bay-Delta water quality standards fail to protect fish and wildlife public trust uses.<sup>31</sup> To routinely weaken already acknowledged inadequate water quality objectives cannot be in the public interest or comply with constitutional and statutory requirements. This is especially true when the SWRCB has already informed USBR and DWR that current violations are a result of the overallocation of Project water during dry conditions and that the Projects appear to have discounted the need to maintain regulatory compliance when making operational decisions.<sup>32</sup>

#### **A. As Fisheries Decline, Irrigated Agriculture Continues to Profit.**

The State Water Board has exhibited considerable bias toward agriculture at the expense of Public Trust resources over the years. This bias is evidenced by the fact that Central Valley agriculture has not experienced impacts comparable to the precipitous declines suffered by fisheries, aquatic ecosystems and recreation. Droughts have magnified this bias, evidenced by closed or restricted fishing seasons, reduced commercial and recreational fishermen, and half-empty marinas on the one hand, and increasing agricultural production and employment on the other.

According to the annual reports that must be submitted by county agricultural commissioners to the California Department of Agriculture, farm production and employment in the San Joaquin Valley has significantly increased since 2000. Between 2000 and 2019, the gross

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<sup>31</sup> SWRCB, *Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem*, 2010, p. 2.

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/deltaflow/docs/final\\_rpt080310.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf)

SWRCB, *July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan*, p. 6.

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/docs/sed/sac\\_delta\\_framework\\_070618%20.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf)

SWRCB, *Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows*, 2017.

[https://www.waterboards.ca.gov/water\\_issues/programs/peer\\_review/docs/scientific\\_basis\\_phase\\_ii/201710\\_bdphaseII\\_sciencereport.pdf](https://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/scientific_basis_phase_ii/201710_bdphaseII_sciencereport.pdf)

<sup>32</sup> SWRCB, letter to Ted Craddock, DWR and Ernest Conant, *Compliance with Water Right Requirements in the Bay-Delta Watershed*, 30 April 2021, p. 3.

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/compliance\\_monitoring/sacramento\\_sanjoaquin/docs/2021/20210430\\_swbltr\\_bdcompliance.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/compliance_monitoring/sacramento_sanjoaquin/docs/2021/20210430_swbltr_bdcompliance.pdf)

value of agricultural production increase from 14.4 billion to 36.4 billion dollars, representing a 152.5% increase. Farm production actually tended to increase during the early years of a drought.

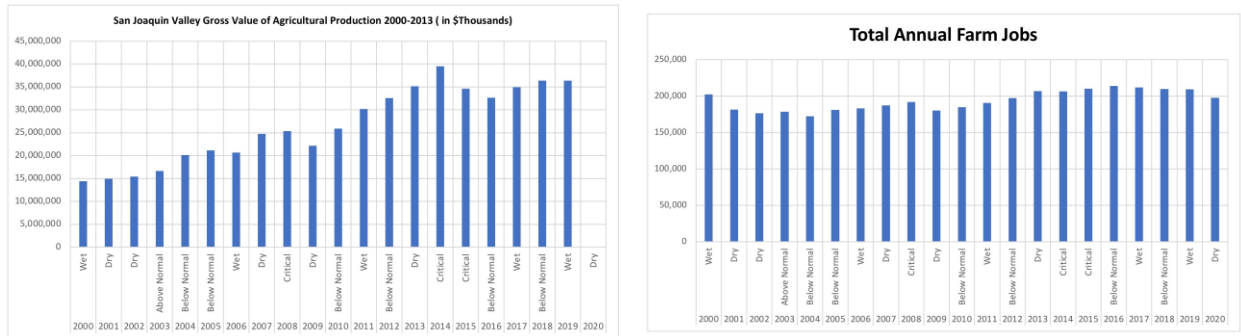


Figure 5. Annual farm production in Kern, Kings, Tulare, Fresno, Madera, Merced, Stanislaus and San Joaquin Counties

The situation is similar for the Sacramento Valley. The gross value of agricultural production increased from \$2.34 billion in 2000 to \$5.26 billion in 2019, representing a 72.4% increase. According to the California Employment Development Department, agricultural employment in the Sacramento Valley increased 16.6% between 2000 and 2020.

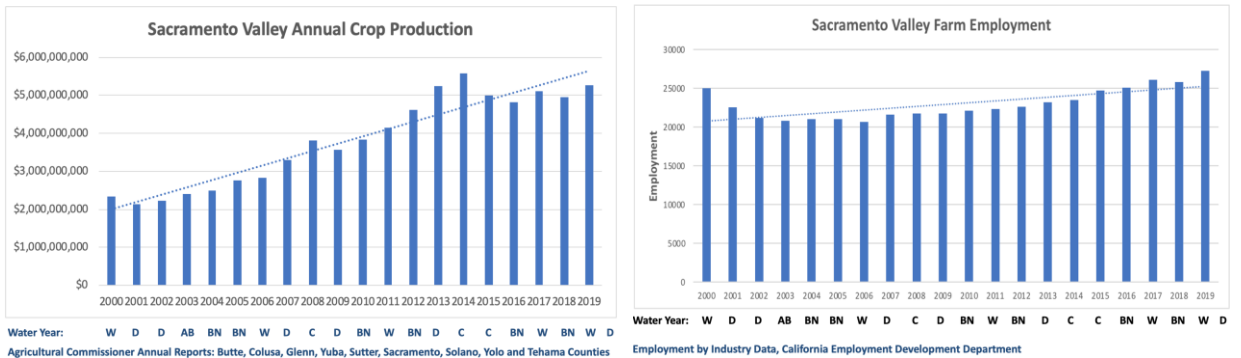


Figure 6. Annual farm production in Butte, Colusa, Glenn, Yuba, Sutter, Sacramento, Solano, Yolo and Tehama Counties

Even in this critically dry year, the U.S. Department of Agriculture is predicting that California almond production and almond bearing acreage will reach record highs.<sup>33</sup>

<sup>33</sup> <https://www.almonds.com/sites/default/files/2021-05/2021SubjectiveForecast.pdf>

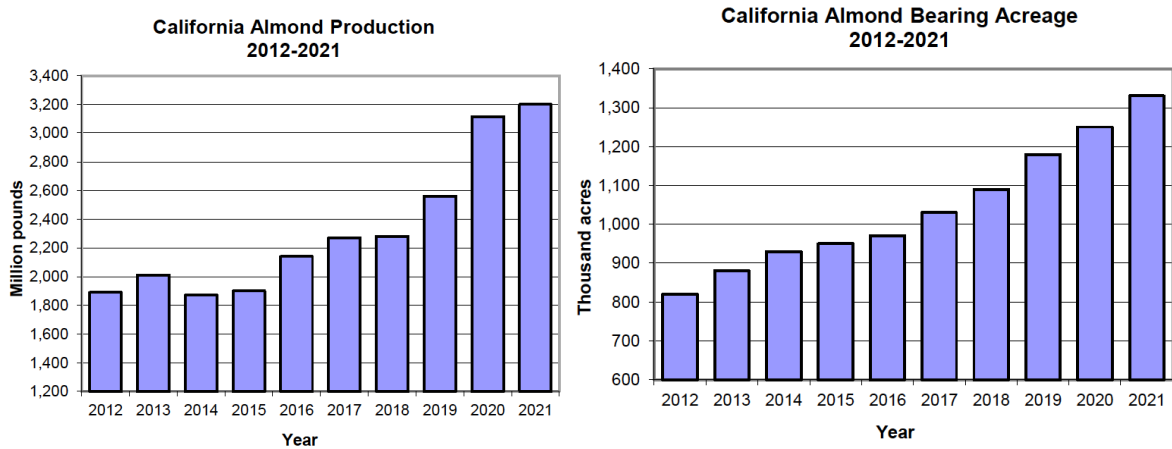


Figure 7. California almond production and acreage 2012-2020, with 2020 forecasted values

Agriculture has weathered reoccurring droughts rather well compared to the devastating impacts to public trust resources and those who value and depend upon them.

**B. The State Water Board Has Failed to Reduce or Eliminate the Decline of Native Fisheries.**

The precipitous collapse of the Central Valley’s pelagic and anadromous fish populations since construction of the SWP in 1967 has been documented at considerable length. Since the State Water Project began exporting water from the Delta, the Department of Fish and Wildlife’s (CDFW) Fall Midwater Trawl indices (1967-71 versus 2016-2020) for striped bass, Delta smelt, longfin smelt, splittail and threadfin shad have declined by 98.1, 99.9, 99.8, 99.3 and 94.3 percent, respectively. The U.S. Fish & Wildlife Service’s (USFWS) Anadromous Fisheries Restoration Program documents that, since 1967, in-river natural production of Sacramento winter-run Chinook salmon and spring-run Chinook salmon have declined by 98.2 and 99.3 percent, respectively, and are only at 5.5 and 1.2 percent, respectively, of doubling levels mandated by the Central Valley Project Improvement Act, California Water Code and California Fish & Game Code. Numerous species have been listed, pursuant to state and federal endangered species acts.<sup>34</sup>

The SWRCB has long been aware of the plight of Central Valley fisheries. In 1978, following a long formal evidentiary hearing and in a moment of remarkable candor, the SWRCB found that “full mitigation of project impacts on all fishery species now would require the virtual

<sup>34</sup> Southern DPS green sturgeon (*Acipenser medirostris*), federal threatened, candidate for federal endangered; Delta smelt (*Hypomesus transpacificus*), state endangered, federal threatened, Longfin smelt (*Spirinchus thaleichthys*), state threatened; Central Valley steelhead (*Oncorhynchus mykiss*), federal threatened; Sacramento winter-run Chinook salmon (*Oncorhynchus tshawytscha*), state endangered, federal endangered; Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*), state threatened, federal threatened; Central Valley fall/late-fall-run Chinook salmon (*Oncorhynchus tshawytscha*), federal species of concern, state species of special concern; Sacramento splittail (*Pogonichthys macrolepedotus*), state species of special concern; Pacific lamprey (*Entosphenus tridentate*), federal species of concern and river lamprey (*Lampetra ayresi*), state species of special concern. The Project also has potential to adversely affect Killer whales or Orcas (Southern Resident DPS) (*Orcinus orca*), federal listed as endangered because they are dependent upon Chinook salmon for 70% of diet, and reduced quantity and quality of diet is one of the major identified causes of their decline.



shutting down of the project export pumps.” D-1485, page 13. In 1988, following another extensive evidentiary hearing, the SWRCB acknowledged, “a safe level of exports is not known.” Draft 1988 Water Quality Control Plan for Salinity, 7.3.2.5. 9. 7-32. The 1988 draft order found that “optimal water quality objectives” for shad and striped bass larvae and salmon smolt survival in the Delta would require the prohibition of all exports between 1 April through 30 November, in all water years. *Id.*, Table 5-4-1, p. 5-110. Political pressure brought by the SWP and CVP contractors led then Governor George Deukmejian to direct the SWRCB to withdraw the draft order.

Yet, another long evidentiary proceeding led the SWRCB to issue Draft Water Right Decision D-1630 in 1992. D-1630 documented that, by 1991, adult fall-run Sacramento River salmon escapement had been halved since the late 1960’s, spring-run Sacramento River salmon abundance was about 0.5 percent of historic runs, San Joaquin River fall-run salmon escapement dropped from 70,000 in 1985 to 430 in 1991, the 1985 level of Delta smelt abundance was 80% lower than the 1967-1982 average population, adult striped bass declined from about 3 million in the early 1960s to 1.7 million in the late 1960s to an estimate of 590,000 in 1990, abundances of shrimp and rotifers declined between 67 percent and 90 percent in the 1970s and 1980s, white catfish population have severely declined since the mid-1970s, and overall fish abundance in Suisun Marsh has been reduced by 90 percent since 1980. D-1630, p. 29. The SWRCB declared in draft D-1630 that “net reverse flows caused by export pumping are adverse to fishery resources because they pull water and young fish of various species from the western Delta into the central Delta.” D-1630. P. 31. It declared that “reverse flows should not occur in the San Joaquin and Sacramento Rivers during the delta smelt’s spawning period in order to transport the larvae to appropriate habitat and to keep them there.” *Id.*, p. 41-42. It included a requirement that “there should be no reverse flow for all water year types on a 14-day running average in the western Delta...between July 1 and July 31” and that the “14-day running average flow shall be greater than -2000 cfs...between August 1 and January 31. *Id.*, p. 46-47. Again, political pressure brought by SWP and CVP contractors led then Governor Pete Wilson to direct the SWRCB to not finalize the order.

In January 1995, the U.S. Environmental Protection Agency (EPA) stepped in and promulgated stringent federal Clean Water Act (CWA) water quality standards for the Delta that was significantly more protective than existing state criteria. 40 CFR 131.37. The SWRCB has refused to acknowledge or abide by these federal standards.

The SWRCB subsequently issued a Water Quality Control Plan (Bay-Delta Plan) for the San Francisco Bay/Sacramento-Dan Joaquin Delta Estuary (95-1WR) in May 1995. The SWRCB plan was significantly weaker than the EPA promulgated standards and wasn’t incorporated into water rights permits until D-1641 was issued in 2000. Mindful of the history of droughts in California, especially the severe six-year 1987-92 drought, D-1640 contained specific water quality criteria for wet, above normal, below normal, dry and critically dry water years.

Following the issuance of D-1641, Delta pelagic species experienced a collapse in fish populations known as the “Pelagic Organism Decline.” Fish abundance indices calculated by the Interagency Ecological Program (IEP) for 2002-2004 were at record lows for Delta smelt and

striped bass and near-record lows for longfin smelt and threadfin shad. This decline was characterized by the IEP as a precipitous “step change” to very low abundance. In response to these changes, the IEP formed a Pelagic Organism Decline work team to evaluate the potential causes for the declines. The work team identified three factors that were likely causes of the decline: water project operations, toxins and invasive species. It should be noted that water project operations had drastically altered the hydrology of the estuary and had enhanced and expanded habitat for invasive species.

### **C. Recent Droughts Have Accelerated the Decline of Fish Populations.**

The low abundance indices for pelagic species recorded during the 2002-2004 decline continued to the 2012-15 drought. Water year 2013 was formally classified as a “dry” water year, and dry water year criteria were applicable. However, SWRCB Executive Director Tom Howard, in a 24 May 2013 email, and SWRCB Delta Watermaster Craig Wilson, in a subsequent letter to DWR and USBR, announced that they would not object or take any enforcement action if DWR and USBR operated to meet “critically dry” year objectives for the Western and Interior Delta.

In 2014, DWR and USBR requested a series of TUCP’s seeking to weaken criteria protecting beneficial uses in the Delta and tributary rivers. The SWRCB quickly responded by issuing a series of TUCO’s on 31 January, 7 February, 18 March, 9 April, 18 April and 2 May and 7 October that significantly weakened Delta outflow, San Joaquin flow, Sacramento River temperature, Delta Cross Channel (DCC) operational requirements, and the export and salinity control criteria contained in D-1641. Measures in these TUCO’s reduced Delta outflow requirements to 3,000 cfs and, beginning 2 May, moved the Emmaton salinity compliance point to Threemile Slough. Numerous parties filed Protests, Objections and Petitions for Reconsideration. CSPA et al. filed Protests, Objections and Petitions for Reconsideration and Public Hearing on 3 March, 28 April and 13 May, as well as testifying at the 18-19 February 2014 workshop. The SWRCB denied all Petitions for Reconsideration on 24 September 2014.

Again in early 2015, the SWRCB quickly responded to TUCP’s by DWR and USBR and issued TUCO’s on 3 February, 5 March, 6 April, 3 July and 2 August, weakening D-1641 and Stanislaus River criteria. CSPA et al. provided TUCO comments on 26 February; submitted Protests, Objections and Petitions for Reconsideration and Public Hearing on 13 February, 6 May, 17 June, 3 August and 6 August 2015, and provided extensive comments at the SWRCB workshops on 18 February, 20 May and 24 June. CSPA submitted a formal Complaint for violations of D-1641 Bay-Delta Plan requirements, Clean Water Act, Endangered Species Act, Public Trust Doctrine and the California Constitution against the SWRCB, USBR and DWR on 21 July 2015. CSPA also submitted a formal complaint against the SWRCB and USBR for violations of temperature requirements in the Basin Plan, WR Order 90-05, Clean Water Act, Endangered Species Acts, Public Trust Doctrine and the California Constitution was submitted on 2 August 2015. And again in 2016, the SWRCB issued a TUCO on 19 April reducing spring pulse flows on the San Joaquin River.

The SWRCB’s failure to enforce and/or its decisions to waive compliance with flow and water quality standards during the 2012-2015 drought exacerbated the decline of already depressed fisheries. Several fish species are now facing extinction.

CDFW’s Kodiak Trawl for adult Delta smelt was initiated in 2002, following the collapse of pelagic species. The low numbers of adults following the last drought led fisheries scientist Peter Moyle to declare impending extinction of Delta smelt.

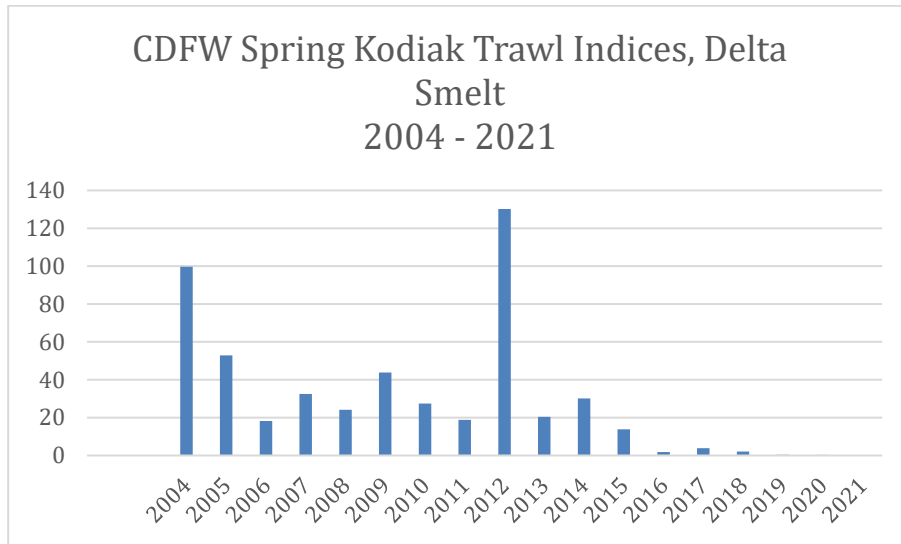


Figure 8. Delta Smelt Kodiak Trawl indices, 2004-2021

CDFW’s 20 mm Survey was initiated in 1995 to monitor postlarval-juvenile Delta smelt throughout their historical range.

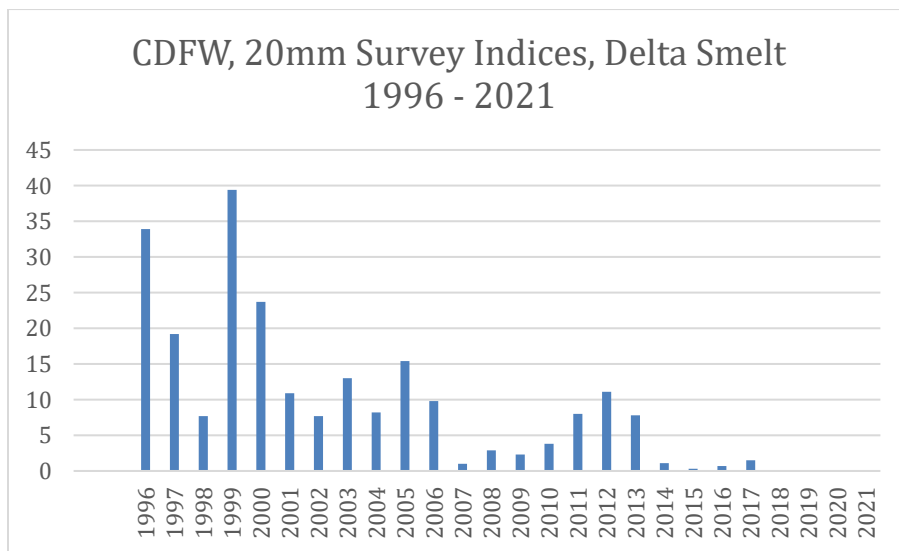
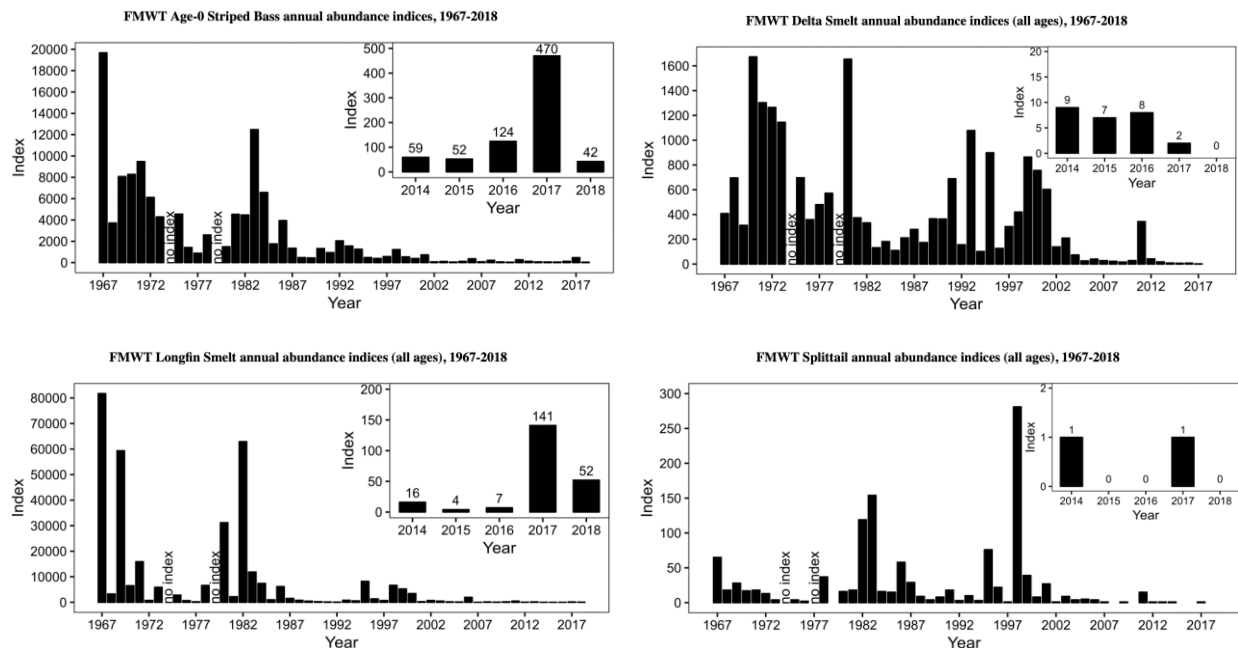


Figure 9. Delta Smelt 20 mm Survey indices, 2004-2021

The already depressed numbers of postlarval-juvenile Delta smelt collapsed following the last drought. There is no scientific mystery in the declining Delta smelt population. Following birth, postlarval-juvenile Delta smelt move downstream into the low salinity zone represented by X2. This area has suitable salinity, more abundant food supply, lower temperatures, reduced predation and protection from the export pumps. During droughts and, especially, when the SWRCB relaxes outflow standards, X2 and Delta smelt move eastward into less hospitable habitat with stressful or lethal temperatures, less food availability, increased predation and greater exposure to being drawn into the export pumps. A more comprehensive description of impacts to Delta smelt from the SWRCB’s weakening of Delta standards are described in Exhibit 1 (Summer of 2013), Exhibit 2 (Summer of 2014) and Exhibit 4 (Delta Smelt on the Scaffold) attached to CSPA et al.’s 13 February 2015 Protest, Objection and Petition for Reconsideration and Public Hearing, incorporated by reference into this document.<sup>35</sup>

Delta pelagic fisheries experienced significant decline following construction and operation of DWR’s Delta pumping facilities in 1967. A dramatic stair-step decline in pelagic fishery abundance levels occurred in 2002-2004 following the SWRCB’s issuance of D-1641. Delta fisheries hovered at near or actual historic lows. The SWRCB’s ignoring/weakening of D-1641 water quality criteria during subsequent droughts has resulted in another dramatic stair-step decline, and several species are now at severe risk of extinction. This decline is illustrated by CDFW’s Fall Midwater Trawl, a series of frequent sampling events over September-December of each year since 1967. As noted above, CDFW’s Fall Midwater Trawl indices (1967-71 versus 2016-2020) for striped bass, Delta smelt, longfin smelt, splittail and threadfin shad have declined by 98.1, 99.9, 99.8, 99.3 and 94.3 percent, respectively.



<sup>35</sup> All available at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/index.html](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/index.html).

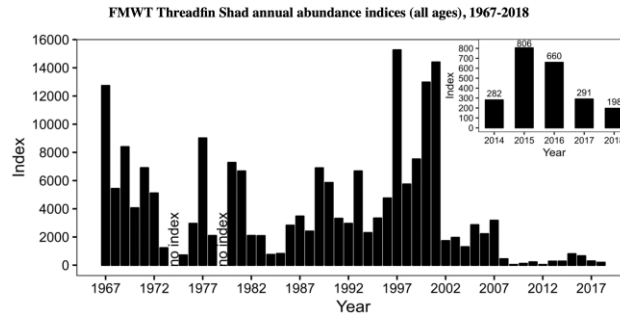


Figure 10. Fall Midwater Trawl Indices for Various Pelagic Delta species (starts on previous page)

A similar situation exists for Central Valley Chinook salmon. As noted above, the USFWS' Anadromous Fisheries Restoration Program documents that, since 1967, in-river natural production of Sacramento winter-run Chinook salmon and spring-run Chinook salmon have declined by 98.2 and 99.3 percent, respectively, and are only at 5.5 and 1.2 percent, respectively, of doubling levels mandated by the Central Valley Project Improvement Act, California Water Code and California Fish & Game Code.

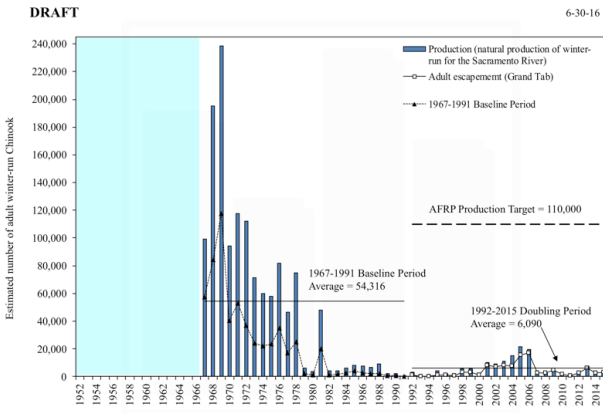


Figure 8. Estimated yearly adult natural production, and in river adult escapements for above RBDD mainstem Sacramento River winter-run Chinook salmon. [shaded area] = no data available for 1952-1966. 1992-2015 numbers are from CDFG Grand Tab (Apr 11, 2016). 1967-1991 Baseline Period numbers are from Mills and Fisher (CDFG, 1994).

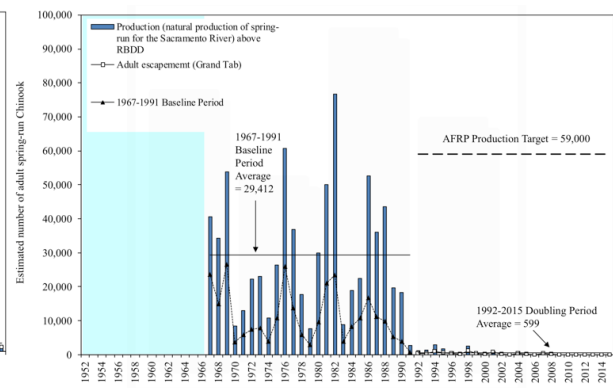


Figure 9. Estimated yearly adult natural production, and in river adult escapements for above RBDD mainstem Sacramento River spring-run Chinook salmon. 1992-2015 numbers are from CDFG Grand Tab (Apr 11, 2016). 1967-1991 Baseline Period numbers are from Mills and Fisher (CDFG, 1994).

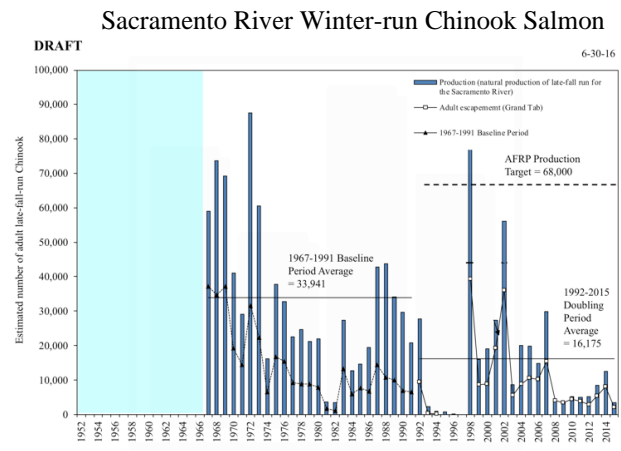


Figure 7. Estimated yearly adult natural production, and in-river adult escapements for above RBDD mainstem Sacramento River late-fall-run Chinook salmon. [shaded area] = no data available for 1952-1966. 1992-2015 numbers are from CDFG Grand Tab (Apr 11, 2016). 1967-1991 Baseline Period numbers are from Mills and Fisher (CDFG, 1994).

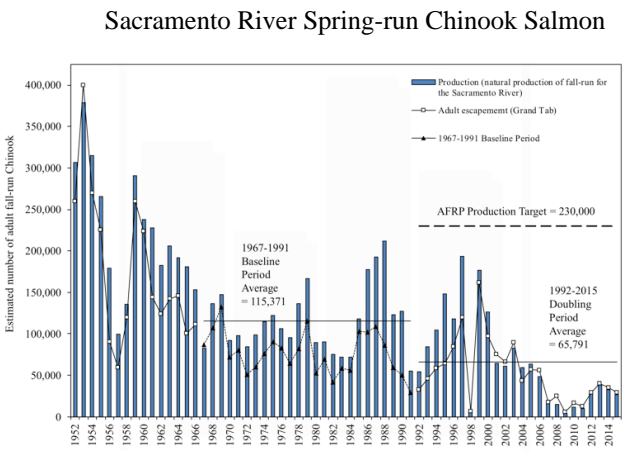


Figure 6. Estimated yearly adult natural production, and in-river adult escapements for the entire mainstem Sacramento River fall-run Chinook salmon. 1952-1966 and 1992-2015 numbers are from CDFG Grand Tab (Apr 11, 2016). 1967-1991 Baseline Period numbers are from Mills and Fisher (CDFG, 1994).

Sacramento River Late Fall-run Chinook Salmon  
 Sacramento River Fall-run Chinook Salmon  
 Figure 11. Abundance indices for different runs of Sacramento River Chinook salmon

USFWS's Anadromous Fisheries Restoration Program documents that, since 1967, in-river natural production of fall-run Chinook salmon on the Stanislaus and Tuolumne Rivers have declined by 92.6 and 93.6 percent, respectively, and are 76.6 and 81.8 percent, respectively, below the doubling levels mandated by the Central Valley Project Improvement Act, California Water Code and California Fish & Game Code. According to CDFW's Grand Tab Central Valley Chinook Population Database Report, escapement of fall-run Chinook salmon back to the Stanislaus and Tuolumne Rivers, between 1967-1971 and 2015-2019, declined by 53.7 and 94.8 percent, respectively. During droughts, the SWRCB has allowed export pumping to exceed San Joaquin River flow during the spring migration period. Consequently, the vast majority of fish migrating out of the San Joaquin River are drawn to the export pumps and few, if any, reach San Francisco Bay. Unfortunately, this also includes the experimental spring-run Chinook salmon reintroduced under the auspices of the San Joaquin River Restoration Program.

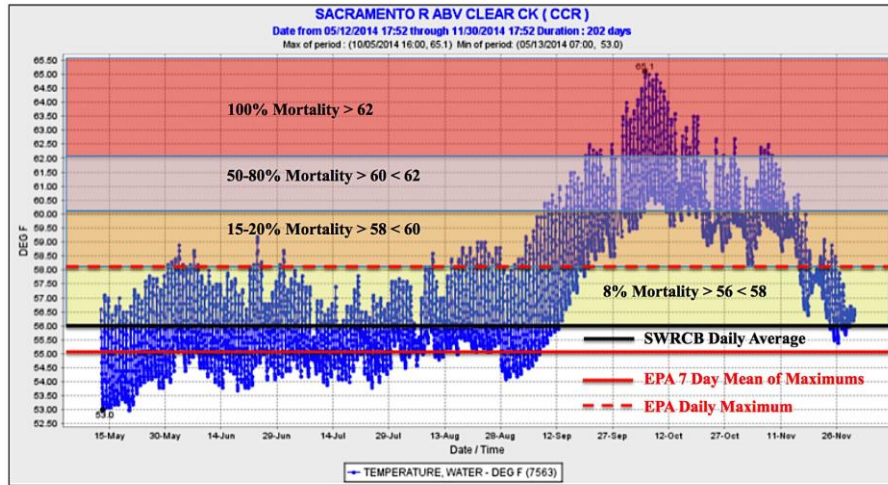
The SWRCB's relaxation of Sacramento River temperature criteria in 2014 moved the temperature compliance point upstream to Redding and eliminated much of the spawning habitat for winter-run and spring-run Chinook salmon. USBR delivered 1.2 million acre-feet of water from Shasta Reservoir to Sacramento Settlement Contractors and another 119 TAF to Tehama-Colusa Canal between April and September 2014. This delivery schedule depleted Shasta Reservoir, exhausted the cold-water pool, and led to high water levels during spawning and low flow levels during emergence (Figure 5). Winter-run salmon spawn June-July, eggs hatch July-early September, and fry emerge late September-mid-October. When water deliveries to the Settlement Contractors concluded, water releases from Keswick were substantially reduced, and the resulting dewatering of redds and high water temperatures in the Sacramento River killed 95% of the cohort. This management also caused significant and potentially complete mortality to the cohort of in-river spawning Sacramento River spring-run Chinook salmon. A more comprehensive description of impacts to winter-run Chinook salmon and pelagic species from the SWRCB's weakening of temperature and Delta standards are described in the 13 February 2015 Protest, Objection and Petition for Reconsideration and Public Hearing and Exhibit 4 (Demise of Winter-Run in Summer 2014).<sup>36</sup>

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<sup>36</sup>[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/comments\\_tucp2015/docs/cspa\\_shute\\_s021315.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_shute_s021315.pdf)  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/comments\\_tucp2015/docs/cspa\\_att1.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att1.pdf)  
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Sacramento River Above Clear Creek Temperatures: 15 May – 31 October 2014



Mortality schedules developed by USFWS and CDFG for use in evaluation of Shasta Dam temperature control alternatives in June 1990 (Richardson et al. 1990).

Figure 12. Summer 2014 Sacramento River Water Temperatures and Winter-Run salmon mortality

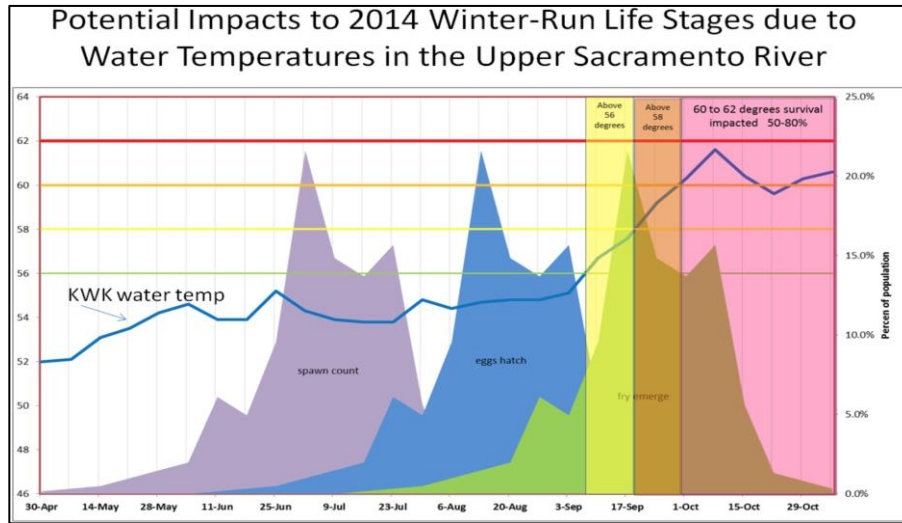
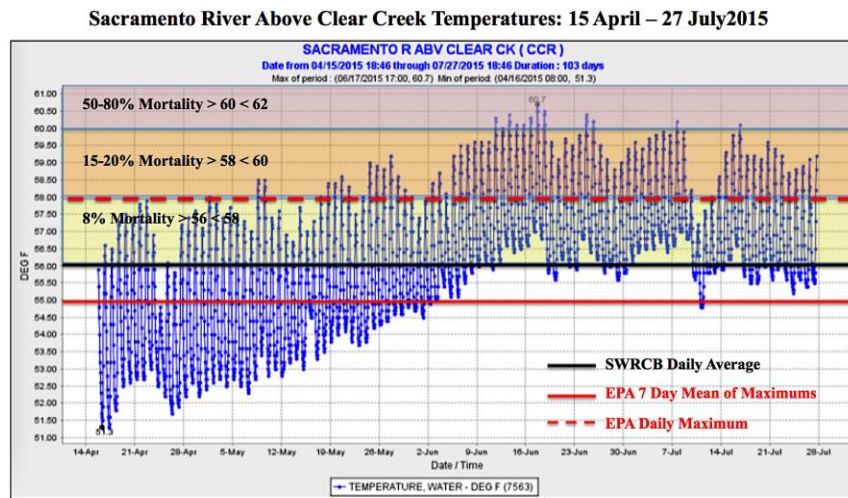


Figure 13. 2014 Winter-run salmon spawning, hatching and emergence. From 18 February 2015 NMFS Presentation to SWRCB.

The situation was similar in 2015. The SWRCB relaxed temperature criteria on the Sacramento River eliminated critical habitat, and USBR delivered 1.1 MAF of water to Sacramento Settlement Contractors and 103 TAF to Tehama-Colusa Canal from a reduced Shasta Reservoir storage. USBR’s deliveries exhausted the cold-water pool and began releasing hot water from Shasta Reservoir, as occurred in 2014. A more comprehensive discussion of the circumstances surrounding the loss of cold-water is described by Tom Cannon in Summer Reservoir Releases – Lessons Learned #2.<sup>37</sup> Lethal water temperatures led to high temperature

<sup>37</sup> <https://calsport.org/fisheriesblog/?p=3574>

mortality. Winter-run Chinook salmon egg to smolt survival in 2015 was estimated by NMFS to be 3%, even lower than the 4% survival in 2014. Relaxation of Bay-Delta objectives decimated pelagic species. CDFW’s FMWT Delta smelt index was a record low, down from the previous record low in 2014. The longfin smelt, striped bass and American shad indices were also record lows, and the splittail index tied a record low. Moreover, even the relaxed Bay-Delta objectives were violated. Again, a more comprehensive description of impacts to Chinook salmon and pelagic species from the SWRCB’s weakening of temperature and Delta standards are described in the 17 June and 6 August 2015 Protest, Objection, Petition for Reconsideration and Petition for Hearing,<sup>38</sup> and the 22 July 2015 and 2 August 2015 Complaints against the SWRCB and USBR.<sup>39</sup>



Mortality schedules developed by USFWS and CDFG for use in evaluation of Shasta Dam temperature control alternatives in June 1990 (Richardson et al. 1990)

Figure 14. Summer 2015 Sacramento River Water Temperatures and Winter-Run salmon mortality

**D. The State Water Board Has Failed to Enforce Water Quality Standards.**

The SWRCB has a long history of ignoring violations of Delta water quality requirements. Water quality standards were adopted and implemented to protect public trust resources and the full suite of beneficial uses. Bay-Delta water quality standards already provide

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[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/comments\\_tucp2015/docs/cspa\\_billjen\\_nings080615.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_billjen_nings080615.pdf)

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/comments\\_tucp2015/docs/cspa\\_billjen\\_nings061715.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_billjen_nings061715.pdf)

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[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/docs/tucp/2015/cspa\\_jennings072215.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/cspa_jennings072215.pdf)

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/comments\\_tucp2015/docs/cspa\\_complaint080315.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_complaint080315.pdf)



for dry and critical water years. Further weakening of these dry and critically dry standards causes unreasonable and devastating impacts.

For example, in 1989-1991, the Board identified 246 violations by DWR and USBR of west Delta salinity standards, but declined to take enforcement action. Letter from SWRCB Chair Don Maughan to Roger Patterson (USBR) and David Kennedy (DWR), 19 June 1992. The egregious and chronic violation of south Delta water quality criteria illustrates the reluctance of the SWRCB to hold DWR and USBR accountable for complying with water quality criteria.

The present water quality standards for salinity for the south Delta were established in the 1978 Bay-Delta Plan and Water Rights Decision D-1485 in 1978. They were readopted in the 1995 Water Quality Control Plan in 1995 and Water Rights Decision D-1641 in 2000. D-1641 established a time schedule for compliance schedule of 2005. Provisions in the 1995 Bay-Delta Plan were readopted in the 2006 Bay-Delta Plan. The 1995 Plan made DWR and USBR jointly responsible for meeting the salinity standard in the south Delta, and USBR solely responsible for meeting the standard at Vernalis.

These salinity standards were routinely violated. In 2006, the SWRCB issued a Cease and Desist order against DWR and USBR for violations of the salinity standard and granted a time extension until 2009. Salinity standards continued to be violated. In 2010, the SWRCB issued an order modifying the 2006 Cease & Desist Order. It delayed compliance until after the SWRCB updates the 2006 Bay-Delta Plan, which was anticipated to be completed and incorporated into water rights permits by 2013. The present effort to update the Bay-Delta Plan is stalled and far behind schedule. Salinity violations continue to occur. DWR and USBR violated salinity standards on 868 days between April 2007 and March 2013. Salinity standards at all four compliance locations in the south Delta were violated in the winter-spring of 2015, and the salinity standard at Old River near Tracy was violated throughout 2015. The 2015 TUCO's ignored the south Delta salinity standards, treating them as if they didn't exist.

The SWRCB has failed to comply with mandates to conduct triennial reviews of the Bay-Delta Plan. Consequently, the water quality standards for protection of water quality and beneficial uses of Delta waters remain unchanged from 1995, despite plummeting fisheries and declining water quality; these declines are documented in low fish abundance indices and the increasing number of identified water quality impairments on California's CWA Section 303(d) List/305(b) Reports. While the SWP and CVP have operated under water quality criteria developed in 1995 and water rights provisions of D-1641 issued in 2000, fishery populations have continued to plummet. The SWRCB's refusal to enforce water quality criteria in 2013 and its weakening of minimal, inadequate standards in 2014 and 2015 exacerbated conditions. To weaken them again in 2021 would further reduce already seriously depressed fish populations and potentially catapult Delta and longfin smelt and winter-run salmon into extinction.

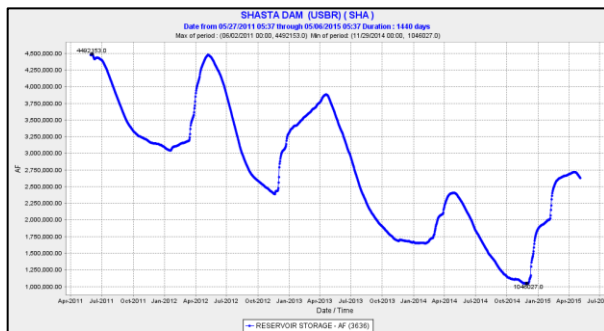
#### **E. Water Agencies Continue to Deny the Frequency and Inevitably of Droughts.**

Droughts are a routine occurrence in California's Mediterranean climate. According to DWR, there have been ten multi-year droughts of large-scale extent in the last 100 years spanning 41 years, including 1918-20, 1923-26, 1928-35, 1947-50, 1959-62, 1976-77, 1987-92,

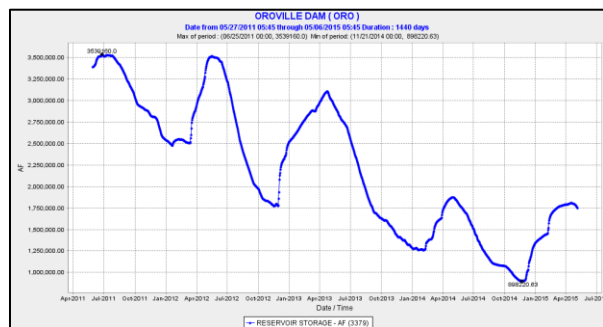
2000-02, 2007-09, and 2012-15. Below normal water years occur more than half the time, and natural ecosystems have evolved and adjusted to periodic droughts.

The inevitability of drought was extensively discussed during the numerous workshops and evidentiary hearings before the SWRCB over the last four decades during development the various iterations of Bay-Delta Plans and implementing water rights orders. It was discussed in the evidentiary proceeding leading up to D-1641. In D-1641, explicit provision was made for critically dry years, which included substantially less stringent, and consequently less protective, water quality and flow objectives. Yet the SWRCB has ignored or weakened those criteria in each of the last three dry year sequences.

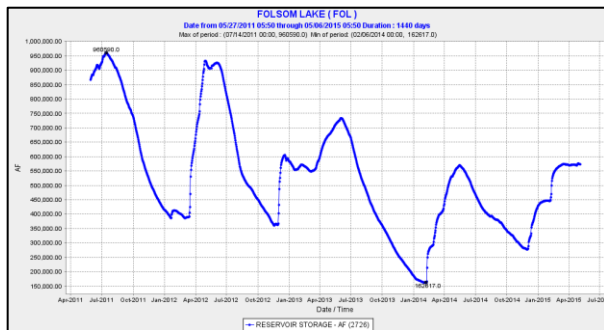
Over the last several years, in workshop and protests, petitioners CSPA et al. have described the prevalence of drought in California and pointed out that the state and federal Projects continue to operate and deliver water as if there is no tomorrow. The Projects draw down reservoir water under the assumption that the coming year will be wet, leaving little reserve storage in the event they're wrong. And in the event of another dry year, they again endeavor to maximize deliveries in the hope that rains will return. The pattern has repeated itself for decades: 1976-1977, 1986-1992, 2001-2002, 2007-2009, 2012-2015 and yet again in 2020-2021. This predictable pattern is not limited to state and federal Project reservoirs: it is replicated on reservoirs throughout the state, as evidenced by the following charts of storage between April 2011 and April 2015.



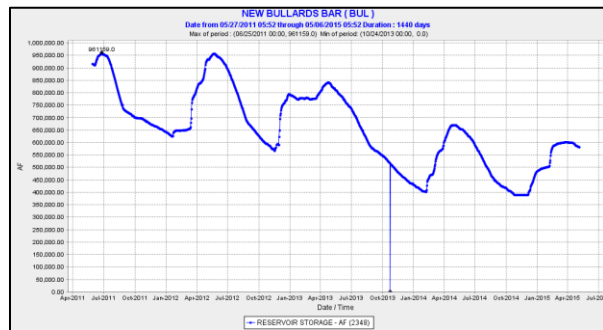
Shasta Reservoir



Oroville Reservoir



Folsom Reservoir



New Bullards Bar Reservoir

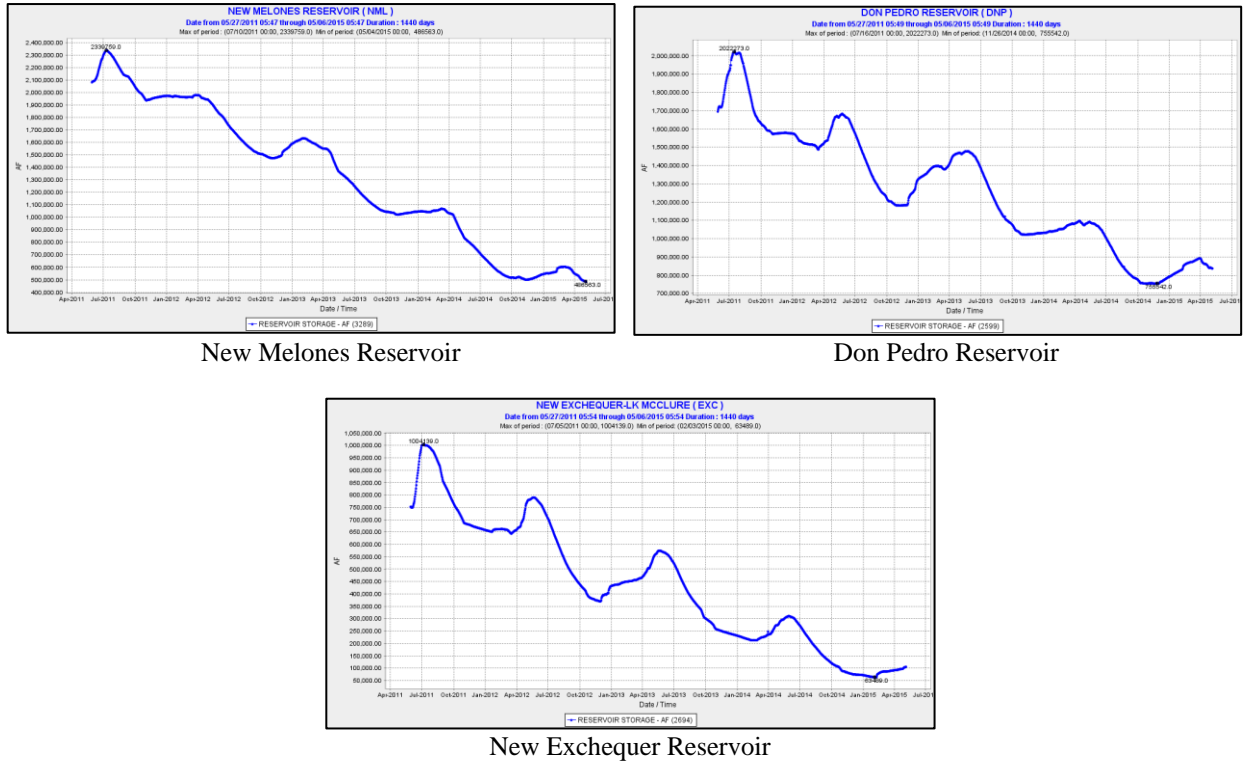


Figure 15. 2011-2015 storage hydrographs from major Central Valley reservoirs. (figure begins on previous page)

Given DWR and USBR’s projected 2021 end-of-September storage levels of 1.25 MAF in Shasta, 850 TAF in Oroville and 200 TAF in Folsom, another dry winter will create a disaster for fisheries, farms and cities throughout California.

Shasta Reservoir storage on 3 April 2021 was 2.39 MAF or 53% of reservoir capacity and 65% of average storage. Assuming that the SWRCB would agree with proposals to relax temperature standards on the Sacramento River and weaken water quality standards in the Delta, USBR ramped up water releases from Shasta Reservoir and significantly increased water deliveries to Sacramento River Settlement Contractors. Measured as the difference between Bend Bridge and Wilkins Slough, approximately 107.6 and 254.5 TAF were delivered to Sacramento Settlement Contractors in April and May 2021, respectively. These excessive deliveries reduced Shasta Reservoir storage to 1.97 MAF on 1 June, or 43% of capacity and 51% of average storage.

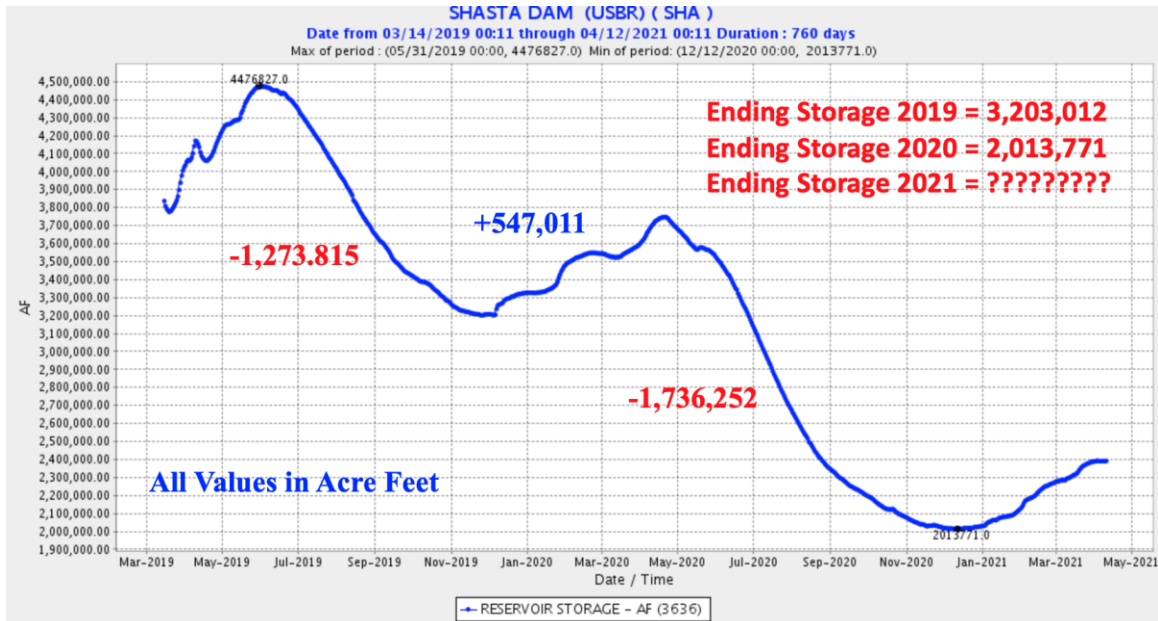


Figure 16. Shasta Reservoir Storage 2019-2021

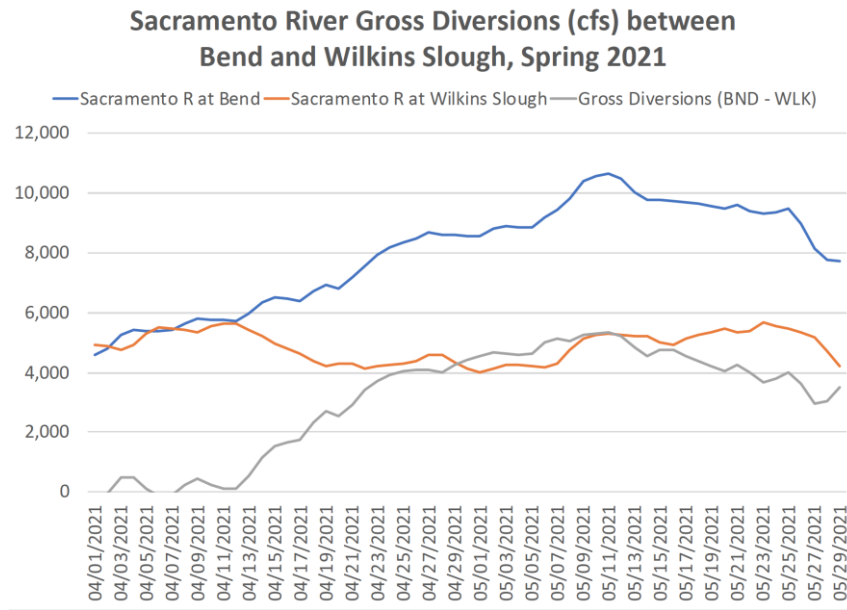


Figure 17. Spring 2021 Sacramento River diversions

The water released from Shasta Reservoir in May 2021 exceeded the 56°F water quality standard for Chinook salmon and the 53.5°F level protective of salmon eggs at all of the temperature compliance points. CDFW carcass survey teams collected dead endangered and unspawned winter-run Chinook Salmon and reported seeing other salmon swimming erratically.

DWR and USBR refuse to adjust to California’s climate and over-subscribed system because they count on the SWRCB to bail them out during droughts by weakening water quality and flow criteria. And they’ve been right, and the SWRCB continues to bail them out by relaxing criteria and encouraging them to continue to operate on the edge of crisis. They count on CDFW, USFWS and NMFS to bail them out during droughts by agreeing that their proposals to weaken standards do not contravene the respective biological opinions. And they’ve been right that the fishery agencies will continue to provide concurrence memos within a day or two, while the Valley’s pelagic and salmonid fisheries continue their inexorable march toward extinction. It is always the Delta and Central Valley fisheries and beneficial uses that pay the price.

The rapidity of the decision-making process to weaken criteria is breathtaking. The process from a TUCP through concurrence memos to the TUCP is complete within several days. It is accomplished in secret, the public is always excluded, and there is never an evidentiary proceeding that might raise embarrassing questions. Occasionally, the SWRCB will schedule an after-the-fact workshop. It cannot be claimed that an emergency exists, because the scenario has replicated itself multiple times over many years. It does suggest that the SWRCB, DFW, USFWS and NMFS have become captive agencies to politically powerful interests and incapable of independent action to protect public trust assets.

Fishery resources have been disproportionately impacted by drought because of increased consumptive use of water and the failure of the SWRCB to adjudicate water right claims that exceed average unimpaired flow in the Delta and tributary streams fivefold. In fact, as the chart below demonstrates, Fisheries dependent on Delta outflow have endured the functional flow equivalent of super critical drought conditions in half of all years since 1975.

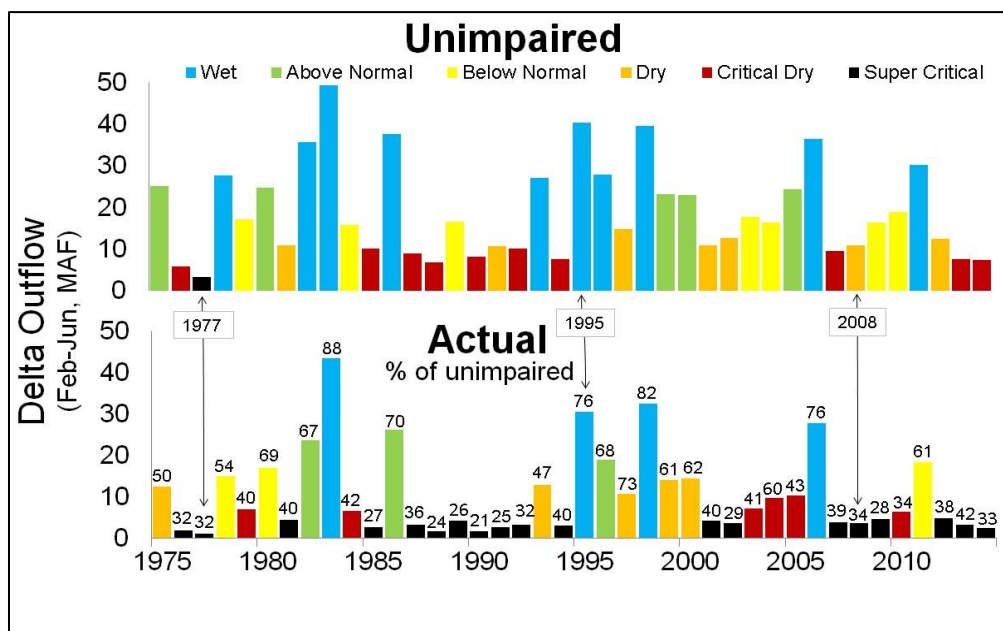


Figure 18. Actual Flow to the Bay vs. Unimpaired Flow. Bay Institute, 2015.

## **F. Health and Safety Needs During the Drought are Not Identified.**

The SWP/USBR 2021 Drought Contingency Plan and TUCP and the SWRCB's TUCO justifies much of the proposed export pumping, when flow and water quality criteria are weakened, as required because of health and safety needs. Yet, there is no quantification of the amount of water needed for health and safety.

That was not the case in 2015. The need for water for health & safety purposes was described in DWR/USBR's Central Valley Project and State Water Project Drought Contingency Plan January 15, 2015 – September 30, 2015. DWR's state contractors reported health and safety needs of 330 thousand acre-feet (TAF), while USBR's federal contractors reported that they needed 180 TAF for health and safety.<sup>40</sup>

## **VI. Conditions Under Which This Protest, Objection and Petition for Reconsideration May Be Disregarded and Dismissed.**

The State Water Board should deny the TUCP and rescind the Executive Director's Order that conditionally approved the TUCP. In their place, the State Water Board should order the following measures to protect fish and wildlife for the remainder of 2021:

1. The State Water Board should reinstate D-1641 critical year criteria.
2. The State Water Board should order the operations of Shasta and Trinity reservoirs and downstream river reaches recommended in the CSPA Temperature Management Plan, including:
  - a. Limit Shasta releases in the months of June through October to 5000 cfs.
  - b. Require minimum end-of-September carryover storage in Shasta Reservoir of 1350 TAF in 2021 and 1900 TAF in 2022.
  - c. Require minimum end-of-September 2021 carryover storage in Trinity Reservoir of 900 TAF.
  - d. Limit Trinity River exports to the Sacramento River to 300 cfs in the months of June through October, and require release of these exports down Clear Creek, with no releases during this time period through the Spring Creek Tunnel.
  - e. Require Trinity River releases in the months of June through October of 800 cfs or the flows required by the Trinity Record of Decision of Lower Klamath Record of Decision, whichever is greatest.

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<sup>40</sup> DWR/USBR, *Central Valley Project and State Water Project Drought Contingency Plan January 15, 2015 – September 30, 2015*, pp. 5-6.  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/docs/2015\\_drought\\_contingency\\_plan.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/2015_drought_contingency_plan.pdf)

3. The State Water Board should limit deliveries to Sacramento River Settlement Contractors to the amounts they could reasonably receive under their underlying water rights.
4. The State Water Board should require the Bureau of Reclamation to meet Delta water quality requirements using water released from New Melones Reservoir to the maximum extent practicable.
5. The State Water Board should limit Delta exports to 1500 cfs including any transfers, and require compliance with D-1641 as a condition of any exports.
6. The State Water Board should disallow any water transfers of water that would otherwise not be available for diversion at the stated place of use while still complying with the public trust and reasonable use doctrines.
7. No later than June 30, 2021, the State Water Board should initiate water rights hearings on the 2009 petitions for extension of time of DWR for the SWP and Reclamation for the CVP. Such hearings are long overdue to address the chronic overallocation of water by the Projects and in particular their operations before and during dry and critically dry years and sequences of years.



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

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**In the Matter of Specified License and Permits<sup>1</sup> of  
the Department of Water Resources and U.S. Bureau of Reclamation for the State  
Water Project and Central Valley Project**

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**ORDER CONDITIONALLY APPROVING 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**

The Sacramento/San Joaquin Delta (Delta) watershed is currently experiencing extreme dry hydrologic conditions, with 2021 the driest year on record to date since 1977 following dry conditions in 2020. Snow water content for 2020-2021 was somewhat better than snow water content in other extreme drought periods of 2014-2015 and 1976-1977; however, in 2021 an unprecedented loss of snowmelt into dry soils and due to sublimation resulted in a nearly 700 thousand acre-feet (TAF) deficit in expected inflows to the Sacramento River watershed (at the 90 percent hydrologic forecast) and associated Project reservoirs between April and May of 2021. The abrupt change in expected inflows to reservoirs contributed to insufficient water supply to meet the obligations of the federal Central Valley Project (CVP) and State Water Project (SWP), including requirements of State Water Resources Control Board (State Water Board) Decision 1641 (D-1641) to achieve water quality and flow objectives included in the

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<sup>1</sup> 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.



Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan).

On April 21, 2021, Governor Newsom proclaimed a State of Emergency in Mendocino and Sonoma Counties due to drought conditions in the Russian River watershed and directed state agencies to take immediate action to bolster drought resilience and prepare for impacts on communities, businesses, and ecosystems. On May 10, 2021, Governor Newsom extended the state of emergency to include 41 counties in the Klamath River, Delta, and Tulare Lake Watersheds due to warm temperatures and extremely dry soils resulting in a historic and unanticipated depletion of runoff from the Sierra-Cascade snowpack.

Directive 4 of the Governor's May 10, 2021, Emergency Proclamation states that "to ensure adequate, minimal water supplies for purposes of health, safety, and the environment, the [State] Water Board shall consider modifying requirements for reservoir releases or diversion limitations – including where existing requirements were established to implement a water quality control plan – to conserve water upstream later in the year in order to protect cold water pools for salmon and steelhead, improve water quality, protect carry over storage, or ensure minimum health and safety water supplies."

On May 17, 2021, the Department of Water Resources (DWR) and the United States Bureau of Reclamation (Reclamation) (hereinafter the Petitioners) jointly filed a Temporary Urgency Change Petition (TUCP) pursuant to Water Code section 1435 et seq. requesting that, consistent with Directive 4 of the Emergency Proclamation, the State Water Board temporarily change their water right permits and license for the SWP and CVP (collectively Projects). In response to the 2021 drought emergency, the Petitioners are seeking changes to permit and license conditions imposed pursuant to D-1641 that require the Petitioners to meet flow-dependent water quality objectives designed to protect fish and wildlife and agricultural beneficial uses in the Delta in order to preserve water in storage in Project reservoirs to meet other Project obligations and improve reservoir storage conditions going into next year.

This Order approves, subject to conditions, the changes described below for the period of June 1 through August 15:

1. Change the minimum Delta outflow objective (NDOI) in June and July from 4,000 cubic-feet per second (cfs) to 3,000 cfs. June would be measured as a 14-day running average, and July would be measured as a monthly average. The 7-day running average shall be no less than 1,000 cfs below 3,000 cfs;
2. From June 1 through August 15, 2021, change the Western Delta agricultural salinity objective compliance location on the Sacramento River at Emmaton to Threemile Slough on the Sacramento River;
3. From June 1 through August 15, 2021, the combined maximum exports at SWP Banks Pumping Plant and the CVP Jones Pumping Plant, excluding transfers, shall be limited to pumping no greater than 1,500 cfs, as a 3-day running

average. Combined exports may be increased above 1,500 cfs when the Petitioners are in full compliance with D-1641 Delta outflow and Sacramento River at Emmaton salinity requirements, but exports other than transfers shall be limited to natural and abandoned flow.

The modifications approved by this Order apply to requirements to meet a Delta outflow objective designed to protect fish and wildlife beneficial uses of water and a salinity objective designed to protect agricultural beneficial uses of water in the western Delta at the Emmaton compliance point. The Petitioners also proposed modified export limits as a companion to these changes. The Order includes the Petitioners' proposed export limits, as well as additional export limits. Unless renewed, changes approved as part of a TUCP request may remain in effect for up to 180 days. In this case, the changes to the Delta outflow requirements will be effective until July 31, 2021, and the remaining changes will be effective until August 15, 2021. The terms and conditions of approval of the TUCP will remain in effect until compliance is completed.

Directive 4 of the Emergency Proclamation requires that modifications to reservoir releases or diversion limitations be monitored and evaluated in order to inform future actions. Consistent with this requirement, this Order requires consultations on real time operations with the State Water Board and fisheries agencies, reporting on hydrologic conditions, operation outlooks, and real-time operations; accounting of water volumes conserved in storage, water deliveries, and water transfers; evaluation of providing conserved water in a subsequent year to improve conditions for protection of beneficial uses; reporting on infrastructure specifications and health and safety limitations of pumping facilities; analysis of ecological impacts of the temporary urgency change actions in combination with other associated drought actions, including a special study for harmful algal blooms and invasive aquatic weeds; development of an operational strategy for next year to address improvements and hydrologic and operational forecasting; and provisions for continuing authority to modify the Order based on comments or objections, or new information.

The Petitioners are required to evaluate the possibility for dedicating a portion of the volume of water conserved by the changes approved in this Order to provide pulse flows or other improvements above and beyond D-1641 requirements in the next water year<sup>2</sup> to the extent feasible based on hydrologic conditions. It is widely recognized that the Delta ecosystem is in a state of crisis. The population abundance of several native estuarine species has continued to decline, strongly suggesting that the current water quality objectives are inadequate to protect fish and wildlife beneficial uses. Additional instream flow can help aquatic species recover after experiencing drought conditions.

The Petitioners are also required to develop an operational strategy for water year 2022, in the event that dry or critically dry hydrologic conditions occur next year. Proper planning for possible future dry or critically dry years can help to alleviate the need for

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<sup>2</sup> A water year starts on October 1 and extends to September 30 of the following calendar year. For example, water year 2021 is October 1, 2020, through September 30, 2021.

expedited emergency actions, exceedances of water quality objectives, and the need for relaxations of requirements to meet water quality objectives. The plan should provide clear, transparent goals, optional actions to meet the goals, and thresholds or triggers to implement the actions, for example through a structured decision-making approach.

Approval of the final Sacramento River Temperature Management Plan (TMP) pursuant to State Water Board Order 90-5 is not subject to this Order, but this Order requires Reclamation to implement the plan as approved by the State Water Board's Executive Director.

This Order is consistent with the legal requirements governing approval of a TUCP. In order to approve a TUCP, the State Water Board or its Executive Director, acting under delegated authority, must find (1) that there is an urgent need for the proposed changes, (2) that the changes will not injure any legal user of water, (3) that the changes will not result in unreasonable effects to fish and wildlife, and (4) that the changes are in the public interest. In addition, the State Water Board must protect public trust resources to the extent feasible and in the public interest.

Section 5.2 of this Order explains the urgent need for the proposed changes. As described in section 5.3, as conditioned by this Order, the modifications to the Emmaton salinity compliance point as well as the other requirements will not injure any lawful user of water. As described in more detail in sections 5.4 and 5.5, as conditioned by this Order, the potential impacts of the changes on fish and wildlife are not unreasonable, and the impacts to public trust resources are in the public interest. In determining whether the impacts of a change on fish and wildlife would be unreasonable, and whether the impacts to public trust resources would be in the public interest, the impacts of the change must be weighed against the benefits of the change to all beneficial uses, including fish and wildlife. The changes approved in this Order will reduce freshwater flows into the Delta in order to provide a benefit to upstream storage. Conserving upstream storage is particularly important because water released from storage can provide cold water river flows for salmon and steelhead, improve water quality, and ensure minimum health and safety water supplies. In this case, the impacts to fish and wildlife and public trust resources in the Delta are not unreasonable, or contrary to the public interest, taking into consideration the need to conserve water upstream for use later in the year for multiple beneficial uses. For the foregoing reasons, and as explained in Section 5.6, the changes will be in the public interest.

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## **2.0 BACKGROUND**

### **2.1 Bay-Delta Plan and D-1641**

The Bay-Delta Plan establishes water quality objectives for the reasonable protection of beneficial uses of water in the watershed, including fish and wildlife, agricultural, and municipal and industrial uses. The water quality objectives included in the Bay-Delta Plan were developed through a rigorous and extensive public process to determine the flow-dependent water quality requirements that are needed to reasonably protect beneficial uses. During that process, the State Water Board considered and balanced the various beneficial uses of water under various hydrologic conditions.

The Bay-Delta Plan includes various flow dependent water quality objectives, including salinity, river flows, and Delta outflows, as well as operational constraints on the Projects. The Bay-Delta Plan objectives were adopted to protect fish and wildlife populations living in or migrating through the watershed and to prevent water in the Delta from becoming too salty to be diverted or exported from the Delta for municipal and agricultural uses. Water Year Type indexes are used in the Bay-Delta Plan to coarsely adjust to California's variable hydrology by indexing the numeric value and time period of each flow and water quality objective to water year type (wet, above normal, below normal, dry, and critical). Higher flows and lower salinity levels are required in wet years and less stringent requirements for flows and salinity apply during drier years. Some of the water quality objectives also include additional relaxations in extreme dry conditions, such as this year.

As the result of agreements that were reached regarding implementation of the 1995 Bay-Delta Plan, the State Water Board implements many of the flow and water quality objectives in the Bay-Delta Plan through amended conditions in the water right permits and license held by the Petitioners that require the Projects to operate to meet flow and salinity objectives and other requirements. Specifically, D-1641 places responsibility on the Petitioners to achieve the water quality objectives specified in Tables 1, 2, and 3 of the 1995/2006 Bay-Delta Plan as well as satisfying 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 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 (Chippis Island and Port Chicago Maximum Daily Average EC).

Since adoption of D-1641, native and migratory fish populations have declined substantially. Several of these species of fish are listed as threatened or endangered under the California Endangered Species Act (CESA), the federal Endangered Species Act (ESA), or both, including Delta smelt, longfin smelt, green sturgeon, Central Valley steelhead, winter-run Chinook and spring-run Chinook salmon. Abundance of longfin and Delta smelt are at such low levels they are difficult to detect in the estuary, survival

of juvenile salmonids and returns of spawning adults are chronically low, and risks of extirpation for multiple fish species are high.

The State Water Board is currently in the process of revising the Bay-Delta Plan and implementing those revisions in order to provide for the reasonable protection of fish and wildlife, including evaluating the responsibilities for meeting Bay-Delta Plan objectives.<sup>3</sup> Currently, the Petitioners hold primary responsibility for meeting Bay-Delta Plan flows and salinity requirements as part of D-1641. During times of limited supplies like this year, meeting those requirements can require significant contributions of previously stored water releases, both due to limited natural flows and due to other water users diverting water when it is not available under their water rights. These circumstances deplete reservoir storage, and in years like this year when reservoir storage is at critically low levels, create significant concerns for temperature management, health and safety water supplies, and salinity management in the Delta if dry conditions persist. The Petitioners have submitted the TUCP to reduce impacts to reservoir storage attributable to storage releases needed to meet outflow and salinity requirements this summer. The State Water Board is also taking efforts to notify water users when water is not available at their priority of right in order to help to conserve critical reservoir storage supplies. The State Water Board may also pursue emergency regulations in the future to address these issues.

### **2.1.1 Delta Outflow Requirements**

The Delta outflow objectives are intended to protect estuarine and migratory aquatic species and their habitat. Delta outflows affect migration patterns of both resident and anadromous species and the availability of suitable habitat for those species. 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 flow also is an important factor in cuing upstream migration of adult salmonids through the Delta, and in the downstream migration and survival of juvenile salmonids. Freshwater inflows also have chemical and biological consequences through the effects of inflows on loading of nutrients and organic matter, pollutant concentrations, and residence time.

The Delta outflow objectives listed in Table 3 of D-1641 include year-round requirements that vary by month and water year type. With some flexibility provided through a limited set of compliance alternatives, the basic outflow objectives require calculated minimum net flow from the Delta to Suisun and San Francisco Bays (the Net Delta Outflow Index or NDOI). Pursuant to D-1641, the Delta outflow requirement for June is 4,000 cfs on a 14-day running average (Table 3 Footnote 10) and for July,

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<sup>3</sup> In 2018, the State Water Board amended the Bay-Delta Plan to revise flow objectives for fish and wildlife beneficial uses on the lower San Joaquin River and salinity objectives in the Southern Delta for agricultural beneficial uses. The Board has not yet implemented the 2018 Bay-Delta Plan through a water right or water quality action amending or otherwise conditioning the Projects' permits; therefore, D-1641 and the 1995 flow and water quality objectives remain in regulatory effect.

during critical water years, is 4,000 cfs on a monthly average. Table 3, Footnote 8 also specifies that when the May through January flow requirements are less than 5,000 cfs, the 7-day running average shall not be less than 1,000 cfs below the requirement.

### **2.1.2 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 Projects' pumping facilities, in order to protect fish and wildlife uses. For the February through June time period (with the exception of April 15 to May 15 when exports are limited to 1,500 cfs) exports are limited to either 35 or 45 percent of Delta inflows and for the July through January time period exports are limited to 65 percent of Delta inflow on either a 3-day or 14-day running average, unless the Executive Director allows for a variation upon concurrence of United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the California Department of Fish and Wildlife (CDFW) (hereafter collectively referred to as the fisheries agencies).

### **2.1.3 Western Delta Agricultural Salinity Requirements**

The western Delta salinity requirements are listed in Table 2 of the Bay-Delta Plan and D-1641 and include two compliance locations, including one on the Sacramento River at Emmaton for which a requested change was made. The salinity requirement is intended to provide protection of agricultural uses in the western Delta from salinity intrusion. For the April 1 to August 15 period in critically dry years the maximum 14-day running average of mean daily EC is 2.78 millimhos per centimeter (mmhos/cm).

## **2.2 Drought Conditions and Water Supply Effects**

### **2.2.1 Hydrology**

As described in the Introduction, California and the Central Valley are experiencing extremely dry conditions for the second consecutive year. Precipitation conditions in the Sacramento Valley are an indicator of water supply for the Projects because most of the Project reservoirs that capture northern California water supply are in the Sacramento Valley, including Shasta, Oroville, and Folsom Reservoirs. One major reservoir, New Melones, is in the San Joaquin Valley. As of May 18, 2021, the Northern Sierra 8-Station Precipitation Index was at 23 inches, 47 percent of average and the third lowest on record since water year 1921, the first year of precipitation records available on California Data Exchange Center (CDEC).<sup>4</sup> Water years 2020 and 2021 are the second driest two-year period on record, drier than 2014 and 2015 and behind 1976 and 1977. Precipitation conditions degraded in 2021 after poor conditions in 2020, unlike 2015 which recorded a small improvement in precipitation after 2014. Figure 1 shows the level of precipitation for the Northern Sierra as of May 19, 2021.

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<sup>4</sup> California Data Exchange Center (CDEC) precipitation records.  
<https://cdec.water.ca.gov/reportapp/javareports?name=8STATIONHIST>;  
<https://cdec.water.ca.gov/precipapp/get8SIPrecipIndex.action>

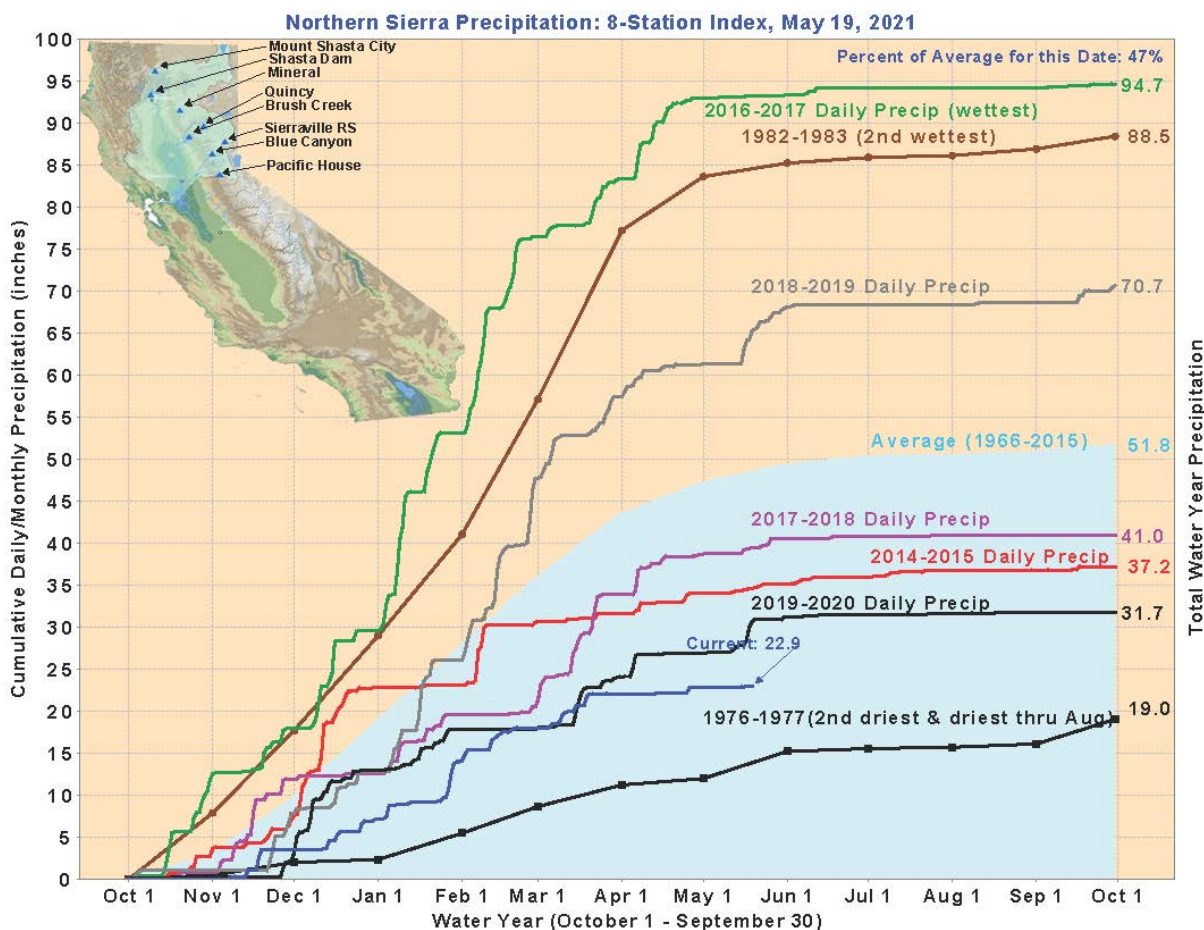


Figure 1. Northern Sierra Precipitation: 8-Station Index as of May 19, 2021. Source: [https://cdec.water.ca.gov/reportapp/javareports?name=PLOT\\_ESI.pdf](https://cdec.water.ca.gov/reportapp/javareports?name=PLOT_ESI.pdf), accessed May 19, 2021

Precipitation conditions are also extremely low in the San Joaquin Valley. As of May 19, 2021, the San Joaquin 5-Station Precipitation Index is at 18.2 inches, 48 percent of average for this time of year. Water year 2021 in the San Joaquin Valley is the third driest on record but very similar to water year 2015. Water years 1924 and 1977 are the driest and second driest at just below and just above 15 inches of precipitation, respectively. Water year 2015 is the fourth driest at 19 inches of precipitation.

Of greater concern is the lack of snowmelt runoff in the watersheds feeding into the major Sacramento Valley reservoirs. The amount of Northern Sierra snowpack in late March peaked at 70 percent of historic average, indicating that sufficient reservoir inflow was expected to be available to meet the Projects' obligations to meet water quality and flow requirements and senior contract demands while providing for temperature management. However, expected water supply conditions significantly changed during the month of April 2021 when very little precipitation occurred, and the snowpack did not produce the expected runoff. A conservative forecast of expected Sacramento River



inflow to reservoirs (90% exceedance) was 685 TAF higher in April than May.<sup>5</sup> Low runoff efficiency may be due to depletions such as snowmelt directly absorbing into soils with dry antecedent conditions from water year 2020, or because of sublimation directly into the dry atmosphere. As of May 19, 2021, snowpack in the Northern Sierra region was 5 percent of historic average, while the Central Sierra and Southern Sierra regions were 2 percent. Figure 2 shows California Snow Water Content as of May 19, 2021. The significant loss of expected inflow to Sacramento Valley reservoirs and associated reductions in Project supplies has resulted in the need to rapidly reevaluate and modify Project allocations for different purposes, including water deliveries and water supplies to meet water quality and flow objectives.

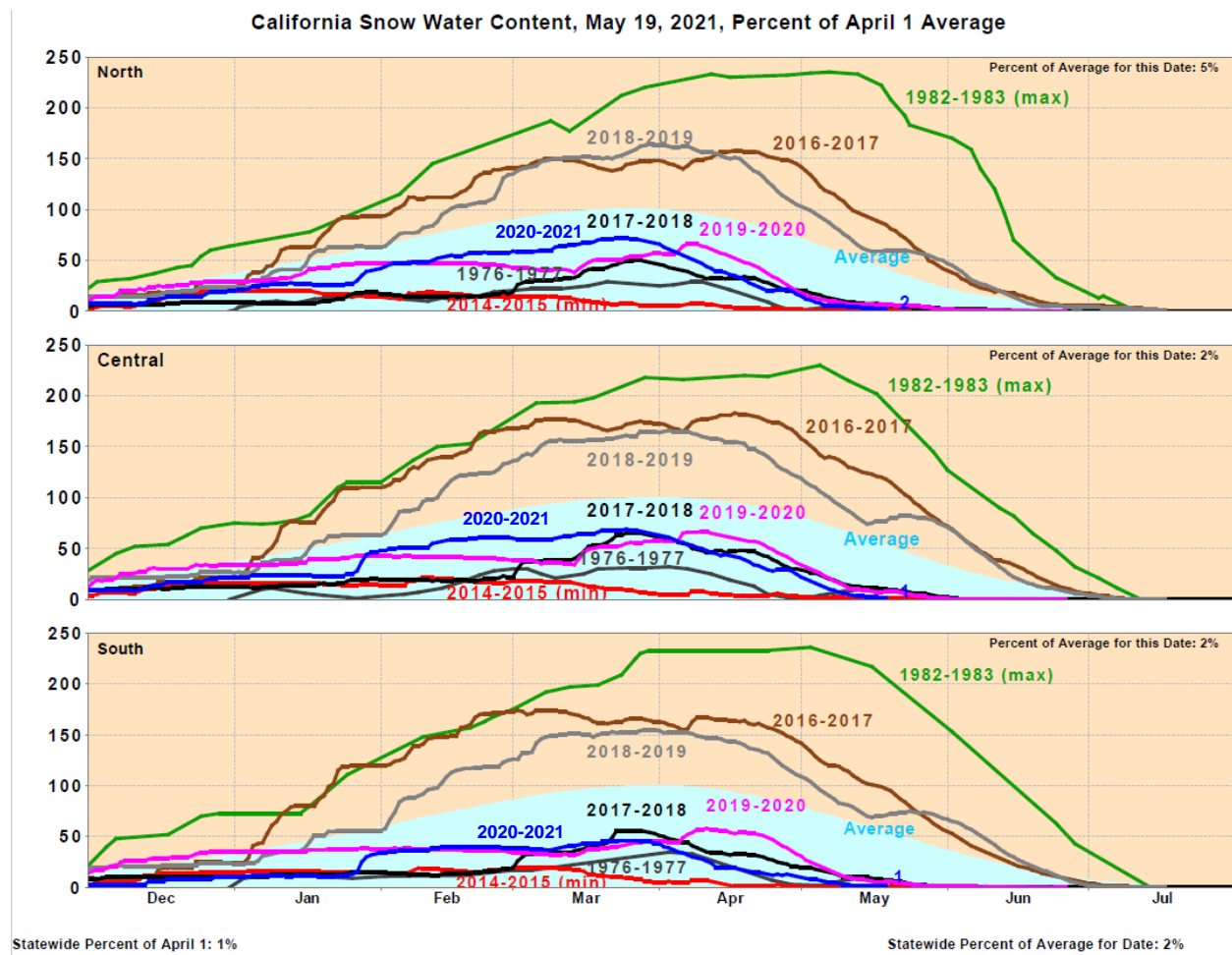


Figure 2. Daily Regional Snowpack Plots from Snow Sensors in California  
 Source: [https://cdec.water.ca.gov/reportapp/javareports?name=PLOT\\_SWC.pdf](https://cdec.water.ca.gov/reportapp/javareports?name=PLOT_SWC.pdf), accessed May 19, 2021.

<sup>5</sup> California Data Exchange Center (CDEC) forecast records.  
<https://cdec.water.ca.gov/cgi-progs/products/210401SRWSI.pdf>;  
<https://cdec.water.ca.gov/cgi-progs/products/SRWSI.pdf>

### **2.2.2 Reservoir Storage Levels**

Water storage levels in many Project reservoirs are significantly lower than historic average conditions. Typically, snowmelt throughout the spring and summer provides inflows to streams and reservoirs for use during the dry summer and fall months. As discussed above, extremely low precipitation, lower than average snowpack volume, and lack of snowmelt runoff in the Northern Sierra has resulted in very low inflows to the reservoirs with a significant reduction in expected runoff of 685 TAF occurring from April to May. Figure 3 shows the storage levels of major reservoirs in California as of May 16, 2021. The storage levels of most reservoirs in the Central Valley are significantly below historical average, with storage conditions in Shasta, Oroville, and Folsom lower than they were at this time in 2014 and 2015. Folsom Reservoir, which provides municipal water supply for cities in the Sacramento area, is particularly low at approximately 363,000 acre-feet (May 28, 2021), less than 50 percent of historical average, 40 percent of total capacity, and close to 200,000 thousand acre-feet lower volume than end of April 2014 (547,000) and end of April 2015 (576,000 acre-feet). Reservoir storage in Shasta, Oroville, and Folsom Reservoirs is also particularly important for providing cold water to protect fish habitat for threatened and endangered and commercially, recreationally, and culturally important salmon runs.

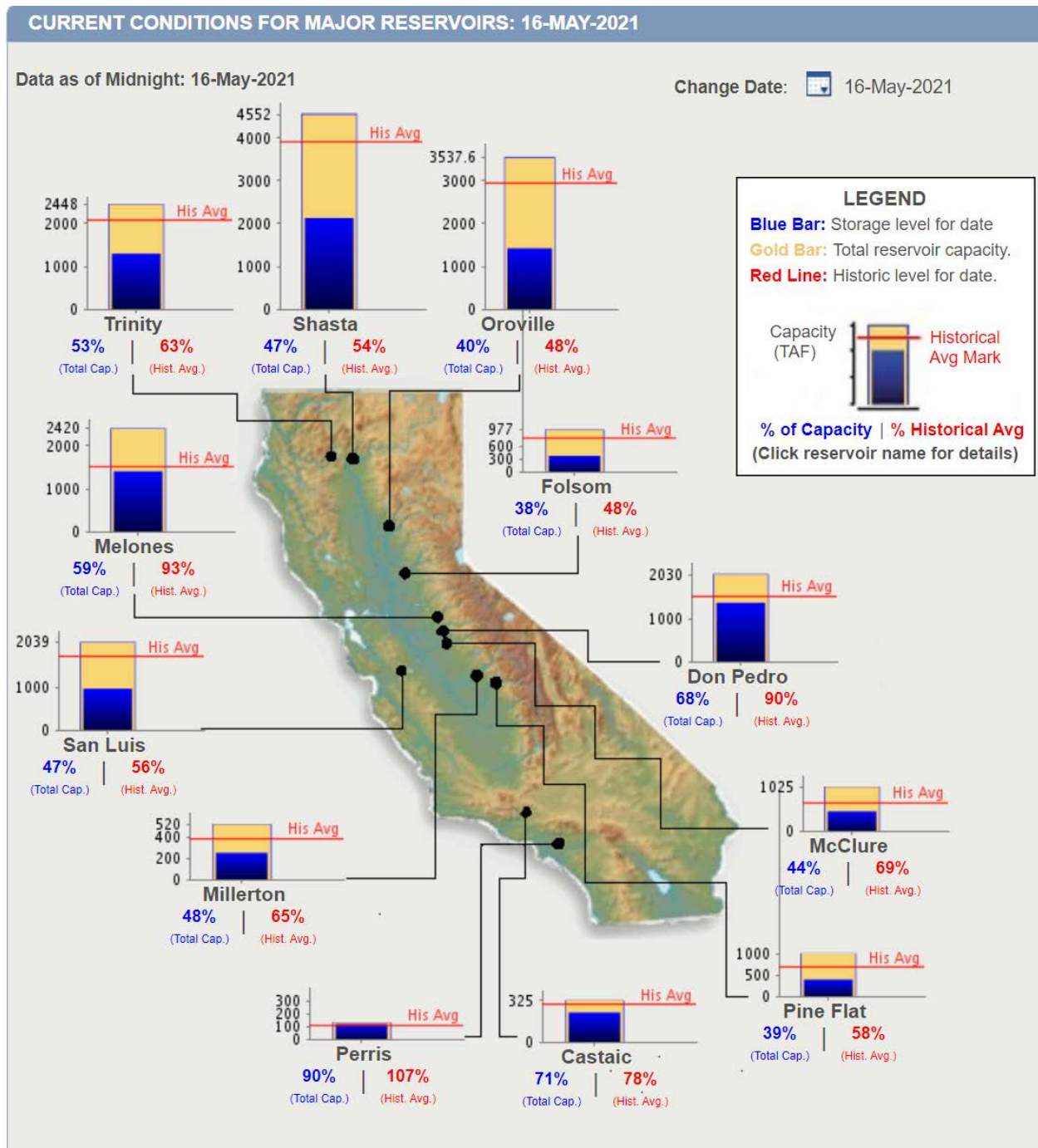


Figure 3. Major Reservoir Conditions in California as of May 16, 2021

Source: <https://cdec.water.ca.gov/reportapp/javareports?name=rescond.pdf>, accessed May 16, 2021

Storage levels in Shasta Reservoir affect Reclamation’s ability to control temperatures in the Sacramento River. Pursuant to State Water Board Order 90-5, Reclamation is required to provide for temperature management on the Sacramento River for the protection of fish species, including endangered winter-run Chinook salmon. Order 90-5

requires Reclamation to submit a plan for maintaining temperatures on the Sacramento River. Reclamation submitted a Draft Sacramento River TMP<sup>6</sup> on May 5, 2021, reflecting the April hydrologic conditions. Even under those conditions, reservoir storage conditions in Shasta Reservoir were projected to be very low, presenting significant concerns for temperature management. With the significant reductions in inflows identified later in May, these concerns intensified for Shasta Reservoir, as well as Folsom and Oroville, and the Petitioners worked to identify actions to address the shortages in expected reservoir inflow. Amongst the actions that the Petitioners identified to address the shortfall were the reductions in required outflows and salinity levels that are part of the TUCP that is the subject of this Order. The final TMP submitted by Reclamation on May 27, 2021, reflects the actions proposed to be taken to address the shortfalls in supplies and make modest improvements to storage conditions, including projected savings from the subject TUCP.

### **2.2.3 Water Supply Allocations**

Project water allocations are determined based on the specific provisions of each contract. More junior contracts, including SWP Table A and CVP service contracts, can be subject to significant reductions under their contracts down to zero in years such as this year. SWP long-term Table A agricultural and Municipal and Industrial (M&I) contractors are generally allocated the same percentages since most SWP Table A contractors have significant reservoir storage of their own that can be relied upon in drier years. CVP agricultural and M&I contractors can receive different allocations since CVP M&I service contractors may not have their own reservoir storage facilities that can be relied upon. More senior Project settlement type contractors that also have their own water rights and water right claims have specific shortage provisions that generally result in much higher allocations to those users in drier conditions than junior contractors.

In December 2020, DWR announced a 10 percent allocation to the 29 long-term SWP Table A contractors.<sup>7</sup> As dry conditions continued for a second consecutive year, DWR announced, on March 23, 2021, a reduction to its initial SWP allocation from 10 percent to 5 percent of the long-term SWP contractors' requested supplies for Water Year 2021. According to DWR, of this amount, only a relatively small amount of supplies for North and South Bay M&I users is not already in storage in San Luis Reservoir.

DWR also operates Lake Oroville to deliver water to Feather River Contractors pursuant to settlement agreements, post-1914 appropriated water rights, and riparian and pre-1914 water right claims. The December announcement did not identify an initial SWP delivery to Feather River contractors, however DWR announced it will reduce

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<sup>6</sup> State Water Board, Sacramento River Temperature and Order 90-5 Compliance. [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/sacramento\\_river/docs/2021/20210504\\_Letter\\_to\\_SWRCB\\_from\\_White,\\_Kristin\\_RE\\_DRAFT\\_Sacramento\\_River\\_Temperature\\_Management\\_PlanSigned.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2021/20210504_Letter_to_SWRCB_from_White,_Kristin_RE_DRAFT_Sacramento_River_Temperature_Management_PlanSigned.pdf).

<sup>7</sup> Department of Water Resources news releases. <https://water.ca.gov/News/News-Releases/2020/Dec-20/DWR-Releases-Initial-State-Water-Project-Allocation>.

allocations to Feather River contractors to the lowest amount allowed in the contracts, which is approximately 50 percent of the maximum contract amount minus a volume that is not subject to reduction.<sup>8</sup> Total volume of expected deliveries to long-term SWP contractors in 2021 is 210,266 acre-feet.<sup>9</sup> Total volume of SWP deliveries to Feather River contractors is expected to be approximately 586,000 acre-feet.

On February 23, 2021, Reclamation announced the initial 2021 water supply allocation for CVP contractors.<sup>10</sup> Agricultural water service contractors north-of-Delta and south-of-the Delta were allocated 5 percent of their contract supply. M&I water service contractors north-of-Delta (including American River and In-Delta Contractors) and south-of-the Delta and were allocated 55 percent of their historic use or public health and safety needs, whichever is greater. Sacramento River Settlement Contractors and San Joaquin River Exchange Contractors were allocated 75 percent of their contract supply, per contract terms that limit shortages in dry years. Eastside water service contractors (Central San Joaquin Water Conservation District and Stockton East Water District) were allocated 100 percent of their contract total. Wildlife refuges (Level 2) north- and south-of-Delta were allocated 75 percent of their contract supply. Friant Class 1 allocations were identified at 20 percent and Class 2 at 0 percent.

On May 5, 2021, Reclamation reduced allocations to the agricultural water service contractors both north- and south-of-Delta to 0 percent of their contract supply. On May 26, 2021, Reclamation reduced north-of-Delta and south-of-Delta M&I water service contractors to 25 percent of historic use or health and safety levels. As of May 2021, total CVP allocations are 3.7 million acre-feet including: 328,885 acre-feet to North-of-Delta M&I, In-Delta M&I, and north-of-Delta wildlife refuges; 237,784 acre-feet to south-of-Delta M&I and wildlife refuges; 1,586,785 acre-feet to Sacramento River settlement contractors (however, these contractors have identified that they plan to divert 10 percent less than their contract amount – 65 percent vs. the 75 percent provided under the contract); 656,717 acres-feet to San Joaquin River exchange contractors; 155,000 acre-feet to New Melones East Side; 600,000 acre-feet to East-Side Water Rights, and 208,000 acre-feet to Friant.<sup>11</sup>

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<sup>8</sup> May 18, 2021 State Water Board Meeting, Project Operations Update, Drought Response, discussion beginning at approximately 5:23:30. (Available at: <https://youtu.be/aIEfAhmRXWo>)

<sup>9</sup> Department of Water Resources Notice to State Water Project Contractors. [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Management/SWP-Water-Contractors/Files/NTC\\_21-06\\_032321.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Management/SWP-Water-Contractors/Files/NTC_21-06_032321.pdf), accessed May 18, 2021

<sup>10</sup> U.S. Bureau of Reclamation news releases. <https://www.usbr.gov/newsroom/newsroomold/newsrelease/detail.cfm?RecordID=73745>

<sup>11</sup> Reclamation (2021) Summary of Water Supply Allocations [https://www.usbr.gov/mp/cvo/vungvari/water\\_allocations\\_historical.pdf](https://www.usbr.gov/mp/cvo/vungvari/water_allocations_historical.pdf)



### **2.3 Drought Contingency Plan for CDFW ITP**

DWR, in coordination with Reclamation, is required to develop and implement a Drought Contingency Plan (DCP) when a dry or critical water year is followed by dry conditions the next year, pursuant to the 2020 CDFW and Wildlife Incidental Take Permit for Operation of the SWP (CDFW ITP) Condition 8.21.<sup>12</sup> Water year 2020 was an exceptionally dry year, and dry conditions continued through the month of January 2021. DWR submitted the initial DCP to CDFW in February, with subsequent updates in March, April, and May. The DCP will continue to be updated for the remainder of the water year. The purpose of the DCP is to outline the areas of potential concern given the observed dry hydrology in 2021.

The February 2021 DCP did not propose any specific drought actions for the water year, citing anticipated winter storms.<sup>13</sup> The March 2021 DCP update on the hydrological conditions identified continued dry conditions for the water year and identified drought actions that the Petitioners were considering and evaluating to improve temperature management and reservoir carryover storage.<sup>14</sup> As hydrological conditions continued to worsen in April, the April 2021 DCP update identified drought actions that the Petitioners had implemented, including, but not limited to, noticing reduced allocations to contractors and warm water power bypasses at reservoirs. DWR also included an Interagency Ecological Program Drought Ecosystem Monitoring and Synthesis Plan to evaluate the environmental impacts of drought and drought actions. The May 2021 DCP update outlines additional actions the Petitioners are taking to address the shortfalls in supplies, including this TUCP.

### **2.4 Substance of the Temporary, Urgency Change Petition**

The Petitioners request the following temporary changes to requirements that were imposed pursuant to D-1641 for the period June 1 through August 15:

- For June 1 – June 30, reduce the required minimum 14-day running average Delta outflow from 4,000 cfs to 3,000 cfs.
- For July 1 – July 31, reduce the required minimum monthly average Delta outflow from 4,000 cfs to 3,000 cfs, with a seven-day running average of no less than 2,000 cfs;
- For June 1 through July 31, limit the combined maximum export rate to no greater than 1,500 cfs when Delta outflow is below 4,000 cfs, and allow the 1,500

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<sup>12</sup> Available from the Department of Water Resources website at <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/ITP-for-Long-Term-SWP-Operations.pdf>.

<sup>13</sup> Available from the Department of Water Resources website at <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/ITP/Final-SWP-and-CVP-DCP-212021ay11.pdf>.

<sup>14</sup> Available from the Department of Water Resources website at <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/ITP/CVP-and-SWP-Drought-PlanFinal32221ay11.pdf>.

cfs limit to be exceeded when the Petitioners are meeting Delta outflow requirements pursuant to D-1641 or for moving transfer water; and

- From June 1 through August 15, move the compliance point for the Western Delta agricultural salinity requirement from Emmaton on the Sacramento River to Threemile Slough on the Sacramento River.

## **2.5 Status of Fish Species and Biological Reviews**

Extremely dry hydrologic conditions in 2020 and 2021, in combination with frequent droughts, long term flow and habitat degradation, and other chronic stressors have contributed to persistently low abundance of native and migratory fish populations. The TUCP changes are also expected to have some effects on fish and wildlife; however potential negative effects to fish populations resulting from TUCP changes may be minimized by the fact that most of the changes would occur after many native fish species have migrated out of the Delta to the Bay and ocean. Native fish that remain in the Delta during the effective period of this TUCP from June through August 15 are likely to experience negative effects associated with reductions in Delta outflow. TUCP actions are also expected to result in some benefits for fish species on tributaries by conserving reservoir storage and cold water resources for use later in the year, maintaining salinity control in the Delta, and minimizing negative effects associated with entrainment and salvage by limiting export pumping.

As an attachment to the TUCP, the Petitioners submitted a Biological Review evaluating the effects of the changes on fish species listed as threatened or endangered under the ESA and CESA).<sup>15</sup> Listed species can be indicators of conditions for aquatic species in general in the Delta watershed. Some additional information about other native species was provided in the Biological Review. As required by Water Code section 1437, the State Water Board consulted with CDFW regarding potential effects to fish and wildlife resources that may result from the TUCP actions. The CDFW consultation focused on species listed as endangered or threatened under CESA and known to occur in portions of the San Francisco Bay and Delta.<sup>16</sup> USFWS and NMFS also submitted a joint letter to Reclamation indicating that as a result of the dry hydrology and reduction in forecasted runoff, the TUCP action is necessary to conserve water in upstream reservoirs to reduce temperature impacts to winter-run and spring-run Chinook salmon and to maintain some system flexibility for managing fish protections should next year also be dry. The letter also indicates that the TUCP is consistent with the Drought and Dry Year Action planning process in Reclamation's Proposed Action included in their

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<sup>15</sup> State Water Board, State Water Project and Central Valley Project Temporary Urgency Change Petition.  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2021/20210517\\_dwr\\_usbr\\_tucp.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2021/20210517_dwr_usbr_tucp.pdf).

<sup>16</sup> CDFW May 24, 2021 Letter to State Water Board regarding 2021 Temporary Urgency Change Petition Regarding Delta Water Quality; available at  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2021/20210524\\_tucp\\_letter.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2021/20210524_tucp_letter.pdf)

2019 Biological Assessment and confirmed in the Biological Opinions issued by USFWS and NMFS on October 21, 2019.

Native aquatic species have not fully recovered from the recent severe droughts and the population effects of chronic stressors. Native fish populations of particular concern include Delta smelt; longfin smelt; winter-run, spring-run, and fall-run Chinook salmon; Central Valley steelhead; and green sturgeon, as well as other native aquatic species. For example, catch of Delta smelt, one of the most impacted fish populations, has dropped precipitously from 418 fish in water year 2013 to 8 fish in water year 2021 to date.<sup>17</sup> Similar trends are observed in longfin smelt. In 2014 and 2015, only 5 percent of in-river winter-run Chinook salmon juveniles emigrated past Red Bluff, with similar survival estimated for fall-run Chinook salmon juveniles and current population estimates remain well below pre-2014 estimates for fall-run Chinook salmon.

Following is a summary of the potential effects of the TUCP changes, including information from the Biological Review that accompanied the TUCP and the CDFW consultation (May 24, 2021). The potential impacts of the TUCP are considered in the context of the existing fish population status and the stressors that cumulatively prevent recovery in non-drought years.

### **2.5.1 Delta Smelt**

Delta smelt are listed as threatened under both the ESA and CESA, relative abundance has been persistently low since prior to the last drought, and the population is at high risk of extinction. Delta smelt have a strong positive relationship with a specific location in the low salinity zone (LSZ), referred to as X2, where the average daily salinity at the bottom of the water column measures 2 practical salinity units (psu). By local convention, X2 is described in terms of distance in kilometers from the 2 psu isohaline to the Golden Gate Bridge. Ecologically, X2 serves as an indicator of habitat suitability for many San Francisco Estuary organisms and is associated with variance in abundance of diverse components of the ecosystem.<sup>18</sup> The LSZ expands and moves downstream when river flows into the estuary are high. Similarly, it contracts and moves upstream when river flows are low. At all times of year, the location of X2 influences both the area and quality of habitat available for Delta smelt to successfully complete their life cycle. In general, Delta smelt habitat quality and surface area are greater when X2 is located in Suisun Bay. Both habitat quality and quantity diminish the more frequently and further the LSZ moves upstream, toward the confluence of the

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<sup>17</sup> USFWS, Lodi Fish and Wildlife Office, Delta Juvenile Fish Monitoring Program. [https://www.fws.gov/loidi/juvenile\\_fish\\_monitoring\\_program/](https://www.fws.gov/loidi/juvenile_fish_monitoring_program/).

<sup>18</sup> Jassby, A. D., W. J. Kimmerer, S. G. Monismith, C. Armor, J. E. Cloern, T. M. Powell, J. R. Schubel, and T. J. Vendlinski. 1995. Isohaline position as a habitat indicator for estuarine populations. *Ecological Applications* 5:272–289.



Sacramento and San Joaquin rivers,<sup>19</sup> thus further constraining the habitat for juvenile Delta smelt closer to the upstream spawning areas in the lower Sacramento River, San Joaquin River, and the Cache Slough Complex/Sacramento Deep Water Ship Channel (SDWSC). The proposed TUCP is expected to shift X2 upstream by up to an additional 2 km further than would have occurred without a change in Delta outflow in June and July.

Delta smelt distributions are correlated with water temperatures in addition to the LSZ. Delta smelt are sensitive to temperatures approaching 25° Celsius (C) and above.<sup>20</sup> Historic water temperature data (1975-2012) show that Suisun Bay and San Pablo Bay maintain cooler temperatures (average 19-21°C) than the western Delta (average 21-23°C). Delta smelt tend to occupy habitat close to their thermal maximum and may not be able to transition to and occupy the cooler, higher salinity habitat in Suisun Bay and San Pablo Bay.<sup>21</sup> In general, the lower the Delta outflow, the more eastward position for the LSZ, and the higher exposure to warmer water temperatures. Turbidity is also an important driver for Delta smelt summer distribution.<sup>22</sup> Turbidity is hypothesized to increase survival of Delta smelt and reduce predation risk. Studies have shown that turbidity is higher in Suisun Bay and Marsh relative to upstream locations because dynamic variables, such as wind, interact with static variables, such as bathymetric complexity and increased erodible sediment, found in the Suisun Region. A more eastward position of the LSZ will expose Delta smelt to less turbid waters and increase vulnerability to predation.

The majority of the Delta smelt population is expected to be centered around the low salinity zone, near X2, between June and August. Due to limited ability to detect Delta smelt in monitoring surveys, habitat and historical data are used to estimate the location of Delta smelt in the estuary for this summer. Delta smelt spawning is likely to have peaked in March or April based on historic timing. As water temperatures rise, larvae will start to recruit to juvenile size and may begin to disperse further throughout the

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<sup>19</sup> Feyrer, F. M. L. Nobriga, and T. R. Sommer. 2007. Multi-decadal trends for three declining fish species: habitat patterns and mechanisms in the San Francisco Estuary, California, USA. *Canadian Journal of Fisheries and Aquatic Sciences* 64:723–734.

<sup>20</sup> Swanson, C., T. Reid, P. S. Young, and J. J. Cech Jr. 2000. Comparative environmental tolerances of threatened delta smelt (*Hypomesus transpacificus*) and introduced wakasagi (*H. nipponensis*) in an altered California estuary. *Oecologia* 123:384–390.

<sup>21</sup> CDFW May 24, 2021 Letter to State Water Board regarding 2021 Temporary Urgency Change Petition Regarding Delta Water Quality; available at [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2021/20210524\\_tucp\\_letter.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2021/20210524_tucp_letter.pdf)

<sup>22</sup> Interagency Ecological Program, Management, Analysis and Synthesis Team (IEP MAST). 2015. An updated conceptual model of Delta smelt biology: our evolving understanding of estuarine fish. Technical Report 90, January 2015, prepared for the San Francisco Bay/Delta Estuary.

system. Juvenile surveys report presence in the SDWSC and the lower Sacramento River regions.<sup>23</sup> A smaller portion of the population is expected to be located in the freshwater North Delta, the Cache Slough Complex, and the SDWSC between June and August. These locations may serve as cold water refugia during high summer temperatures provided that lethal temperature thresholds are not reached.

The magnitude of potential impacts of the TUCP on Delta smelt are uncertain; however, they are considered in the context of the current population status of Delta smelt. The fall midwater trawl abundance index was zero in 2020 for the third year in a row, suggesting a very low adult stock available to produce the next generation of Delta smelt. The reduction in Delta outflow proposed in the TUCP may shift the LSZ and X2 up to 2km eastward and may expose a significant portion of the juvenile Delta smelt to warmer water temperatures, reduced bathymetric complexity, and decreased turbidity. A smaller portion of the population may be able to reside in thermal refugia in North Delta freshwater habitats or more saline habitat in Suisun Bay to reduce these effects, but it is not clear how long that cool water refugia will be available this summer. The effects of reduced Delta outflow are expected to negatively impact survival of juvenile Delta smelt June through August. Delta smelt are not expected to be distributed in the central and south Delta and salvage effects associated with the TUCP are not expected. Reductions in Delta outflow combined with export restrictions are expected to preserve upstream storage and cold water resources which will be important for ecosystem protection later in the year, particularly salinity control in the Delta, and in the event that 2022 is another dry year.

### **2.5.2 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 fourth lowest Fall Midwater Trawl survey index in 2020.<sup>24</sup> Similar low indices are expected this fall. Based upon the most recent 20mm survey data,<sup>25</sup> juvenile longfin smelt appear to be distributed in Suisun Marsh, west of the Delta near the confluence, Montezuma Slough, the lower Sacramento River, the lower San Joaquin River, and the SDWSC. Longfin smelt tend to migrate seaward with most having dispersed into marine environments during summer. Some individuals will rear in San Pablo Bay and Suisun Bay through fall.

The TUCP changes in June and July are expected to shift the LSZ upstream by up to 2 km and may further reduce food availability for longfin smelt rearing in Suisun Bay. The abundance of an important prey species, *P. forbesi*, in the LSZ is subsidized by

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<sup>23</sup> The fourth 20mm Survey sampled 1 larval Delta smelt on May 6, 2021, in the SDWSC. The EDSM surveys have sampled a total of 8 Delta smelt, 7 in the SDWSC (1 on 4/12, 1 on 4/13, 2 on 4/27 and 3 on 5/4) and 1 in the Lower Sacramento River on 5/6.

<sup>24</sup> California Department of Fish and Wildlife, Fall Midwater Trawl. <https://wildlife.ca.gov/Conservation/Delta/Fall-Midwater-Trawl>.

<sup>25</sup> California Department of Fish and Wildlife, 20mm survey. <https://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm>.

freshwater inflows from marsh areas into the Delta. This subsidy is important to offset the loss of local zooplankton production caused by feeding from the overbite clam. As inflows are reduced, this subsidized food source and food availability for longfin smelt is expected to decrease to some degree.

Given the limited distribution of larvae and juveniles in the central and south Delta and the relatively low levels of planned exports, the Biological Review finds that the proposed changes are not expected to substantially raise the entrainment risk of the longfin smelt population. While larvae in southern areas will be at risk of entrainment during operations due to their proximity to the export facilities, the minimum export levels should result in a low level of risk. In addition, only a small portion of the population is thought to be in the south Delta (less than 1.0 percent of the total larval catch). However, potential exists for longfin smelt to migrate into the south Delta toward the end of the period of these changes.

The Biological Review indicates that the proposed changes are not expected to result in a substantial degradation of rearing habitat for longfin smelt over conditions that would be experienced in a dry year. The Biological Review finds that reduction in outflow due to the proposed changes may have some negative impact on longfin smelt spawning and recruitment, though this effect is hard to quantify given the already poor environmental conditions due to the drought.

The potential impacts to longfin smelt abundance resulting from the TUCP are uncertain; however, they should be considered in the context of the longfin smelt population leading into the present drought cycle. Longfin smelt abundance has not recovered from the effects of prior droughts and chronic stressors that prevent population recovery. The TUCP changes in June may result in negative effects to longfin smelt abundance based on the observed relationship between January through June outflow and abundance. Reductions in outflow will shift low salinity habitat upstream which will reduce the quality and quantity of habitat and limit access to food subsidies from marsh areas. The reduction in Delta outflow on longfin smelt may have a negative effect, of uncertain magnitude, to a vulnerable population that is at high risk of extinction. However, the potential negative effects of reducing outflow occur in only one month during the period from January through June, which is the time period of strongest relationship between outflow and longfin smelt abundance. Exports are also limited by the TUCP, which will minimize entrainment risk of longfin smelt. Reductions in Delta outflow combined with export restrictions are expected to preserve upstream storage, which will be important for ecosystem protection, including salinity control in the Delta later in the year and in the event that 2022 is another dry year.

### **2.5.3 Estuarine Habitat and Species**

The Biological Review focused on species listed under ESA and CESA, but the proposed action is also likely to have adverse effects on other beneficial uses protected under D-1641. In particular, the Delta outflow objectives in Tables 3 and 4 of D-1641 are designed to protect the estuarine ecosystem in order to provide habitat for several species of pelagic fish and crustaceans whose populations show strong positive relationships to Delta outflow. Many of these species have undergone population

declines over the history of water development in the Delta. As discussed above for Delta smelt, decreasing Delta outflow constrains habitat by moving X2 and the LSZ inland from the shallow, more favorable habitats of Suisun Bay to the deeper, channelized, and less hospitable habitats of the lower Sacramento and San Joaquin Rivers and their confluence. This reduction in habitat quantity and quality will also likely result in lower survival and recruitment of several other estuarine dependent species than would have occurred without a reduction in outflow. Similar to the longfin smelt review, reductions in Delta outflow combined with export restrictions are expected to preserve upstream storage, which will be important for ecosystem protection, including salinity control in the Delta later in the year and in the event that 2022 is another dry year.

#### **2.5.4 Winter-Run Chinook Salmon**

Winter-run Chinook salmon was listed as endangered under CESA in 1989 and listed as endangered under the ESA in 1994. The federal listing includes both natural and artificially propagated stocks. Juvenile survival and adult escapement continued to decline after ESA listing. Adult escapement has been persistently low since 2006.<sup>26</sup>

The endangered winter-run Chinook salmon is of particular concern during drought years. Prior to the summer spawning period for winter-run Chinook salmon, adults migrate through the Delta and hold in the upper Sacramento River below Keswick Dam until they are ready to initiate spawning, with the majority of spawning typically occurring between June and July upstream of Clear Creek. Conditions in the Delta would likely be suboptimal (20–21°C) and in the range of potential mortality (>21–24°C) during the month of June, presenting a potential fish passage barrier to late migrating winter-run Chinook salmon adults. After spawning, the fertilized eggs require cold water to ensure their proper development (temperatures above 53.5° Fahrenheit being less than optimal). It is important to provide appropriate temperature conditions during the egg development period, typically late May through early fall, because immobile eggs are not able to relocate and seek thermal refugia as fry and parr are able to do.

Juvenile winter-run Chinook salmon have experienced two consecutive years of poor outmigrant survival due to complications of thiamine deficiency and poor instream survival on the Sacramento River and through the Delta. Chinook salmon in the Central Valley typically express a three-year cohort cycle. Poor survival for a third consecutive year can have population level negative effects and push the population towards extirpation of naturally produced fish. High temperatures early in the season and an ultimate loss of temperature control several weeks before the end of the egg incubation life stage resulted in almost total mortality to the 2014 and 2015 winter-run brood year.

Temperature management will be difficult again this year. This is of particular concern given winter-run Chinook salmon's endangered status and extremely limited distribution,

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<sup>26</sup> CDFW. 2020. Fisheries Branch Anadromous Assessment. California Central Valley Sacramento and San Joaquin River Systems Chinook Salmon Escapement: Hatcheries and Natural Areas. GrandTab. Compiled 5/22/2020 by Jason Azat.

which reduces this population's ability to withstand environmental perturbations, especially considering the rapid sequence of prolonged drought conditions. The proposed TUCP changes combined with commitments to Shasta reservoir storage in the 2021 TMP, pursuant to 90-5, should improve conditions for winter-run Chinook salmon this summer and early fall, by storing water in Shasta Reservoir that would have been used to meet Delta outflow. This additional cold water will be available for use during the spawning and egg incubation period. In addition, the water conserved in storage will help to improve carryover storage conditions next year in the event of extended dry conditions. In the event of wetter conditions, this Order requires the Petitioners to evaluate providing pulse flows above D-1641 requirements that could benefit salmon runs on the Sacramento River and improve Delta conditions for various fish species.

### **2.5.5 Spring-Run Chinook Salmon**

Central Valley spring-run Chinook salmon were listed as threatened under the ESA in 1999. The listing was reaffirmed in 2005 and expanded to include the Feather River hatchery stock. Spring-run Chinook salmon were listed as threatened in 1999 under CESA. Escapement of Central Valley spring-run Chinook salmon has remained persistently low since 2012.<sup>27</sup>

Spring-run Chinook salmon adults returning to the upper Sacramento River system in 2014 and 2015 also experienced significant impacts due to drought conditions. Concerns for spring-run this year are similar to those for winter-run. While spring-run have greater distribution, conditions on those streams are also expected to be poor due to the drought. On May 18, 2021, the interagency Salmon Monitoring Team estimated that 55-70 percent of the brood year 2020 young-of-year spring-run Chinook salmon have exited the Delta. By June 1, it is expected that most juveniles will have migrated west of the Delta, minimizing the negative impact of reducing Delta outflow. Young-of-year spring-run Chinook salmon remaining in the Delta in June and adult spring-run Chinook salmon in the Delta from June through July may experience negative impacts associated with reduced Delta outflow; however, the conservation of storage expected as a result of the changes in the TUCP is expected to benefit spring-run later this year by protecting cold water that can be used for temperature control this year and providing options for improving habitat conditions in 2022 as discussed above for winter-run Chinook salmon.

### **2.5.6 Fall-Run Chinook Salmon**

Impacts to other anadromous species, including fall-run Chinook salmon, are also expected as a result of the drought. These impacts could result in significant impacts to the commercial and recreation fishing industry and concerns related to increased risks of extirpation and possibly extinction if poor conditions persist. Fall-run Chinook salmon are a primary prey base for Southern Resident Killer whales. Accordingly, reductions in

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<sup>27</sup> *Ibid.*

fall-run Chinook salmon may also negatively impact food availability and survival of Southern Resident Killer whales.

Adult fall-run Chinook salmon typically migrate into natal rivers from September to December, with peak migration typically occurring in November. Spawning may occur as early as November when temperatures in the rivers are lower than 55 degrees Fahrenheit. Egg incubation also may occur in November but can vary depending on water temperatures and timing of spawning. Optimal water temperatures for egg incubation range from 41 to 53.5 degrees Fahrenheit. Eggs that incubate at temperatures higher than 60 degrees Fahrenheit and lower than 38 degrees Fahrenheit suffer high mortality rates. The proposed changes are expected to improve conditions for fall-run Chinook salmon to some degree by conserving water in Project reservoirs that may be needed for temperature control in the fall to protect adult fall-run Chinook salmon prior to and during spawning.

### **2.5.7 Steelhead**

Steelhead have also likely been affected by long-term stressors and recent drought cycles, but given the difficulty in sampling for these fish it is not possible to determine exactly how the species has been affected. Adult steelhead abundance is not estimated in the mainstem of the Sacramento River or any waterways of the Central Valley. The drought conditions are causing increased stress to steelhead populations (with or without water project operations) from low flows causing reduced rearing and migratory habitat, increased water temperatures affecting survival, and likely higher than normal predation of juvenile steelhead. The changes proposed in the TUCP will conserve Project storage, which will mitigate these effects to some extent. Regardless of the changes, steelhead survival will likely be low in all tributaries and migratory pathways and is likely to result in a smaller returning year class of steelhead emigrating this year.

### **2.5.8 Green Sturgeon**

Information on green sturgeon is extremely limited. Adult green sturgeon may be present in the Delta from March to September, with the principal occurrence in upstream spawning areas in the Sacramento River occurring from mid-April to mid-June. Juvenile green sturgeon are routinely collected at the Projects salvage facilities throughout the year. Salvage records indicate that sub-adult green sturgeon may be present in the Delta during any month of the year in low numbers but are most commonly salvaged in July and August. The proposed changes are expected to provide similar benefits for green sturgeon as described above for salmon and steelhead related to improved storage and cold water resources.

## **2.6 Emergency Drought Barrier**

On May 14, 2021 DWR applied for water quality certification to install an emergency drought barrier at West False River to help preserve water quality in the Delta.<sup>28</sup> The

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<sup>28</sup> State Water Board, Water Quality Certification Program Public Notices. [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/water\\_quality\\_cert/docs/emergency\\_drought\\_barriers/edb\\_2021\\_public\\_notice.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/docs/emergency_drought_barriers/edb_2021_public_notice.pdf)

temporary rock barrier will reduce the intrusion of high-salinity water into the central and south Delta, help protect water supplies used by people who live in the Delta and in Contra Costa, Alameda, and Santa Clara counties, and allow water managers to retain more water in upstream reservoirs for release later in the year. The State Water Board evaluated the temporary rock barrier's potential impacts to water quality and beneficial uses of water and issued a water quality certification on May 28, 2021. Although the emergency drought barrier certification action is a separate process from the changes approved by this Order, together both actions will affect water quality and flows in the Delta and are related to one another. The changes approved in this Order have taken into consideration the combined impacts of both actions.

### **3.0 APPLICABILITY OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) AND WATER CODE 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.) Directive 11 of the Governor's May 10, 2021 Drought Proclamation and Executive Order waives CEQA and the regulations adopted to implement CEQA for the purposes of carrying out Directives 3, 4, 5, 6, 8 and 9. In addition, the Drought Proclamation suspends Water Code section 13247 as applied to actions taken pursuant to Directive 4. 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 water quality objectives as required by 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 State Water Board must promptly consider and may hold a hearing on any objection. (*Id.*, subd. (e).) State Water Board Resolution 2012-0029 delegated to the Board Members individually and to the Executive Director the authority to hold a hearing, if necessary, and act on a TUCP. (Resolution 2012-0029, ¶¶ 2.2, 4.4.1.)<sup>29</sup>

The Petitioners filed the TUCP on May 17, 2021, and the State Water Board issued notice of the TUCP the following day, May 18, 2021.<sup>30</sup> The State Water Board also posted the request on its website and notified persons on its email distribution lists of the request. Due to the urgent nature of the request, the State Water Board is issuing the Order at this time and has incorporated changes to the Order in response to comments received to date. However, the State Water Board is accepting comments on

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<sup>29</sup> The Deputy Director for Water Rights may act on a temporary urgency change petition if there are no objections to the petition.

or objections to the TUCP until noon on Friday, June 4, 2021, and will give prompt consideration to any such comments or objections, which may form the basis for future modifications of this Order.

## **5.0 REQUIRED FINDING 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 the 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 changes expire automatically 180 days after approval, unless they are revoked or an earlier expiration date is specified, but any monitoring, reporting, or mitigation requirements remain in effect until satisfied. (*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**

As summarized and described in the introduction, this Order conditionally approves changes to Delta outflows and Western Delta agricultural salinity requirements on the Sacramento River at Emmaton. This Order 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; (3) consistent with the public trust doctrine; and (4) in the public interest. Following is a summary of the changes to D-1641 requirements conditionally approved in this Order:

- Change the minimum NDOI requirement in June and July from 4,000 cfs to 3,000 cfs. June would be measured as a 14-day running average, and July would be



measured as a monthly average. The 7-day running average shall be no less than 1,000 cfs below 3,000 cfs;

- From June 1 through August 15, 2021, change the Western Delta agricultural salinity requirement compliance location on the Sacramento River at Emmaton to Threemile Slough on the Sacramento River.

From June 1 through August 15, 2021, the combined maximum exports at SWP Banks Pumping Plant and the CVP Jones Pumping Plant, excluding transfers, shall be limited to pumping no greater than 1,500 cfs, as a 3-day running average. The State Water Board Executive Director may also direct lower exports as appropriate. Combined exports may be increased above 1,500 cfs when the Petitioners are in full compliance with D-1641 Delta outflow and Sacramento River at Emmaton salinity requirements, but exports are required to be limited to natural and abandoned flow. The Petitioners are required to consult on a regular basis with designated representatives of the State Water Board and the 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 meet health and safety requirements and not unreasonably affect fish, wildlife, and other instream uses of water.

This Order requires the Petitioners to 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 and to provide those records to the State Water Board and fisheries agencies monthly.

This Order also requires the Petitioners to submit updated monthly operations outlooks to the State Water Board and fisheries agencies and to post the outlooks on DWR's website. Information that is required to be included in the outlooks include, but are not limited to, inflows to and storage levels of Projects' reservoirs; Delta hydrology; water delivery volumes; and south-of-Delta water transfer volumes, transferees and transferors.

This Order requires the Petitioners to evaluate the possibility for dedicating a portion of the volume of water conserved by the changes approved in this Order to provide pulse flows or other improvements above and beyond D-1641 requirements in the next water year, to the extent feasible based on hydrologic conditions.

This Order requires the Petitioners to conduct monitoring, analyses, and modeling necessary to inform real-time operational decisions, assess drought emergency actions authorized by this order, and understand the effects of changes authorized by this Order in combination with other associated actions such as Sacramento River temperature management pursuant to State Water Board Order 90-5 and the emergency drought salinity barrier at False River. In addition, this Order requires completion of a special study that evaluates the effects of changes authorized by this Order in combination with other associated drought actions on harmful algal blooms and invasive aquatic weeds.

This Order requires that Reclamation implement the Sacramento River TMP as approved by the Executive Director, consistent with State Water Board Order 90-5.

This Order requires the Petitioners to prepare a report summarizing the constraints that exist on minimum export pumping levels including, but not limited to, infrastructure and safety thresholds for pump operations, minimum deliveries for health and safety, and an evaluation of opportunities to reduce exports.

This Order requires the Petitioners, in consultation with State Water Board and fisheries agencies, to develop an operational strategy for water year 2022, in the event that dry or critically dry hydrologic conditions occur next year.

This Order continues to reserve the Executive Director's or the State Water Board's authority to require modifications to the Order based on public or agency comments or objections or changed circumstances.

## **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 . . . ."

As discussed in section 2.2, California is in its second year of drought in a very dry sequence of years over the last two decades. The majority of reservoir levels are at critically low storage levels and will likely recede quickly due to reservoir releases for salinity control and minimum deliveries and lack of additional inflow this year. These conditions create significant concerns for health and safety water supplies, salinity control in the Delta, environmental water supplies, and water supplies for other uses. If dry conditions persist into next water year, these concerns will intensify significantly. These conditions create an urgent need to conserve water supplies.

Relevant to the issue of urgency, as well as the findings regarding unreasonable impacts on fish and wildlife and the public interest, are the water supply benefits that are expected as a result of the changes. The changes approved in this Order are expected to result in 60 - 120 TAF of water supply and storage benefits (see table below). The changes will improve the Projects' ability to meet various obligations this summer and fall. Specifically, on the Sacramento River, adequate storage must be maintained into the fall and into next year to control temperatures on the Sacramento River for salmon protection, as well as to provide supplies for salinity control, minimal environmental protections, and water supplies. Minimum storage levels in Folsom Reservoir are needed to meet minimum health and safety needs for communities in the Sacramento area and to provide some level of environmental protection. Likewise, minimum storage levels in Oroville Reservoir are needed for critical hydropower production, environmental protection, and water supplies. The water conservation resulting from modifications to D-1641 flow and water quality objectives in this Order are expected to improve reservoir storage conditions for these purposes. There will be impacts to fish and wildlife from the reduced flows and other changes. However, these effects will be offset to some extent by increasing cold water pool resources throughout the year and supplies for fisheries and other purposes. The increased storage will be realized in a

combination of Shasta, Oroville, and Folsom reservoirs, where it will mitigate to some extent the low storage conditions caused by the drought, and where it can be used for various purposes later, including salinity control, fisheries purposes, and water supplies.

The changes approved in this Order could result in the following reductions in flows and increases in water supplies and storage:

**Table 1. Reductions in Flows and Water Supply/Storage Savings Under the TUCP Order June Through August\***

| <b>D-1641 Requirements</b>     | <b>June</b>   | <b>July</b>   | <b>August 1-15</b> |
|--------------------------------|---------------|---------------|--------------------|
| Delta Outflows (cfs)           | 4,000         | 4,000         | 3,000              |
| Salinity Compliance Location   | Emmaton       | Emmaton       | Emmaton            |
| <b>TUCP Requirements (cfs)</b> | <b>June</b>   | <b>July</b>   | <b>August</b>      |
| Delta Outflows                 | 3,000         | 3,000         | 3,000              |
| Salinity Compliance Location   | Threemile Sl. | Threemile Sl. | Threemile Sl.      |
| <b>Maximum Savings (TAF)</b>   | <b>June</b>   | <b>July</b>   | <b>August</b>      |
| Delta Outflows                 | 59.4          | 61.4          | 0*                 |
|                                |               |               |                    |
| <b>Expected Savings (TAF)</b>  | <b>June</b>   | <b>July</b>   | <b>August</b>      |
| Delta Outflows*                | 50.5          | 30.7          | 0*                 |
|                                |               |               |                    |
| Total Expected Savings         | 50.5          | 30.7          | 0*                 |

\*Notes: Expected savings of Delta outflow are based on computed outflow reported in Appendix 3 of the TUCP. This includes June outflow of 3,150 cfs, July outflow of 3,500 cfs, and August outflow of 3,000 cfs. Appendix 3 does not identify water saving from changes to salinity requirements in August; however, it is not clear that this is actually the case.

Together, operations to meet unchanged Delta outflow and Emmaton salinity requirements could have a variety of effects depending how operations would be prioritized. It could significantly deplete storage or reduce deliveries, thus making those supplies unavailable for the remainder of the season for fisheries protection, control of Delta salinity, and water supplies. Reductions in supplies to water users upstream of the Delta would reduce the ability of those water users to provide critical water transfers during the drought, which would adversely affect south of Delta export users and potentially wildlife refuges. Reductions in surface water supplies would also place additional strain on already significantly depleted groundwater basins. As such, there is an urgent need for these changes.

In summary, in light of the severe magnitude of the drought, there is an urgent need for the proposed changes to address or help to minimize the significant impacts to water supplies that have occurred over the last two years, and to help address and avoid associated economic impacts, as well as impacts to fish, wildlife, and beneficial uses, 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, including stored water that is released for purposes of meeting water quality objectives. (See *id.* at pp. 738, 743, 771.) Similarly, water right holders only are entitled to the natural flows necessary to provide adequate water quality for their purposes of use; they are not entitled to have water released from upstream storage in order to provide better water quality than would exist under natural conditions, and they are not entitled to better water quality than necessary to allow them to use the water to which they are entitled. (See *Wright v. Best* (1942) 19 Cal.2d 368, 378-379; see also *Deetz v. Carter* (1965) 232 Cal.App.2d 851, 856.) Accordingly, legal users of water 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 Sacramento River salinity requirements, and adequate flows are expected to remain in the system to meet the demands of other lawful users of water. The Petitioners conducted salinity modeling for the changes that indicates that the change in the salinity compliance location from Emmaton to Threemile Slough may result in increases in salinity at various locations from Rio Vista on the lower Sacramento River to Chipps Island in the Delta from June 1 to August 15. However, the Projects are expected to continue to maintain significant releases of previously stored water to control salinity levels providing for improved conditions over conditions that would occur absent the Projects’ operations.

In addition, 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, or to meet any independent contractual obligations that the Petitioners may have. Further, this Order requires that the Petitioners bypass natural and abandoned flows when they are not meeting the Delta outflow or Sacramento River at Emmaton agricultural salinity requirement to prevent injury to other lawful users of water. Therefore, based on the information provided, and as conditioned herein, the proposed changes will not injure other users of water due to changes in water quality.

#### **5.4 No Unreasonable effect upon Fish and Wildlife, or Other Instream Beneficial Uses**

In determining whether the impacts of the proposed changes on fish and wildlife are reasonable, the short-term impacts to fish and wildlife must be weighed against the long-term impacts to all beneficial uses of water if the changes are not approved, including impacts to stored water needed for temperature control on the tributaries and salinity control in the Delta, health and safety water supplies, other fish and wildlife uses, and other water supply uses. Further, the effects that have occurred to the species over several years must be considered. Information previously submitted by the fisheries agencies in the 2014-2015 drought and Bay-Delta Plan updates maintains that insufficiencies in the quality and quantity of tributary and Delta flows have contributed to the decline of the Delta ecosystem including the abundance and distribution of species potentially impacted by the TUCP. Several processes to ameliorate the effects of these insufficiencies at the state, federal, and local levels include recent adoption of recovery plans, comprehensive review and update of the Bay-Delta Plan, drought contingency planning, as well as many other efforts.

As discussed above, historically low precipitation in 2021, low April snowpack, and higher than expected depletions will result in very low reservoir inflows the remainder of the year. The Projects are likely to release previously stored water to meet water quality and flow objectives which will deplete reservoir storage when it is already low in most reservoirs and lower than it was during the 2014-2015 drought in several reservoirs. These dry conditions are expected to adversely affect habitat conditions for various species and increase the difficulty of maintaining salinity control in the Delta.

While maintaining the D-1641 flow and water quality requirements would provide some short-term benefits to native and migratory fish species, the overriding effects of the drought and chronic stressors on these populations would persist. Further, releasing water from reservoirs to meet those requirements would reduce the storage available in Project reservoirs later in the year for cold water flows for fish; salinity control in the Delta; deliveries to agriculture, municipalities, wildlife refuges, and other users; and minimal water storage going into the next water year. As discussed above, of particular concern this year is ensuring that adequate water remains in storage in Shasta Reservoir to provide for temperature control on the Sacramento River throughout the temperature control season. Without these changes, it is more likely that Reclamation would not be able to maintain temperature control in accordance with a TMP while meeting water deliveries to settlement contractors, exchange contractors, municipal users, and wildlife refuges. Similarly, the TUCP changes are needed to support the ability to preserve stored water for supporting fishery resources dependent on other Project reservoirs, including Folsom and Oroville.

The potential negative impacts to fish and wildlife associated with the short-term reduction in Delta outflow are not unreasonable in the context of reduced Project allocations to contract minimums, and the need to conserve water in upstream reservoirs for use later in the year to support multiple beneficial uses, including fish and wildlife. In addition to temperature control, conserved stored water is also needed to

maintain salinity control in the Delta in order to protect water quality exported from the Delta and to support fish and wildlife in the approaching year, especially if drought conditions continue. Avoiding loss of salinity control is critically important for maintaining reasonable protection of agricultural, M&I, and fish and wildlife beneficial uses.

Increased water supplies available to users upstream of the Delta are also likely to benefit users south of the Delta who engage in transfers, which are expected to occur later this year. 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. Groundwater supplies after multiple drought episodes in the last two decades 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 significant concerns that must be balanced with protections for fish and wildlife.

The TUCP is part of a coordinated effort between petitioners, CDFW, NMFS, and USFWS to address drought conditions. On May 18, 2021, the Directors of DWR, Reclamation, and CDFW, the Regional Administrator for NMFS, and the Deputy Assistant Director of USFWS made a joint presentation during the State Water Board's public meeting, and emphasized that coordination among the State Water Board, DWR, Reclamation, CDFW, NMFS, and USFWS with respect to joint SWP/CVP operations in the face of current extreme dry conditions has been and will continue to be critical.<sup>31</sup> As described by DWR's Director, the TUCP is part of a comprehensive action that helps implement a drought framework that is intended to meet five goals:

- Conserve storage in Shasta, Oroville, and Folsom to provide cold water for fisheries;
- Protect storage in Folsom to meet Sacramento Region needs until storage increases in fall/winter;
- Maintain water quality in the Delta for in-Delta uses and minimize project deliveries while facilitating transfers;
- Provide conditions to lessen drought impacts to fish and wildlife;
- Initiate contingency planning for water year 2022.

According to CDFW's Director, the five Directors of the relevant state and federal agencies on wildlife management and water supply have been working together to address the current crisis, including to develop end-of-September storage targets, and preserve cold water pool, both for the fishery and as a human health and safety water

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<sup>31</sup> May 18, 2021 State Water Board Meeting, Project Operations Update, Drought Response, discussion beginning at approximately 5:23:30. (Available at: <https://youtu.be/aIEfAhmRXWo>)

supply next year. Similarly, the Regional Administrator for NOAA, Western Region, emphasized that temperature management is critical, particularly for winter-run Chinook salmon, and that a critical objective for the agencies is to reduce temperature-dependent mortality as well as make improvement across the whole life history of the fish.

On May 24, 2021, CDFW issued an assessment of potential effects to fish and wildlife resources as a result of the TUCP. CDFW concluded that habitat conditions for Delta smelt in Cache Slough and the SDWSC are unlikely to be affected by the TUCP. In addition, the TUCP would likely maintain or potentially reduce entrainment risk to young of the year Delta smelt by restricting combined Project exports to no more than 1,500 cfs. No change in effects was anticipated as a result of export restrictions in July because historical data indicate that entrainment risk is minimal during this period. In addition, export restrictions have the benefit of preserving upstream storage. For longfin smelt, CDFW acknowledged summer distribution and survival had not been examined in detail. However, the changes by the TUCP in June could exacerbate the negative effects of a critically dry year on longfin smelt abundance in the fall. CDFW acknowledged that the degree to which outflow and salinity elements of the TUCP would affect winter-run and spring-run Chinook salmon as compared to baseline conditions during a critically dry year is uncertain. However, reducing reservoir releases will have the benefit of preserving storage throughout the remainder of the year and subsequent water year, which could benefit winter-run and spring-run Chinook salmon. In addition to the above letter, DFW is expected to issue an amendment to the ITP to cover the changes requested in the TUCP in the near future pursuant to a request from DWR.

On May 30, 2021, the USFWS and NMFS sent a letter to Reclamation, confirming that the USFWS and NMFS have reviewed the relevant portions of the Biological Review prepared by Reclamation and DWR in support of the TUCP. The letter memorializes that the USFWS and NMFS provided technical assistance in the preparation of the Biological Review, including providing comments that were incorporated into the document. Based on their targeted review, the letter states that the USFWS and NMFS have no significant concerns with the analyses contained in the Biological Review. In addition, the letter confirms that the TUCP as requested is consistent with the Drought and Dry Year Action planning process outlined in Reclamation's Proposed Action included in Reclamation's 2019 Biological Assessment and confirmed in the 2019 Biological Opinions issued by the USFWS and NMFS for the coordinated operation of the Projects. The USFWS and NMFS also expressed their understanding that the TUCP is necessary in light of the dry hydrology and reduction in forecasted runoff, and the need to conserve water in upstream reservoirs to reduce temperature impacts to winter-run and spring-run Chinook salmon, and to maintain some system flexibility with Delta conditions for managing fish protections in case next year is also dry.

To ensure that the changes approved in this Order that may reduce flows will not have unreasonable impacts on fish and wildlife, this Order includes several provisions including:

1. To ensure that the water conserved as a result of the changes is used to address the significant concerns with temperature management for winter-run Chinook salmon and other Sacramento River salmonids this year, this Order requires Reclamation to operate in compliance with a Sacramento River TMP as approved by the Executive Director in accordance with Order WR 90-5.
2. Exports are limited to a maximum of 1,500 cfs when D-1641 requirements are not being met, excluding transfers, to improve reservoir storage in the event that the following water year is also dry.
3. To mitigate for any impacts to fish and other beneficial uses, this Order requires the Petitioners to evaluate the possibility for providing pulse flows or other flow enhancements in a subsequent year with improved hydrology.
4. To address concerns about water management in the event dry conditions continue, this Order requires the Petitioners to develop an operational strategy for 2022 that includes improvements in hydrologic and operations forecasting (e.g., estimate of depletions) and describes how Project obligations will be met in the event of limited supplies and extreme dry conditions.
5. This Order requires the Petitioners to conduct necessary modeling, monitoring, analysis, and reporting and to prepare other necessary technical information to inform operational decisions and post drought assessment. Specifically, this Order requires the Petitioners to conduct necessary monitoring to understand the effects of operations associated with the temporary drought barrier at False River, including reductions in Delta outflows. This information along with fisheries information provided by the fisheries agencies will enable the Executive Director and the Board to monitor the effects of this Order and make changes as necessary to avoid any unreasonable impacts to fish and wildlife or other instream beneficial uses.
6. To address concerns about potential TUCP effects on HABs and aquatic weeds, this order requires the Petitioners to fund and complete monitoring and analyses to evaluate and document the effects of the TUCP and associated actions, including the drought barriers, on the prevalence and extent of HABs and expansion of invasive aquatic weeds and identify possible mitigation.

In summary, the potential for impairment to fish, wildlife, or other instream beneficial uses from the approved temporary changes, with the conditions summarized above, is not unreasonable considering the improvements in reservoir storage for temperature management, salinity control, and other purposes and the impacts to fish and wildlife, health and safety water supplies, and other purposes that could occur if the temporary changes are not approved.

### **5.5 Impacts to Public Trust Resources**

Prior to approval of a TUCP, the Board must find that the proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses. In addition, the State Water Board has an independent obligation to consider the effect of the approval of changes in this Order on public trust resources and to protect those resources to the extent feasible and in the public interest. (*National Audubon Society v. Superior Court* (1983) 33 Cal. 3d 419, 446-447.) Public trust uses include navigation, commerce, fishing, recreation, and the preservation of fish and wildlife habitat.



### 5.5.1 Cyanobacteria

Cyanobacteria are present in most freshwater and marine aquatic environments. When conditions are favorable with abundant light, elevated water temperature, elevated levels of nutrients, and lack of water turbulence and velocity, cyanobacteria can quickly multiply into a bloom. Not every bloom is toxic; however, harmful algal blooms are a concern as some species of cyanobacteria produce toxins that have the potential to impact drinking water, recreation, and fish and wildlife.

Cyanobacterial blooms in the Delta have been associated with high irradiance, warm water temperatures, timing of flows, vertical stratification, and high nutrient concentrations.<sup>32</sup> Salinity gradients within the Delta do not appear to have control over the geographic distribution of cyanobacteria.<sup>33</sup> Cyanobacterial blooms often originate in the central Delta in Old River and the San Joaquin River; however, the overall coverage and biomass of *Microcystis*, the most common cyanobacteria in the Delta associated with toxins, is low. Cyanobacterial blooms are typically restricted to July and August in most years due to higher turbidity, low temperatures, and higher flows during the rest of the year.

Naturally, cyanobacterial bloom frequency and duration tend to increase with drought conditions due to elevated water temperatures and increased residence times from reduced flows. The requested actions of the TUCP may contribute to increased blooms or the acceleration of blooms into the month of June through additional reductions in Delta outflow; however, the extent to which the requested TUCP actions will increase cyanobacterial blooms above the general drought conditions is unknown. This Order includes a condition requiring the Petitioners to complete monitoring and analyses to evaluate the effects of the requested TUCP action and any associated actions (e.g., the drought salinity barrier) on the prevalence and extent of harmful algal blooms and invasive aquatic weeds in the Delta. In addition, the Petitioners are required to identify possible mitigation. To the extent that the changes would impact public trust uses due to an increase in harmful algal blooms, the conditions of this Order would protect those uses to the extent feasible and in the public interest. In light of the extremely dry conditions and benefits of the changes to carryover storage for temperature control and other purposes, it would not be in the public interest to deny the TUCP, notwithstanding the potential increase in harmful algal blooms.

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<sup>32</sup> Dahm, C.N., A.E. Parker, A.E. Adelson, M.A. Christman, and B.A. Bergamaschi. 2016. Nutrient Dynamics of the Delta: Effects on Primary Producers. San Francisco Estuary and Watershed Science. 14(4).

<sup>33</sup> Berg, M. and M. Sutula. 2015. Factors affecting the growth of cyanobacteria with special emphasis on the Sacramento-San Joaquin Delta. Southern Coastal Water Research Project Technical Report 869. August 2015. Available at: [https://www.waterboards.ca.gov/centralvalley/water\\_issues/delta\\_water\\_quality/delta\\_nutrient\\_research\\_plan/science\\_work\\_groups/2015\\_08\\_cyano\\_wp\\_final.pdf](https://www.waterboards.ca.gov/centralvalley/water_issues/delta_water_quality/delta_nutrient_research_plan/science_work_groups/2015_08_cyano_wp_final.pdf)

### **5.5.2 Recreation**

The temporary reductions in Delta outflow and relaxation of western Delta salinity requirements in D-1641 approved by this Order are not expected to impact water contact recreation that depends on water surface elevation to support activities. Water surface elevation in the Delta is determined by the rise and fall of the tides, which results in upstream and downstream movement of large volumes of water and produces flows and velocities that are generally much greater than the volume of water associated with net Delta outflow. Temporary changes to D-1641 Delta outflow and the western salinity requirements approved in this Order may impact water contact and non-water contact recreation to the extent that they promote conditions that increase the occurrence and severity of HABs and submersed aquatic vegetation (SAV) or other aquatic weeds. Temporary changes in Delta outflow may also impact recreational fishing by modifying survival of fish species that depend on different types of habitat. For example, reductions in Delta outflow may negatively impact juvenile fall-run Chinook salmon survival, which could result in fewer adults and a shorter recreational fishing season when the cohort returns in three years. Reductions in Delta outflow may result in habitat conditions that promote survival of introduced recreational fish such as largemouth bass. While this may be a positive impact for recreational fishing of largemouth bass, it is also a negative impact to native fish species consumed by largemouth bass and other predators that use similar habitat. There may be short-term impacts to contact and non-contact recreation and recreational fishing associated with this Order. However, these impacts are not contrary to the public interest in the context of the need to conserve water in reservoirs for use later in the year to control temperature in the upper watershed for salmon and to maintain salinity control in the Delta.

### **5.5.3 Water Quality and Availability of Habitat**

As described in sections 2.5 and 5.4, reductions in Delta outflow and relaxation of the western Delta salinity requirements requested by the TUCP are expected to allow salinity to intrude further upstream which degrades habitat for native and migratory fish populations and reduces water quality for agricultural uses. Fish and wildlife habitat would be protected to the extent feasible and in the public interest by the conditions of this Order. The near-term potential negative impacts to fish and wildlife are not considered contrary to the public interest in the context of extremely dry conditions, the need to maintain salinity control in the Delta, and the ability to use water conserved in storage later in the year to support multiple beneficial uses such as temperature control for salmon, salinity control in the Delta, and water supply for municipal, industrial, and agricultural uses.

## **5.6 The Proposed Change is in the Public Interest**

The temporary modifications authorized in this Order will make the best use of limited water supplies, within the context of the TUCP process, and are accordingly in the public interest. As discussed above, hydrologic and water supply conditions in the Delta watershed continue to be highly impacted by the drought and are inadequate to meet all of the needs 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 fisheries and water supply related impacts expected if conditions remain dry. The changes approved in this Order will help conserve stored water so that it can be released for multiple purposes the rest of this year, including temperature control on the Sacramento River, salinity control in the Delta, and minimal health and safety supplies. 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. This Order also requires planning, modeling, consulting, monitoring, and reporting and reserves 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 evaluation required by Water Code section 1435 concerning the modification and renewal of the TUCP Order discussed above.

I conclude that, based on the available evidence:

1. The Petitioners have an urgent need to make the proposed changes;
2. The petitioned changes; as conditioned by this Order, will not operate to the injury of any other lawful user of water;
3. The petitioned changes, as conditioned by this Order, will not have an unreasonable effect upon fish, wildlife, or other instream beneficial uses; and
4. The petitioned 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, 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. The requested changes approved in this Order shall be effective through August 15, 2021. Other conditions of this Order shall be effective until fully satisfied.

1. Except as otherwise provided in condition 2, below, during the time periods specified below, or until such time as this Order is amended or rescinded, the requirements of D-1641 for DWR and Reclamation (Petitioners) to meet specified water quality objectives are amended as follows:
  - a. From June 1 through June 30, 2021, the minimum Delta outflow level specified in Table 3 of D-1641 as measured by the Net Delta Outflow Index (NDOI) described in Figure 3 of D-1641 shall be no less than 3,000 cubic-feet per second (cfs) on a 14-day running average. The 7-day running average shall be no less than 1,000 cfs below 3,000 cfs.
  - b. From July 1 through July 31, 2021, the minimum Delta outflow level specified in Table 3 of D-1641 as measured by the NDOI described in Figure 3 of D-1641 shall be no less than 3,000 cfs on a monthly average. The 7-day running average shall be no less than 1,000 cfs below 3,000 cfs.
  - c. From June 1 through August 15, 2021, the Western Delta, Sacramento River at Emmaton electrical conductivity (EC) compliance location specified in Table 2 of D-1641 is moved to Threemile Slough on the Sacramento River.
  - d. From June 1 through August 15, 2021, the maximum Export Limits specified in Table 3 of D-1641 are modified as follows:
    - i. The combined maximum exports at the SWP Banks Pumping Plant and the CVP Jones Pumping Plant, excluding transfers, shall be

limited to pumping no greater than 1,500 cfs, as a 3-day running average or an alternate averaging period as approved by the Executive Director.

- ii. During the effective period of the changes approved in this Order, at least 5 working days prior to conducting water transfers, the Petitioners shall provide detailed accounting for the transfers to the State Water Board identifying: the volume of water being transferred, when, and between which parties; how water is being made available for transfer; and information to support that the transfers will not cause injury to other legal users of water or unreasonable impacts to fish, wildlife, or other instream beneficial uses, including through reductions in carryover storage in Project reservoirs or stream depletions due to groundwater substitution transfers.
  - iii. The Executive Director reserves authority to modify the requirements of this Order, including the export limits, to ensure that the changes approved in this Order are in the public interest and meet the intent of this Order to improve reservoir storage conditions for the protection of health and safety water supplies and the environment. In order to inform the Executive Director's determinations, the Petitioners shall provide an accounting of the total quantities of SWP and CVP water planned to be exported from the Delta, the purposes for which that water will be exported, and an explanation of why it is in the public interest to export that water when D-1641 requirements are not being met. The information shall be provided 5 days in advance of export operations and shall cover operations from June 10 until August 15, 2021.
  - iv. During the effective period of this Order, in the low probability circumstance that precipitation events occur that enable the Petitioners to fully comply with the D-1641 Delta outflow and Sacramento River at Emmaton salinity requirements, then the applicable D-1641 exports limits shall be operative, except that any SWP and CVP exports greater than 1,500 cfs shall be limited to natural or abandoned flow, or transfers as specified in condition 1.d.ii.
2. While the Petitioners are operating under the changes approved by condition 1.a,b, and c of this Order, they shall bypass natural and abandoned flows to prevent injury to other lawful users of water.
3. The Petitioners shall consult on a regular basis with designated representatives from the State Water Board, the Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and U.S. Fish and Wildlife Service (USFWS) (collectively 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.

4. The Petitioners shall calculate and maintain a record of the amount of water conserved in storage and identify the reservoir(s) where storage is conserved. These records shall be submitted on a monthly basis to the State Water Board and fisheries agencies within 20 working days after the first day of the following month. Documentation shall include, but is not limited to, the volume of water needed to meet D-1641 flow and salinity requirements and the volume of water conserved as a result of the changes approved by this Order.
5. Through the remainder of the water year, the Petitioners shall submit updated monthly operations outlooks identifying:
  - a. Upstream: Inflows to and storage levels in the major reservoirs (Shasta, Folsom, Oroville, Trinity, Whiskeytown, San Luis, and New Melones). River releases from the aforementioned reservoirs. Transfers from the Trinity system, including Carr Power Plant and Spring Creek Tunnel flows.
  - b. Delta inflows, channel depletions, exports, and outflows.
  - c. SWP: deliveries to Feather River Service Area contractors, north-of-Delta Table A contractors, south-of-Delta Table A contractors. Information regarding SWP deliveries shall include the monthly and total volume, volumes delivered to specific water users, and the basis of water right or contractual agreement under which the deliveries are made.
  - d. CVP: deliveries to Settlement contractors, American River municipal and industrial (M&I) contractors, Sacramento River agricultural water service contractors, Sacramento River M&I water service contractors, Contra Costa Water District, north-of-Delta refuges, exchange contractors, south-of-Delta agricultural water service contractors, south-of-Delta M&I water service contractors, south-of-Delta refuges, East side water right holders, New Melones East side, and Friant Unit; Information regarding CVP deliveries shall include the monthly and total volume, volumes delivered to specific water users, and the basis of water right or contractual agreement under which the deliveries are made
  - e. South-of-Delta water transfers, including the transferors, transferees, and the quantities transferred; and
  - f. The outlooks 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.
6. In the event of improved hydrologic conditions next year, the Petitioners shall evaluate the possibility for dedicating a portion of the volume of water conserved by the changes approved in this Order to provide pulse flows or other improvements in flows above and beyond D-1641 requirements next water year to provide improved conditions for beneficial uses of water to the extent feasible based on hydrologic conditions. The Petitioners shall submit a report to the Executive Director on their findings by March 15, 2022.

7. The Petitioners shall conduct modeling, monitoring, analysis, and reporting and prepare other technical information necessary to inform operational decisions and assess drought emergency actions authorized by this Order and any subsequent temporary urgency change orders in combination with other drought actions. Specifically, the Petitioners shall conduct monitoring and analyses, including implementation of the Interagency Ecological Program annual workplan and ongoing monitoring in the upper watershed, needed to understand the effects of changes authorized by the TUCP Order in combination with other associated actions such as Sacramento River temperature management pursuant to State Water Board Order 90-5, installation of the temporary drought barrier at False River, and changes to the estuarine salt field and aquatic habitat.
  - a. The Petitioners shall consult with the fisheries agencies and State Water Board staff through the consultation process described in Condition 3 above to identify needed modeling, monitoring, analyses, and reporting. Required modeling, monitoring, analyses, and reporting shall be determined by the Executive Director or other designated representative, taking into consideration input from the relevant agencies, including DWR, Reclamation, and the fisheries agencies including recommendations for modeling and analyses made by CDFW in their consultation letter on the TUCP (May 24, 2021).
  - b. The Petitioners shall make available technical information in a timeframe that is useful to support State Water Board decisions. Technical information and analyses may include, but are not limited to, planned operations (forecasts), examination of minimum export rates, temperature models, modeling and monitoring information, water quality modeling, monitoring, and assessment information, information about potential impacts of operational changes on other water users and fish and wildlife, and any other relevant information requested by the fisheries agencies or State Water Board staff.
  - c. The Petitioners shall report to the Board at least monthly at its Board meetings on their drought operations, including information discussed in the terms of this order.
8. In coordination with the State Water Board, Central Valley Water Board, and the Interagency Ecological Program, the Petitioners shall complete a special study that identifies the effects of this TUCP Order, any future TUCPs, and any associated actions including drought barriers on the prevalence and extent of harmful algal blooms and expansion of invasive aquatic weeds in the Sacramento-San Joaquin Delta. A report on the findings of the special study shall be submitted by December 15, 2021.
9. Pursuant to the requirements of this Order and State Water Board Order WR 90-5, Reclamation, in consultation with the fisheries agencies, shall implement the Sacramento River Temperature Management Plan as approved by the Executive Director.
10. By August 30, 2021, the Petitioners shall prepare a report summarizing the



- constraints that exist on minimum export pumping levels including the following:
- a. Infrastructure specifications and safety thresholds for operation of Delta export pumps at each Project. Identification of any safety thresholds that may exist for individual and combined operations;
  - b. Minimum deliveries for health and safety purposes and their effect on determining pumping rates;
  - c. Evaluation of opportunities to use system infrastructure to reduce exports, including joint points of diversion, use of the California Aqueduct Intertie, operations at San Luis Reservoir, and other potential actions.

11. In consultation with the State Water Board and fisheries agencies, the Petitioners shall develop an operational strategy for water year 2022 in the event that dry or critically dry hydrologic conditions, including conditions similar to this year, occur next water year. The strategy shall include information regarding improvements in hydrologic and operational forecasting to account for extreme dry hydrologic conditions and information regarding how various Project obligations will be met in the event of limited supplies. The strategy shall be submitted to the Executive Director no later than December 31, 2021, and updated as necessary based on changed circumstances or as requested by the Executive Director.
12. This Order may be further modified by the Executive Director or the State Water Board based on public and agency comments or objections, or changed circumstances. Information concerning changes to this Order will be posted on the State Water Board's website within 24 hours.
13. 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.
14. 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.

June 1, 2021

Dated



Eileen Sobeck,  
Executive Director

**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 <sup>-</sup> ) | Maximum mean daily 150 mg/l Cl <sup>-</sup> for at least the number of days shown during the Calendar Year.           | W                   |             | No. of days each Calendar Year ≤ 150 mg/l Cl <sup>-</sup><br>240 (66%) |
| -or-  |                                      |                             |   |                     |             |  |
| San Joaquin River at Antioch Water Works Intake | D-12 (near) (RSAN007)                |                             | Must be provided in intervals of not less than two weeks duration. (Percentage of Calendar Year shown in parenthesis) | AN<br>BN<br>D<br>C  |             | 190 (52%)<br>175 (48%)<br>165 (45%)<br>155 (42%)                       |
| Contra Costa Canal at Pumping Plant #1          | C-5 (CHCCC06)                        | Chloride (Cl <sup>-</sup> ) | 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                            |
|---|--|------------------------------|--|---------------------|-----------------------|----------------------------------|
| <b>WESTERN DELTA</b>  |  |                              |  |                     |                       |                                  |
| Sacramento River at Emmaton   | D-22 (RSAC092)   | Electrical Conductivity (EC) | Maximum 14-day running average of mean daily EC (mmhos/cm) |                     | 0.45 EC               | EC from date shown to Aug 15 [4] |
|   |  |                              |  |                     | April 1 to date shown | 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-15I (RSAN018)  | Electrical Conductivity (EC) | Maximum 14-day running average of mean daily EC (mmhos/cm) |                     | 0.45 EC               | EC from date shown to Aug 15 [4] |
|   |  |                              |  |                     | April 1 to date shown | Aug 15 [4]                       |
|   |  |                              |  | W                   | Aug 15                | ----                             |
|   |  |                              |  | AN                  | Aug 15                | ----                             |
|   |  |                              |  | BN                  | Jun 20                | 0.74                             |
|   | D  | Jun 15                       | 1.35   |                     |                       |                                  |
|   | C  | ----                         | 2.20   |                     |                       |                                  |
| <b>INTERIOR DELTA</b>   |  |                              |  |                     |                       |                                  |
| 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               | EC from date shown to Aug 15 [4] |
|   |  |                              |  |                     | April 1 to date shown | 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               | EC from date shown to Aug 15 [4] |
|   |  |                              |  |                     | April 1 to date shown | Aug 15 [4]                       |
|   |  |                              |  | W                   | Aug 15                | ----                             |
|   |  |                              |  | AN                  | Aug 15                | ----                             |
|   |  |                              |  | BN                  | Aug 15                | ----                             |
|   | D  | Jun 25                       | 0.58   |                     |                       |                                  |
|   | C  | ----                         | 0.87   |                     |                       |                                  |
| <b>SOUTHERN DELTA</b>   |  |                              |  |                     |                       |                                  |
| San Joaquin River at Airport Way Bridge, Vernalis<br>-and-<br>San Joaquin River at Brandt Bridge site[5]<br>-and-<br>Old River near Middle River [5]<br>-and-<br>Old River at Tracy Road Bridge [5] | C-10 (RSAN112)<br>C-6 (RSAN073)<br>C-8 (ROLD69)<br>P-12 (ROLD59) | Electrical Conductivity (EC) | Maximum 30-day running average of mean daily EC (mmhos/cm) | All                 | Apr-Aug<br>Sep-Mar    | 0.7                              |
|   |  |                              |  |                     |                       | 1.0                              |
|   |  |                              |  |                     |                       |                                  |
|   |  |                              |  |                     |                       |                                  |
|   |  |                              |  |                     |                       |                                  |
| <b>EXPORT AREA</b>  |  |                              |  |                     |                       |                                  |
| West Canal at mouth of Clifton Court Forebay<br>-and-<br>Delta-Mendota Canal at Tracy Pumping Plant   | C-9 (CHWST0)<br>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    |
|---|--|------------------------------|--|-------------------------------|-------------|----------|
| <b>SAN JOAQUIN RIVER SALINITY</b>                                     |  |                              |  |                               |             |          |
| San Joaquin River at and between Jersey Point and Prisoners Point [4] | D-15 (RSAN018)<br><b>-and-</b><br>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] |
| <b>EASTERN SUISUN MARSH SALINITY</b>                                  |  |                              |  |                               |             |          |
| Sacramento River at Collinsville                                      | C-2 (RSAC081)                                    | 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         | 19.0     |
| <b>-and-</b><br>Montezuma Slough at National Steel                    | S-64 (SLMZU25)                                   |                              |  |                               | Nov-Dec     | 15.5     |
| <b>-and-</b><br>Montezuma Slough near Beldon Landing                  | S-49 (SLMZU11)                                   |                              |  |                               | Jan         | 12.5     |
|   |  |                              |  |                               | Feb-Mar     | 8.0      |
|   |  |                              |  |                               | Apr-May     | 11.0     |
| <b>WESTERN SUISUN MARSH SALINITY</b>                                  |  |                              |  |                               |             |          |
| Chadbourne Slough at Sunrise Duck Club                                | S-21 (SLCBN1)                                    | 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         | 19.0     |
| <b>-and-</b><br>Suisun Slough, 300 feet south of Volanti Slough       | S-42 (SLSUS12)                                   |                              |  |                               | Nov         | 16.5     |
|   |  |                              |  |                               | Dec         | 15.5     |
|   |  |                              |  |                               | Jan         | 12.5     |
|   |  |                              |  |                               | Feb-Mar     | 8.0      |
|   |  |                              |  |                               | Apr-May     | 11.0     |
|   |  |                              |  | Deficiency Period [6]         | Oct         | 19.0     |
|   |  |                              |  |                               | Nov         | 16.5     |
|   |  |                              |  |                               | Dec-Mar     | 15.6     |
|   |  |                              |  |                               | Apr         | 14.0     |
|   |  |                              |  |                               | May         | 12.5     |

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

| COMPLIANCE LOCATION                               | INTERAGENCY STATION NUMBER(RK14[1]) | PARAMETER                          | DESCRIPTION (UNIT) [2]                             | WATER YEAR TYPE [3] | TIME PERIOD                             | VALUE  |
|---|-------------------------------------|------------------------------------|--|---------------------|---|--|
| <b>DELTA OUTFLOW</b>                              |                                     |                                    |  |                     |   |  |
|   |                                     | 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  |
| <b>RIVER FLOWS</b>                                |                                     |                                    |  |                     |   |  |
| 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           | Nov-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 and May 16-Jun               | 2,130 or 3,420<br>1,420 or 2,280<br>710 or 1,140 |
|   |                                     |                                    |  | BN,D                |   |  |
|   |                                     |                                    |  | C                   |   |  |
|   |                                     |                                    |  | W                   | Apr 15- May 15 [14]                     | 7,330 or 8,620<br>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]                                       |
| <b>EXPORT LIMITS</b>                              |                                     |                                    |  |                     |   |  |
|   |                                     | Combined export rate [16]          | Maximum 3-day running average (cfs)                | All                 | Apr 15- May 15 [17]                     | [18]   |
|   |                                     |                                    | Maximum percent of Delta inflow diverted [19] [20] | All                 | Feb-Jun                                 | 35% Delta inflow [21]                            |
|   |                                     |                                    |  | All                 | Jul-Jan                                 | 65% Delta inflow                                 |
| <b>DELTA CROSS CHANNEL GATES CLOSURE</b>          |                                     |                                    |  |                     |   |  |
| Delta Cross Channel at Walnut Grove               | —                                   | Closure of gates                   | Closed gates                                       | All                 | Nov-Jan<br>Feb-May 20<br>May 21- Jun 15 | [22]<br>----<br>[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:

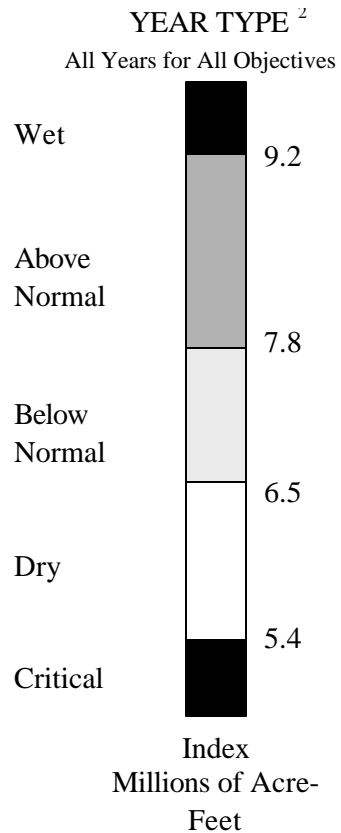
$$\text{INDEX} = 0.4 * X + 0.3 * Y + 0.3 * Z$$

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

Y = Current October – March  
 Sacramento Valley unimpaired runoff

Z = Previous year's index<sup>1</sup>

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.



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

<sup>1</sup> 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.

<sup>2</sup> 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:

$$\text{INDEX} = 0.6 * X + 0.2 * Y + 0.2 * Z$$

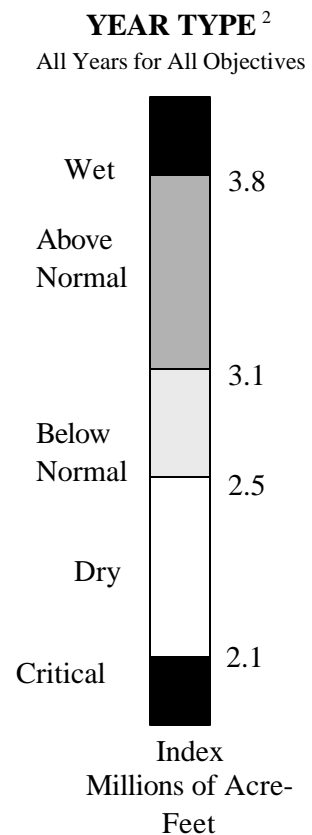
Where: X = Current year's April – July  
 San Joaquin Valley unimpaired runoff

Y = Current October – March  
 San Joaquin Valley unimpaired runoff

Z = Previous year's index<sup>1</sup>

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.

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



<sup>1</sup> 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.

<sup>2</sup> 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**<sup>1</sup>

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):

|   |
|---|
| $NDOI = DELTA\ INFLOW - NET\ DELTA\ CONSUMPTIVE\ USE - DELTA\ EXPORTS$ $PERCENT\ INFLOW\ DIVERTED = (CCF + TPP) \div DELTA\ INFLOW$ |
|---|

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.<sup>2</sup>
- PREC* = Real-time Delta precipitation runoff for the previous day estimated from stations within the Delta.

and where  $DELTA\ EXPORTS$ <sup>3</sup> =  $CCF + TPP + CCC + NBA$

- CCF* = Clifton Court Forebay inflow for the current day.<sup>4</sup>
- 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.

---

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 <sup>[a]</sup> |  |     |     |     |     |                             |   |     |     |     |     |                             |   |     |     |     |     |
|--|--|-----|-----|-----|-----|-----------------------------|---|-----|-----|-----|-----|-----------------------------|---|-----|-----|-----|-----|
| PMI <sup>[b]</sup><br>(TAF)  | Chippis Island<br>(Chippis Island Station D10) |     |     |     |     | PMI <sup>[b]</sup><br>(TAF) | Port Chicago<br>(Port Chicago Station C14) <sup>[d]</sup> |     |     |     |     | PMI <sup>[b]</sup><br>(TAF) | Port Chicago<br>(Port Chicago Station C14) <sup>[d]</sup> |     |     |     |     |
|  | 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 <sup>[c]</sup>                              | 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 Chippis 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 Chippis 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.



DEPARTMENT OF WATER RESOURCES

Division of Operations and Maintenance  
3310 El Camino Avenue, Suite 300  
Sacramento, California 95821



— BUREAU OF —  
RECLAMATION

BUREAU OF RECLAMATION

Central Valley Operations Office  
3310 El Camino Avenue, Suite 300  
Sacramento, California 95821

May 17, 2021

Ms. Eileen Sobeck  
Executive Director  
California State Water Resources Control Board  
1001 I Street  
Sacramento, California 95814

Subject: 2021 Temporary Urgency Change Petition Regarding Delta Water Quality

Dear Ms. Sobeck,

The U.S. Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR) jointly submit the attached 2021 Temporary Urgency Change Petition (2021 TUCP) to request the California State Water Resources Control Board (Water Board) consider modifying requirements of Reclamation's and DWR's water right permits to enable changes in operations of the Central Valley Project (CVP) and State Water Project (SWP) (collectively Projects) that will allow for delivery of water with conservation for later instream uses and water quality requirements.

Water Year 2021 is currently the driest on record since 1977. Although well below average rainfall, the snowpack in March, 2021 indicated that sufficient reservoir inflow was likely available to meet requirements. Conditions significantly changed at the end of April 2021 when it became clear that expected reservoir inflow from snowmelt failed to materialize. The May 90% exceedence forecast for the water year Sacramento Valley Four River Index identified a reduction of expected runoff of 685 TAF from those generated only a month earlier in April. The combination of factors, including the May 2021 inflow forecast deficit being far less than predictable with available forecasting methods, parched watershed soils and extremely low rainfall, continued dry and warm conditions, and limited available water supplies in the Sacramento – San Joaquin Bay-Delta (Delta) create an urgent need to act. As announced by the Governor in his May 10, 2021 Emergency Proclamation (Emergency Proclamation) on drought conditions for the Bay-Delta and other watersheds, the continuation of extremely dry conditions in the Delta watershed mean there is not an adequate water supply to meet water right permit obligations for instream flows and water quality under Water Rights Decision 1641 (D-1641).

As described in the attached 2021 TUCP and consistent with Directive 4 of the Emergency Proclamation, Reclamation and DWR are petitioning the Water Board to modify certain terms of the Projects' water rights permits from what is currently provided in D-1641 from June 1 to August 15, 2021:

| Timeframe                    | Proposed Action  |
|------------------------------|--|
| June 1 through July 31, 2021 | June 1 through June 30: Reduce net delta outflow index (NDOI) requirements for salinity control from 4,000 cubic feet per second (cfs) to 3,000 cfs on a 14-day running average              |
|                              | July 1 through July 31: Reduce NDOI requirements for salinity control from 4,000 cfs to 3,000 cfs on a monthly average. D-1641, Table 3, footnote 8 remains applicable                       |
|                              | Cap the combined SWP and CVP exports at 1,500 cfs when Delta outflow is less than 4,000 cfs. SWP and CVP exports may exceed 1,500 cfs when Delta outflow meets D-1641 or for moving transfer |

| Timeframe                      | Proposed Action   |
|--------------------------------|---|
|                                | water (after July 1)  |
| June 1 through August 15, 2021 | Relocate the Western Delta Agriculture compliance point from Emmaton to Threemile Slough. |

In addition, from June 1 through August 31, DWR and Reclamation will confer weekly with the Water Board to coordinate management of water supplies during the course of the declared drought emergency. DWR and Reclamation will utilize the Water Operations Management Team (WOMT), comprised of staff from Reclamation, DWR, National Marine Fisheries Service (NMFS), United States Fish and Wildlife (USFWS), California Department of Fish and Wildlife (CDFW), and the Water Board, for this coordination. The WOMT meets weekly to provide hydrology and operations updates and will be also used to discuss TUCP actions and other drought actions, as appropriate. The 2021 TUCP is based on operations described in the 2020 Record of Decision implementing Alternative 1, which was consulted upon for the 2019 NMFS and USFWS Biological Opinions for the Re-initiation of Consultation on the Long-Term Operation of the CVP and SWP, and the 2020 Incidental Take Permit from CDFW for Long-Term Operation of the SWP, as analyzed in the Final Environmental Impact Report certified by DWR on March 27, 2020.

In support of the 2021 TUCP, Reclamation and DWR have prepared a Biological Review (Attachment 2 of the 2021 TUCP Petition) in compliance with the Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code), which establishes California's statutory authority for the protection of water quality. The beneficial uses protected in the Regional Water Quality Control Boards' Basin Plans include fish and wildlife, rare, threatened, or endangered species, and their habitats. As described in the 2021 TUCP, the proposed changes in operations will not injure other lawful users of water; will not unreasonably effect public trust resources such as fish and wildlife or other instream beneficial uses; and are in the public interest.

If sufficient precipitation were to occur to systemically recover upstream storage, then the Projects could resume operating to the D-1641 objectives, as appropriate. However, if critically dry conditions in the Bay-Delta watershed persist, Reclamation and DWR, through a team of managers from their agencies, will continue to meet with the Water Board staff to consider additional modifications of D-1641 water quality and flow objectives and to coordinate management of water supplies during the course of the declared drought emergency.

We urge the Water Board to approve the 2021 TUCP and look forward to cooperatively working with the Water Board and its staff during this challenging period to manage Delta water resources for the benefit of the people and natural resources of the state of California.



Karla A. Nemeth  
Director  
Department of Water Resources

Ernest A  
Conant

Digitally signed by Ernest  
A Conant  
Date: 2021.05.17 10:00:42  
-07'00'

Ernest A. Conant  
Regional Director  
United State Bureau of Reclamation

Please indicate County where your project is located here:

Various

MAIL FORM AND ATTACHMENTS TO:  
State Water Resources Control Board  
**DIVISION OF WATER RIGHTS**  
**P.O. Box 2000, Sacramento, CA 95812-2000**  
Tel: (916) 341-5300 Fax: (916) 341-5400  
<http://www.waterboards.ca.gov/waterrights>

## PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

- |   |   |   |   |
|---|---|---|---|
| <input type="checkbox"/> <b>Point of Diversion</b><br>Wat. Code, § 1701                         | <input type="checkbox"/> <b>Point of Rediversion</b><br>Cal. Code Regs., tit. 23, § 791(e)                  | <input type="checkbox"/> <b>Place of Use</b><br>Wat. Code, § 1701             | <input type="checkbox"/> <b>Purpose of Use</b><br>Wat. Code, § 1701 |
| <input type="checkbox"/> <b>Distribution of Storage</b><br>Cal. Code Regs., tit. 23, § 791(e)   | <input checked="" type="checkbox"/> <b>Temporary Urgency</b><br>Wat. Code, § 1435                           | <input type="checkbox"/> <b>Instream Flow Dedication</b><br>Wat. Code, § 1707 | <input type="checkbox"/> <b>Waste Water</b><br>Wat. Code, § 1211    |
| <input type="checkbox"/> <b>Split</b><br>Cal. Code Regs., tit. 23, § 836<br>Application Various | <input type="checkbox"/> <b>Terms or Conditions</b><br>Cal. Code Regs., tit. 23, § 791(e)<br>Permit Various | <input type="checkbox"/> <b>Other</b><br>License Various                      | Statement   |

I (we) hereby petition for change(s) noted above and described as follows:

**Point of Diversion or Rediversion** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present: Not requested

Proposed: No change

**Place of Use** – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present: Not requested

Proposed: No change

**Purpose of Use**

Present: Not requested

Proposed: No change

**Split**

Provide the names, addresses, and phone numbers for all proposed water right holders.

Not requested

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

**Distribution of Storage**

Present: Not requested

Proposed: No change

**Temporary Urgency**

This temporary urgency change will be effective from \_\_\_\_\_ to \_\_\_\_\_.

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

**Instream Flow Dedication** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location: Not requested

Downstream Location: Not requested

List the quantities dedicated to instream flow in either: cubic feet per second or gallons per day:

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|     |     |     |     |     |     |     |     |     |     |     |     |

Will the dedicated flow be diverted for consumptive use at a downstream location? Yes No  
 If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

**Waste Water**

If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water?  Yes  No

Will any legal user of the treated waste water discharged be affected?  Yes  No

**General Information** – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned?  Yes  No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:  
 ownership  lease  verbal agreement  written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

**All Right Holders Must Sign This Form:** I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 5/17/2021 at Sacramento, California

**Ernest A Conant** Digitally signed by Ernest A Conant  
 Date: 2021.05.17 10:01:02 -07'00'

Right Holder or Authorized Agent Signature



Right Holder or Authorized Agent Signature

**NOTE: All petitions must be accompanied by:**  
 (1) the form Environmental Information for Petitions, including required attachments, available at:  
[http://www.waterboards.ca.gov/waterrights/publications\\_forms/forms/docs/pet\\_info.pdf](http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf)  
 (2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at:  
[http://www.waterboards.ca.gov/waterrights/water\\_issues/programs/fees/](http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/)  
 (3) Department of Fish and Wildlife fee of \$850 (Pub. Resources Code, § 10005)



State of California  
State Water Resources Control Board  
**DIVISION OF WATER RIGHTS**  
**P.O. Box 2000, Sacramento, CA 95812-2000**  
Tel: (916) 341-5300 Fax: (916) 341-5400  
<http://www.waterboards.ca.gov/waterrights>

## ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

### DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

As announced by the Governor in his May 10, 2021 Emergency Proclamation on drought conditions for the Sacramento – San Joaquin Bay-Delta (Delta) and other watersheds, the continuation of extremely dry conditions in the Delta watershed mean there is not an adequate water supply to meet water right permit obligations for instream flows and water quality under Water Rights Decision 1641 (D-1641). Thus, United States Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR) submit this 2021 Temporary Urgency Change Petition (2021 TUCP) requesting the Water Board approve modification to certain terms of the Central Valley Project (CVP) and State Water Project (SWP) water rights permits from what is currently provided in D-1641 from June 1 to August 15, 2021. Water Year 2021 is currently the driest on record since 1977. Although well below average rainfall, the snowpack in March, 2021 indicated that sufficient reservoir inflow was likely available to meet requirements. Conditions significantly changed at the end of April 2021 when it became clear that expected reservoir inflow from snowmelt failed to materialize. The May 90% exceedence forecast for the water year Sacramento Valley Four River Index identified a reduction of expected runoff of 685 TAF from those generated only a month earlier in April. The combination of factors, including the May 2021 inflow forecast deficit being far less than predictable with available forecasting methods, parched watershed soils and extremely low rainfall, continued dry and warm conditions, and limited available water supplies in the Delta create an urgent need to act.

As stated in the 2021 TUCP, the proposed changes in operations will not injure other lawful users of water, will not unreasonably affect public trust resources such as fish and wildlife or other instream beneficial uses, and are in the public interest. If sufficient precipitation were to occur to systemically recover upstream storage, then the Projects could resume operating to the D-1641 objectives, as appropriate. However, if critically dry conditions in the Bay-Delta watershed persist, Reclamation and DWR, through a team of managers from their agencies, will continue to meet with the Water Board staff to consider additional modifications of D-1641 water quality and flow objectives and to coordinate management of water supplies during the course of the declared drought emergency.

The 2021 TUCP is only for modification to certain terms of the CVP and SWP water right permits from what is currently provided in D-1641 and does not include construction activities, changes in land use, nor changes to how the water will be used.

See Attachment 1 "Supplement to 2021 Temporary Urgency Change to Certain DWR and Reclamation Permit Terms as Provided in D-1641," and Attachment 2 "Biological Review for the 2021 June through August Temporary Urgency Change Petition," and Attachment 3 "Delta Summary"

Insert the attachment number here, if applicable:

**Coordination with Regional Water Quality Control Board**

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: [http://www.waterboards.ca.gov/waterboards\\_map.shtml](http://www.waterboards.ca.gov/waterboards_map.shtml). Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation?

Yes No

Will a waste discharge permit be required for the project?

Yes No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Local Permits**

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted:

Date of Contact:

Department:

Phone Number:

County Zoning Designation:

Are any county permits required for your project? If yes, indicate type below.

Yes No

Grading Permit

Use Permit

Watercourse

Obstruction Permit

Change of Zoning

General Plan Change

Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies.

Yes No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Federal and State Permits**

Check any additional agencies that may require permits or other approvals for your project:

- Regional Water Quality Control Board                      Department of Fish and Game
- Dept of Water Resources, Division of Safety of Dams                      California Coastal Commission
- State Reclamation Board                      U.S. Army Corps of Engineers                      U.S. Forest Service
- Bureau of Land Management                      Federal Energy Regulatory Commission
- Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies.                      Yes                      No

For each agency from which a permit is required, provide the following information:

| Agency | Permit Type | Person(s) Contacted | Contact Date | Phone Number |
|--------|-------------|---------------------|--------------|--------------|
|--------|-------------|---------------------|--------------|--------------|

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Construction or Grading Activity**

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake?                      Yes                      No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Archeology**

Has an archeological report been prepared for this project? If yes, provide a copy.  Yes  No  
Will another public agency be preparing an archeological report?  Yes  No  
Do you know of any archeological or historic sites in the area? If yes, explain below. Yes No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Photographs**

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

- Along the stream channel immediately downstream from each point of diversion
- Along the stream channel immediately upstream from each point of diversion
- At the place where water subject to this water right will be used

**Maps**

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

**All Water Right Holders Must Sign This Form:**

I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 5/17/2021 at Sacramento, California .

**Ernest A Conant**  
Digitally signed by Ernest A Conant  
Date: 2021.05.17 10:01:28 -07'00'

Water Right Holder or Authorized Agent Signature



Water Right Holder or Authorized Agent Signature

**NOTE:**

- Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)
- Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)

**Attachment 1**  
**Supplement to 2021 Temporary**  
**Urgency Change to Certain**  
**DWR and Reclamation Permit**  
**Terms as Provided in D-1641**

**ATTACHMENT 1****SUPPLEMENT TO 2021 TEMPORARY URGENCY CHANGE TO CERTAIN DWR  
AND RECLAMATION PERMIT TERMS AS PROVIDED IN D-1641****California Department of Water Resources**

Application Numbers 5630, 14443, 14445A, 17512, 17514A, Permits 16478, 16479, 16481, 16482, 16483

**U.S. Bureau of Reclamation Permits for the Central Valley Project**

Application Numbers: 23, 234, 1465, 5626, 5628, 5638, 9363, 9364, 9366, 9367, 9368, 13370, 13371, 14858A, 14858B, 15374, 15375, 15376, 15764, 16767, 16768, 17374, 17376, 19304, 22316

License Number 1986 and Permit Numbers: 11885, 11886, 12721, 11967, 11887, 12722, 12723, 12725, 12726, 12727, 11315, 11316, 16597, 20245, 11968, 11969, 11970, 12860, 11971, 11972, 11973, 12364, 16600, 15735

**I. Requested Change**

While 2021 started out with dry conditions, the hydrology in late April 2021 significantly deteriorated with significant and uncharacteristic deficits in watershed runoff, especially for the Sacramento River. Although well below average rainfall, the snowpack in March, 2021 indicated that sufficient reservoir inflow was likely available to meet requirements. Conditions significantly changed at the end of April 2021 when it became clear that expected reservoir inflow from snowmelt failed to materialize, as much of the snowmelt was absorbed into the parched soils or sublimated into the atmosphere. The Sacramento Four River Index 90% exceedence water year forecast decreased between April and May, 2021 by 685 thousand acre-feet (TAF). The combination of factors, including May 2021 runoff reduction being far greater than recent norms would anticipate, extremely low rainfall, dry soils, continued dry and warm conditions, and limited available water supplies in the Sacramento – San Joaquin Bay-Delta (Delta) create an urgent need to act. The current extremely dry conditions in the Delta watershed pose challenges to the effective management of the Central Valley Project (CVP) and State Water Project (SWP) (collectively Projects). The U.S. Bureau of Reclamation (Reclamation) and Department of Water Resources (DWR) do not believe that there is an adequate water supply to meet all obligations under the State Water Resources Control Board's Water Rights Decision 1641 (D-1641). The May 11, 2021 Bulletin 120 (B120) hydrological projections indicate this summer poses significant risks to maintaining M&I water quality standards, temperature control, minimum instream flow, power generation and the ability to repel salinity in the Delta later this year. Under the current circumstances, Reclamation and DWR believe the most prudent course of action is to conserve storage in upstream reservoirs until significant improvement of that storage is realized. Consequently, DWR and Reclamation are requesting the State Water Resources Control Board (Water Board) change terms of the Projects' water rights permits from what is currently provided in D-1641 for the period of June 1 through August 15, 2021 as summarized in **Table 1** and outlined below.

**Table 1: Summary of TUCP Operations Framework**

| <b>Timeframe</b>               | <b>Proposed Action</b>  |
|--------------------------------|---|
| June 1 through July 31, 2021   | June 1 through June 30: Reduce net delta outflow index (NDOI) requirements for salinity control from 4,000 cubic feet per second (cfs) to 3,000 cfs on a 14-day running average                                   |
|                                | July 1 through July 31: Reduce NDOI requirements for salinity control from 4,000 cfs to 3,000 cfs on a monthly average. D-1641, Table 3, footnote 8 remains applicable  |
|                                | Cap the combined SWP and CVP exports at 1,500 cfs when Delta outflow is less than 4,000 cfs. SWP and CVP exports may exceed 1,500 cfs when Delta outflow meets D-1641 or for moving transfer water (after July 1) |
| June 1 through August 15, 2021 | Relocate the Western Delta Agriculture compliance point from Emmaton to Threemile Slough  |

In addition, from June 1 through August 31, 2021, DWR and Reclamation will meet and confer weekly with the Water Board to coordinate management of water supplies during the course of the declared drought emergency. DWR and Reclamation will utilize the Water Operations Management Team (WOMT), comprised of staff from Reclamation, DWR, National Marine Fisheries Service (NMFS), United States Fish and Wildlife (USFWS), California Department of Fish and Wildlife (CDFW), and the Water Board, for this coordination effort. The WOMT meets weekly to provide hydrology and operations updates, and will discuss TUCP actions and other drought actions as appropriate. Information on coordination with the WOMT and other technical teams is provided below and in Attachment 2 "Biological Review for the 2021 June through August Temporary Urgency Change Petition". In addition, as part of this petition, DWR and Reclamation will continue to coordinate with Long-term Operation Agency working groups to develop a robust drought monitoring program through completion of the 2021 Drought Contingency Plan, with updates to WOMT.

The Projects are currently operating to D-1641 outflow and water quality requirements with significant storage releases given the lack of precipitation and natural flow to the system. As indicated above, forecasts indicate that relief in some of these operations is needed, along with other actions, in order to have water available later in the year for M&I water quality standards, Delta salinity control, and aquatic species cold water pool protection.

Reclamation and DWR may have a need to request further modifications of the Rio Vista flow requirement contained in D-1641 for September through December 2021. It is not yet clear whether such request will be necessary. If necessary, Reclamation and DWR will plan to request modification of the Rio Vista flow standard in September through December, 2021 to be no less than 2,500 cfs. Below are the requested changes in operations for this 2021 TUCP:

### **1) Reduction of Outflow Requirements (June 1 through June 30, 2021)**

Beginning June 1, Reclamation and DWR request modification of D-1641 outflow. The requested changes would modify the minimum NDOI described in Figure 3 of D-1641 during the month of June to no less than 3,000 cfs on a 14-day average, to allow for some storage conservation for fishery protection and improving carryover storage while meeting minimum CVP and SWP export levels.

### **2) Reduction of Outflow Requirements (July 1 through July 31, 2021)**

Beginning July 1, Reclamation and DWR request modification of D-1641 outflow. The requested changes would modify the minimum NDOI described in Figure 3 of D-1641 in July from a monthly average of 4,000 cfs to a monthly average of 3,000 cfs (Table 3, footnote 8 remains applicable) to allow for some storage conservation for fishery protection and improving carryover storage while meeting minimum CVP and SWP export levels.

### **3) Exports (June 1 through July 31, 2021)**

June 1 through July 31, the maximum combined SWP and CVP exports will be limited to 1,500 cfs when Delta outflow is less than 4,000 cfs. SWP and CVP exports may exceed 1,500 cfs when Delta outflow meets D-1641 or for moving transfer water (after July 1, 2021).

The minimum combined export of 1,500 cfs, as referenced in Table 1, is consistent with other regulatory requirements. The combined 1,500 cfs export rate represents a sustainable rate and provides the CVP and SWP real-time operational flexibility in the Delta to meet D-1641 salinity and water quality standards, as Delta conditions can rapidly change due to weather and tidal cycles. Absent this flexibility, additional sustained upstream releases would be required to manage the real-time changes in Delta conditions. In addition, the 1,500 cfs rate allows the CVP the ability to maintain a one-unit operation, and minimizes the need to start and stop the unit in a 24-hour period (i.e. cycling) which could result in catastrophic damage. This rate also allows the SWP to meet Byron Bethany Irrigation District diversions, who divert from Clifton Court Forebay, and also provides for water supply delivery to the SWP South Bay Public Water Agencies who are not directly connected to San Luis Reservoir and who rely on direct diversions from the Delta to meet their municipal and industrial demands.

### **4) Modification of the Western Delta Salinity Compliance Point (June 1 through August 15, 2021)**

In a critical year, D-1641 requires the Agricultural Western Delta Salinity Standard at Emmaton have a 14-day running average of 2.78 millimhos per centimeter from April 1 to August 15. Reclamation and DWR are petitioning the Water Board to modify this requirement by moving the compliance location from Emmaton to Threemile Slough on the Sacramento River from June 1 through August 15, 2021.



## **II. Basis to Authorize Modification of Water Rights**

The California Water Code, Section 1435, authorizes the Water Board to grant a temporary change order for any permittee or licensee who has an urgent need to change a permit or license, where the Water Board finds: 1) the permittee has an urgent need for the proposed change, 2) the proposed change may be made without injury to any other lawful user of water, 3) the proposed change can be made without unreasonably affecting fish, wildlife, or other instream beneficial uses, 4) the proposed change is in the public interest. The law also requires consultation with representatives of the Department of Fish and Wildlife.

DWR and Reclamation provide the information below to support the findings necessary under California Water Code section 1435. The current hydrology and storage are critically low and the modifications requested, along with additional actions, are intended to decrease the risk that DWR and Reclamation will be unable to provide future protection of beneficial uses that rely upon storage from the Projects. Therefore, the modifications requested are urgent and critical and can be implemented in a manner satisfying requirements of section 1435, as described below.

### **1) DWR and Reclamation Have an Urgent Need for the Proposed Change**

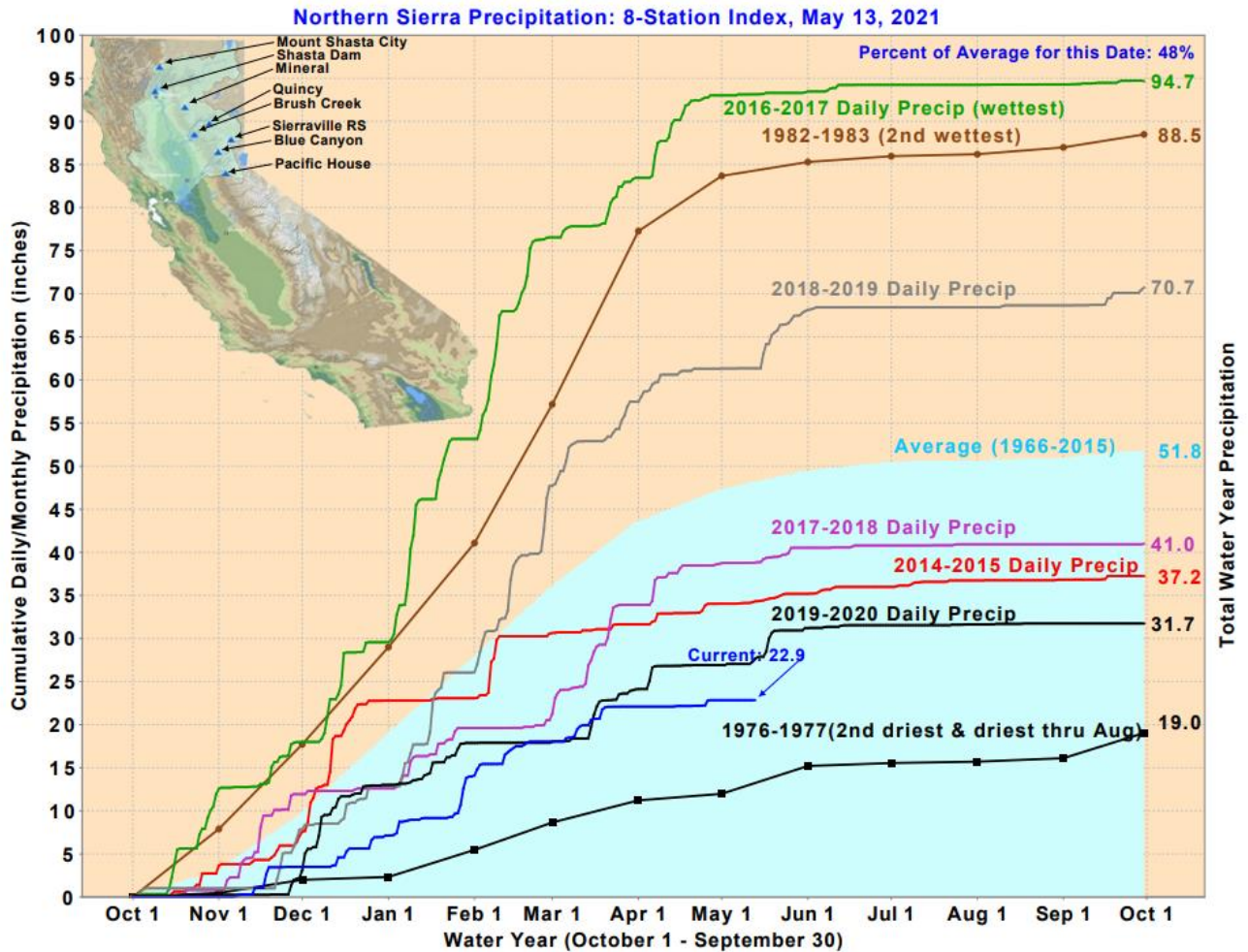
For Water Year (WY) 2021, the precipitation to date is below 50 percent of average, which ties this year for the third driest year on record (<https://water.ca.gov/News/News-Releases/2021/April-21/Statewide-Snowpack-Well-Below-Normal-as-Wet-Season-Winds-Down>) and the driest since D-1641, Endangered Species Act (ESA), Central Valley Project Improvement Act (CVPIA) and many other environmental regulations were put in place. As a result of this record aridity, many reservoir levels throughout the state are significantly below average. Conditions deteriorated in April 2021 when projected reservoir inflows from snowmelt did not materialize. This was uncharacteristic and likely due to unpredictably dry soils soaking up snowmelt and substantially reducing runoff into CVP and SWP reservoirs.

If the requested modification in Delta outflow requirement is granted, Reclamation and DWR forecast that a minimum Delta Outflow of 3,000 cfs will provide some additional preservation of cold water pool in reservoirs for aquatic species later in the year.

As provided in the Drought Contingency Plan Addendum, the October through March precipitation for the Northern Sierra 8-Station Index (8SI) for WY 2021 was the third driest on record, while the San Joaquin Basin and the Tulare Basin are ranked as the fifth and second, respectively. Observed October through March 2021 runoff for the Sacramento Valley, San Joaquin Valley, and Tulare Lake Basin were the third, sixth, and eighth driest in historical record, respectively. Lastly, the peak snowpack throughout the Sierra Basins was observed around the third week of March 2021 and is quickly diminishing with dismal runoff due to very dry soil conditions. Because of the continued dry conditions in April 2021, the May 1, 2021 runoff forecast was reduced substantially for all exceedance levels. Given these drier conditions, the 8SI for water years 2020 through 2021 are now the second driest on record, behind the drought of 1976 through 1977.

As of May 10, 2021, total storage at the SWP's Lake Oroville is 1.46 million acre-feet (MAF), the storage at the CVP's Shasta Reservoir is 2.2 MAF and Folsom Reservoir is 370 TAF. Storage in all three reservoirs is significantly below the historical averages (see <http://cdec.water.ca.gov/cgi-progs/products/rescond.pdf>). Of even more concern is the lack of snowpack in the watersheds feeding into the Projects' major Sacramento Valley reservoirs. As of May 11, 2021, the snowpack of the northern Sierra basin is 7% of historic average. **Figure 1** shows the precipitations of May 13, 2021.

**Figure 1: Northern Sierra 8-Station Index**



Without a modification of the D-1641 standards as described above, Reclamation and DWR would be required to increase releases from upstream reservoirs in June and July 2021 to meet Delta outflow levels up to 4,000 cfs. If the Projects were able to instead meet 3,000 cfs outflow, the estimated improvement to upstream reservoir storage could be in the range of 60 to 120 TAF. However, meeting water quality standards may result in a delta outflow greater than 3,000 cfs, and therefore this savings should be viewed as an upper limit. Such an outflow rate can also provide the water quality necessary to maintain minimum exports of up to 1,500 cfs and is contingent upon modification of Delta salinity standards. The 3,000 cfs outflow rate, in combination with the installation

of a salinity barrier at West False River, is the estimated minimum nominal outflow rate assumed to maintain salinity levels above 250 mg/L chloride for municipal and industrial water supply at all export locations specified under Table 1 of D-1641.

a. Authorization to Take Extraordinary Measures

On May 10, 2021, Governor Newsom issued a Proclamation of a State of Emergency (Emergency Proclamation) (see <https://www.gov.ca.gov/wp-content/uploads/2021/05/5.10.2021-Drought-Proclamation.pdf>). This Emergency Proclamation includes the following directives:

4. To ensure adequate, minimal water supplies for purposes of health, safety, and the environment, the Water Board shall consider modifying requirements for reservoir releases or diversion limitations – including where existing requirements were established to implement a water quality control plan – to conserve water upstream later in the year in order to protect cold water pools for salmon and steelhead, improve water quality, protect carry over storage, or ensure minimum health and safety water supplies. The Water Board shall require monitoring and evaluation of any such changes to inform future action. The actions taken in the Sacramento-San Joaquin Delta Watershed Counties pursuant to this paragraph, Water Code Section 13247 is suspended.
5. To ensure adequate, minimal water supplies for purposes of health, safety, and the environment in the Klamath River and Sacramento-San Joaquin Delta Watershed Counties, the Water Board shall consider emergency regulations to curtail water diversions when water is not available at water right holders' priority of right or to protect releases of stored water. The Department of Water Resources shall provide technical assistance to the Water Board that may be needed to develop appropriate water accounting for these purposes in the Sacramento-San Joaquin Delta Watershed.
11. For purposes of carrying out or approving any actions contemplated by the directives in operative paragraphs 3, 4, 5, 6, 8, and 9, the environmental review by state agencies required by the California Environmental Quality Act in Public Resources Code, Division 13 (commencing with Section 21000) and regulations adopted pursuant to that Division are hereby suspended to the extent necessary to address the impacts of the drought in the Klamath River, Sacramento San Joaquin Delta and Tulare Lake Watershed Counties.

b. Coordination with Water Operations and Watershed Monitoring Technical Teams

Consistent with the Record of Decision for the Long-Term Operation of the CVP/SWP (Reclamation 2020), DWR and Reclamation propose utilizing the team of managers already part of the WOMT. These managers are already authorized to meet weekly and act in order to coordinate management of water supplies and protection of natural resources during the course of the declared drought emergency. The WOMT managers include representatives from the Water Board, California Department of Fish and

Wildlife (CDFW), National Marine Fisheries Service (NMFS) and the Fish and Wildlife Service (USFWS).

Additionally, DWR and Reclamation participate in the Watershed Monitoring Workgroups for each of the Upper Sacramento, Clear Creek, American, Delta, and Stanislaus watersheds (“Watershed Monitoring Workgroups”). Each of the Watershed Monitoring Workgroups is responsible for real-time synthesis of fisheries monitoring information and scheduling specific volumes of water. The Watershed Monitoring Workgroups include technical representatives from federal and State fishery agencies along with stakeholders and will provide information to Reclamation and DWR on species abundance, species distribution, life stage transitions, and other relevant physical parameters.

Reclamation and DWR propose continued discussions, as described in the subsection (c) “Proposed Reporting” below, in order to consider potential modifications to other standards (in conjunction with the outflow requirement) that will best balance the protection of all beneficial uses.

c. Proposed Reporting

As stated in the Emergency Proclamation, the dry conditions and water supply levels are of a magnitude that they present peril to the safety of persons and property. In order to facilitate Directives 4 and 5 of the Emergency Proclamation, DWR and Reclamation propose that the operations and regulatory changes requested in this petition include monitoring using existing stations and programs to ensure that the objectives of this proposal and the requirements of Water Code Section 1435 are met under any changed conditions.

**2) The Proposed Change Will Not Result in Injury to Any Other Lawful Users of Water**

The Projects currently do not divert natural or abandoned flows that are necessary to meet in-Delta demands. The requested changes to D-1641 will reduce the Projects anticipated releases of stored water to augment natural and abandoned flow to satisfy regulatory requirements. If the Water Board approves the requested changes that result in a reduction in stored water releases, such a reduction could not result in an injury to other legal users of water.

**3) The Proposed Change Will Not Result in Unreasonable Impacts to Fish, Wildlife, and Other Instream Uses**

Extreme drought conditions are well known to stress the aquatic resources of the Delta estuary and its watershed. Continued dry conditions during the remainder of WY 2021 are expected to adversely affect rearing and migration conditions for delta smelt, longfin smelt, and other species such as winter-run Chinook salmon. Continued dry conditions without modifications to D-1641 could lead to fishery impacts later in the year. For example, extremely low reservoir storage and associated cold water pool could lead to reduced ability to maintain cold water later in the year for winter-run Chinook salmon egg survival. The expected water savings is intended to provide a benefit to upstream

storage and allow for some level of salinity and temperature control later in season. Analyses provided in Attachment 2, *Biological Review for the 2021 June through August Temporary Urgency Change Petition*, indicate that there would be no unreasonable impacts to fish, wildlife, or other instream resources in the Delta as a result of the 2021 TUCP relative to baseline conditions, as most of the negative effects described would occur primarily as a result of the overall drought conditions. Effects attributable to the TUCP are limited based on the Biological Review analysis, due to the following factors: nearly all juvenile salmonids will have passed through the Delta prior to the start of the 2021 TUCP period; the TUCP includes a south Delta exports cap; and continuation of existing species management actions to minimize entrainment under the 2019 NMFS and USFWS Biological Opinions for the Re-initiation of Consultation on the Long-Term Operation of the CVP and SWP, and the 2020 Incidental Take Permit from CDFW for Long-Term Operation of the SWP. In addition, while the reduction in outflow due to the TUCP may have some negative and/or beneficial impacts on other native and nonnative species, including the migratory, pelagic, and littoral species, these incremental impacts are expected to be minimal and difficult to quantify/detect given the environmental conditions associated with the drought and the small differences between TUCP and baseline flows relative to hydrological differences between water years. Therefore, there would not be an unreasonable impact of the TUCP on public trust resources such as fish and wildlife or other instream resources.

#### **4) The Proposed Change is in the Public Interest**

The public interest is best served by maintaining, for as long into the year as possible, storage to support minimum exports and water quality necessary for the protection of critical water supplies and species protections. The requested changes are in the public interest by preserving water supplies to meet M&I water quality standards, by increasing the duration and likelihood of maintaining minimal salinity control, and by increasing the duration and likelihood of success of maintaining a cold water pool sufficient for sensitive aquatic species. In addition, modifying the Delta outflow as proposed in this petition will increase the probability that the Projects will be able to prevent the uncontrolled intrusion of salinity into the Delta this summer. If by meeting unmodified D-1641 outflow objectives earlier in the year the Projects have insufficient storage to control seawater intrusion, problematic water quality would persist until Northern California receives a rainy season with sufficient runoff to flush the Delta of ocean water to once again allow for in-Delta beneficial uses.

### **III. Due Diligence has been Exercised**

DWR and Reclamation rely upon sound science and methods to forecast and project hydrology and water supply needs. This scientific approach to water management is the most prudent course of action in such a complex and variable system. Based upon this approach, DWR and Reclamation revisit these forecasts and projections frequently and adjust project operations accordingly, which may include additional updates, such as updated hydrodynamic and water quality modeling simulations.

On December 1, 2020, DWR announced an initial SWP allocation of 10%, which amounts to 422,848-acre feet of water, of requested supplies for the 2021 water year



(see <https://water.ca.gov/News/News-Releases/2020/Dec-20/DWR-Releases-Initial-State-Water-Project-Allocation#:~:text=The%2010%20percent%20initial%20allocation,20%20percent%20set%20in%20May>). On February 23, 2021, Reclamation announced the initial 2021 water supply allocation for CVP contractors (see <https://www.usbr.gov/newsroom/newsroomold/newsrelease/detail.cfm?RecordID=7374>). This announcement, in part, included a 5% allocation of water supply for agricultural water service contractors. On March 23, 2021, Reclamation announced a revised 2021 water supply allocation for CVP contractors (<https://www.usbr.gov/newsroom/#/news-release/3796?filterBy=region&region=California-Great%20Basin>). This announcement stated that the 5% allocation of water supply for south-of-Delta agricultural water service contractors is no longer available for delivery until further notice. In addition, on March 23, 2021, DWR also announced that the SWP water supply allocation was reduced to 5%, which amounts to 210,266 acre-feet of water (<https://water.ca.gov/News/News-Releases/2021/March-21/SWP-Allocation-Update-March-23>). On May 5, 2021, Reclamation announced that the 5% allocation of water supply for north-of-Delta agricultural water service contractors is no longer available. Under the current conditions there are significant deficiencies to the water supply available to all SWP and CVP users throughout the system.

Reclamation and DWR have exercised due diligence to avoid the circumstance necessitating this request by beginning this year with relatively high carryover storage after the dry year of 2020. Storage conservation measures in the beginning of water year 2021 helped to meet D-1641 requirements through the winter and early spring. In addition, the Projects exercised due diligence by both initially issuing very low allocations to its water supply contractors and then later further reducing allocations, when the worsening severe dry pattern began to emerge.

Prior to this petition, DWR and Reclamation provided weekly hydrology and condition updates through WOMT. DWR and Reclamation have met with the Water Board staff and with representatives of CDFW, NMFS and USFWS, to discuss the elements of this petition, and will continue to provide updates and to seek their input on how best to manage multiple needs for water supply. In addition, as part of this petition, DWR and Reclamation will continue to coordinate with Long-term Operation Agency working groups to develop a robust drought monitoring program through completion of the 2021 Drought Contingency Plan with updates to WOMT.

**EXECUTIVE DEPARTMENT  
STATE OF CALIFORNIA**

**PROCLAMATION OF A STATE OF EMERGENCY**

**WHEREAS** climate change is intensifying the impacts of droughts on our communities, environment, and economy, and California is in a second consecutive year of dry conditions, resulting in drought or near-drought throughout many portions of the State; and

**WHEREAS** recent warm temperatures and extremely dry soils have further depleted the expected runoff water from the Sierra-Cascade snowpack, resulting in a historic and unanticipated estimated reduction of 500,000 acre feet of water – or the equivalent of supplying water for up to one million households for one year – from reservoirs and stream systems, especially in the Klamath River, Sacramento-San Joaquin Delta, and Tulare Lake Watersheds; and

**WHEREAS** the extreme drought conditions through much of the State present urgent challenges, including the risk of water shortages in communities, greatly increased wildfire activity, diminished water for agricultural production, degraded habitat for many fish and wildlife species, threat of saltwater contamination of large fresh water supplies conveyed through the Sacramento-San Joaquin Delta, and additional water scarcity if drought conditions continue into next year; and

**WHEREAS** Californians have saved water through conservation efforts, with urban water use approximately 16% below where it was at the start of the last drought years, and I encourage all Californians to undertake actions to further eliminate wasteful water practices and conserve water; and

**WHEREAS** on April 21, 2021, I issued a proclamation directing state agencies to take immediate action to bolster drought resilience and prepare for impacts on communities, businesses, and ecosystems, and proclaiming a State of Emergency to exist in Mendocino and Sonoma counties due to severe drought conditions in the Russian River Watershed; and

**WHEREAS** additional expedited actions are now needed in the Klamath River, Sacramento-San Joaquin Delta, and Tulare Lake Watersheds; and

**WHEREAS** it is necessary to expeditiously mitigate the effects of the drought conditions within the Klamath River Watershed Counties (Del Norte, Humboldt, Modoc, Siskiyou, and Trinity counties), the Sacramento-San Joaquin Delta Watershed Counties (Alameda, Alpine, Amador, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Benito, San Joaquin, Shasta, Sierra, Siskiyou, Solano, Stanislaus, Sutter, Tehama, Trinity, Tuolumne, Yolo, and Yuba counties), and the Tulare Lake Watershed Counties (Fresno, Kern, Kings, and Tulare counties) to ensure the protection of health, safety, and the environment; and

**WHEREAS** under Government Code Section 8558(b), I find that the conditions caused by the drought conditions, by reason of their magnitude, are or are likely to be beyond the control of the services, personnel, equipment, and facilities of any single local government and require the combined forces of a mutual aid region or regions to appropriately respond; and

**WHEREAS** under Government Code Section 8625(c), I find that local authority is inadequate to cope with the drought conditions; and

**WHEREAS** to protect public health and safety, it is critical the State take certain immediate actions without undue delay to prepare for and mitigate the effects of, the drought conditions statewide, and under Government Code Section 8571, I find that strict compliance with various statutes and regulations specified in this proclamation would prevent, hinder, or delay the mitigation of the effects of the drought conditions in the Klamath River, Sacramento-San Joaquin Delta, and Tulare Lake Watershed Counties.

**NOW THEREFORE, I, GAVIN NEWSOM**, Governor of the State of California, in accordance with the authority vested in me by the State Constitution and statutes, including the California Emergency Services Act, and in particular, Section 8625, **HEREBY PROCLAIM A STATE OF EMERGENCY** to exist in the Klamath River, Sacramento-San Joaquin Delta, and Tulare Lake Watershed Counties due to drought.

**IT IS HEREBY ORDERED THAT:**

1. The orders and provisions contained in my April 21, 2021 Proclamation remain in full force and effect, except as modified. State agencies shall continue to implement all directions from that proclamation and accelerate implementation where feasible.
2. To ensure that equipment and services necessary for drought response can be procured quickly, the provisions of the Government Code and the Public Contract Code applicable to procurement, state contracts, and fleet assets, including, but not limited to, advertising and competitive bidding requirements, are hereby suspended to the extent necessary to address the effects of the drought in the Klamath River, Sacramento-San Joaquin Delta, and Tulare Lake Watershed Counties. Approval of the Department of Finance is required prior to the execution of any contract entered into pursuant to this provision.
3. To support voluntary approaches where hydrology and other conditions allow, the Department of Water Resources and the State Water Resources Control Board (Water Board) shall expeditiously consider requests to move water, where appropriate, to areas of need, including requests involving voluntary water transfers, forbearance agreements, water exchanges, or other means. Specifically, the Department of Water Resources and Water Board shall prioritize transfers that retain a higher percentage of water in upstream reservoirs on the Sacramento, Feather, and American Rivers for release later in the year. If necessary, the Department of Water Resources shall request that the Water Board consider changes to water rights permits to enable such voluntary movements of water. For actions taken in the Klamath River and Sacramento-San Joaquin Delta Watershed Counties pursuant to this paragraph, the following requirements of the Water Code are suspended:
  - a. Section 1726(d) requirements for written notice and newspaper publication, provided that the Water Board shall post notice on its website and provide notice through electronic subscription services where interested persons can request information about temporary changes; and



- b. Section 1726(f) requirement of a 30-day comment period, provided that the Water Board shall afford a 15-day comment period.
4. To ensure adequate, minimal water supplies for purposes of health, safety, and the environment, the Water Board shall consider modifying requirements for reservoir releases or diversion limitations—including where existing requirements were established to implement a water quality control plan—to conserve water upstream later in the year in order to protect cold water pools for salmon and steelhead, improve water quality, protect carry over storage, or ensure minimum health and safety water supplies. The Water Board shall require monitoring and evaluation of any such changes to inform future actions. For actions taken in the Sacramento-San Joaquin Delta Watershed Counties pursuant to this paragraph, Water Code Section 13247 is suspended.
5. To ensure protection of water needed for health, safety, and the environment in the Klamath River and Sacramento-San Joaquin Delta Watershed Counties, the Water Board shall consider emergency regulations to curtail water diversions when water is not available at water right holders' priority of right or to protect releases of stored water. The Department of Water Resources shall provide technical assistance to the Water Board that may be needed to develop appropriate water accounting for these purposes in the Sacramento-San Joaquin Delta Watershed.
6. To ensure critical instream flows for species protection in the Klamath River and Sacramento-San Joaquin Delta Watersheds, the Water Board and Department of Fish and Wildlife shall evaluate the minimum instream flows and other actions needed to protect salmon, steelhead, and other native fishes in critical streams systems in the State and work with water users and other parties on voluntary measures to implement those actions. To the extent voluntary actions are not sufficient, the Water Board, in coordination with the Department of Fish and Wildlife, shall consider emergency regulations to establish minimum drought instream flows.
7. Operative paragraph 4 of my April 21, 2021 Proclamation is withdrawn and superseded by the following, which shall apply to the Russian River Watershed identified in my April 21, 2021 Proclamation as well as the Klamath River, Sacramento-San Joaquin Delta, and Tulare Lake Watershed Counties:

To prioritize drought response and preparedness resources, the Department of Water Resources, the Water Board, the Department of Fish and Wildlife, and the Department of Food and Agriculture, in consultation with the Department of Finance, shall:

- a. Accelerate funding for water supply enhancement, water conservation, or species conservation projects.
- b. Identify unspent funds that can be repurposed to enable projects to address drought impacts to people, ecosystems, and economic activities.
- c. Recommend additional financial support for groundwater substitution pumping to support Pacific flyway habitat needs in the lower Sacramento River and Feather River portions of the Central Valley in the Fall of 2021.

8. Consistent with operative paragraph 13 of my April 21, 2021 Proclamation, the Department of Water Resources shall take actions, if necessary, to implement plans that address potential Delta salinity issues. Such actions may include, among other things, the installation and removal of, Emergency Drought Salinity Barriers at locations within the Sacramento-San Joaquin Delta Estuary. These barriers shall be designed to conserve water for use later in the year to meet state and federal Endangered Species Act requirements, preserve to the extent possible water quality in the Delta, and retain water supply for human health and safety uses. The Water Board and the Department of Fish and Wildlife shall immediately consider any necessary regulatory approvals needed to install Emergency Drought Salinity Barriers. For actions taken pursuant to this paragraph, Section 13247 and the provisions of Chapter 3 (commencing with Section 85225) of Part 3 of Division 35 of the Water Code are suspended.
9. To support the movement of water from areas of relative plenty to areas of relative scarcity in the Sacramento-San Joaquin Delta and Tulare Lake Watershed Counties, the Department of Water Resources shall expedite the consideration and, where appropriate, the implementation of pump-back delivery of water through the State Water Project on behalf of local water agencies.
10. To proactively prevent situations where a community runs out of drinking water, the Water Board, the Department of Water Resources, the Office of Emergency Services, and the Office of Planning and Research shall assist local agencies in identifying acute drinking water shortages in domestic water supplies, and shall work with local agencies in implementing solutions to those water shortages.
11. For purposes of carrying out or approving any actions contemplated by the directives in operative paragraphs 3, 4, 5, 6, 8, and 9, the environmental review by state agencies required by the California Environmental Quality Act in Public Resources Code, Division 13 (commencing with Section 21000) and regulations adopted pursuant to that Division are hereby suspended to the extent necessary to address the impacts of the drought in the Klamath River, Sacramento-San Joaquin Delta and Tulare Lake Watershed Counties. For purposes of carrying out the directive in operative paragraph 10, for any (a) actions taken by the listed state agencies pursuant to that directive, (b) actions taken by a local agency where the Office of Planning and Research concurs that local action is required, and (c) permits necessary to carry out actions under (a) or (b), Public Resources Code, Division 13 (commencing with Section 21000) and regulations adopted pursuant to that Division are hereby suspended to the extent necessary to address the impacts of the drought in counties where the Governor has proclaimed a drought state of emergency. The entities implementing these directives shall maintain on their websites a list of all activities or approvals for which these provisions are suspended.
12. To ensure transparency in state agency actions, the Water Board and Department of Water Resources will maintain on their websites a list of the activities or approvals by their agencies for which provisions of the Water Code are suspended under operative paragraphs 3, 4, or 8 of this proclamation.

13. To ensure that posting and dissemination of information related to drought emergency activities is not delayed while accessible versions of that information are being created, Government Code Sections 7405 and 11546.7 are hereby suspended as they pertain to the posting of materials on state agency websites as part of responding to the drought emergency, provided that any state agencies failing to satisfy these code sections shall make and post an accessible version on their websites as soon as practicable.

This proclamation is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers, employees, or any other person.

**I FURTHER DIRECT** that as soon as hereafter possible, this proclamation be filed in the Office of the Secretary of State and that widespread publicity and notice be given of this proclamation.

**IN WITNESS WHEREOF** I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 10th day of May 2021.



GAVIN NEWSOM  
Governor of California

**ATTEST:**

\_\_\_\_\_  
SHIRLEY N. WEBER, PH.D.  
Secretary of State

**Attachment 2**  
**Biological Review for the 2021**  
**June through August**  
**Temporary Urgency Change**  
**Petition**

# Attachment 2: Biological Review for the 2021 June through August Temporary Urgency Change Petition

## Purpose and Background

Based on extraordinarily dry conditions throughout California and the projections for continued dry conditions, the California Department of Water Resources (DWR) for the State Water Project (SWP) and the U.S. Bureau of Reclamation (Reclamation) for the Central Valley Project (CVP) are requesting through a 2021 Temporary Urgency Change Petition (2021 TUCP) that the State Water Resources Control Board (Water Board) change terms of the CVP and SWP water rights permits from what is currently provided in Water Rights Decision 1641 (D-1641) for the period of June 1 through August 15, 2021, as summarized in Table 1 and outlined below.

**Table 1. Summary of TUCP Operations Framework**

| Timeframe                      | Proposed Action   |
|--------------------------------|---|
| June 1 through July 31, 2021   | June 1 through June 30: Reduce net delta outflow index (NDOI) requirements for salinity control from 4,000 cubic feet per second (cfs) to 3,000 cfs on a 14-day running average                                   |
|                                | July 1 through July 31: Reduce NDOI requirements for salinity control from 4,000 cfs to 3,000 cfs on a monthly average. D-1641, Table 3, footnote 8 remains applicable  |
|                                | Cap the combined SWP and CVP exports at 1,500 cfs when Delta outflow is less than 4,000 cfs. SWP and CVP exports may exceed 1,500 cfs when Delta outflow meets D-1641 or for moving transfer water (after July 1) |
| June 1 through August 15, 2021 | Relocate the Western Delta Agriculture compliance point from Emmaton to Threemile Slough  |

In addition, from June 1 through August 31, DWR and Reclamation will meet and confer weekly with the Water Board to coordinate management of water supplies during the course of the declared drought emergency. DWR and Reclamation will utilize the Water Operations Management Team (WOMT), comprised of staff from Reclamation, DWR, National Marine Fisheries Service (NMFS), United States Fish and Wildlife (USFWS), California Department of Fish and Wildlife (CDFW), and the Water Board. The WOMT meets weekly to provide hydrology and operations updates and discuss TUCP actions and other drought actions, as appropriate. Information on coordination with WOMT and other technical teams is provided below. In addition, as part of this petition, DWR and Reclamation will continue to coordinate with Long-term Operation Agency working groups to develop a robust drought monitoring program through completion of the 2021 Drought Contingency Plan with updates to WOMT.

*Attachment 2. Biological Review for the 2021 June through August TUCP*

The CVP and SWP are currently operating to D-1641 outflow and water quality requirements with storage releases given the lack of precipitation and natural flow to the system. As indicated above, forecasts indicate that relief in some of these operations is needed, along with other actions, in order to have water available later in the year for M&I water quality standards, Delta salinity control, and aquatic species cold water pool protection.

Reclamation and DWR may have a need to request further modifications of the Rio Vista flow requirement contained in D-1641 for September through December 2021. If necessary, Reclamation and DWR plan to request modification of the Rio Vista flow standard in September through December 2021 to be no less than 2,500 cfs.

**1) Reduction of Outflow Requirements (June 1 through June 30, 2021)**

Beginning June 1, Reclamation and DWR request modification of D-1641 outflow. The requested changes would modify the minimum NDOI described in Figure 3 of D-1641 during the month of June to no less than 3,000 cfs on a 14-day average, to allow for some storage conservation for fishery protection and improving carryover storage while meeting minimum CVP and SWP export levels.

**2) Reduction of Outflow Requirements (July 1 through July 31, 2021)**

Beginning July 1, Reclamation and DWR request modification of D-1641 outflow. The requested changes would modify the minimum NDOI described in Figure 3 of D-1641 in July from a monthly average of 4,000 cfs to a monthly average of 3,000 cfs (Table 3, footnote 8 remains applicable) to allow for some storage conservation for fishery protection and improving carryover storage while meeting minimum CVP and SWP export levels.

**3) Exports (June 1 through July 31, 2021)**

June 1 through July 31, the maximum combined SWP and CVP exports will be limited to 1,500 cfs when Delta outflow is less than 4,000 cfs. SWP and CVP exports may exceed 1,500 cfs when Delta outflow meets D-1641 or for moving transfer water (after July 1, 2021).

The minimum combined export of 1,500 cfs, as referenced in Table 1, is consistent with other regulatory requirements. The combined 1,500 cfs export rate represents a sustainable rate and provides the CVP and SWP real-time operational flexibility in the Delta to meet D-1641 salinity and water quality standards, as Delta conditions can rapidly change due to weather and tidal cycles. Absent this flexibility, additional sustained upstream releases would be required to manage the real-time changes in Delta conditions. In addition, the 1,500 cfs allows the CVP the ability to maintain a one-unit operation, and minimizes the need to start and stop the unit in a 24-hour period (i.e. cycling) which could result in catastrophic damage. This rate also allows the SWP to meet Byron Bethany Irrigation District diversions, who divert from Clifton Court Forebay,

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and also provides for water supply delivery to the SWP South Bay Public Water Agencies who are not directly connected to San Luis Reservoir and who rely on direct diversions from the Delta to meet their municipal and industrial demands.

**4) Modification of the Western Delta Salinity Compliance Point (June 1 through August 15, 2021)**

In a critical year, D-1641 requires the Agricultural Western Delta Salinity Standard at Emmaton have a 14-day running average of 2.78 millimhos per centimeter from April 1 to August 15, 2021. Reclamation and DWR are petitioning the Water Board to modify this requirement by moving the compliance location from Emmaton to Threemile Slough on the Sacramento River from June 1 through August 15, 2021.

The 2021 TUCP is based on operations described in the 2020 Record of Decision implementing Alternative 1, which was consulted upon for the 2019 NMFS and USFWS Biological Opinions for the Re-initiation of Consultation (ROC) on the Long-Term Operation (LTO) of the CVP and SWP, and the 2020 Incidental Take Permit (ITP) from CDFW for Long-Term Operation of the SWP, as analyzed in the Final Environmental Impact Report certified by DWR on March 27, 2020.

## **Purpose of Biological Review**

As described in the 2021 TUCP, legal users to water will not be injured by the requested changes, nor will the requested changes have an unreasonable effect to fish and wildlife. In support of the 2021 TUCP, Reclamation and DWR have prepared this Biological Review of these proposed changes for compliance with the Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code), which establishes California's statutory authority for the protection of water quality. Under the Porter-Cologne Water Quality Control Act, the State must adopt water quality policies, plans, and objectives that protect the State's waters. The Porter-Cologne Water Quality Control Act sets forth the obligations of the Water Board and Regional Water Quality Control Boards pertaining to the adoption of Basin Plans and establishment of: (1) beneficial uses to be protected; (2) water quality objectives for the reasonable protection of beneficial uses, and (3) a program of implementation for achieving the water quality objectives. The beneficial uses protected in Basin Plans include fish and wildlife, rare, threatened, or endangered species, and their habitats. Additional information is also provided in the Biological Review to inform the Water Board with respect to potential effects to other public trust resources, such as fish and wildlife. The Biological Review included coordination with, and input from CDFW, NMFS, USFWS, and the Water Board staff to help inform the Biological Review to determine if the proposed changes would result in an unreasonable impact on fish, wildlife, or other instream resources.

*Attachment 2. Biological Review for the 2021 June through August TUCP***Scope of Analysis**

The area of analysis for the Biological Review is limited to the Sacramento-San Joaquin Delta (Delta) region because the proposed modification to D-1641 standards associated with the TUCP address Delta conditions. The 2020 Record of Decision implementing the Proposed Action consulted upon for the NMFS 2019 Biological Opinions addresses ESA species on the Sacramento River, Clear Creek, Stanislaus River, and American River, and their flow and temperature management requirements, and the NMFS 2016 Biological Opinion addresses Feather River flow management requirements.

The Biological Review assesses the potential for additional unreasonable impacts that could result from the TUCP, specifically, those actions identified in Table 1 above. DWR is also planning the construction and operation of an emergency drought barrier (EDB) in West False River as a separate drought contingency measure. While the EDB is being pursued as a separate action (separate from the TUCP), and will undergo its own review, it is included in the Delta Simulation Model II (DSM2) hydrodynamic modeling study to support the 2021 TUCP analysis and conclusions in this Biological Review. A description of the DWR DSM2 hydrodynamic study is provided below.

**Methods and Modeling**

The potential impacts of the proposed June through August 2021 operational actions as part of the TUCP are considered in the context of conceptual models. For example, the delta smelt conceptual model (Interagency Ecological Program Management, Analysis, and Synthesis Team 2015); the NMFS and USFWS CVP/SWP Biological Opinions (NMFS 2019 and USFWS 2019); the CDFW ITP (CDFW 2020); conceptual models for winter-run Chinook salmon (Windell et al. 2017), and green sturgeon (Heublein et al. 2017a,b); and other information as cited below.

**DSM2 Modeling**

DSM2 simulations were performed and evaluated for two operational management scenarios, a TUCP case and base case representing operations that would occur without the TUCP. These simulations were designed to evaluate potential impacts of the TUCP on Delta flows, salinity, and other factors, in order to infer potential impacts to fish and aquatic resources as part of this biological review.

To model the Delta flows, water levels and salinity, Delta models such as DSM2 need boundary inflows, exports and diversions, stages, and salinity. Up to the point where the forecast begins, DSM2 uses observed historical data. For inflows to and exports from the Delta, DSM2 uses the forecasted data from DWR's Delta Coordinated Operations (DCO) model that determine allocations to SWP water supply contractors. Information that is fed into the DCO includes hydrology data, contractor delivery requests, and legal restrictions on exports. The DCO allocation forecasts that were used for this analysis utilized a May forecast with a 90% exceedance hydrology. This represents a forecast for a very dry



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year. Based on historical data, a 90% exceedance hydrology assumes that only one in ten years would be drier than this forecast.

Two scenarios were run with DSM2. Scenario 1 (referred to as base case or baseline) consists of the May 1, 2021 forecast (May forecast) 90% exceedance hydrology from the DCO model meeting the objectives in D-1641, while scenario 2 consists of the May forecast 90% exceedance hydrology from the DCO model meeting the modified objectives put forward in the TUCP. No drought barrier is assumed in the baseline scenario, while the TUCP scenario includes the installation of the EDB from July 1 through October 31, 2021. Non-hydrologic modeling assumptions are listed below; these assumptions are common to both the baseline and TUCP scenarios:

1. Clifton Court Forebay gates are operating to Priority 1 through the end of the forecast period.
2. The Delta Cross Channel gates are currently closed, then open on May 28, close on June 1, open on June 4, close on June 7, open on June 11, and thereafter remain open until December 1.
3. Suisun Marsh – the flashboards are currently in place, and as of May 5, one of the salinity control gates is in tidal operation. The remaining two gates are in closed position for maintenance. The flashboards are scheduled to be removed on June 3 and at that time, one gate will be in the open position, one gate will be closed (for refurbishment), and the gate that is currently under repair will be in the closed position until repaired.
4. The Middle River agricultural barrier is in place on May 15 and is breached on November 2.
5. The Old River at Tracy agricultural barrier is in place on May 29 and is breached on November 2.
6. The Grant Line Canal agricultural barrier is in place on June 1 and is breached on November 11.

While these assumptions were used to create a conservative modeling scenario, actual operations may differ and will depend on real time conditions. Actual operations will be shared with and discussed through the WOMT. DCO Delta flow estimates are included in Attachment 3 “*Delta Summary*”.

## **Analysis of the Impacts of TUCP**

### **Ecosystem Impacts**

Impacts of the June–August 2021 TUCP on focal species and their habitat are discussed in the sections below. Impacts to species and their habitat reflect ecosystem-level impacts of drought conditions, key among them being factors such as potential impacts on food webs. July–September Delta outflow is positively correlated with the density of the zooplankton *Pseudodiaptomus forbesi* (an important prey item for species including

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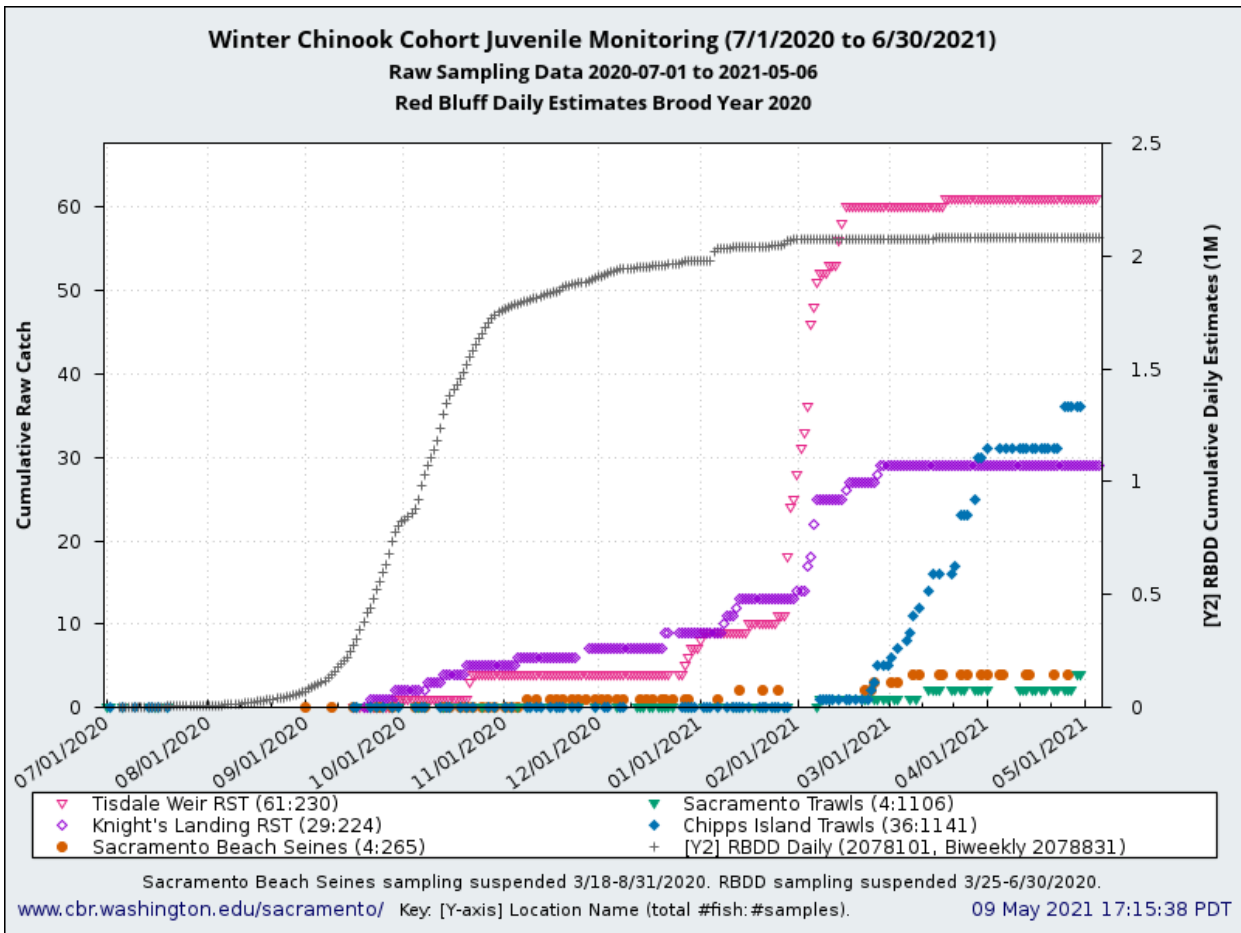
delta smelt and longfin smelt) in the low salinity zone as a result of spatial subsidy from the freshwater Delta (Kimmerer et al. 2018). Drought conditions would be expected to reduce the density of *P. forbesi* but there is uncertainty in the extent to which this would be affected by the TUCP on top of baseline drought conditions given that tidal mixing mediates a large part of plankton movement in dry periods when net flows are low (Kimmerer et al. 2019). The density in the low salinity zone of *Eurytemora affinis*, another zooplankton species preyed upon by smelt and other species, has a statistically significant negative correlation with March–May X2, which is prior to the start of the TUCP period changing operations, indicating that the 2021 TUCP would not be expected to have different impacts on this species compared to baseline conditions. The density of mysid shrimp *Neomysis mercedis* (prey for species such as longfin smelt) in the low salinity zone has also been correlated with X2 during May–October, although Kimmerer (2002) observed a change in the relationship from negative to positive following 1987, indicating that less delta outflow (greater X2) under the 2021 TUCP during June–August would not be expected to negatively affect mysid density. Abundance indices of silversides, predators of larval delta smelt, are negatively related to Delta inflow (Mahardja et al. 2016) and so silverside abundance could increase as a result of the drought, although it is uncertain to what extent this would occur and whether there would be additional impacts from the TUCP on top of drought impacts. Reduced Delta inflow and increased residence time may contribute to the general drought-related increase in intensity of *Microcystis* harmful algal blooms (Lehman et al. 2018). The extent to which the TUCP’s changed operations from baseline conditions would affect harmful algal blooms is uncertain but likely small given that water temperature is the main driver of bloom intensity (Lehman et al. 2020a). Less Delta outflow under drought conditions would move the salinity field upstream, allowing the invasive clam *Potamocorbula amurensis* to move further upstream and thereby expand its range and overall grazing rate if salinity remains high enough for several months (Kimmerer et al. 2019), although the incremental additional effect of the TUCP on top of the drought is small (see more detailed analysis of changes in the salinity field in *Impacts of TUCP on Delta Smelt*). Discussion of other relevant ecosystem impacts is provided in the species-specific analyses below.

## **Winter-Run Chinook Salmon**

### **Presence and Life Stages of Winter-Run Chinook Salmon**

By late April 2021, all juveniles from Brood Year (BY) 2020 spawning by winter-run Chinook salmon adults had passed Red Bluff Diversion Dam and catches at monitoring locations further downstream in the Sacramento River and Delta suggest all or nearly all juvenile winter-run Chinook salmon have entered and left the Delta (Figure WR1). This is consistent with historical timing suggested in summaries by NMFS (2019: Tables WR1 and WR2) and the SacPAS database of Central Valley monitoring efforts (Figures WR2, WR3, WR4, and WR5). Adult winter-run may also occur in the Delta in June (Table WR2).

Attachment 2. Biological Review for the 2021 June through August TUCP



**Figure WR1. Raw Catch of Juvenile Winter-Run Chinook Salmon from Brood Year 2020 to May 6, 2021.**

## Attachment 2. Biological Review for the 2021 June through August TUCP

**Table WR1. Temporal Occurrence of Sacramento River Winter-Run Chinook Salmon by Life Stage in the Sacramento River**

| Relative Abundance                               | High (▼) |     |     | Medium (☒) |     |     | Low (#) |     |     | None (-) |     |     |
|--|----------|-----|-----|------------|-----|-----|---------|-----|-----|----------|-----|-----|
| Adults Freshwater                                | Month    |     |     |            |     |     |         |     |     |          |     |     |
|  | Jan      | Feb | Mar | Apr        | May | Jun | Jul     | Aug | Sep | Oct      | Nov | Dec |
| Sacramento River basin <sup>a,b</sup>            | ☒        | ☒   | ☒   | ☒          | ☒   | ☒   | ☒       | -   | -   | -        | ☒   | ☒   |
| Upper Sacramento River spawning <sup>c</sup>     | -        | -   | -   | -          | #   | ▼   | ▼       | ☒   | -   | -        | -   | -   |
| Juvenile Emigration                              | Month    |     |     |            |     |     |         |     |     |          |     |     |
| Location   | Jan      | Feb | Mar | Apr        | May | Jun | Jul     | Aug | Sep | Oct      | Nov | Dec |
| Sacramento River at Red Bluff <sup>d</sup>       | #        | #   | #   | -          | -   | -   | #       | ☒   | ☒   | ☒        | ☒   | ☒   |
| Sacramento River at Knights Landing <sup>e</sup> | ▼        | ☒   | #   | -          | -   | -   | -       | -   | -   | #        | ☒   | ▼   |
| Sacramento trawl at Sherwood Harbor <sup>f</sup> | ☒        | ▼   | ▼   | #          | -   | -   | -       | -   | -   | -        | ☒   | ▼   |
| Midwater trawl at Chipps Island <sup>f</sup>     | ☒        | ☒   | ▼   | ▼          | #   | -   | -       | -   | -   | -        | -   | #   |

Sources: <sup>a</sup>Yoshiyama et al. (1998), Moyle (2002); <sup>b</sup>Myers et al. (1998); <sup>c</sup>Williams (2006); <sup>d</sup>Martin et al. (2001); <sup>e</sup>Knights Landing Rotary Screw Trap Data, CDFW (1999-2019); <sup>f</sup>Delta Juvenile Fish Monitoring Program, USFWS (1995-2019), del Rosario et al. (2013).

Source: National Marine Fisheries Service 2019:67.

**Table WR2. Temporal Occurrence of Sacramento River Winter-Run Chinook Salmon by Life Stage in the Delta**

| Relative Abundance    | High (▼) |     |     | Medium (☒) |     |     | Low (#) |     |     | None (-) |     |     |
|-----------------------|----------|-----|-----|------------|-----|-----|---------|-----|-----|----------|-----|-----|
| Life-Stage            | Month    |     |     |            |     |     |         |     |     |          |     |     |
|                       | Jan      | Feb | Mar | Apr        | May | Jun | Jul     | Aug | Sep | Oct      | Nov | Dec |
| Adult <sup>1</sup>    | ☒        | ▼   | ▼   | ▼          | ☒   | ☒   | -       | -   | -   | -        | ☒   | ☒   |
| Juvenile <sup>2</sup> | #        | ☒   | ▼   | ☒          | -   | -   | -       | -   | -   | #        | #   | ☒   |
| Salvaged <sup>3</sup> | ☒        | ▼   | ▼   | #          | #   | #   | -       | -   | -   | -        | -   | #   |

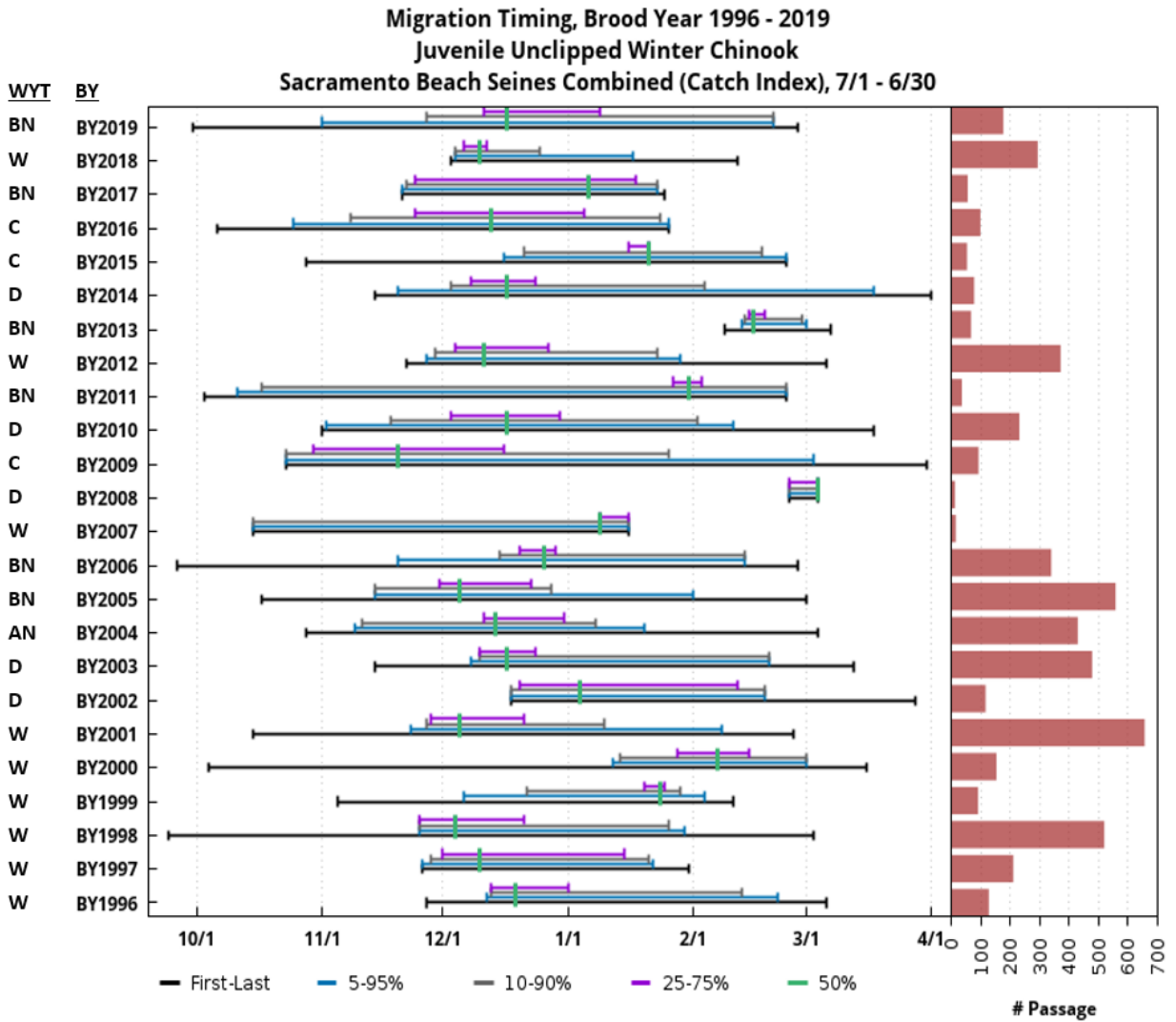
<sup>1</sup> Adults enter the Bay November to June (Hallock and Fisher 1985) and are in spawning ground at a peak time of June to July (Vogel and Marine 1991).

<sup>2</sup> Juvenile presence in the Delta was determined using Delta Juvenile Fish Monitoring Program data.

<sup>3</sup> Months in which salvage of wild juvenile winter-run at State and Federal pumping plants occurred (National Marine Fisheries Service 2016c).

Source: National Marine Fisheries Service 2019:68.

Attachment 2. Biological Review for the 2021 June through August TUCP

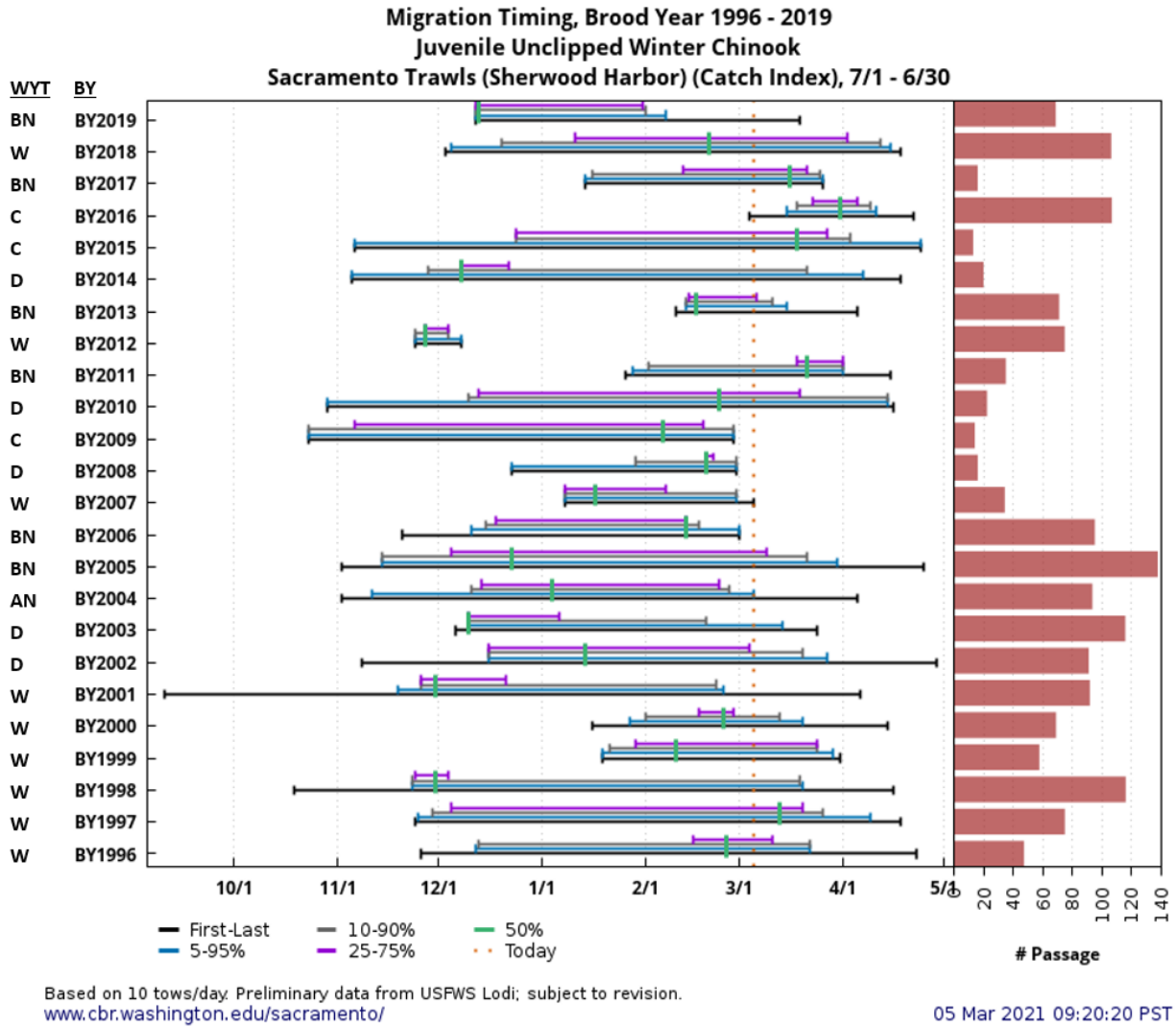


Based on 8 hauls/day. Preliminary data from USFWS Lodi; subject to revision. No sampling 3/18-8/31/2020.  
[www.cbr.washington.edu/sacramento/](http://www.cbr.washington.edu/sacramento/)

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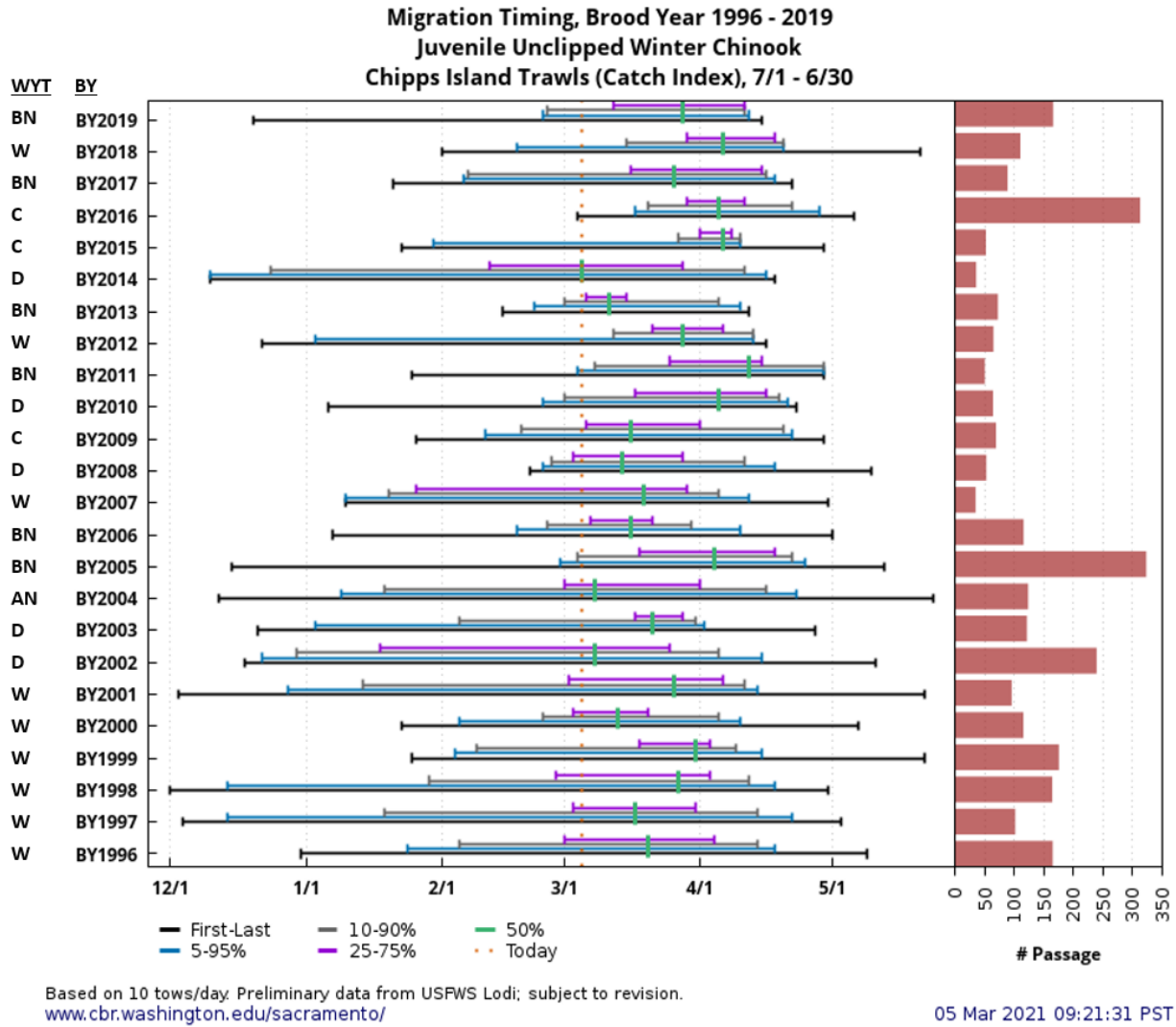
**Figure WR2. Catch Index Timing and Number of Unclipped Juvenile Winter-Run Chinook Salmon in Sacramento Beach Seines.**

Attachment 2. Biological Review for the 2021 June through August TUCP



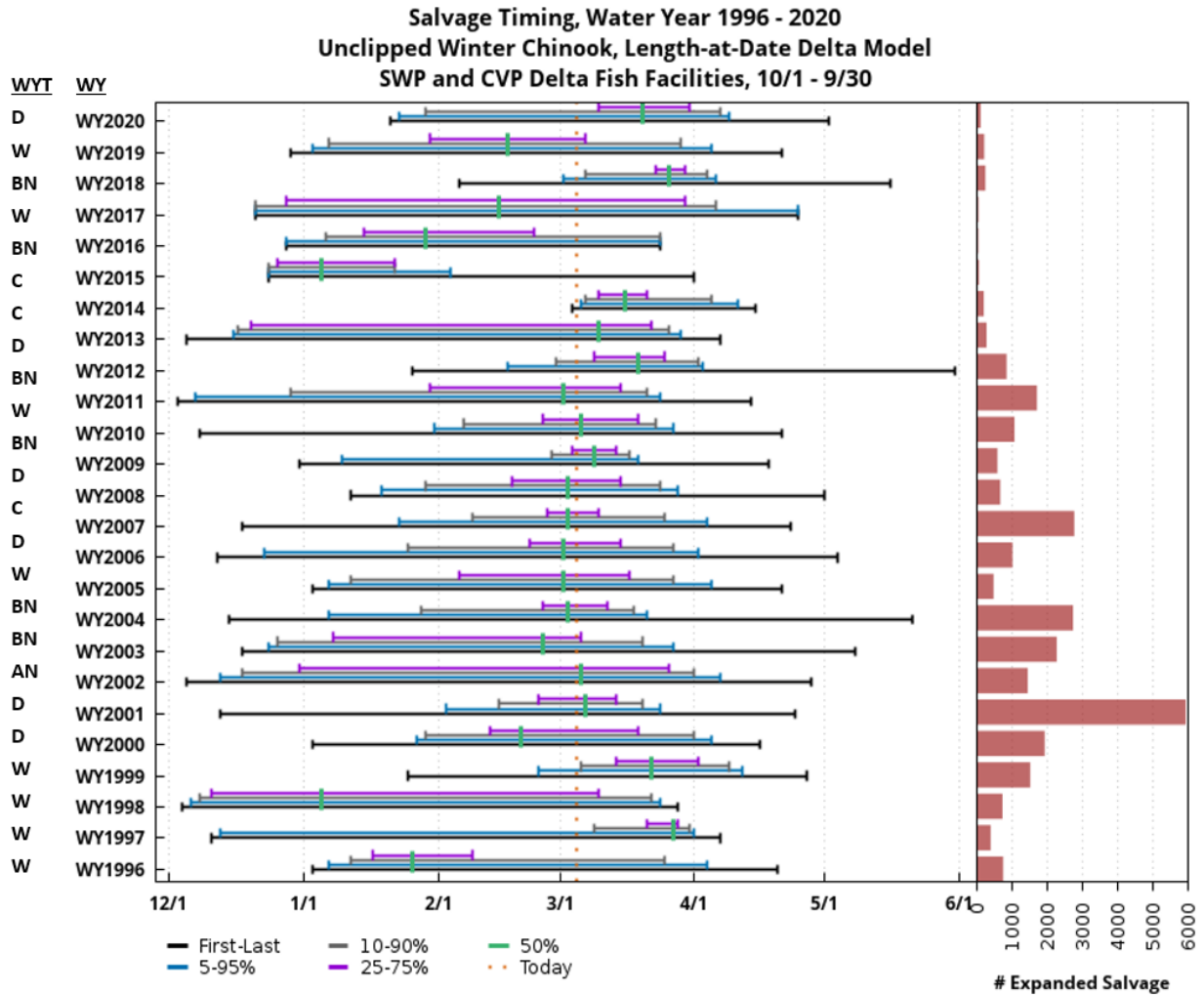
**Figure WR3. Catch Index Timing and Number of Unclipped Juvenile Winter-Run Chinook Salmon in Sacramento Trawls at Sherwood Harbor.**

Attachment 2. Biological Review for the 2021 June through August TUCP



**Figure WR4. Catch Index Timing and Number of Unclipped Juvenile Winter-Run Chinook Salmon in Chippis Island Trawls.**

Attachment 2. Biological Review for the 2021 June through August TUCP



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**Figure WR5. Timing and Number of Unclipped Juvenile Winter-Run Chinook Salmon (Race Determined from Length at Date) at the State Water Project and Central Valley Project South Delta Fish Salvage Facilities.**



*Attachment 2. Biological Review for the 2021 June through August TUCP***Impacts of TUCP on Winter-Run Chinook Salmon**

Per the presence summary above, BY 2020 winter-run Chinook salmon juveniles will likely have completely or almost completely exited the Delta by the time the TUCP results in less Delta outflow beginning in June 2021. Any individuals migrating in June could experience reduced through-Delta survival based on factors such as increasing reverse flows and slower mean velocity resulting in longer travel times (e.g., Romine et al. 2013; Perry et al. 2018) as a result of the TUCP, and thereby increasing predation risk relative to baseline conditions. DSM2 modeling results for the Sacramento River at Freeport and Delta Cross Channel gate opening status were used to estimate through-Delta survival based on the model of Perry et al. (2018)<sup>1</sup>. Estimates of through-Delta survival based on this model essentially integrate flow impacts on north Delta hydrodynamics, including channel flow and proportion of flow entering distributaries such as Georgiana Slough. The modeling results indicated that the differences in Delta inflow may result in relatively small differences in through-Delta survival probability of juvenile Chinook salmon (3% or less; Table WR3). These results reflect factors such as flow-survival relationships as well as entry into low-survival pathways. The Perry et al. (2018) model estimated juvenile Chinook salmon entry into the low-survival interior Delta through Georgiana Slough and the Delta Cross Channel from the Sacramento River would be similar or slightly greater (0–2%) under the TUCP relative to baseline (Table WR4).

Table WR3. Mean Monthly Probability of Through-Delta Survival of Juvenile Chinook Salmon Based on Freeport Flow and Delta Cross Channel Position from the Model of Perry et al. (2018).

| <b>Month</b> | <b>Baseline</b> | <b>TUCP</b> |
|--------------|-----------------|-------------|
| June         | 0.33            | 0.32 (-3%)  |
| July         | 0.37            | 0.36 (-2%)  |
| August       | 0.35            | 0.35 (0%)   |

Note: Percentage difference in parentheses represents TUCP minus baseline. The full TUCP period (June–August) was modeled to provide perspective for juvenile Chinook salmon in general, given discussion of spring-run and fall/late fall-run below, and the summary by Williams (2006: 91) showing small numbers of juvenile Chinook salmon occur in July and August.

Table WR4. Mean Monthly Probability of Juvenile Chinook Salmon Entering the Interior Delta Through Georgiana Slough and the Delta Cross Channel Based on Freeport Flow and Delta Cross Channel Position from the Model of Perry et al. (2018).

<sup>1</sup> The North Delta Routing Management Tool is a spreadsheet-based tool that was provided by Perry (pers. comm.) and reproduces the mean response of the STARS (Survival, Travel time, And Routing Simulation) model (Perry et al. 2019).

*Attachment 2. Biological Review for the 2021 June through August TUCP*

| <b>Month</b> | <b>Baseline</b> | <b>TUCP</b> |
|--------------|-----------------|-------------|
| June         | 0.31            | 0.32 (2%)   |
| July         | 0.28            | 0.29 (1%)   |
| August       | 0.29            | 0.29 (0%)   |

Note: Percentage difference in parentheses represents TUCP minus baseline.

As noted in the 2015 TUCP biological reviews, at low outflow (i.e., decreased as a result of decreased riverine inflow), channel margin habitat becomes exposed above the surface of the water and is unavailable to juvenile salmonids present. This lack of cover in habitat may reduce juvenile survival. The 2015 TUCP biological reviews hypothesized that lower outflows may intensify the density of littoral predators into a smaller, shallower area and/or decrease the quantity of cover available to outmigrating salmonids to avoid predators, but noted that there is a high level of uncertainty in this conclusion. Increases in aquatic vegetation due to low outflow may also provide increased habitat for invasive predators such as largemouth bass (Conrad et al. 2016; Kimmerer et al 2019). Durand et al. (2016) examined factors affecting the submerged aquatic vegetation species and did not find a clear effect of flow (water velocity), noting that factors other than flow may have had a greater effect on long-term increases, including increased water clarity; they also suggested that other important factors that should be considered are the effects of previous occupancy by the vegetation, increased temperatures, and changing nutrient concentrations. As such, although the TUCP would affect flow, overall drought conditions would be the main driver of changes in submerged aquatic vegetation. Drought-related increases in submerged aquatic vegetation extent may persist beyond the end of drought conditions, as illustrated by the previous drought (Kimmerer et al. 2019), and thus could increase predation risk for subsequent year-classes of juvenile winter-run Chinook salmon.

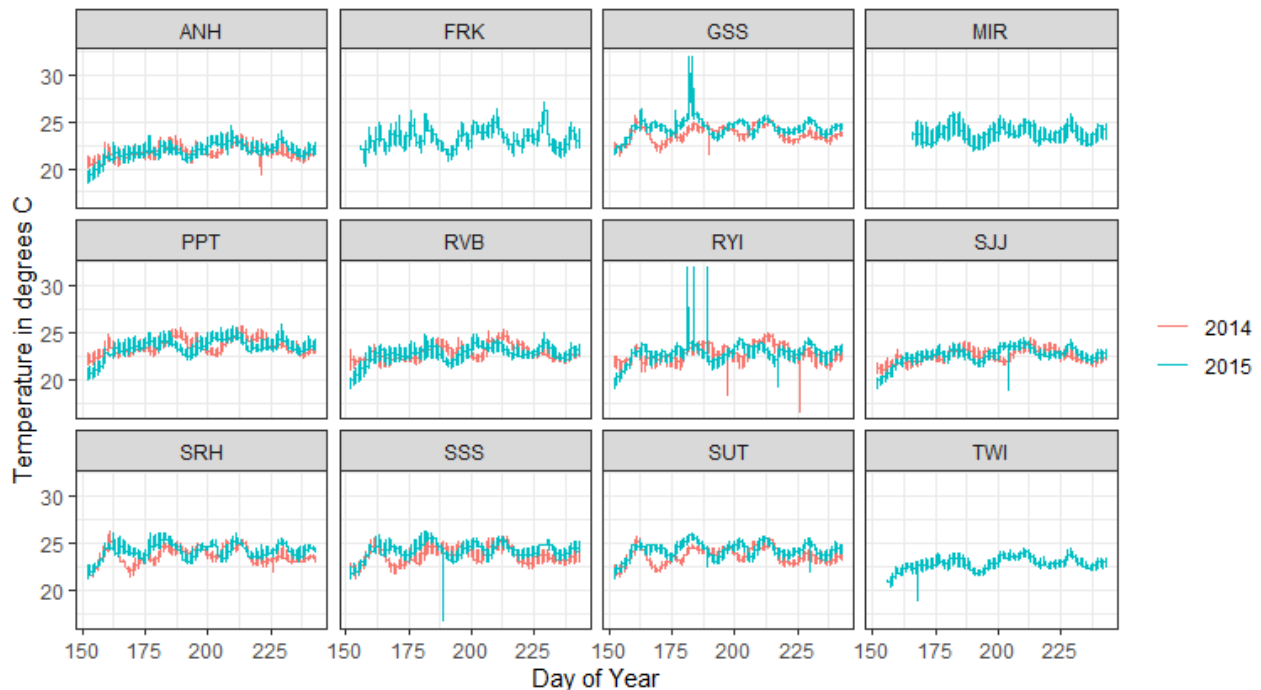
Reduced Delta inflow and increased residence time as a result of less south Delta exports may contribute to the general drought-related increase in intensity of *Microcystis* harmful algal blooms (Lehman et al. 2018), although this would be unlikely to impact winter-run Chinook salmon during the TUCP period. Drought conditions generally appear to increase susceptibility to pathogens as a result of factors such as salinity intrusion (Lehman et al. 2020b), although impacts of the TUCP would be limited relative to the overall impacts of the drought (see, for example, discussion of salinity impacts in the delta smelt analysis).

In order to minimize entrainment loss of juvenile winter-run Chinook salmon continuous real-time monitoring is required by NMFS (2019) CVP/SWP Biological Opinion and the CDFW (2020) SWP ITP. The TUCP's limits on south Delta export pumping would not contribute to increased species risk, particularly given nearly all juvenile winter-run would be expected to have left the Delta by the time the TUCP operations begin in June.

Based on timing information in Table WR2 above, some adult winter-run Chinook salmon

*Attachment 2. Biological Review for the 2021 June through August TUCP*

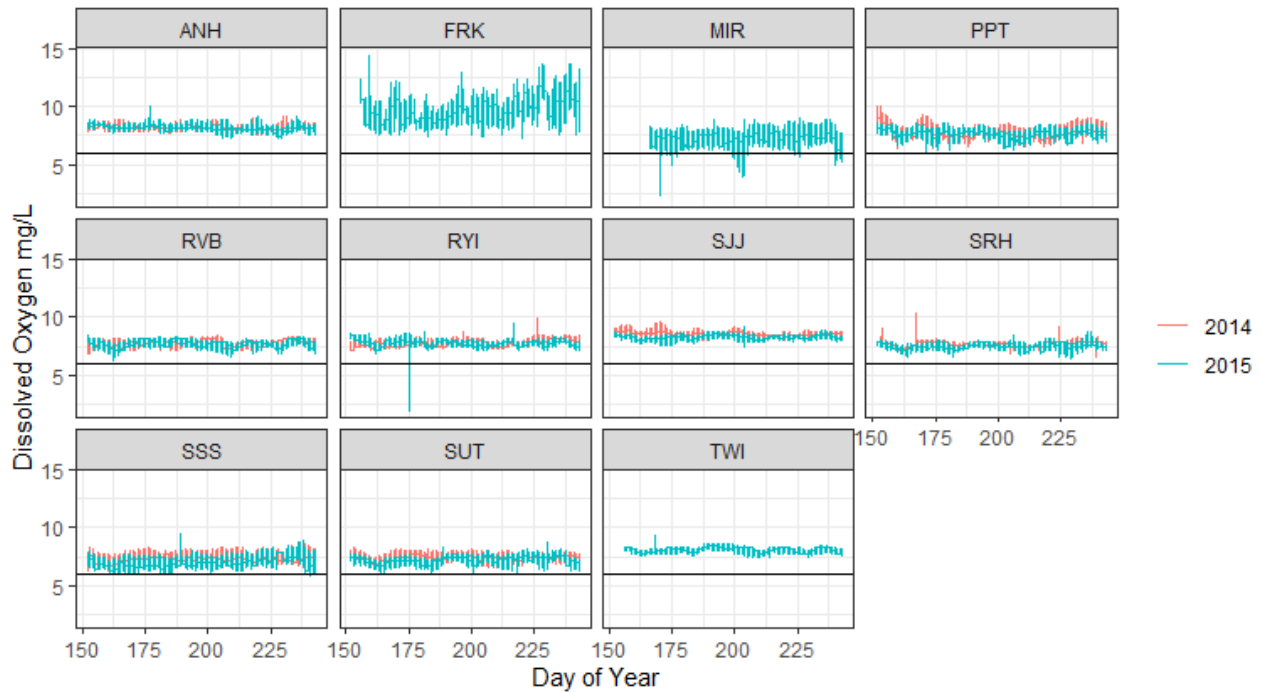
could be migrating through the Delta in June. Based on temperatures in the 2014/2015 drought years, conditions would likely be suboptimal (20–21°C) and in the range of potential mortality (>21–24°C) based on criteria outlined by Moyle et al. (2017: 50) (Figure WR5). Moyle et al. (2017: 50) noted that migration usually stops at >21°C and that adults migrating at higher temperatures are probably moving between cooler refuges. Data for June 2014 and June 2015 showed that although mean Sacramento River inflow was higher in 2014 (monthly mean of ~8,900 cfs per the DAYFLOW database) compared to 2015 (monthly mean of ~6,900 cfs), temperature was not consistently different as a result (Figure WR5). This is consistent with atmospheric forcing being the main driver of water temperature (Wagner et al. 2011) rather than reservoir operations and suggests there would be little difference in temperature experienced by migrating adult winter-run Chinook salmon between the TUCP (modeled mean June 2021 Sacramento River inflow = 7,100 cfs) and baseline conditions (modeled mean June 2021 Sacramento River inflow = 7,950 cfs) (see Attachment 3). Dissolved oxygen conditions during June in the 2014/2015 drought were generally above 6 mg/l (Figure WR6), a level used for water quality compliance in the San Joaquin River under D-1641 (for adult fall-run Chinook salmon migration), suggesting that despite differences in flows between years, dissolved oxygen was not clearly linked to these differences. This again suggests there would be little difference in dissolved oxygen between TUCP and baseline conditions.



**Figure WR5. Hourly Mean Temperature at Various Monitoring Locations, June–August 2014 and 2015.**

*Attachment 2. Biological Review for the 2021 June through August TUCP*

Source: California Data Exchange Center (CDEC). Stations are San Joaquin River at Antioch (ANH); Frank's Tract Mid Tract (FRK); Georgiana Slough at Sacramento River (GSS); Miner Slough near Sacramento River (MIR); San Joaquin River at Prisoners Point (PPT); Sacramento River at Rio Vista Bridge (RVB); Cache Slough at Ryer Island (RYI); San Joaquin River at Jersey Point (SJJ); Sacramento River at Hood (SRH); Steamboat Slough between Sacramento River and Sutter Slough (SSS); Sutter Slough at Courtland (SUT); and San Joaquin River at Twitchell Island (TWI). June 1 = day 152; July 1 = day 183; August 1 = day 213.



**Figure WR6. Hourly Mean Dissolved Oxygen at Various Monitoring Locations, June–August 2014 and 2015.**

Source: California Data Exchange Center (CDEC). Source: California Data Exchange Center (CDEC). Stations are San Joaquin River at Antioch (ANH); Frank's Tract Mid Tract (FRK); Miner Slough near Sacramento River (MIR); San Joaquin River at Prisoners Point (PPT); Sacramento River at Rio Vista Bridge (RVB); Cache Slough at Ryer Island (RYI); San Joaquin River at Jersey Point (SJJ); Sacramento River at Hood (SRH); Steamboat Slough between Sacramento River and Sutter Slough (SSS); Sutter Slough at Courtland (SUT); and San Joaquin River at Twitchell Island (TWI). June 1 = day 152; July 1 = day 183; August 1 = day 213. Reference line shows 6 mg/l dissolved oxygen.

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Delta Cross Channel operations would not differ between TUCP and baseline, thus there would not be any difference between TUCP and baseline in delay of adult winter-run Chinook salmon that may move upstream via the Mokelumne River when the Delta Cross Channel is open. There is little information from which to infer the potential for migratory delay because of reductions in Delta inflow (e.g., reduced upstream migration cues), although the available information for hatchery fall-run Chinook salmon indicates stray rates of fish returning to the Sacramento River are always low (Marston et al. 2012), suggesting relatively little influence of flows and therefore no likely difference between TUCP and baseline for the remainder of winter-run Chinook salmon adults that may be returning in June.

**Conclusions for Winter Run Chinook Salmon**

In the Delta, all or nearly all BY 2020 juvenile winter-run Chinook salmon would have exited the Delta by the time the TUCP changes to operations would begin in June 2021. Regardless, any BY 2020 juvenile winter-run in the Delta would not experience greater risk of entrainment in June 2021, as a result of very low exports under the TUCP and continued implementation of entrainment risk assessment and operations adjustments from the NMFS (2019) Biological Opinion and the CDFW (2020) ITP. Through-Delta survival of any remaining juveniles migrating in June could be slightly lower (3% on average) than baseline as a result of less Delta inflow affecting north Delta hydrodynamics, including slightly greater entry into the interior Delta through Georgiana Slough (note that Delta Cross Channel operations would not be different between TUCP and baseline). Survival estimates are within the range evaluated by NMFS (2019<sup>2</sup>). Temperature migration conditions for any winter-run Chinook salmon adults occurring in June would be poor under both TUCP and baseline conditions and reflect atmospheric conditions rather than operational differences.

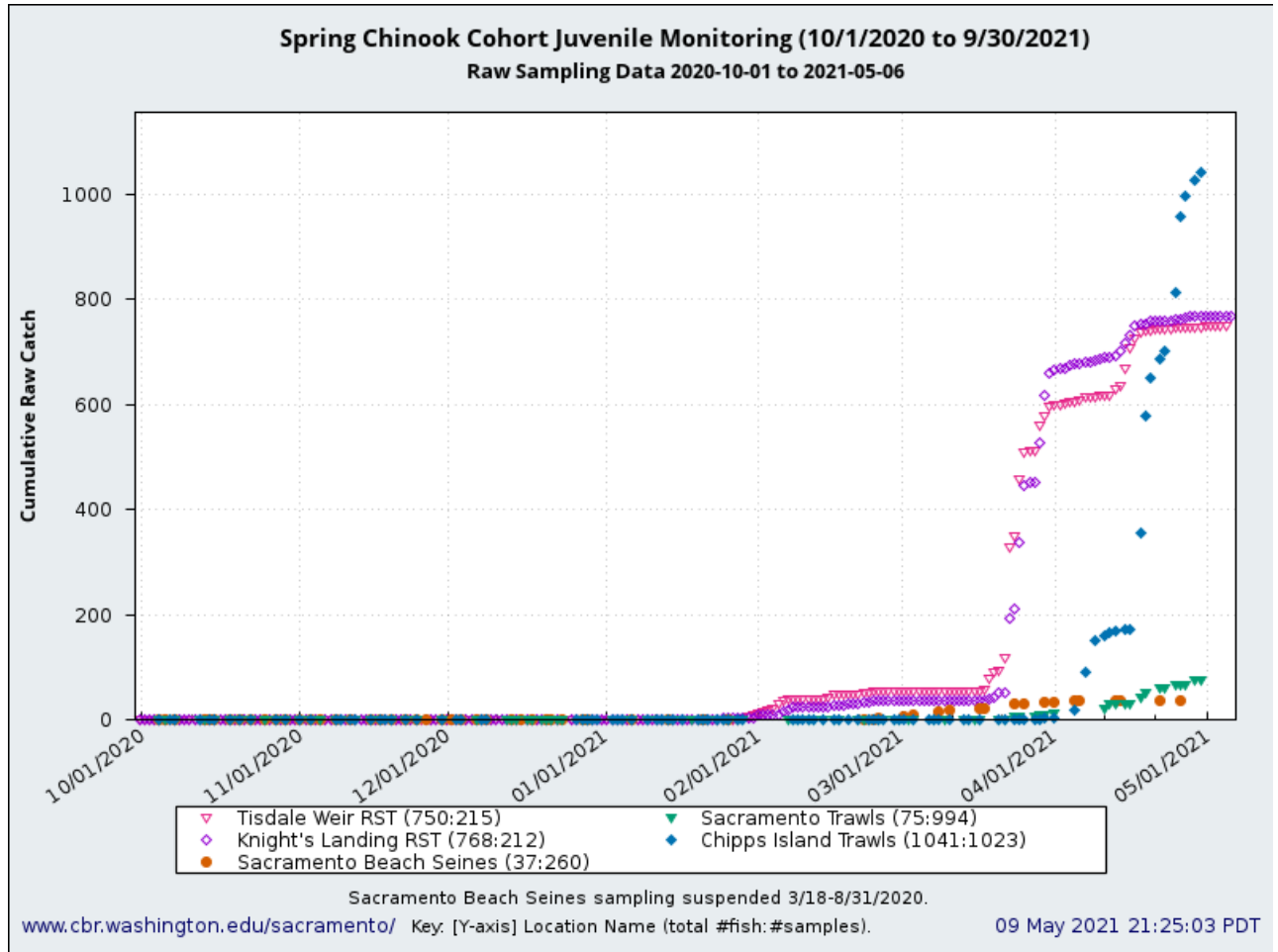
**Spring-Run Chinook Salmon****Presence and Life Stages of Spring-Run Chinook Salmon**

By early May 2021, many young-of-the-year juveniles from BY 2021 spawning by spring-run Chinook salmon adults had likely entered the Delta (Figure SR1). Historical migration timing data suggest that most young-of-the-year juveniles should have left the Delta in May, with only very low numbers remaining in June (Tables SR1 and SR2; Figures SR3, SR4, and SR5). The footnote for Table SR1 indicates that yearlings downstream emigration generally occurs in fall and winter. Adult presence in the Delta extends into June (Table SR2).

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<sup>2</sup> Full documentation of survival values evaluated by NMFS was provided by Perry et al. (2019).

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**Figure SR1. Raw Catch of Juvenile Spring-Run Chinook Salmon from Brood Year 2020 to May 6, 2021.**

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**Table SR1. Temporal Occurrence of Central Valley Spring-Run Chinook Salmon by Life Stage in the Sacramento River**

| Relative Abundance                                 | High (▼) |     |     |     | Medium (☒) |     |     |     | Low (#) |     |     |     | None (-) |   |   |   |   |   |   |   |   |   |
|--|----------|-----|-----|-----|------------|-----|-----|-----|---------|-----|-----|-----|----------|---|---|---|---|---|---|---|---|---|
|  | Month    |     |     |     |            |     |     |     |         |     |     |     |          |   |   |   |   |   |   |   |   |   |
| (a) Adult Migration                                | Jan      | Feb | Mar | Apr | May        | Jun | Jul | Aug | Sep     | Oct | Nov | Dec |          |   |   |   |   |   |   |   |   |   |
| Sac. River Basin <sup>a,b</sup>                    | -        | -   | ☒   | ☒   | ☒          | ☒   | ▼   | ▼   | ▼       | ▼   | ☒   | ☒   | ☒        | ☒ | ☒ | # | - | - | - | - | - |   |
| Sac. River Mainstem <sup>b,c</sup>                 | -        | #   | #   | #   | ☒          | ☒   | ☒   | ☒   | ☒       | ☒   | ☒   | ☒   | #        | # | - | - | - | - | - | - | - |   |
| Adult Holding <sup>a,b</sup>                       | -        | -   | #   | #   | ☒          | ☒   | ▼   | ▼   | ▼       | ▼   | ▼   | ▼   | ▼        | ☒ | ☒ | # | # | - | - | - | - |   |
| Adult Spawning <sup>a,b,c</sup>                    | -        | -   | -   | -   | -          | -   | -   | -   | -       | -   | -   | -   | #        | ☒ | ▼ | ▼ | ☒ | # | - | - | - |   |
| (b) Juvenile Migration                             | Month    |     |     |     |            |     |     |     |         |     |     |     |          |   |   |   |   |   |   |   |   |   |
| Location   | Jan      | Feb | Mar | Apr | May        | Jun | Jul | Aug | Sep     | Oct | Nov | Dec |          |   |   |   |   |   |   |   |   |   |
| Sac. River at Red Bluff Diversion Dam <sup>c</sup> | ▼        | ▼   | #   | #   | #          | #   | #   | -   | -       | -   | -   | -   | -        | - | - | - | - | - | ▼ | ▼ | ▼ | ▼ |
| Sac. River at Knights Landing <sup>b</sup>         | ☒        | ☒   | ☒   | ☒   | ▼          | ▼   | ▼   | ▼   | ☒       | ☒   | -   | -   | -        | - | - | - | - | - | ☒ | ☒ | ▼ | ▼ |

Sources: <sup>a</sup>Yoshiyama et al. (1998); <sup>b</sup>Moyle (2002); <sup>c</sup>Myers et al. (1998); <sup>d</sup>Lindley et al. (2004); <sup>e</sup>California Department of Fish and Game (1998); <sup>f</sup>McReynolds et al. (2007); <sup>g</sup>Ward et al. (2003); <sup>h</sup>Snider and Tins (2000b)

Note: Yearling spring-run Chinook salmon rear in their natal streams through the first summer following their birth. Downstream emigration generally occurs the following fall and winter. Most young-of-the-year spring-run Chinook salmon emigrate during the first spring after they hatch.

Source: National Marine Fisheries Service 2019:83.

**Table SR2. Temporal Occurrence of Central Valley Spring-Run Chinook Salmon by Life Stage in the Delta**

| Relative Abundance    | High (▼) |     |     |     | Medium (☒) |     |     |     | Low (#) |     |     |     | None (-) |  |  |  |
|-----------------------|----------|-----|-----|-----|------------|-----|-----|-----|---------|-----|-----|-----|----------|--|--|--|
|                       | Month    |     |     |     |            |     |     |     |         |     |     |     |          |  |  |  |
| Life Stage            | Jan      | Feb | Mar | Apr | May        | Jun | Jul | Aug | Sep     | Oct | Nov | Dec |          |  |  |  |
| Adult <sup>1</sup>    | ☒        | ▼   | ▼   | ▼   | ☒          | ☒   | -   | -   | -       | -   | -   | -   |          |  |  |  |
| Juvenile <sup>2</sup> | #        | #   | #   | ▼   | ☒          | -   | -   | -   | -       | -   | -   | #   |          |  |  |  |
| Salvaged <sup>3</sup> | #        | #   | ☒   | ▼   | ☒          | -   | -   | -   | -       | -   | -   | -   |          |  |  |  |

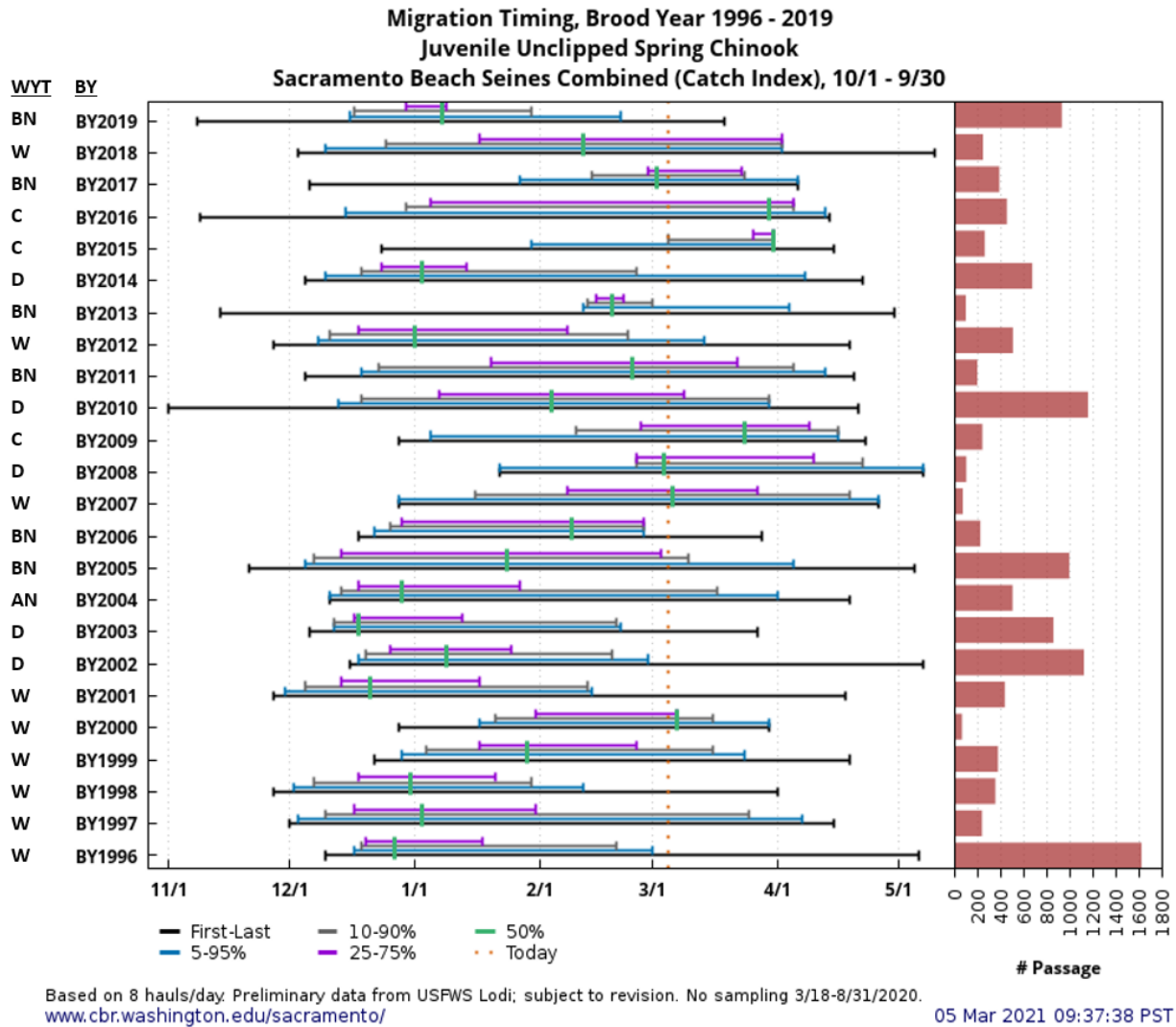
<sup>1</sup>Adults enter the Bay late January to early February (California Department of Fish and Game 1998) and enter the Sacramento River in March (Yoshiyama et al. 1998). Adults travel to tributaries as late as July (Lindley et al. 2004). Spawning occurs September to October (Moyle 2002).

<sup>2</sup>Juvenile presence in the Delta based on Delta Juvenile Fish Monitoring Program data.

<sup>3</sup>Juvenile presence in the Delta based on salvage data (National Marine Fisheries Service 2016a).

Source: National Marine Fisheries Service 2019:84.

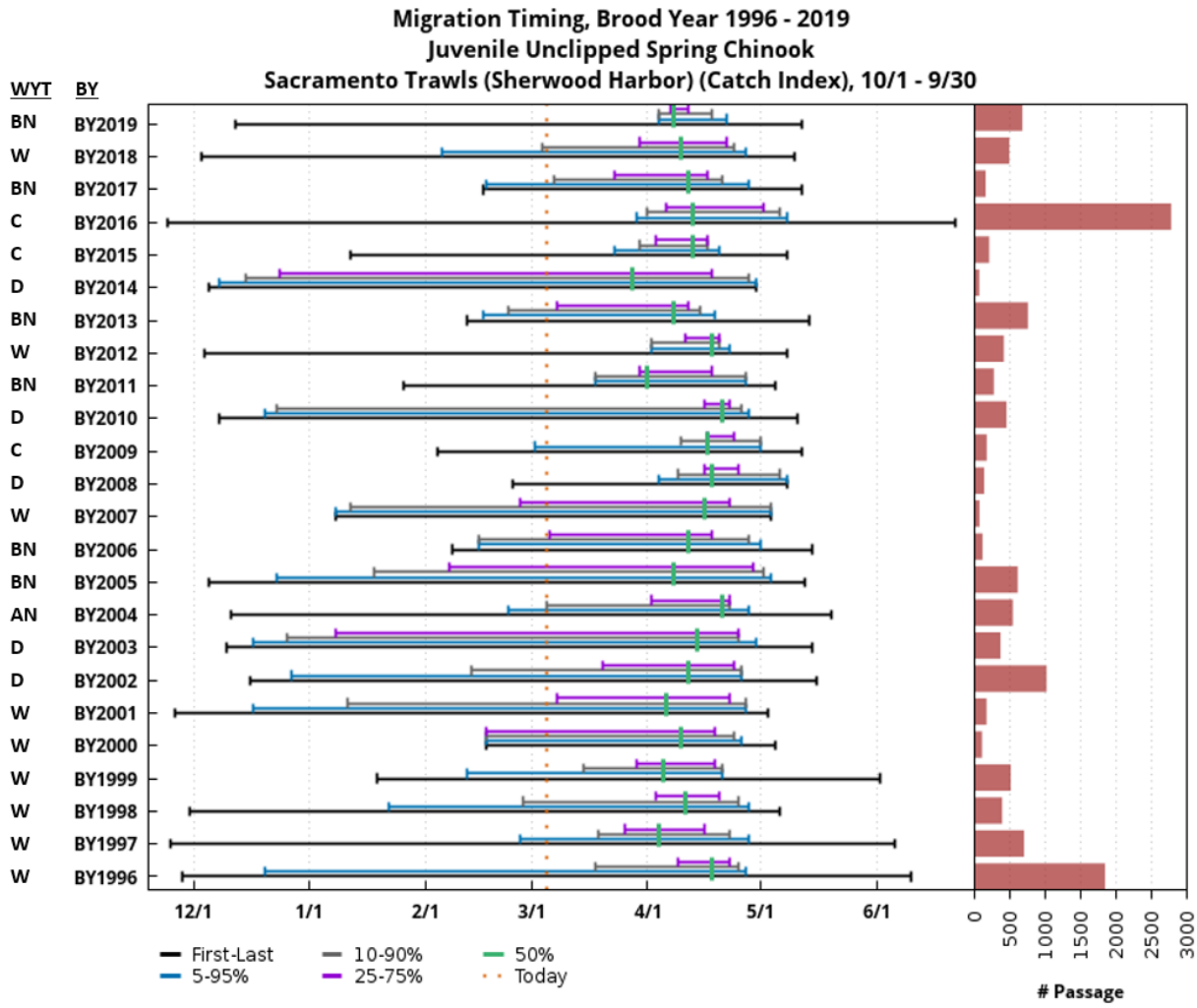
Attachment 2. Biological Review for the 2021 June through August TUCP



**Figure SR2. Catch Index Timing and Number of Unclipped Juvenile Spring-Run Chinook Salmon in Sacramento Beach Seines.**



Attachment 2. Biological Review for the 2021 June through August TUCP

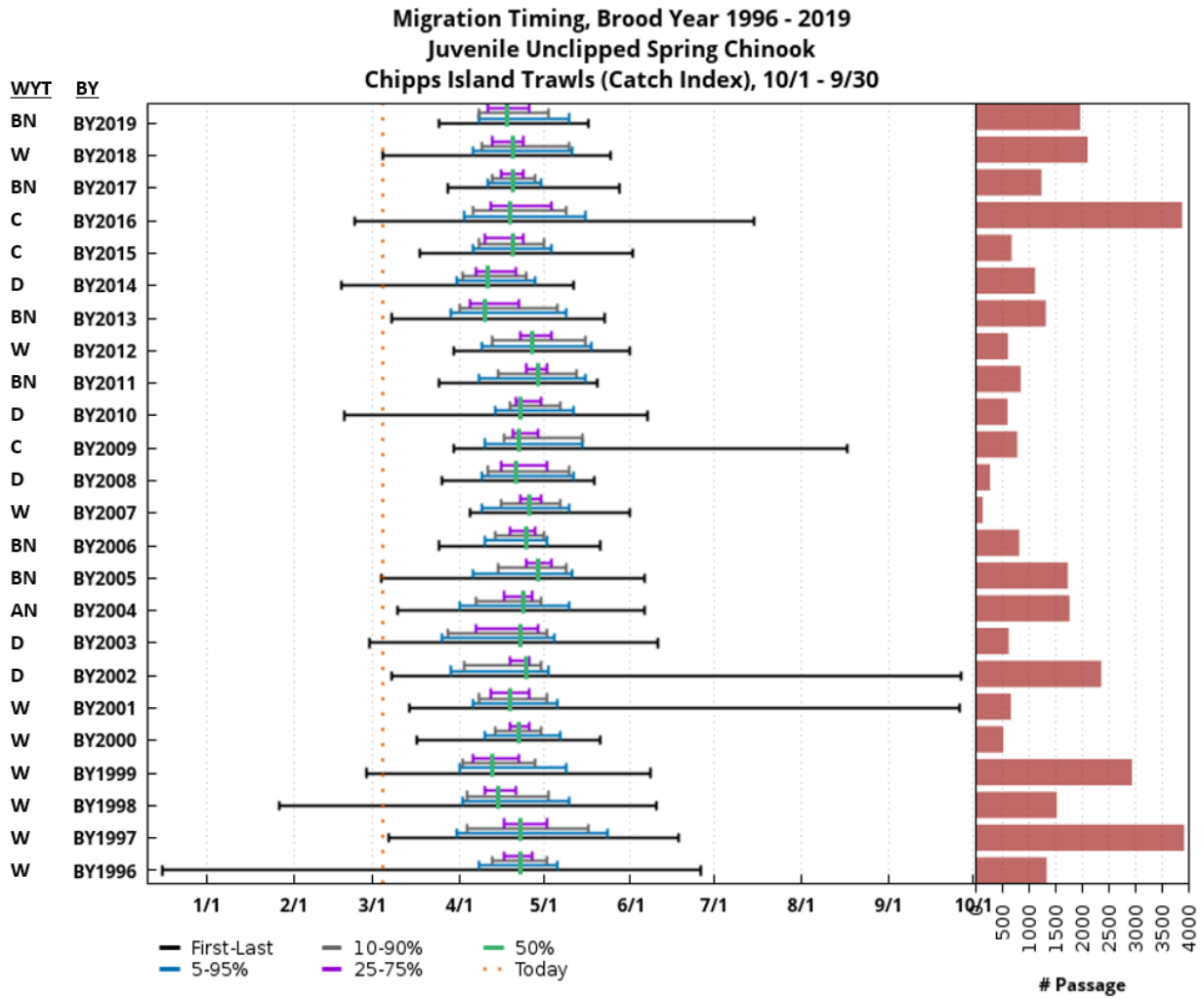


Based on 10 tows/day. Preliminary data from USFWS Lodi; subject to revision.  
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**Figure SR3. Catch Index Timing and Number of Unclipped Juvenile Spring-Run Chinook Salmon in Sacramento Trawls at Sherwood Harbor.**

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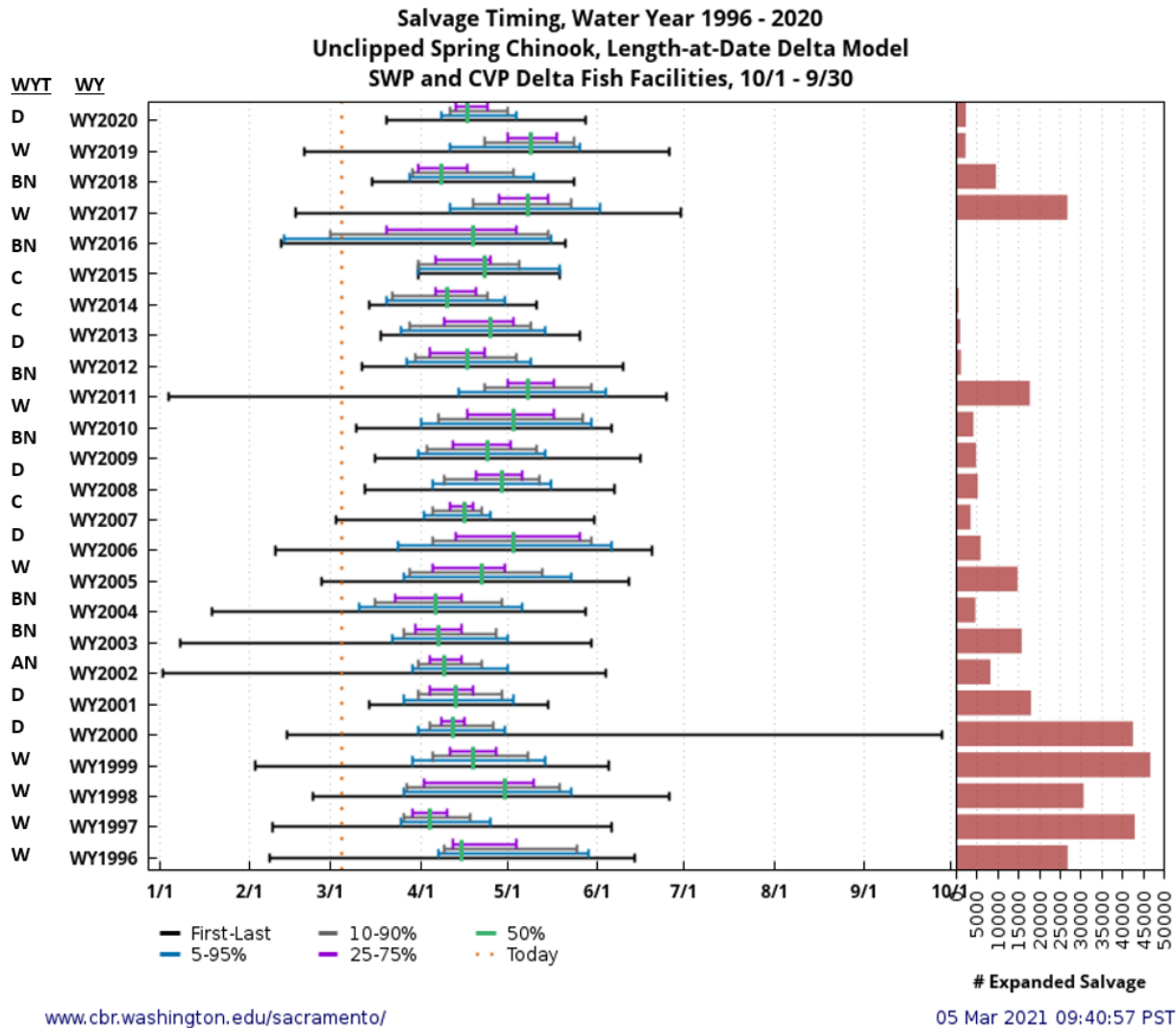


Based on 10 tows/day. Preliminary data from USFWS Lodi; subject to revision.  
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**Figure SR4. Catch Index Timing and Number of Unclipped Juvenile Spring-Run Chinook Salmon in Chippis Island Trawls.**

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**Figure SR5. Timing and Number of Unclipped Juvenile Spring-Run Chinook Salmon (Race Determined from Length at Date) at the State Water Project and Central Valley Project South Delta Fish Salvage Facilities.**

*Attachment 2. Biological Review for the 2021 June through August TUCP***Impacts of TUCP on Spring-run Chinook Salmon**

Within the Delta, there is the potential for similar types of impacts to young-of-the-year juvenile spring-run Chinook salmon and habitat as discussed previously for winter-run. The footnote for Table SR1 indicates that yearling spring-run Chinook salmon downstream emigration generally occurs in fall and winter and therefore yearlings would not overlap the June–August TUCP period. By the time of TUCP operations reducing Delta inflow/outflow and south Delta exports in June, all or nearly all young-of-the-year BY 2020 spring-run would be expected to have left the Delta (see summary of temporal occurrence in *Status of Spring Run Chinook Salmon* above) and so the potential for negative migration impacts would be limited to few, if any, individuals. Entrainment risk for these fish would remain low because the TUCP limits on south Delta exports as well as continued entrainment risk management under the NMFS (2019) Biological Opinion and the CDFW (2020) ITP. As with winter-run, through-Delta survival modeling suggests the potential for small negative impacts to young-of-the-year juvenile spring-run through-Delta survival in 2021 as a result of the TUCP for any remaining individuals migrating in June (Table WR3), reflecting factors such as slightly increased entry into lower survival pathways in the interior Delta (Table WR4).

Based on timing information in Table SR2 above, some adult spring-run Chinook salmon could be migrating through the Delta in June. As discussed in more detail for winter-run Chinook salmon, temperature and dissolved oxygen data for June 2014 and June 2015 (Figures WR5 and WR6) showed that although mean Sacramento River inflow was higher in June 2014 (monthly mean of ~8,900 cfs per the DAYFLOW database) compared to June 2015 (monthly mean of ~6,900 cfs), temperature and dissolved oxygen were not consistently different. This suggests that migration conditions under the TUCP (modeled mean June 2021 Sacramento River inflow = 7,100 cfs) and baseline conditions (modeled mean June 2021 Sacramento River inflow = 7,950 cfs) would not be greatly different. As noted for winter-run Chinook salmon, Delta Cross Channel operations would not differ between TUCP and baseline, thus there would not be any difference between TUCP and baseline in delay of adult spring-run Chinook salmon that may move upstream via the Mokelumne River when the Delta Cross Channel is open. Straying rates for Chinook salmon returning to the Sacramento River are low based on historical flows over many years (Marston et al. 2012), including dry years, and therefore suggest there would be little difference in straying of adult spring-run Chinook salmon because of reductions in Sacramento River inflow as a result of the TUCP.

**Conclusions for Spring-run Chinook Salmon**

In the Delta, all or nearly all BY 2020 young-of-the-year juvenile spring-run Chinook salmon would have exited the Delta by the time the TUCP changes to operations would begin in June 2021. Regardless, any BY 2020 juvenile spring-run in the Delta would not experience greater risk of entrainment in June 2021, as a result of very low exports under the TUCP and continued implementation of entrainment risk assessment and operations adjustments from the NMFS (2019) Biological Opinion and the CDFW (2020) ITP. As noted for winter-run, through-Delta survival of BY 2020 juveniles in June could be slightly lower (3% or less) under the TUCP than baseline as a result of less Delta inflow affecting north Delta hydrodynamics (Table WR3). Survival estimates are within



## Attachment 2. Biological Review for the 2021 June through August TUCP

**Table GS2. Temporal Occurrence of Southern Distinct Population Segment Green Sturgeon by Life Stage in the Delta**

| Relative Abundance    | High (▼) | Medium (☒) | Low (#) | None (-) |     |     |     |     |     |     |     |     |
|-----------------------|----------|------------|---------|----------|-----|-----|-----|-----|-----|-----|-----|-----|
|                       |          |            |         |          |     |     |     |     |     |     |     |     |
| Life Stage            | Month    |            |         |          |     |     |     |     |     |     |     |     |
|                       | Jan      | Feb        | Mar     | Apr      | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Adult <sup>1</sup>    | ☒        | ☒          | ☒       | ☒        | ☒   | ☒   | ☒   | ☒   | ☒   | ☒   | ☒   | ☒   |
| Juvenile <sup>2</sup> | ☒        | ☒          | ☒       | ☒        | ☒   | ☒   | ☒   | ☒   | ☒   | ☒   | ☒   | ☒   |
| Salvaged <sup>3</sup> | #        | #          | #       | #        | #   | -   | ☒   | ▼   | #   | #   | #   | #   |

<sup>1</sup>Adult presence was determined to be year round according to information in (California Department of Fish and Game 2008; California Department of Fish and Game 2009; California Department of Fish and Game 2010a; California Department of Fish and Game 2011; California Department of Fish and Game 2012; California Department of Fish and Wildlife 2013a; California Department of Fish and Wildlife 2014a; Lindley et al. 2008; Moyle 2002).

<sup>2</sup>Juvenile presence in the Delta was determined to be year round by using information in (USFWS Delta Juvenile Fish Monitoring Program data), (Moyle et al. 1995; Radtke 1966).

Source: National Marine Fisheries Service 2019:115.

### Impacts of TUCP on Green Sturgeon

Juveniles and sub-adult green sturgeon rearing in and utilizing the Delta as part of their habitat are not expected to be greatly affected by the TUCP's modifications to Delta outflow and Delta water quality standards from June through August. In most of the Delta where juvenile green sturgeon are expected to be rearing, flows are tidally dominated and therefore changes in riverine inflow would have minimal to no effect. However, there is low certainty in understanding of the juvenile and sub-adult green sturgeon biological processes affected by flow in the Delta. South Delta exports would be at very low levels during June–August 2021 and recent years have seen minimal salvage of green sturgeon, indicating that very low or zero salvage would be expected under the TUCP.

The NMFS green sturgeon recovery plan suggested that green sturgeon larval abundance and distribution may be influenced by spring and summer outflow, and recruitment may be highest in wet years, making water flow an important habitat parameter (NMFS 2018: 12). As noted by NMFS (2018: 12), there are correlations between white sturgeon year-class strength and Delta outflow, which have previously been used to infer potential impacts on green sturgeon (ICF International 2016: 5-197 to 5-205). However, impacts on green sturgeon as a result of changes in flow under the TUCP may be limited primarily because the largest sturgeon recruitment occurs in wetter years (Fish 2010; Gingras et al. 2013); 2021 would be a drier year regardless of implementation of the TUCP and it is uncertain the extent to which the relatively small difference in drought-year-flows between TUCP and baseline would result in differing impacts to green sturgeon compared to the potential impacts that may occur between much broader ranging hydrological conditions (i.e., different water year types).

Adult green sturgeon will be potentially present in the Delta throughout the TUCP as they migrate into and out of the Sacramento River and possibly forage in the Delta during the summer. The reductions in outflow through multiple distributaries in the North Delta in the TUCP could increase straying and travel time of green sturgeon in this region during

Attachment 2. Biological Review for the 2021 June through August TUCP

June–August, although this is uncertain. As discussed for winter-run Chinook salmon, differences in temperature and dissolved oxygen between the TUCP and baseline would be expected to be limited based on comparisons of 2014 and 2015 drought years.

**Conclusions for Green Sturgeon**

Cumulatively, the TUCP’s modifications in flow and water quality criteria should not significantly reduce riverine or through-Delta survival of juvenile green sturgeon, although there is some uncertainty in the conclusion given the general lack of information on the species. There would be expected to continue to be little to no salvage of green sturgeon at the south Delta export facilities, consistent with recent years with greater levels of exports than the TUCP.

**Central Valley Steelhead**

**Presence and Life Stages of Central Valley Steelhead**

Relative to Chinook salmon, Central Valley steelhead are considerably less well monitored. Few steelhead have been collected in routine monitoring. Historical abundance in surveys shows juvenile peaks in the Delta during late winter/spring (Tables SH1 and SH2). Salvage may continue into June in low numbers and some juveniles are present in low numbers in the Delta in summer. Adults occur in the Delta in July and August (Table SH2).

**Table SH1. Temporal Occurrence of Central Valley Steelhead by Life Stage**

| Relative Abundance                                    | High (▼) |     |     |     | Medium (⊗) |     |     |     | Low (#) |     |     |     | None (-) |   |   |   |   |   |   |   |   |   |   |
|---|----------|-----|-----|-----|------------|-----|-----|-----|---------|-----|-----|-----|----------|---|---|---|---|---|---|---|---|---|---|
| Migration Life Stage: (a)<br>Adult                    | Month    |     |     |     |            |     |     |     |         |     |     |     |          |   |   |   |   |   |   |   |   |   |   |
| Location  | Jan      | Feb | Mar | Apr | May        | Jun | Jul | Aug | Sep     | Oct | Nov | Dec |          |   |   |   |   |   |   |   |   |   |   |
| <sup>1</sup> Sacramento R. at Fremont Weir            | #        | #   | #   | #   | -          | -   | -   | -   | -       | -   | #   | #   | #        | # | ⊗ | ▼ | ▼ | ▼ | ⊗ | # | # | # | # |
| <sup>2</sup> Sacramento R. at Red Bluff Diversion Dam | #        | #   | #   | #   | #          | #   | #   | #   | #       | #   | #   | #   | #        | # | ⊗ | ⊗ | ▼ | ⊗ | # | # | # | # |   |
| <sup>3</sup> San Joaquin River                        | ▼        | ▼   | ⊗   | ⊗   | #          | #   | -   | -   | -       | -   | -   | #   | #        | # | # | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ▼ | ▼ |
| Migration Life Stage: (b)<br>Juvenile                 | Month    |     |     |     |            |     |     |     |         |     |     |     |          |   |   |   |   |   |   |   |   |   |   |
| Location  | Jan      | Feb | Mar | Apr | May        | Jun | Jul | Aug | Sep     | Oct | Nov | Dec |          |   |   |   |   |   |   |   |   |   |   |
| <sup>1,2</sup> Sacramento R. near Fremont Weir        | #        | #   | #   | #   | ⊗          | ⊗   | ⊗   | ⊗   | ⊗       | ⊗   | #   | #   | #        | # | # | # | ⊗ | ⊗ | ⊗ | ⊗ | # | # |   |
| <sup>4</sup> Sacramento R. at Knights Landing         | ▼        | ▼   | ▼   | ▼   | ⊗          | ⊗   | ⊗   | ⊗   | #       | #   | #   | -   | -        | - | - | - | - | - | - | # | # | # |   |
| <sup>5</sup> Chippis Island (clipped)                 | ⊗        | ⊗   | ▼   | ▼   | ⊗          | ⊗   | #   | #   | #       | #   | -   | -   | -        | - | - | - | - | - | - | - | # | # |   |
| <sup>5</sup> Chippis Island (unclipped)               | ⊗        | ⊗   | ⊗   | ⊗   | ▼          | ▼   | ▼   | ▼   | ▼       | ▼   | ⊗   | ⊗   | #        | # | - | - | - | - | - | - | # | # |   |
| <sup>6</sup> San Joaquin R. at Mossdale               | -        | -   | #   | #   | ⊗          | ⊗   | ▼   | ▼   | ▼       | ▼   | #   | #   |          |   |   |   |   |   | # | # | - | - | - |

Sources: <sup>1</sup> Hallock et al. (1957); <sup>2</sup>McEwan (2001); <sup>3</sup>California Department of Fish and Game (2007); <sup>4</sup>NMFS analysis of 1998-2018 CDFW data; <sup>5</sup>NMFS analysis of 1998-2018 USFWS data; <sup>6</sup>NMFS analysis of 2003-2018 USFWS data.

Source: National Marine Fisheries Service 2019:100.



## Attachment 2. Biological Review for the 2021 June through August TUCP

**Table SH2. Temporal Occurrence of Central Valley Steelhead by Life Stage in the Delta**

| Relative Abundance    | High (▼) |     |     | Medium (⊠) |     |     | Low (#) |     |     | None (-) |     |     |
|-----------------------|----------|-----|-----|------------|-----|-----|---------|-----|-----|----------|-----|-----|
|                       | Jan      | Feb | Mar | Apr        | May | Jun | Jul     | Aug | Sep | Oct      | Nov | Dec |
| Adult <sup>1</sup>    | ⊠        | ⊠   | ⊠   | ⊠          | ▼   | -   | #       | ⊠   | ▼   | ⊠        | ⊠   | ⊠   |
| Juvenile <sup>2</sup> | #        | ⊠   | ⊠   | ▼          | ▼   | #   | #       | -   | #   | -        | -   | #   |
| Salvaged <sup>3</sup> | ⊠        | ▼   | ▼   | ⊠          | #   | #   | -       | -   | -   | -        | #   | #   |

<sup>1</sup>Adult presence was determined using information in Moyle (2002), Hallock et al. (1961), and California Department of Fish and Wildlife (2015b).

<sup>2</sup>Juvenile presence in the Delta was determined using Delta Juvenile Fish Monitoring Program data.

<sup>3</sup>Months in which salvage of wild juvenile steelhead at State and Federal pumping plants occurred; values in cells are salvage data reported by the facilities (He and Stuart 2016).

Source: National Marine Fisheries Service 2019:101.

### Impacts of TUCP on Central Valley Steelhead

Juvenile steelhead migrating through the Delta in 2021 could experience similar impacts of the TUCP as previously described for juvenile Chinook salmon, although the main juvenile migration period would be almost entirely completed by June (Table SH2), when differences in operations as a result of the TUCP would begin. Juvenile steelhead could occur in small numbers during the summer months (Table SH2), with potential for small reductions in through-Delta survival as a result of reductions in Delta inflow assuming a similar response suggested modeling for juvenile Chinook salmon (see the analysis for winter-run Chinook salmon). There is uncertainty in the extent of the negative effect given that factors such as through-Delta survival as a function of flow have not been examined in a similar manner as done for Chinook salmon, although as with juvenile Chinook salmon, low survival through the interior Delta relative to the Sacramento River has been observed (Singer et al. 2013). As with juvenile Chinook salmon, low south Delta exports and entrainment risk management under the NMFS (2019) Biological Opinion would limit entrainment risk for juvenile steelhead. As shown in Table SH2, adult steelhead may occur in the Delta during July and August in low to medium numbers. Temperature migration conditions for adult steelhead in these months would likely be stressful based on drought temperature data in 2014–2015 (Figure WR5) being within the suboptimal (20–23°C) or greater range noted by Moyle et al. (2017: 297). During the 2014/2015 drought years, Sacramento River inflow in July was ~9,100 cfs (2014) and ~7,900 cfs (2015) and in August was ~8,500 cfs (2014) and 7,800 cfs (2015). Although 2014 had higher Sacramento River inflow than 2015 in July and August, temperature was not consistently lower, illustrating the importance of atmospheric forcing (see winter-run Chinook salmon discussion). Therefore, it would be expected that there would be little difference in temperature migration conditions between the TUCP (modeled mean July and August 2021 Sacramento River inflow = 8,150 cfs and 7,200 cfs) and baseline conditions (modeled mean July and August 2021 Sacramento River inflow = 8,650 cfs and 7,200 cfs) (see Attachment 3). Similarly, there would be little difference expected between TUCP and baseline for dissolved oxygen based on the relative differences in July and August 2014 and 2015 (Figure WR6). As discussed further for adult winter-run



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and spring-run Chinook salmon, migration delay or straying of adult steelhead would not be expected to greatly differ for adult steelhead returning to the Sacramento River. Straying of adult steelhead returning to the San Joaquin River basin has not been studied, but if results for fall-run Chinook salmon indicating potential importance of San Joaquin River flows and exports also apply to steelhead, there would not be expected to be a difference in straying because July and August San Joaquin inflow and south Delta exports would be the same under TUCP and baseline (see Attachment 3 “*Delta Summary*”).

**Conclusions for Steelhead**

In the Delta, there is the potential for slightly less through-Delta survival of juvenile steelhead as a result of less Delta inflow under the TUCP, although this would be limited to few individuals as the main migration period for spring 2021 would be complete by the time of changes in TUCP operations (June–August) and the main period of juvenile migration would not recommence until 2022. Entrainment would be low as a result of low south Delta exports under the TUCP and continued implementation of entrainment risk management under the NMFS (2019) Biological Opinion. Temperature migration conditions for steelhead adults occurring in July and August would be poor under both TUCP and baseline conditions and reflect atmospheric conditions rather than operational differences.

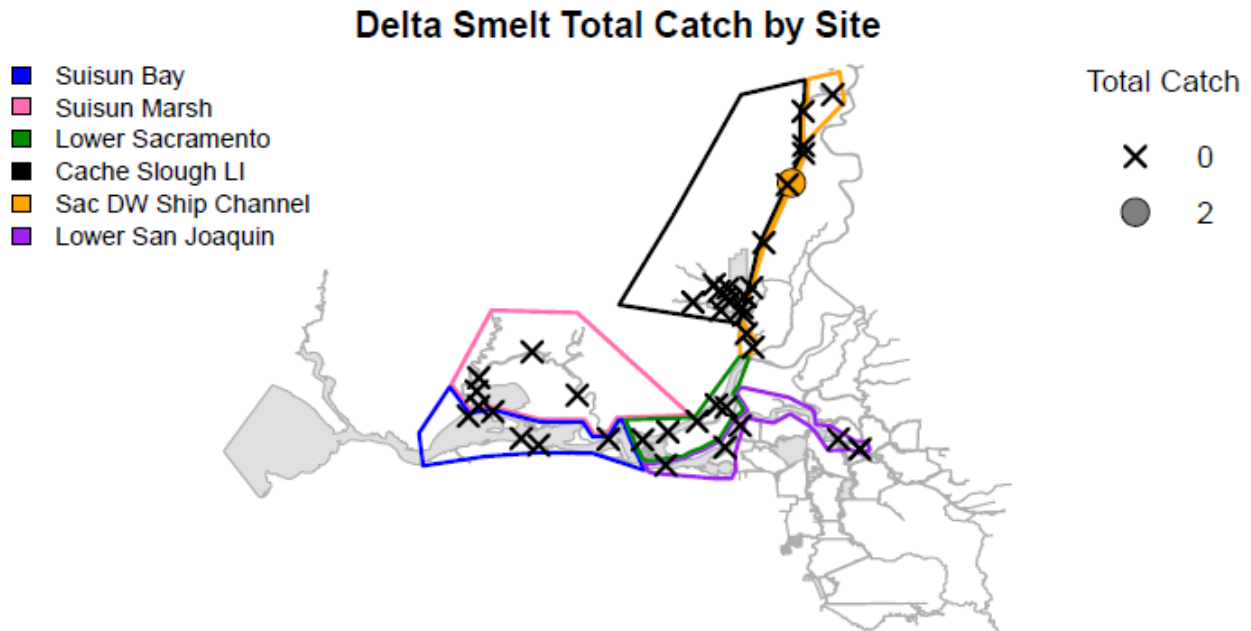
**Delta Smelt****Presence and Life Stages of Delta Smelt**

The 2020 fall midwater trawl abundance index of delta smelt was zero for the third year in a row. Very few delta smelt are currently being collected in sampling (e.g., none were collected during the first four Spring Kodiak Trawl surveys during January–April 2021), with the most recent Enhanced Delta Smelt Monitoring and 20mm surveys showing small numbers of larvae and juveniles in the Sacramento Deep Water Ship Channel (Figure DS1) and Lower Sacramento stratum based on the most recent survey information (figure not yet available). The TUCP period (June–August) would overlap the late spring/summer portion of the juvenile rearing period. As of late April/early May 2021, no delta smelt were salvaged by the CVP/SWP south Delta export facilities. The most recently available risk assessment<sup>4</sup> for delta smelt entrainment undertaken as part of CDFW (2020) ITP implementation concluded that based on distribution patterns over the past decade and rare detections in this water year, delta smelt are unlikely to be prevalent in the south Delta and that the risk of entrainment into the south Delta was low for delta smelt in both the Sacramento River/confluence and central Delta areas.

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<sup>4</sup> See <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=192085&inline>

## Attachment 2. Biological Review for the 2021 June through August TUCP

**Week 4 (April 26 – 29, 2021)**

**Figure DS1. Catch of Delta Smelt Juveniles in Enhanced Delta Smelt Monitoring Week 4.**

Source: [https://www.fws.gov/lodi/juvenile\\_fish\\_monitoring\\_program/edsms/Enhanced%20Delta%20Smelt%20Monitoring%20Report%20%28Weekly%20Summary%29/EDSM\\_report\\_212\\_2021\\_05\\_07.pdf](https://www.fws.gov/lodi/juvenile_fish_monitoring_program/edsms/Enhanced%20Delta%20Smelt%20Monitoring%20Report%20%28Weekly%20Summary%29/EDSM_report_212_2021_05_07.pdf)

As of late April/early May 2021, no delta smelt were salvaged by the CVP/SWP south Delta export facilities. The most recently available risk assessment<sup>5</sup> for delta smelt entrainment undertaken as part of CDFW (2020) ITP implementation concluded that based on distribution patterns over the past decade and rare detections in this water year, delta smelt are unlikely to be prevalent in the south Delta and that the risk of entrainment into the south Delta was low for delta smelt in both the Sacramento River/confluence and central Delta areas.

### Impacts of TUCP on Delta Smelt

Risk of juvenile delta smelt entrainment would remain low after the start of operational changes under the TUCP in June 2021 (i.e., reduced Delta outflow and restrictions on south Delta exports). There will be continued risk assessment and, as necessary, operational adjustments as part of USFWS (2019) Biological Opinion and CDFW (2020) ITP implementation to limit entrainment risk until the end of June, when the management period ends because entrainment risk ends.

<sup>5</sup> See <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=192085&inline>

*Attachment 2. Biological Review for the 2021 June through August TUCP*

The biological review for the 2015 April–September TUCP summarized research presented at the Interagency Ecological Program (IEP) workshop (March 18-20, 2015) which remains relevant in illustrating that drought likely affects delta smelt in a number of ways. This summary is adapted from that account and includes more recent literature. Drought can reduce the area of low salinity habitat used by rearing delta smelt (Feyrer et al. 2011; Bever et al. 2016). Drought can indirectly impact reproductive potential by lowering the number of oocytes females produce (Hammock 2015). This is brought about by the general link between low outflow in drought conditions and elevated water temperature (Jeffries et al. 2016), although note that there can be exceptions (e.g., relatively warm conditions in the wet year of 2017). Warming temperature shortens the spawning window, which causes fewer clutches to be produced per female (Jeffries 2015), and warmer temperature in the summer is correlated with low delta smelt survival into the fall (Brown et al. 2016). Both of these mechanisms combine with low adult abundance to impair population fecundity. Although the general turbidity patterns in the system have been largely driven by a long-term decrease in sediment supply (Schoellhamer et al. 2013) and factors such as wind-driven resuspension are of considerable importance (Bever et al. 2018), lower outflow also delivers less sediment to the Delta (Schoellhamer et al. 2013) and therefore can affect turbidity. Delta smelt use turbid water to avoid predators and also use it as foraging habitat (Hasenbein 2015a, Hasenbein et al. 2016). Furthermore, warm, slow moving water characterized by drought promotes conditions in which parasites like Ich (*Ichthyophthirius multifiliis*) thrive (Lehman et al. 2020a). Ich causes skin lesions to form on a variety of fish and has an increased prevalence among captive delta smelt above 17°C (Frank et al. 2015). *Microcystis* blooms extended into December of 2014 (Lehman 2015; Lehman et al. 2017). This highly toxic cyanobacteria is known to kill phytoplankton, zooplankton and compromise fish health (Acuña et al. 2012). Finally, the abundance of non-native delta smelt predators, such as Mississippi silversides and black bass, increased in the Delta during the 2012–2016 drought (Barnard 2015; Mahardja et al. 2021). The same pattern was found for non-native competitors, such as clams like *Corbicula*, which seem to be expanding throughout the Delta despite the drought (Thompson 2015; see also previous discussion related to *P. amurensis* in *Ecosystem Impacts*).

As noted above, there may be a number of impacts of drought on delta smelt and habitat. As previously discussed above in *Ecosystem Impacts*, abundance indices of silversides, predators of larval delta smelt, are negatively related to Delta inflow (Mahardja et al. 2016<sup>6</sup>; Mahardja et al. 2021) and so silverside abundance could increase as a result of the drought, although it is uncertain to what extent this would occur and whether there would be additional impacts from the TUCP on top of the drought. USFWS (2019: 215) suggested that extended warm, low flow conditions that resulted from the recent drought may be contributing to the proliferation of submerged aquatic vegetation delta smelt habitat within the Cache Slough Complex. As previously noted for winter-run Chinook salmon, Durand et al. (2016) examined factors affecting the submerged aquatic vegetation species and did not find a clear effect of flow (water

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<sup>6</sup> Mahardja et al. (2016: 12) cautioned that the relationships are not meant to imply causality, given that the mechanisms could not be identified, and that further investigation is merited.

*Attachment 2. Biological Review for the 2021 June through August TUCP*

velocity), noting that factors other than flow may have had a greater effect on long-term increases, including increased water clarity; they also suggested that other important factors that should be considered are the impacts of previous occupancy by the vegetation, increased temperatures, and changing nutrient concentrations. As such, although the TUCP would affect flow, overall drought conditions would be the main driver of changes in submerged aquatic vegetation. As described in *Ecosystem Impacts*, the extent to which the TUCP's changed operations from baseline conditions would affect harmful algal blooms is uncertain given that water temperature is the main driver of bloom intensity (Lehman et al. 2020a). Drought conditions would be expected to reduce the density of the delta smelt prey *P. forbesi* but there is uncertainty in the extent to which this would be affected by the TUCP (see discussion in *Ecosystem Impacts*). Less Delta outflow under drought conditions would move the salinity field upstream (see discussion below), allowing *P. amurensis* to move further upstream and thereby expand its range and overall grazing rate if salinity remains high enough for several months (Kimmerer et al. 2019). As described further below, an upstream shift in X2 of around 2 kilometers or less was modeled to occur (Figure DS2), potentially increasing the upstream range of *P. amurensis* but only to a limited extent relative to overall drought conditions. Water temperature differences in the low salinity zone as a result of the TUCP would be expected to be very small, given that recent studies found a 0.0–0.1°C increase in temperature for a 3-kilometer upstream movement of X2, albeit in a wet but warm year (Anchor QEA 2019). In addition, available data for 2014–2015 show that although June–August Delta outflow was greater in 2014 (monthly means of ~3,400–5,400 cfs) than 2015 (monthly means of ~4,500–4,800 cfs), water temperature in 2015 at Antioch and Rio Vista was comparable to 2014, reflecting the importance of atmospheric forcing (Figure WR5). Thus the TUCP would not be expected to have noticeably different water temperature for delta smelt than baseline. Polansky et al. (2020: Figure 1b) found that post-larval delta smelt survival was positively related with June–August Delta outflow, indicating a potential negative effect of the TUCP relative to baseline, although with appreciable uncertainty based on the width of the credible intervals in their statistical relationship.

The USFWS (2019) Biological Opinion found that the position of X2 should be managed between Carquinez Strait and Threemile Slough on the Sacramento River for rearing habitat. Results from the DSM2 modeling illustrated that reduced outflow during June–August under the TUCP would shift the salinity field upstream around 2 km or less (Figure DS2). In general, movement of the salinity field upstream would reduce the area of low salinity zone habitat which a relatively large proportion of the delta smelt population inhabits as juveniles and subadults, although with low Delta outflow the area of habitat would be considerably limited under both TUCP and baseline scenarios relative to wetter years (Feyrer et al. 2011). Based on the low salinity zone area lookup table provided by Brown et al. (2014: 79), the area of low salinity habitat as a function of X2 is around 11,000–12,500 acres<sup>7</sup> over a range from 82 to 96 km and does not uniformly decrease with increasing X2. This indicates that the TUCP would not

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<sup>7</sup> As noted by Brown (2014: 79), the distribution of salinity in the for the same X2 can differ depending on whether X2 is moving seaward or landward and on the exact flow conditions in the year of interest. Therefore, calculated surface areas are to be considered estimates rather than exact values. Note that lookup does not account for the presence of EDB, but the EDB would not result in X2 farther upstream based on DSM2 modeling consistent with conditions documented by California Department of Water Resources (2019a).

## Attachment 2. Biological Review for the 2021 June through August TUCP

necessarily result in a reduction in the area of the low salinity zone and that any change (positive or negative) would be small. As Sommer and Mejia (2013) noted, delta smelt are not confined to a narrow salinity range and occur from fresh water to relatively high salinity, even though the center of distribution is consistently associated with X2 (Sommer et al. 2011). Nobriga et al. (2008) found the probability of occurrence of Delta Smelt was highest at low electrical conductivity (EC) (1,000–5,000  $\mu\text{mhos/cm}$ ), and declines at higher EC. This generally corresponds to the habitat affinity results of Hamilton and Murphy (2020), who delineated suitable (470–4,550  $\mu\text{mhos/cm}$ ), adequate (300–5,300  $\mu\text{mhos/cm}$ ), unsuitable (<150 and >7,800  $\mu\text{mhos/cm}$ ), and uninhabitable (>18,750  $\mu\text{mhos/cm}$ ) EC ranges. There were differences in modeled EC between the TUCP and baseline along the lower Sacramento River and confluence from Rio Vista to Chipps Island during the TUCP period as a result of the change in the western Delta agriculture compliance point from Collinsville to Emmaton from June 1 to August 15; however, based on the criteria of Hamilton and Murphy (2020), both scenarios resulted in unsuitable EC at Chipps Island (Figure DS3) and Collinsville (Figure DS4), suitable EC at Emmaton (Figure DS5), and suitable or adequate EC at Rio Vista (Figure DS6). EC was also unsuitable under both TUCP and baseline in Montezuma Slough at Beldon's Landing in Suisun Marsh (Figure DS7).

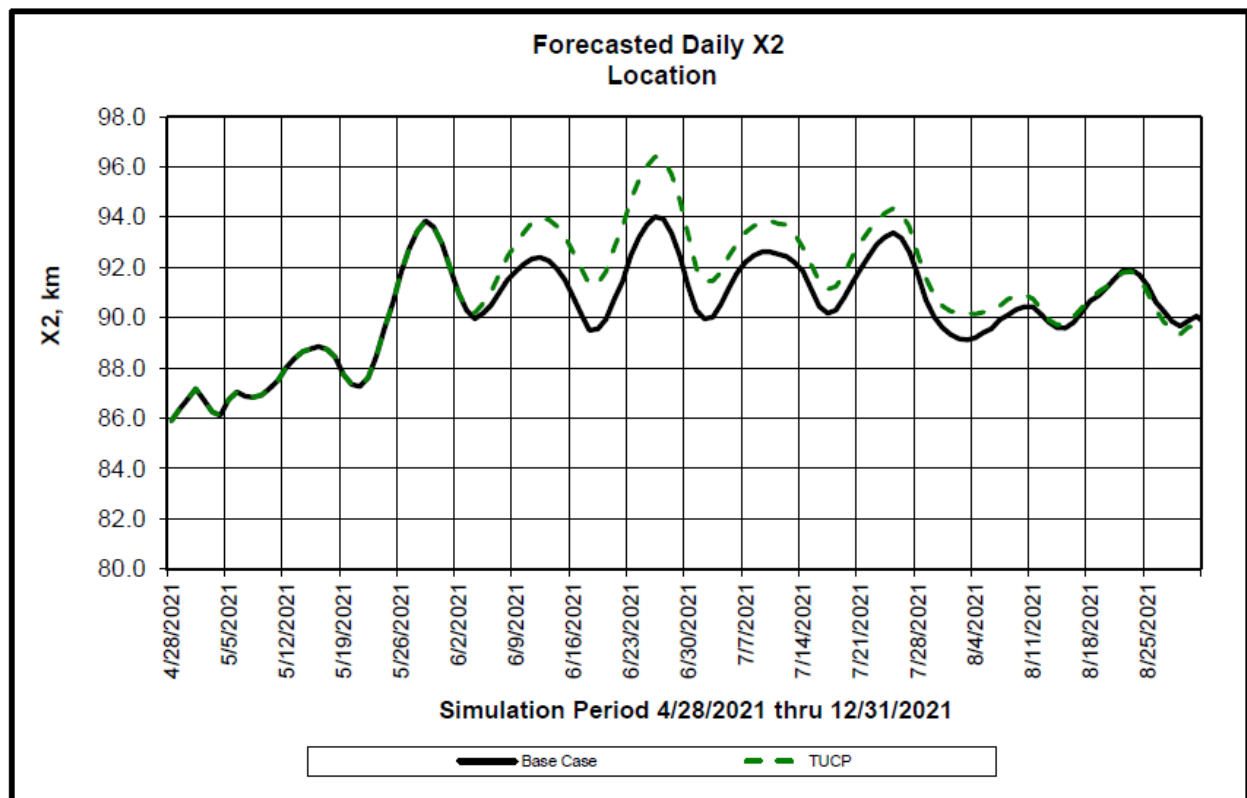


Figure DS2. Daily X2 from DSM2 Modeling.

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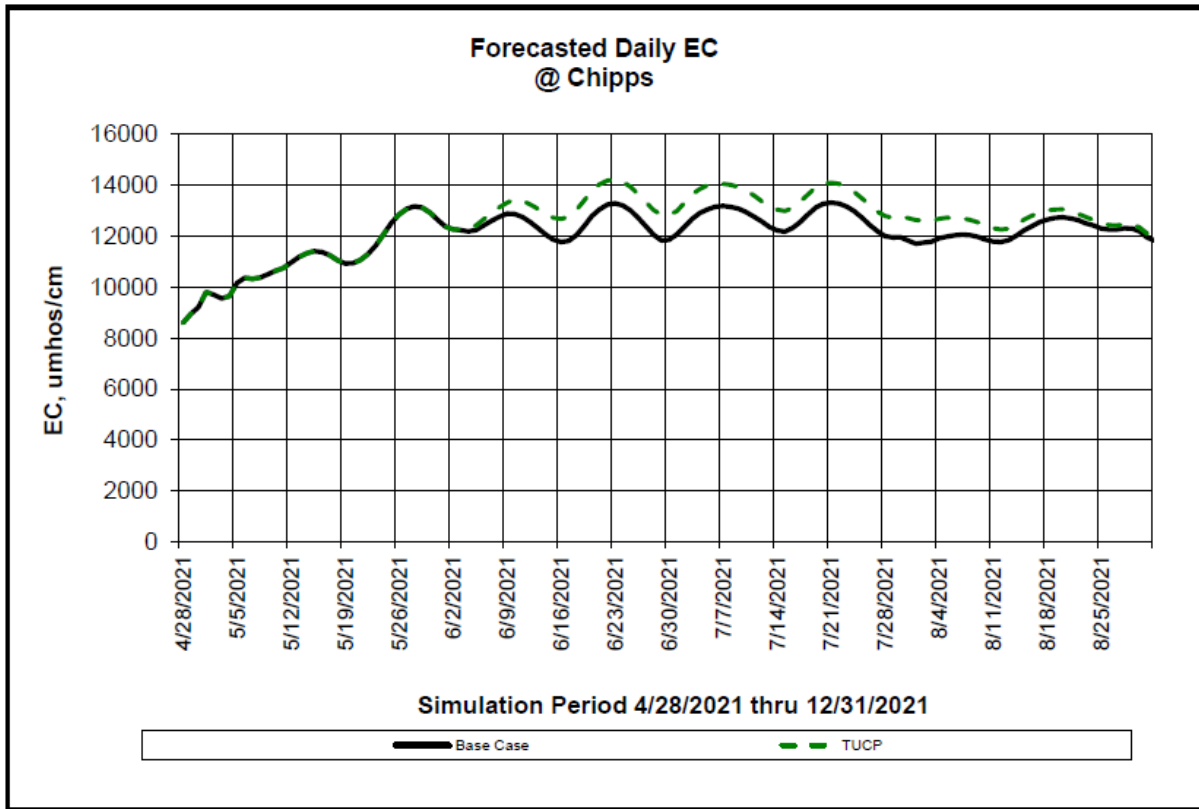


Figure DS3. Daily EC at Chipps Island from DSM2 Modeling.

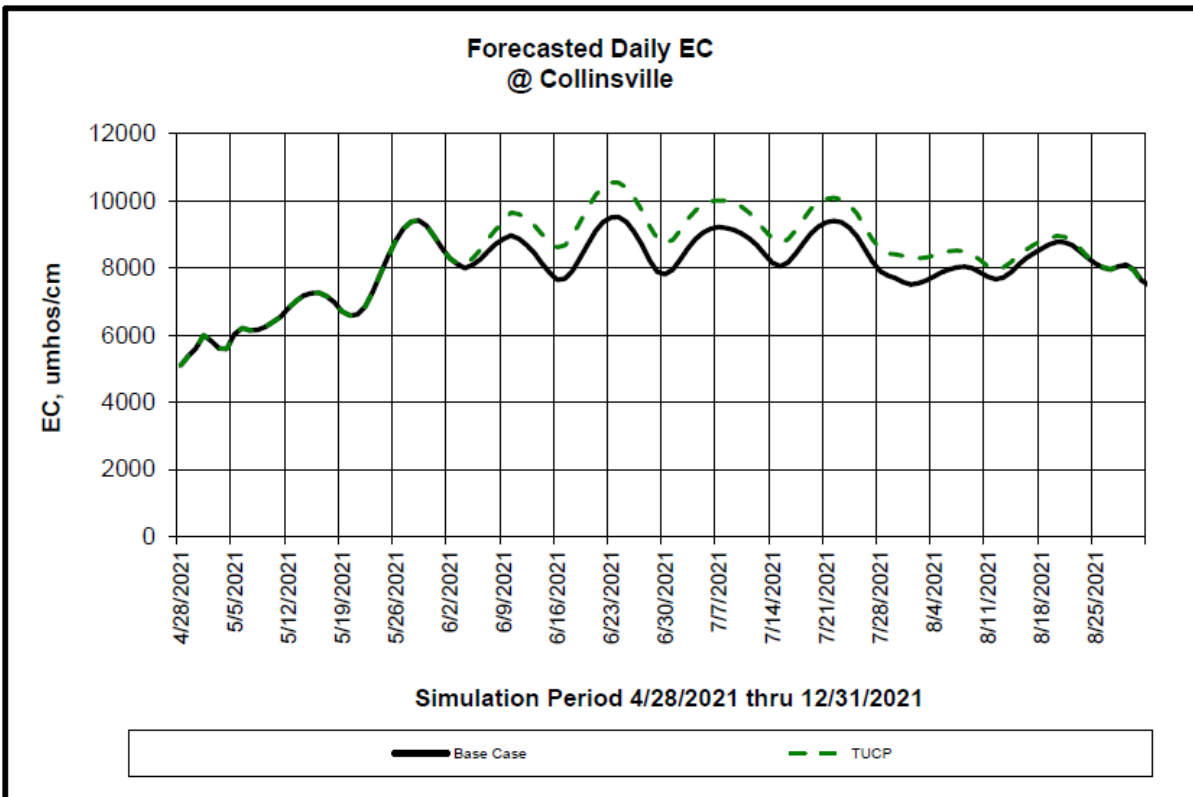


Figure DS4. Daily EC at Collinsville from DSM2 Modeling.

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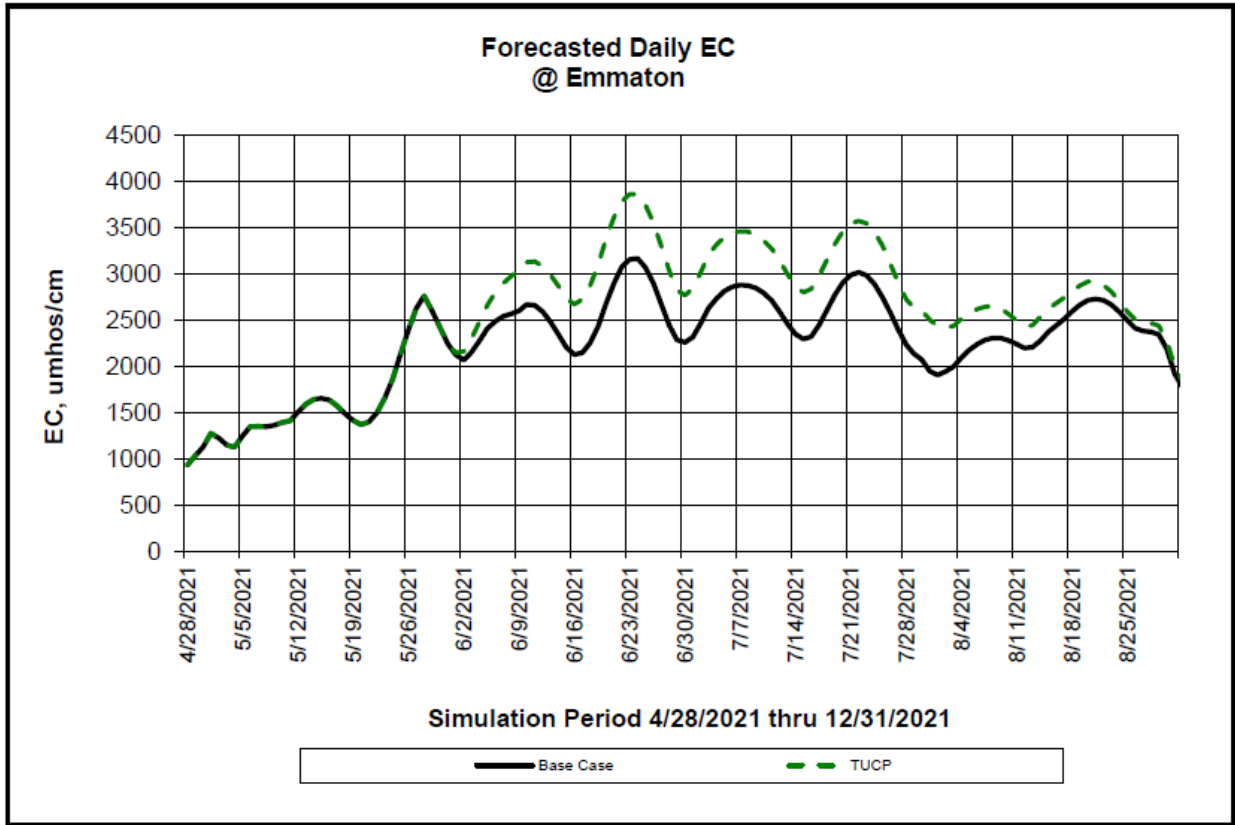


Figure DS5. Daily EC at Emmaton from DSM2 Modeling.

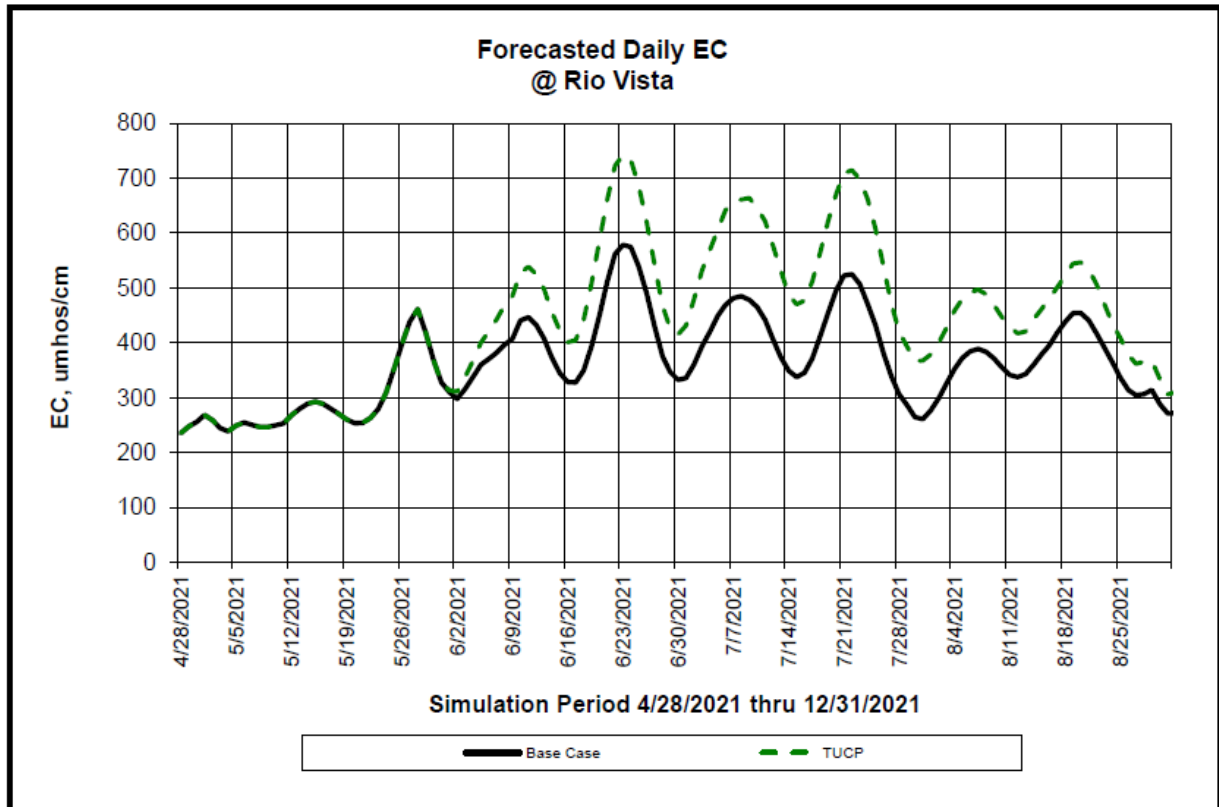


Figure DS6. Daily EC at Rio Vista from DSM2 Modeling.



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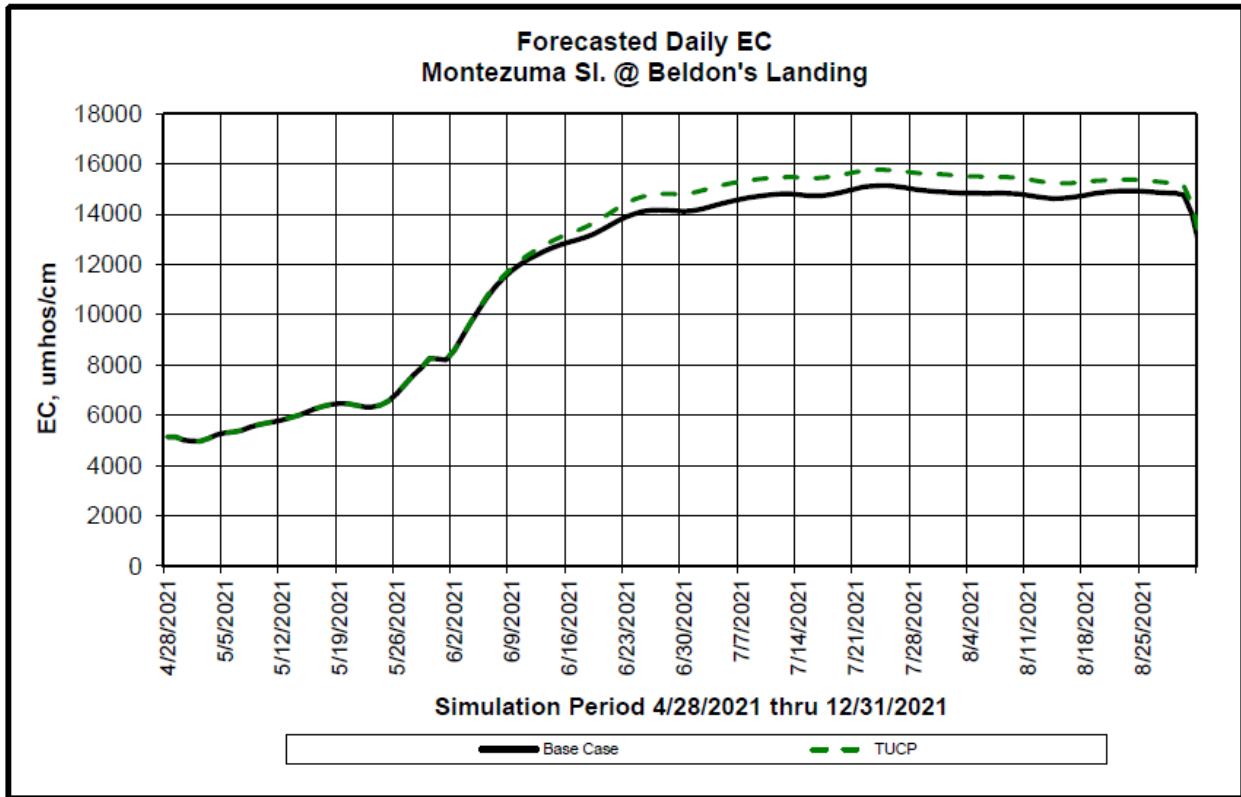
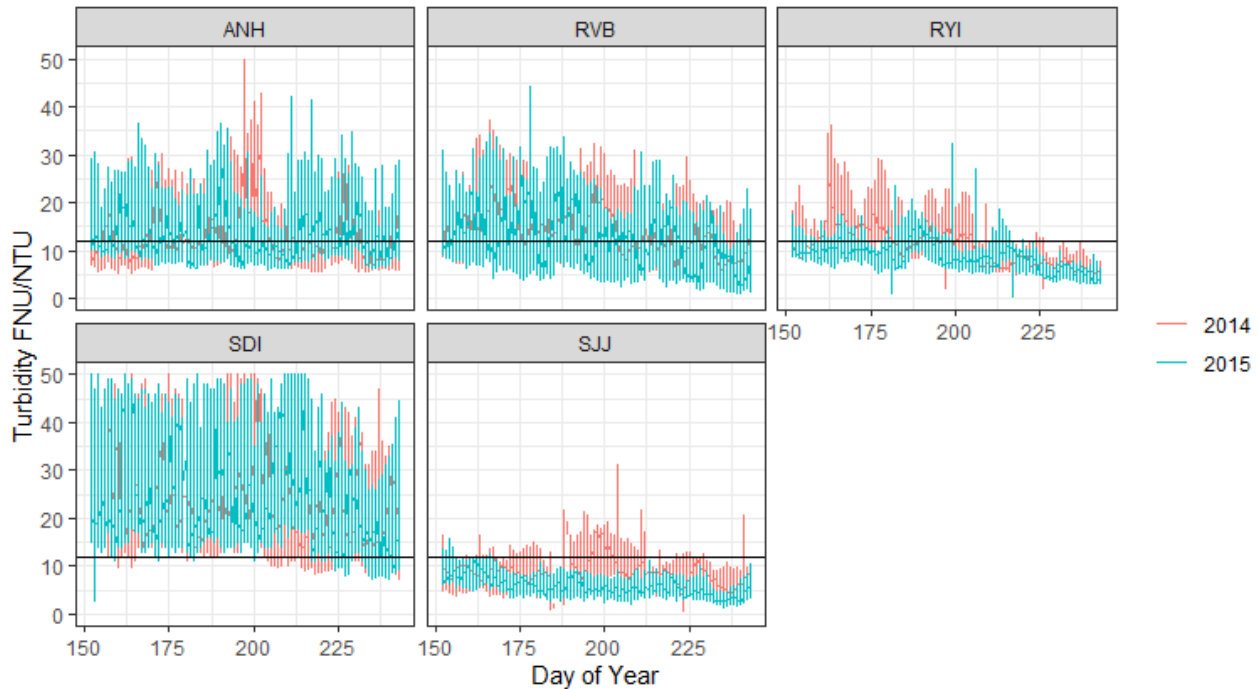


Figure DS7. Daily EC at Montezuma Slough at Beldon's Landing from DSM2 Modeling.

Movement of the salinity field upstream in 2021 could result in the low salinity zone being more likely to overlap areas with less turbidity/higher water clarity as a result of relatively high extents of submerged aquatic vegetation in parts of the Delta (e.g., San Joaquin River/Franks Tract). However, delta smelt tend to be distributed more on the Sacramento River side of the Delta. The USFWS (2019) Biological Opinion recognized that CVP and SWP operations results in an increase in summer and fall outflows over what would occur in the absence of operating the CVP and SWP and considered actions such as the 2015 TUCP, and that similar drought operations could be considered in the future when exceptionally dry conditions return to California. This area is part of the area of primary delta smelt habitat referred to as the "North Delta Arc" from the Cache Slough-Lindsay Slough Complex in the north Delta through the lower Sacramento River and confluence with the San Joaquin River to Suisun Marsh and portions of Suisun Bay (Moyle et al. 2018). Habitat features in this area, such as higher turbidity (Morgan-King and Schoellhamer 2013) and food availability (Hammock et al. 2019), provide important habitat for delta smelt, particularly during drought conditions (Mahardja et al. 2019). Turbidity monitoring data in June–August 2014 and 2015 illustrate generally more suitable turbidity (i.e., >12 NTU/FNU; Sommer and Mejia 2013) on the Sacramento River side of the Delta and considerable overlap between the two years (Figure DS8), indicating little likelihood of difference in turbidity as a result of TUCP vs. baseline.



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**Figure DS8. Hourly Mean Turbidity at Various Monitoring Locations, June–August 2014 and 2015.**

Source: California Data Exchange Center (CDEC). Stations are San Joaquin River at Antioch (ANH); Sacramento River at Rio Vista Bridge (RVB); Cache Slough at Ryer Island (RYI); Sacramento River at Decker Island (SDI); and San Joaquin River at Jersey Point (SJJ). June 1 = day 152; July 1 = day 183; August 1 = day 213. Reference line shows 12 Nephelometric Turbidity Units/Formazin Turbidity Units (NTU/FNU).

### Conclusions for Delta Smelt

Implementation of the TUCP would give a similarly low entrainment risk to delta smelt as baseline conditions in spring 2021 for juvenile delta smelt because south Delta exports under the TUCP would be restricted to low levels (generally 1,500 cfs) and the existing entrainment risk management under the 2020 Record of Decision and the CDFW (2020) ITP would continue.

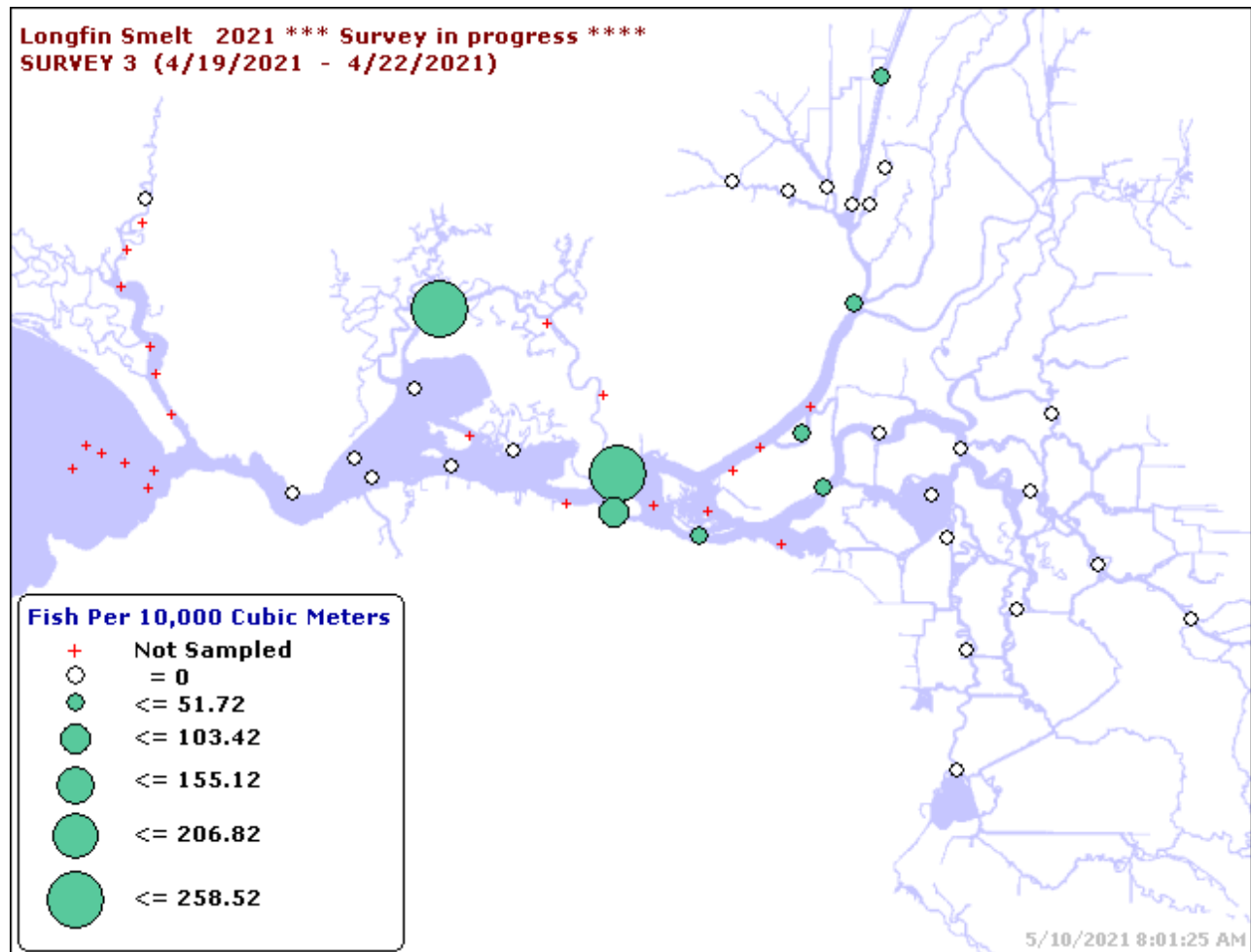
Less Delta outflow under the TUCP relative to baseline drought conditions would not lead to materially less low salinity zone habitat because of the general location of the salinity field under drought conditions, although there may be some negative impacts of the TUCP (e.g., predatory silverside abundance and increased *Potamocorbula* range and grazing). TUCP impacts, if any, would be minor relative to overall drought impacts.

## Attachment 2. Biological Review for the 2021 June through August TUCP

## Longfin Smelt

### Presence and Life Stages of Longfin Smelt

The 2020 CDFW Fall Midwater Trawl abundance index for longfin smelt was 28, the lowest since the drought years of 2014–2016. The most recent CDFW 20 mm survey indicates that juvenile longfin smelt are distributed seaward of the Delta. A small number were collected in the north Delta while none were collected in the south Delta (Figure LFS1). By May and June of most years, juvenile longfin smelt are able to tolerate salinity of 30 parts per thousand and are often found in San Francisco Bay (MacWilliams et al. 2016). Moreover, longfin smelt are now known to occur in a suite of San Francisco Bay tributaries, and in restored Bay wetlands (Lewis et al. 2020).



**Figure LFS1. Distribution of Longfin Smelt Juveniles in Mid-Late April from 20-mm Survey 3.**

Source: [https://www.dfg.ca.gov/delta/data/20mm/CPUE\\_map.asp](https://www.dfg.ca.gov/delta/data/20mm/CPUE_map.asp)

*Attachment 2. Biological Review for the 2021 June through August TUCP***Impacts of TUCP on Longfin Smelt**

The status of longfin smelt and the impacts of flow and water project operations were recently summarized in the DWR SWP ITP Application under CESA (DWR 2019b). The range of drivers affecting population trends is broad, but it is clear that drought conditions cause major stresses for the population.

The current distribution of longfin smelt juveniles (Figure LFS1), the expected general continued movement downstream toward San Francisco Bay of those currently in or near the Delta (e.g., Baxter et al. 2010, MacWilliams et al. 2016), rising water temperatures in the south Delta, and continued south Delta export operations to meet D-1641 minimum outflow indicate that entrainment risk for juvenile longfin smelt would remain very low with the onset of changes in operations under the TUCP initiating on June 1st (i.e., less Delta outflow and restrictions on south Delta exports).

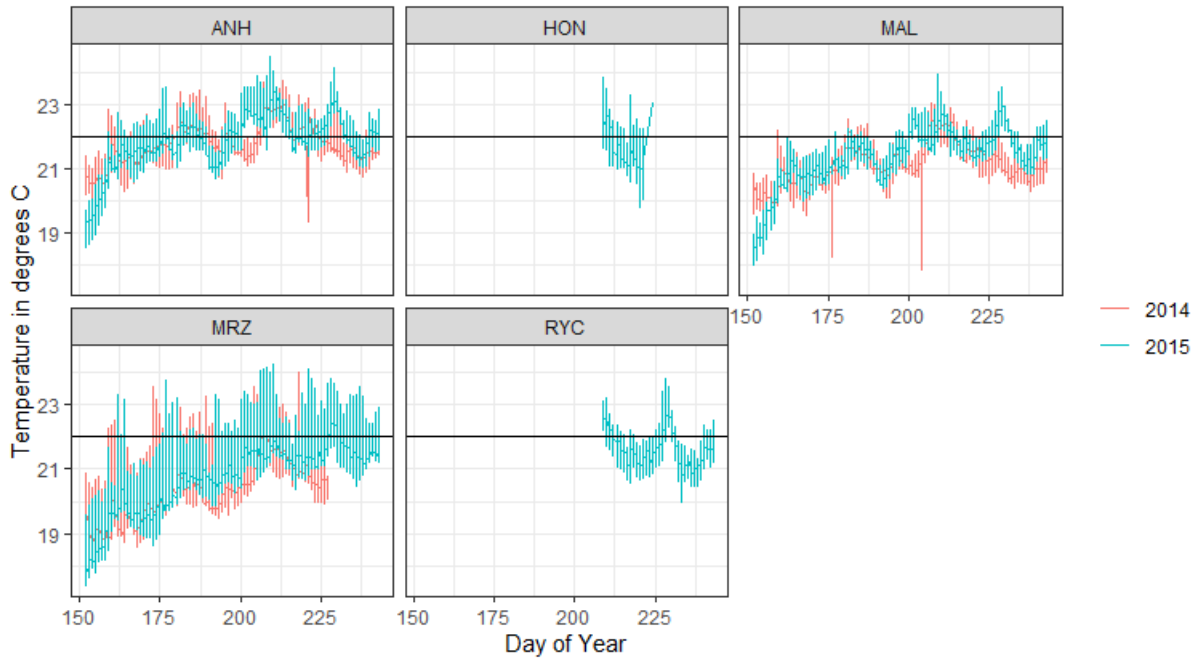
The TUCP will reduce Delta outflow from June to August as a result of changes in outflow requirements and relocation of the western Delta agriculture compliance point. While there are relatively strong statistically significant relationships between longfin smelt abundance indices and winter-spring Delta outflow or X2 (e.g., Kimmerer et al. 2009; Thomson et al. 2010; Nobriga and Rosenfield 2016), reductions in Delta outflow in June 2021 would be at the end of the winter-spring Delta outflow period that has correlations with longfin smelt abundance indices. Therefore, TUCP reductions would have limited potential for negative impacts to juvenile longfin smelt recruiting in 2021. Differences in Delta outflow between the TUCP and baseline would be very small compared to general hydrological differences (i.e., differences between water year types). As described previously for delta smelt and in the discussion related to *Ecosystem Impacts*, TUCP impacts on prey for smelts (e.g., *P. forbesi* transport to the low salinity zone) would be limited relative to the magnitude of effect from drought conditions.

Seasonal water temperature increases  $>22^{\circ}\text{C}$  cue longfin smelt emigration from the Delta (Baxter et al. 2010: 66). Such temperatures are more common in the Delta (see Figure WR5 in the winter-run Chinook salmon analysis) and are generally less frequent in Suisun Bay (Figure LFS2). As previously noted for delta smelt, the inconsistent differences in water temperature between the 2014 and 2015 drought years, for which Delta outflow was higher in the former, indicate that the TUCP would not affect water temperature differently than baseline. EC in Suisun Bay during June–August would not be greatly different under the TUCP and baseline, and well within the range of salinity selected by juvenile longfin smelt based on summer townet survey data (Kimmerer et al. 2009<sup>8</sup>).

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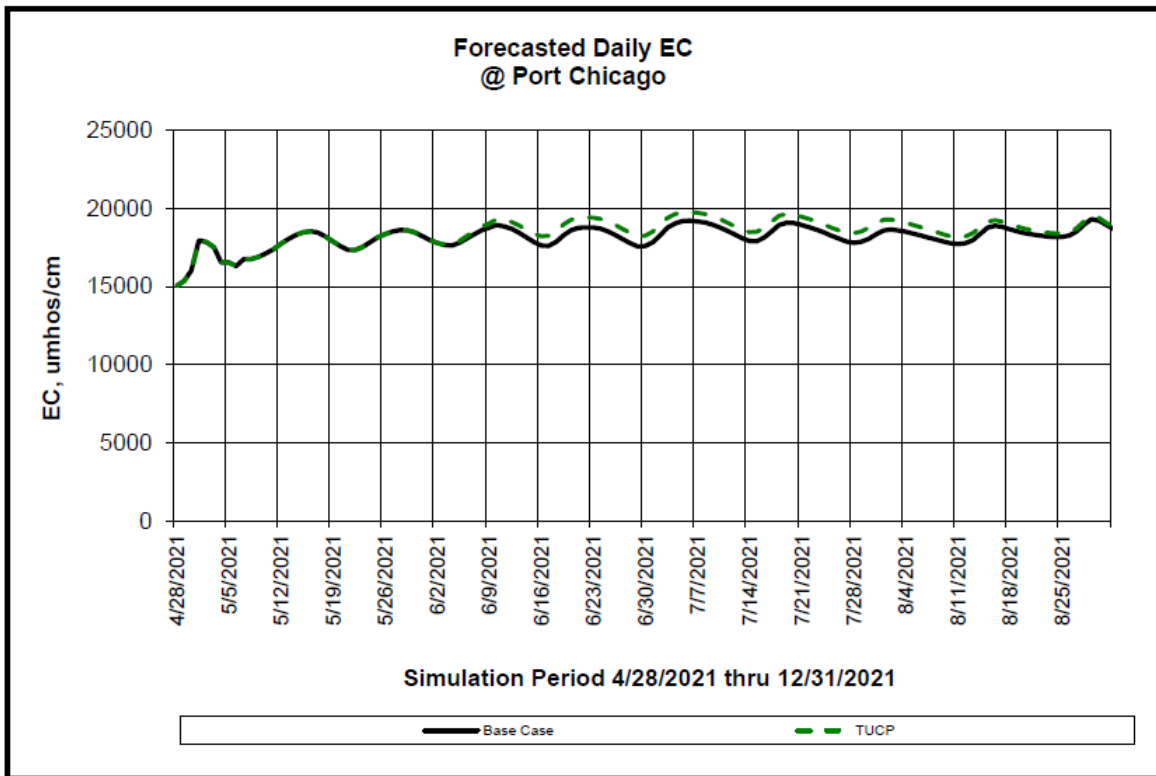
<sup>8</sup> The peak resource selection function shown by Kimmerer et al. (2009: Figure 5f) for juvenile longfin smelt abundance in the summer townet survey is at a salinity range of ~5–7 parts per thousand, equivalent to EC of ~9,000–12,300  $\mu\text{mhos/cm}$  based on the conversion from Schemel (2001); EC of 20,000  $\mu\text{mhos/cm}$  is equivalent to just under 12 parts per thousand salinity.

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**Figure LFS2. Hourly Mean Temperature at Various Monitoring Locations in the Western Delta and Suisun Bay, June–August 2014 and 2015.**

Source: California Data Exchange Center (CDEC). Stations are San Joaquin River at Antioch (ANH); Honker Bay (HON); Sacramento River at Mallard Island (MAL); Martinez (MRZ); and Suisun Bay – Cutoff Near Ryer (RYC). June 1 = day 152; July 1 = day 183; August 1 = day 213.



**Figure LFS3. Daily EC at Port Chicago from DSM2 Modeling.**

*Attachment 2. Biological Review for the 2021 June through August TUCP***Conclusions for Longfin Smelt**

Based on historical observations and current hydrology, longfin smelt are likely to experience relatively poor recruitment of juveniles in 2021. The reduction in winter-spring outflow (June 2021) due to the TUCP may have some negative impact on longfin smelt abundance based on observed correlations between abundance indices and Delta outflow, though this effect would be difficult to quantify given the already poor environmental conditions due to the drought and the small differences between TUCP and baseline flows relative to hydrological differences between water years. The TUCP is unlikely to increase entrainment of juvenile longfin smelt in June 2021 at the south Delta export facilities in any substantive manner, as a result of the existing or expected species distribution being largely outside of the south Delta, as well as implementation of restricted exports under the TUCP and restrictions being implemented or that would be implemented under the CDFW (2020) ITP. The TUCP would have only small changes to habitat for longfin smelt downstream of the Delta relative to baseline.

**Other Native and Nonnative Species**

The Delta is a large network of tidally influenced channels located at the confluence of the Sacramento and San Joaquin rivers that is the most important and complex geographic area in California for anadromous fish production, estuarine fish species, introduced fish species, and distribution of water resources for numerous beneficial uses.

In addition to the rare, threatened, and endangered species described and analyzed above, the Delta provides shallow open-water and emergent marsh habitat for a variety of common, native and nonnative, resident and migratory fish and macroinvertebrates, including several recreationally important fish species. The purposeful and unintentional introductions of nonnative fish, macroinvertebrates, and aquatic plants have contributed to a substantial change in the species composition, trophic dynamics, and competitive interactions affecting the population dynamics of native Delta species.

Water quality variables such as temperature, salinity, turbidity, DO, pesticides, pH, nutrients (nitrogen and phosphorus), dissolved organic carbon, chlorophyll, and mercury may influence habitat and food-web relationships in the Delta. Water quality conditions in the Delta are influenced by natural environmental processes (including floods and droughts), water management operations, and waste discharge practices. Delta water quality conditions can vary dramatically because of year-to-year differences in runoff and upstream water storage releases, and seasonal fluctuations in Delta flows.

Concentrations of materials in inflowing rivers are often related to streamflow volume and season. Transport and mixing of materials in Delta channels are strongly dependent on river inflows, tidal flows, agricultural diversions, drainage flows, wastewater effluents, and exports. Water quality objectives and concerns are associated with each beneficial use of Delta water.

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Droughts have broad-scale impacts on aquatic ecosystems and aquatic communities, including changes to the physical environment and biological communities (Bogan et al. 2015). For example, drought conditions can provide opportunities for invasive species to become established in a new system, with cascading impacts on communities even after drought conditions recede (Beche et al. 2009).

Mahardja et al. (2021) examined over five decades of fish monitoring data from the Delta, including 2014 and 2015 TUCP years, to evaluate the resistance and resilience of fish communities to disturbance from prolonged drought events. High resistance was defined by the lack of decline in species occurrence from a wet to a subsequent drought period, while high resilience was defined by the increase in species occurrence from a drought to a subsequent wet period.

Mahardja et al. (2021) found some unifying themes connecting the multiple drought events over the 50-yr period. Pelagic fishes consistently declined during droughts (low resistance), but exhibit a considerable amount of resiliency and often rebound in the subsequent wet years. However, full recovery did not occur in all wet years following droughts, leading to permanently lower baseline numbers for some pelagic fishes over time. In contrast, littoral fishes seem to be more resistant to drought and may even increase in occurrence during dry years.

**Impacts of TUCP on Other Native Species**

The TUCP period would likely overlap with some juvenile fall-run Chinook salmon rearing and migration through the Delta. Based on the results from the spreadsheet implementation of the Perry et al. (2018) modeling and as discussed for winter-run and spring-run Chinook salmon, less Delta inflow under the TUCP could result in slightly increased (1–2%) juvenile Chinook salmon entry into the low-survival interior Delta through Georgiana Slough and the Delta Cross Channel when open, and slightly reduced through-Delta survival (2–3%). Entrainment at the south Delta export facilities would be expected to be low under the TUCP because of restrictions on south Delta exports. Some adult fall-run Chinook salmon may migrate through the Delta during the June–August TUCP period, although the peak of the overall potential June–December migration period is September/October (Moyle et al. (2017: 47). As described in more detail for winter-run Chinook salmon, available information suggests that relative to baseline the TUCP would not give greatly different migration conditions for adult fall-run based on factors such as temperature, dissolved oxygen, and changes in flows.

As previously discussed for green sturgeon, NMFS (2018: 12) noted that there are positive correlations between white sturgeon and Delta outflow, which have previously been used to infer potential impacts on green sturgeon (ICF International 2016: 5-197 to 5-205). Any impacts on white sturgeon as a result of changes in flow under the TUCP may be limited primarily because the largest sturgeon recruitment occurs in wetter years (Fish 2010); as previously noted for green sturgeon, 2021 would be a drier year regardless of implementation of the TUCP and it is uncertain the extent to which the relatively small difference in drought-year-flows between TUCP and baseline would

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result in differing impacts to green sturgeon compared to the potential impacts that may occur between much broader ranging hydrological conditions (i.e., different water year types).

Abundance indices of starry flounder and California bay shrimp, two estuarine and coastal taxa occurring in the San Francisco Estuary, have statistically significant negative correlations with X2 (Kimmerer 2002; Kimmerer et al. 2009), indicating a positive relationship with Delta outflow. The correlation for California bay shrimp is with March–May X2, which does not overlap with the TUCP period of changed Delta outflow and therefore indicates no effect of the TUCP would be expected on the species on the basis of that correlation. The X2 averaging period for starry flounder is March–June, which overlaps the TUCP period beginning in June, although the impacts of the TUCP in relation to baseline would be very small in relation to the overall drought conditions under the baseline condition relative to wetter years. In addition, starry flounder distribution is not restricted solely to the San Francisco Estuary and it is not known how abundance in the Estuary—possibly reflecting increased upstream movement and retention with greater Delta outflow (Kimmerer et al. 2009)—relates to the overall species abundance across the species' range from Alaska to southern California.

Resilience to low flow, drought conditions for those species described above and other native fishes, appears to be contingent on the suite of environmental factors critical to each species and how they relate to the increased flow during post-drought periods. Mahardja et al. (2021) found that the Delta-endemic Sacramento splittail demonstrated low resistance to drought, but consistently recovered during subsequent wet years. This is consistent with the current understanding that the relatively long-lived Sacramento splittail (Daniels and Moyle 1983) depend on strong year classes that are recruited during wet years when floodplain habitat is available for spawning (Sommer et al. 1997, Moyle et al. 2004). While the reduction in outflow due to the TUCP may have some negative impact on splittail and other native fish, such as the Sacramento splittail, this effect would be difficult to quantify given the already poor environmental conditions due to the drought and the small differences between TUCP and baseline flows relative to hydrological differences between water years.

### **Impacts of TUCP on Nonnative Species**

According to Mahardja et al. (2021), nonnative pelagic fishes of the Delta (e.g., threadfin shad, American shad, and striped bass) generally exhibited low drought resistance and high resilience during the study period. However, these nonnative pelagic fish species did not demonstrate synchronous decline and rebound throughout every drought cycle. There is a lack of information on the flow-related mechanisms that would affect the abundance and distribution of these species; however, previous studies indicated that availability of suitable freshwater habitat may increase their occurrence during wet years (Feyrer et al. 2007, Kimmerer et al. 2009).

The nonnative littoral fish species included in the Mahardja et al. (2021) analysis (e.g., largemouth bass, bluegill, redear sunfish, and Mississippi silverside) are generally

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considered warm-water and drought-tolerant species and, as such, they rarely show decline during droughts. Conversely, numbers of largemouth bass, bluegill, and redear sunfish seem to have progressively increased between 1995 and 2011 (Mahardja et al. 2021), possibly due to the expansion of invasive submerged aquatic vegetation in the Delta over the past decade or two that have been associated with drought (Conrad et al. 2016, Santos et al. 2016, Kimmerer et al. 2019). On the other hand, Mississippi silverside appears to have a negative association with freshwater flow that led to a mostly positive drought resistance (Mahardja et al. 2016).

**Conclusions for Other Native and Nonnative Species**

While the reduction in outflow due to the TUCP may have some negative and/or beneficial impacts on other native and nonnative species, including the migratory, pelagic, and littoral species described above, these impacts would be expected to be small and difficult to quantify/detect given the environmental conditions associated with the drought and the small differences between TUCP and baseline flows relative to hydrological differences between water years.

**Coordination with Water Operations and Watershed Monitoring Technical Teams**

Reclamation and DWR convene the WOMT and Watershed Monitoring Workgroups for each of the Upper Sacramento, Clear Creek, American, Delta, and Stanislaus watersheds (“Watershed Monitoring Workgroups”). DWR convenes a Feather River Operations Group. Each of the Watershed Monitoring Workgroups are responsible for real-time synthesis of fisheries monitoring information (e.g., Enhanced Delta Smelt Monitoring Program, Summer Towntnet Surveys, other status and trends monitoring) and providing recommendations on scheduling specific volumes of water and implementing protective measures as specified in the 2020 Record of Decision, ITP, and FERC licenses. The Delta Monitoring Workgroup is responsible for integrating species information across watersheds, including delta and longfin smelt and winter-run Chinook salmon and other salmonids and sturgeon. In addition to Delta Watershed Monitoring Workgroup, the program includes Smelt Monitoring Team and Salmonid Monitoring Team. The Watershed Monitoring Workgroups include technical representatives from federal and state agencies and stakeholders and will provide information to Reclamation and DWR on species abundance, species distribution, life stage transitions, and relevant physical parameters.

The WOMT, comprised of agency managers, coordinates the implementation of water operations under the 2020 Record of Decision, as well as for the 2020 ITP. WOMT oversees the Watershed Monitoring Workgroups, seeks to resolve disagreements within the technical teams, and elevates policy decisions to the Directors of the agencies where necessary. This management-level team was established to facilitate timely decision-support and decision-making. The goal of WOMT is to resolve disagreements between technical staff from each agency; however, the participating agencies retain their



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authorized roles and responsibilities as set forth in the 2020 Record of Decision and 2020 ITP.

As part of implementation of the TUCP, DWR and Reclamation will coordinate with the Water Board, CDFW, NMFS, and USFWS at WOMT meetings. This process allows the regulatory agencies to stay up to date on information and provide feedback on potential project operations and related impacts on an ongoing basis as the drought is addressed. As a result of this coordination, DWR and Reclamation may submit to the Water Board additional information on developing standards appropriate for operation of the CVP/SWP during the drought. For example, DWR and Reclamation will continue to coordinate with Long-term Operation Agency Coordination working groups to develop a robust drought monitoring program through completion of the 2021 Drought Contingency Plan and Drought Ecosystem Monitoring and Synthesis Plan with updates to WOMT. Summary descriptions of the 2021 Drought Contingency Plan and Drought Ecosystem Monitoring and Synthesis Plan are provided below.

## **Drought Contingency Plan**

The Drought Contingency Plan (DWR and Reclamation 2021) is prepared by DWR and Reclamation in an effort to provide updated information about areas of potential concern given the current dry hydrology of 2021. The Drought Contingency Plan is being submitted by DWR to CDFW in response to Condition 8.21 of CDFW's ITP (CDFW 2020). Concurrently, the Drought Contingency Plan will be shared with the agencies through the LTO Implementation Agency Coordination meetings.

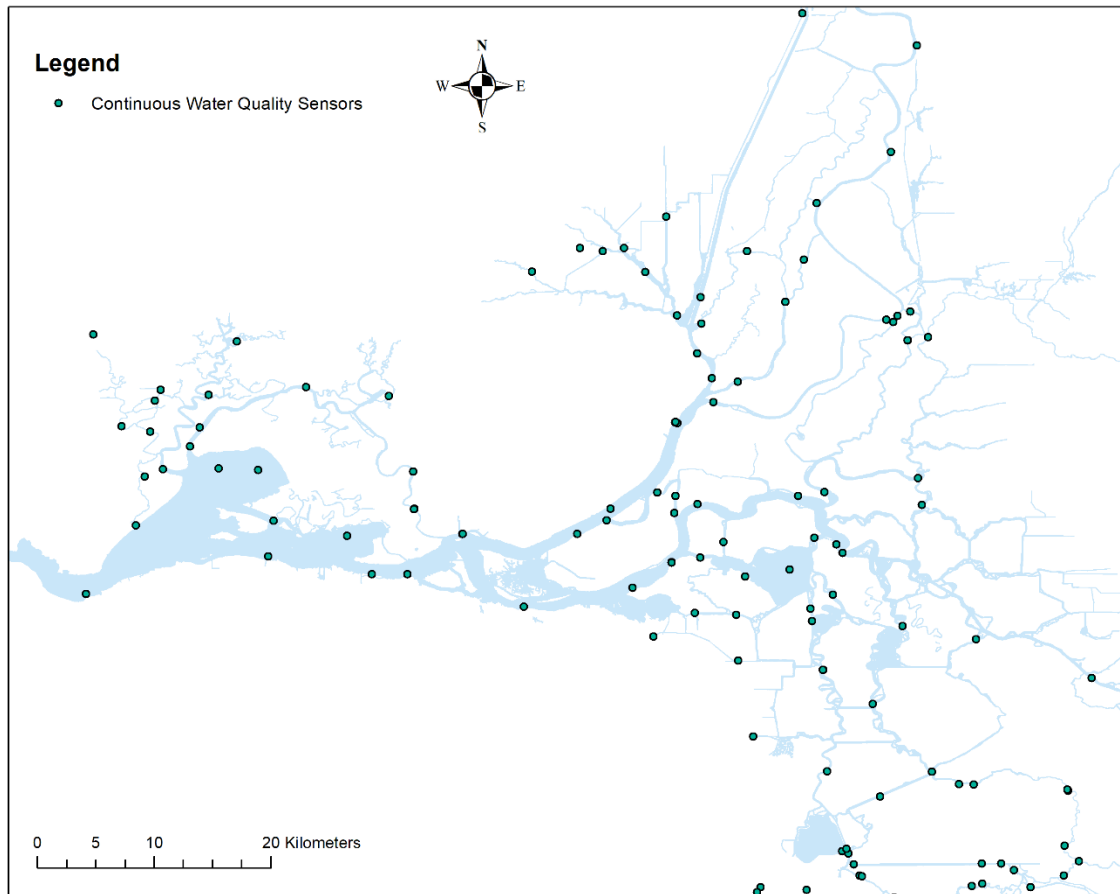
Over the past several months, as part of implementing the action included in the 2019 Biological Opinions and ITP, DWR and Reclamation have worked with CDFW, NMFS, USFWS, and the Water Board to identify actions that could potentially be implemented during a drought (not specifically for water year 2021) to manage the State's limited water supplies and protect species. These actions (known as the Drought Toolkit) describes the anticipated coordination, process, planning and potential drought response actions in the event of a drought. DWR and Reclamation are committed to continued development of the Drought Toolkit and will continue to coordinate with the CDFW, NMFS, USFWS, and the Water Board as any actions from that Toolkit are being considered for implementation in WY 2021

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## **Drought Ecosystem Monitoring and Synthesis Plan**

The 2021 Drought Contingency Plan will include ecosystem monitoring to assess the impact of drought and drought actions. The monitoring plan will outline the data collection and analysis that will be implemented to evaluate ecosystem responses to the current drought in the Delta and Suisun Marsh, as well as the impacts of the TUCP. Data collection will rely primarily on existing monitoring, with the addition of a few special studies. Data will be integrated and compared to previous droughts and previous wet periods to detect ecosystem changes. These changes will be compiled and synthesized into a report and be incorporated into updates for the Drought Toolkit to inform future dry year actions.

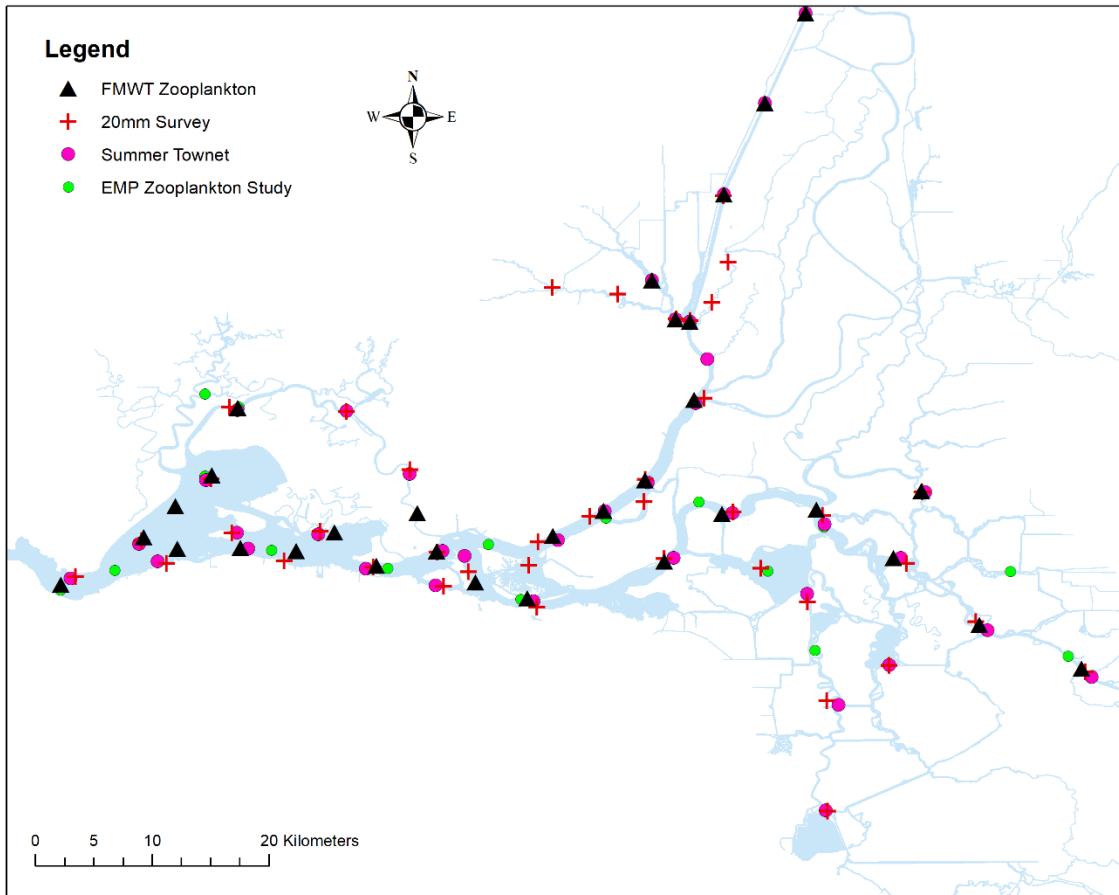
Monitoring covers the legal Delta and Suisun Marsh (Figures MON1 through MON4). In some cases, it will include limited data collection outside these areas where necessary to describe habitat for anadromous species.



**Figure MON1. Continuous water quality sensors in the Delta and Suisun Marsh.**

Source: DWR and IEP 2021.

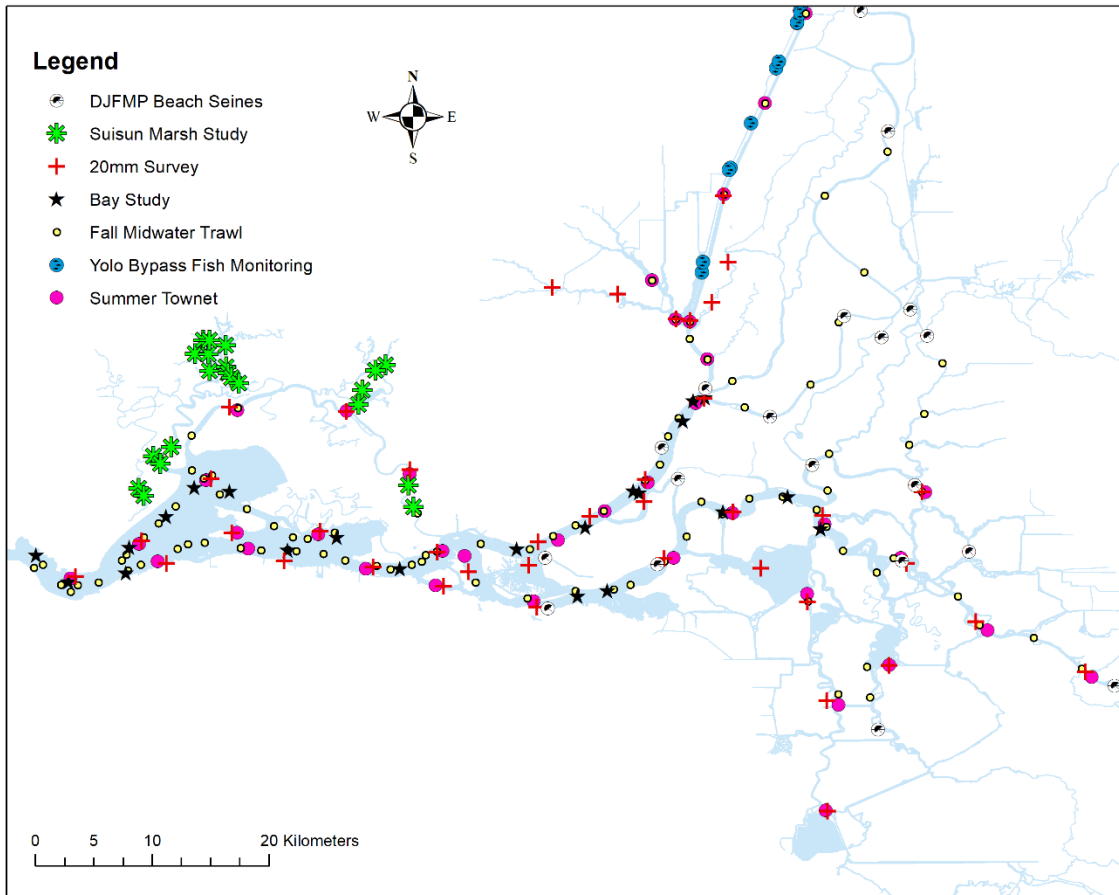
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**Figure MON2. IEP Zooplankton sample stations in the Delta and Suisun Bay/Marsh. FMWT zooplankton are collected monthly, Sept-December, 20mm area collected twice per month, March-June, Summer Townet samples are collected twice per month (June-August), and EMP samples are collected once per month year round.**

Source: DWR and IEP 2021.

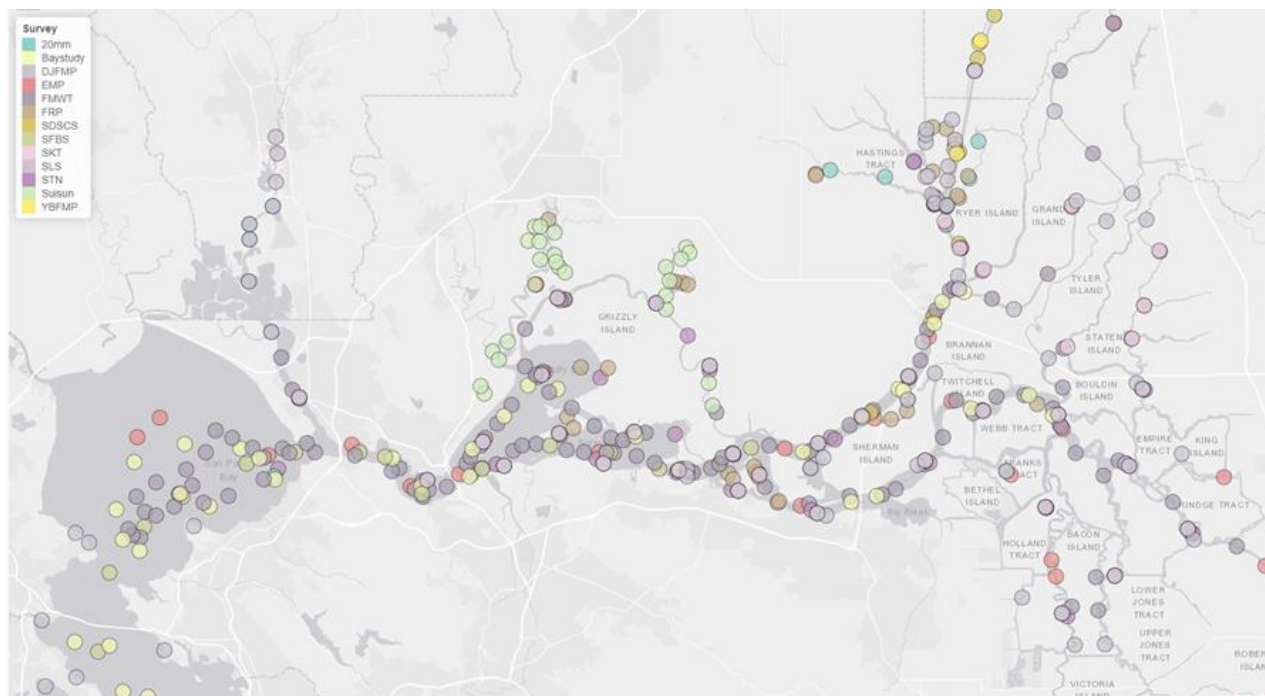
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**Figure MON3. IEP Fish sample stations in the Delta and Suisun Bay/Marsh. The Enhanced Delta Smelt Monitoring Survey does not have fixed sites, so is not shown here.**

Source: DWR and IEP 2021.

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**Figure MON4. Zooplankton and Fish sample stations in the Delta and Suisun Bay/Marsh (13 Bay-Delta monitoring programs).**

Source: <https://deltascience.shinyapps.io/monitoring/>.

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# Attachment 3

## **Delta Summary**

**DELTA SUMMARY (CFS)**

|                          | JUNE |           | JULY |           | AUGUST |           |
|--------------------------|------|-----------|------|-----------|--------|-----------|
|                          | Base | With TUCP | Base | With TUCP | Base   | With TUCP |
| Sac River at Freeport    | 7950 | 7100      | 8650 | 8150      | 7200   | 7200      |
| SJ River at Vernalis     | 650  | 650       | 600  | 600       | 550    | 550       |
| Computed Outflow         | 4000 | 3150      | 4000 | 3500      | 3000   | 3000      |
| Combined Project Pumping | 1200 | 1200      | 1150 | 1150      | 1200   | 1200      |


**Certificate Of Completion**

|   |                               |
|---|-------------------------------|
| Envelope Id: AE68937594854B08BAE70D9C60C3C606   | Status: Completed             |
| Subject: Please DocuSign: 00_2021 Temporary Urgency Change Petition_Director_Final_Signed.pdf |                               |
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| AutoNav: Enabled  | Envelope Originator:          |
| Envelope Stamping: Enabled  | Olivia Virgadamo              |
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|   | Sacramento, CA 95814          |
|   | Olivia.Virgadamo@water.ca.gov |
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| Lea.Garrison@water.ca.gov                            |                                | Viewed: 5/17/2021 10:30:48 AM |
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|                         |  |
|-------------------------|--|
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| Browsers (for SIGNERS): | Internet Explorer 6.0?, Mozilla FireFox 1.0, NetScape 7.2 (or above) |
| Email:                  | Access to a valid email account                                      |

|                            |  |
|----------------------------|--|
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## California Sportfishing Protection Alliance

*"An Advocate for Fisheries, Habitat and Water Quality"*

Chris Shutes, Water Rights Advocate

1608 Francisco St., Berkeley, CA 94703

Tel: (510) 421-2405 E-mail: [blancapaloma@msn.com](mailto:blancapaloma@msn.com)

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June 29, 2021

Eileen Sobeck, Executive Director  
State Water Resources Control Board  
P.O. Box 100, Sacramento, CA 95812-2000  
*Via electronic filing*

Re: Order Conditionally Approving 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

Dear Ms. Sobeck:

California Sportfishing Protection Alliance, AquAlliance, and the California Water Impact Network (collectively, CSPA et al.) respectfully submit a timely request of the Executive Director to prepare the administrative record in support of the petition for reconsideration of the Order Conditionally Approving 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 the you issued on June 1, 2021.

Please feel free to contact me if you have any questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Chris Shutes", is written over a horizontal line.

Water Rights Advocate  
California Sportfishing Protection Alliance  
1608 Francisco Street,  
Berkeley, CA 94703  
[blancapaloma@msn.com](mailto:blancapaloma@msn.com)