

AQUALLIANCE

DEFENDING NORTHERN CALIFORNIA WATERS

July 27, 2018

Via email to LSJR-SDComments@waterboards.ca.gov

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1001 I Street
Sacramento, California 95814

Re: Supplemental Comments on Revisions to Proposed Bay-Delta Plan Amendments

Dear Ms. Townsend and Members of the Board

This letter responds to the Board's *Notice of Public Meeting and Consideration of Adoption of Proposed Amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and Final Substitute Environmental Document*. We appreciate the work that the State Water Resources Control Board has done on the Phase 1 Update to the Bay-Delta Water Quality Control Plan and commend the Board members and Board staff for their efforts to navigate difficult and controversial terrain to provide necessary ecosystem flows on the San Joaquin River and its tributaries.

These supplemental comments are on two revisions to Appendix K. One of the revisions to Appendix K refers to Clean Water Act Regulations requiring a Use Attainability Analysis for the revisions to Table 3 objectives for fish and wildlife beneficial uses. A Use Attainability Analysis has not been done for the proposed relaxation of minimum instream flow criteria at Vernalis to 1,000 cfs, with an adaptive range of 800 cfs to 1,200 cfs. This is of particular concern because Appendix K states that there will be a delay in implementation of the San Joaquin tributary flows until 2022, but Appendix K does not state that there will be a similar delay in implementation of the revised minimum instream flow criteria in Table 3.

The other revision to Appendix K deletes a statement that the Board will consider amending the Table 3 Objectives for Fish and Wildlife Beneficial Uses after completion of the Pelagic Organism Decline studies. It has been over a decade since the Board's last Pelagic Organism Decline Workshop, and the Board did not provide an opportunity to receive a report from the Interagency Ecological Program Pelagic Organism Decline Management Team. That effort remains the most comprehensive, evidenced based effort to date to investigate the Pelagic Organism Decline and to synthesize the results of over 47 studies.

In April of 2018, the Board received formal testimony in the WaterFix Water Right Change Petition Hearing from a member of the Interagency Ecological Program Pelagic Organism Decline Management Team on the 2010 Pelagic Organism Decline Workplan and Synthesis Report. The testimony was presented for the Board's consideration in adopting "appropriate Delta flow criteria" pursuant to Water Code section 85086. The Board should not delete the statement about considering the Pelagic Organism Decline studies in determining whether the Table 3 Objectives are reasonably protective until the 2010 Pelagic Organism Decline Synthesis Report, and the completed initial Pelagic Organism Decline studies, have been adequately considered by the Board in their formal determination of "appropriate Delta flow criteria" and in the Phase 2 Update to the Bay-Delta Water Quality Control Plan.

We thank you for your consideration of these comments on the revisions to the proposed Bay-Delta Plan amendments.

1. Use Attainability Analysis for Current Table 3 Instream Flow Criteria at Vernalis

The section of Appendix K on Water Quality Objectives for Fish and Wildlife Beneficial Uses (p. 13), refers to Clean Water Regulations requiring a Use Attainability Analysis:

C. Water Quality Objectives for Fish and Wildlife Beneficial Uses

The water quality objectives in Table 3 provide reasonable protection of fish and wildlife beneficial uses in the Bay-Delta Estuary including EST, COLD, WARM, MIGR, SPWN, WILD, and RARE. They also provide reasonable protection of fish and wildlife beneficial uses designated in the "Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin" for the Stanislaus River, Tuolumne River, Merced River, and the San Joaquin River from the mouth of the Merced River to Vernalis, as well as those presumed to exist under the Clean Water Act.⁸

Footnote 8 states:

⁸ See 40 C.F.R. § 131.10(j).

The Clean Water Act Regulations, 40 C.F.R. section 131.10(j) state:

(j) A State must conduct a use attainability analysis as described in § 131.3(g), and paragraph (g) of this section, whenever:

- (1) The State designates for the first time, or has previously designated for a water body, uses that do not include the uses specified in section 101(a)(2) of the Act; or
- (2) The State wishes to remove a designated use that is specified in section 101(a)(2) of the Act, to remove a sub-category of such a use, or to designate a sub-category of such a use that requires criteria less stringent than previously applicable.

(underlining added.) The Clean Water Act Regulations, 40 C.F.R. section 131.3(g), defines a use attainability analysis as follows:

(g) *Use attainability analysis* is a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in § 131.10(g.)

There are two components to the revisions to Table 3 in Appendix K, which is reproduced on the next page. The first revision to Table 3 is the deletion of the existing minimum instream flow criteria at Vernalis from April 15 to May 15, and from February through May 14, and May 16 through June. These criteria are replaced by a minimum “base” flow of 1,000 cfs, with an allowed adaptive management range between 800 and 1200 cfs, inclusive. In considering whether a Use Attainability Analysis is required, it is important to examine the implementation of Table 3 objectives.

				C	3,500
<u>LOWER SAN JOAQUIN RIVER FLOWS</u>					
San Joaquin River at Airport Way Bridge, Vernalis	C-10 (RSAN112)	Flow rate	Minimum monthly average [13] flow rate (cfs) [14]	W,AN BN,D C	Feb-Apr-14 and May-16-Jun 710 or 1,140
				W AN BN D C	Apr-15- May-15 [15] 7,330 or 8,620 5,730 or 7,020 4,620 or 5,480 4,020 or 4,880 3,110 or 3,540
				All	Oct 1,000 [13][16]
San Joaquin River at Airport Way Bridge, Vernalis	C-10	Flow Rate	Narrative & Minimum 7-day running average flow rate (cfs) for February through June	Maintain inflow conditions from the San Joaquin River watershed to the Delta at Vernalis sufficient to support and maintain the natural production of viable native San Joaquin River watershed fish populations migrating through the Delta. Inflow conditions that reasonably contribute toward maintaining viable native migratory San Joaquin River fish populations include, but may not be limited to, flows that more closely mimic the natural hydrographic conditions to which native fish species are adapted, including the relative magnitude, duration, timing, and spatial extent of flows as they would naturally occur. Indicators of viability include population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity.	
Stanislaus River at Koetitz	DWR Gage KOT			Maintain 40% A percent of unimpaired flow, with an allowed adaptive range between 30% - 50%, inclusive, from each of the Stanislaus, Tuolumne, and Merced Rivers shall be maintained from February through June. [14]	
Tuolumne River at Modesto	USGS Gage 1129000			Notwithstanding the above unimpaired flow requirement, At all times during February through June, the flow at Vernalis, as provided by the percent of unimpaired flow objective, shall be no lower than the a minimum base flow value of 1,000 cfs with an allowed adaptive management range between 800 – 1,200 cfs, inclusive, at Vernalis shall be maintained at all times during February through June.	
Merced River near Stevenson	DWR Gage MST			Flows provided to meet these numeric objectives shall be managed in a manner to avoid causing significant adverse impacts to fish and wildlife beneficial uses at other times of the year.	
	C-10				

The Revised Decision 1641 assigned the responsibility for meeting the Table 3 Vernalis flows criteria to Reclamation’s New Melones permit, stating:

IT IS FURTHER ORDERED that Permits 16597 and 16600 (Applications 14858A and 19304, respectively) * of the USBR (New Melones storage) are amended as follows:
(p. 160.)

2. Permittee shall, on an interim basis until the Board adopts a decision assigning permanent responsibility for meeting the water quality objectives:

a. Ensure that the water quality objective for fish and wildlife beneficial uses for San Joaquin River flow at Airport Way Bridge, Vernalis set forth in Table 3 is met, with the exception that during the April-May pulse flow period while the SJRA is in effect, experimental target flows set forth in (b) below may be provided in lieu of meeting this objective.

b. During the April-May pulse flow period while the SJRA is in effect, maintain San Joaquin River flows at Airport Way Bridge, Vernalis, as follows, in lieu of meeting said river flow objective:

Existing Flow (cfs)	Target Flow (cfs)
0-1,999	2,000
2,000-3,199	3,200
3,200-4,449	4,450
4,450-5,699	5,700
5,700-6,999	7,000
7,000 or greater	Existing Flow

During years when the sum of the current year’s 60-20-20 indicator and the previous year’s 60-20-20 indicator is seven (7) or greater, target flows shall be one step higher than those required by the above table. The Permittee is not required to meet the target flow during years when the sum of the current year’s 60-20-20 indicator and the previous two years’ 60-20-20 indicator is four (4) or less, using the following table.

SJR Basin 60-20-20 Classification	60-20-20 Indicator
Wet	5
Above normal	4
Below normal	3
Dry	2
Critical	1

(p. 161-162.)

The San Joaquin River Agreement expired in 2011. Richard Woodley, Reclamation's Resources Manager, sent a letter on February 15, 2017 to the State Water Resources Control Board stating that Reclamation will not comply with the Table 3 requirements for minimum instream flows at Vernalis, but only those in Appendix 2E of the NMFS Biological Opinion.¹ Woodley's letter stated that the modeling in the 1999 EIR for Decision 1641 (done by the Department of Water Resources) was wrong, and so Reclamation has not had a due process hearing:

Reclamation does not believe that the Board's post-San Joaquin River Agreement (SJRA) interpretation of D-1641 is supported by sufficient procedural or substantive due process, and raises serious concerns for viable, sustainable operations of New Melones, and, therefore, could also conflict with clear Congressional directives for the CVP.

(p. 1.)

Woodley continued:

When the Board issued D-1641, modeling results in the Board's November 1999 Final Environmental Impact Report showed that even with the SJRA in place, carryover storage in New Melones would be reduced by an annual average of 151,000 acre-feet, including reductions of 356,000 acre-feet in critical drought periods. Those same modeling results show that if Reclamation were to be solely responsible for the instream flows on the mainstem San Joaquin contained in Table 3 of D-1641, using its available supplies on the Stanislaus, the reduction in carryover would be an average of 305,000 acre-feet, with a reduction of 593,000 acre-feet in critical drought periods. Operation of New Melones in this manner is unsustainable, drastically increasing the potential number of years that zero water will be available for storage, and does not result in durable instream flows on the mainstem.

Reclamation believes that the 1999 modeling is flawed and underestimates the true impact of operating New Melones to these flow requirements. Such operations have not been vetted through a due process hearing, and threaten the ability of New Melones to store and deliver water to its federal contractors in all but the wettest years.

(p. 2, underlining added.)

Woodley also stated that Reclamation will only comply with the requirements in the National Marine Fisheries Service's 2009 Biological Opinion, not the D-1641 requirements:

Since the expiration of the SJRA, the Board has taken the untenable position that the sole responsibility for the April/May San Joaquin river flows in the Water Quality Control Plan is on Reclamation's New Melones Reservoir, not on an "interim" basis, but until such time as it sees fit to establish an alternative implementation plan, now 17 years since the Board adopted D-1641. Reclamation, on the other hand, is willing to work with the

¹ The February 15, 2017 letter from Richard Woodley to the State Water Resources Control Board is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/woodley_ltr02152017.pdf. Incorporated by reference.

Board to fashion a reasonable contribution to instream flow objectives for Reclamation in light of the circumstances, and is committed to continuing to meeting flows required by Appendix 2E of the National Marine Fisheries Service 2009 Biological Opinion (2009 NMFS BO.)

(p. 2.)

Executive Director Tom Howard's March 14, 2017 response² stated in part:

I recognize that development of new flow objectives and implementation of a permanent allocation of responsibility for meeting these objectives has taken longer than anticipated. I also recognize that under certain flow and antecedent conditions Reclamation is not capable of meeting all its water right permit conditions while maintaining adequate carryover storage in New Melones Reservoir. In particular, Reclamation's ability to meet the April-May pulse flow requirement has become more difficult now that the SJRA has expired. The Board was aware of these issues when it adopted 0-1641. In light of the circumstances, a reasonable path forward is for Reclamation and Board staff to meet each winter and agree on a prudent operation until such time as new flow objectives are implemented.

(p. 2.)

The March 14, 2017 decision by the Executive Director effectively exempted Reclamation from meeting the Table 3 Vernalis flow criteria or the expired SJRA criteria. There was no water rights hearing for this relaxation of the Board's D-1641 implementation of the minimum instream flow requirements at Vernalis, and Reclamation has simultaneously made the claim in the WaterFix Water Right Change Petition hearing that the Department of Water Resources' CALSIM computer modeling shows that Reclamation can continue to meet all of the Decision 1641 requirements, and proposes those requirements as a condition of that permit. The September 2017 letter³ from Reclamation and the California Department of Water Resources to the State Water Resources Control Board states in part:

Petitioners propose that the California WaterFix be conditioned upon the terms contained in Water Rights Decision 1641 ("D-1641"). Modeling assumptions demonstrate it is possible to meet existing regulatory requirements inclusive of D-1641 and the 2008/2009 Biological Opinions.

(p. 1.)

² Tom Howard's March 14, 2017 letter to Reclamation is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/03142017howardltr.pdf. Incorporated by reference.

³ The September 8, 2017 letter from Reclamation and the California Department of Water Resources, *Re: August 31, 2017 Ruling Regarding Scheduling of Part 2 and Other Procedural Matters* is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/docs/2017/20170908_dwr_letter.pdf.pdf. Incorporated by reference.

Reclamation's Chief Operator, Ron Mulligan, also testified in the WaterFix Hearing that Reclamation would continue to meet Decision 1641 requirements.

As previously stated, Reclamation operates the CVP pursuant to statute, regulations, permit terms and conditions and contractual obligations that affect the timing and amount of water that may be available for various uses. These include requirements and operating criteria contained in CVPIA, D-1641 and other SWRCB orders, and implementation of the 2008/09 Biological Opinions.

(Exhibit DOI-7⁴, p. 4.)

Both claims cannot simultaneously be true.

There has been no analysis of why the Department of Water Resources' modeling for the Decision 1641 EIR or for the WaterFix Hearing would be in error, and the Board has continued to rely the CALSIM model for both the Phase I Update and the WaterFix Water Right Change Petition hearing.

However, the generalized reservoir operations in the CALSIM II model have not been validated, and may not represent actual current reservoir operations. The 2003 CALSIM II Strategic Review⁵ noted:

Most successful applications of optimization that attempt to simulate the behavior of a system have calibrated their objective functions (i.e., set the weights that prioritize flows over time and space) so that the model results correspond to what actually happens or would happen under a particular hydrologic and demand scenario. In these cases the model's decisions correspond to those the operators would make, as often prescribed by rules that have been worked out in a legal/political process. It does not appear that such a calibration of the objective function weights in CALSIM has yet been completed.

(p. 4)

DWR's and Reclamation's response⁶ stated in part that validation on historic reservoir operations was not desirable, since reservoir operations were subject to change:

⁴ Ron Milligan's testimony, Exhibit DOI-7 in the Department of Interior's exhibits in the WaterFix Water Right Change Petition hearing, is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/doi/doi_7.pdf. Incorporated by reference.

⁵ Close et. al., *A Strategic Review of CALSIM II and its Use for Water Planning, Management, and Operations in Central California*, 2003. Available at http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/daviswoodland/daviswoodland_cspa_es9.pdf. Incorporated by reference.

⁶ California Department of Water Resources and U.S. Bureau of Reclamation, *PEER REVIEW RESPONSE: A Report by DWR/Reclamation in Reply to the Peer Review of the CalSim-II Model Sponsored by the CALFED Science Program in December 2003*, 2004. Available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/dd_jardins/ddj_x102.pdf. Incorporated by reference.

...DWR and Reclamation suggest that a more reasonable approach to defining behavioral parameters is through discussions with system operators to define current operational policy or rules. California's water system, especially with regard to the Delta, has undergone many changes in the 1990s (Delta Water Quality Control Plan, CalFed, ESA actions, CVPIA (b)(2), Environmental Water Account) so that calibration to historical practice has limited value. It would appear more reasonable to define operating rules in conversations with operators and subsequently use a recent wet, normal and dry year in a validation exercise.

(p. 19.)

With a multiyear fill reservoir like New Melones, operational rules and End of September carryover storage targets would have significant impact on carryover storage during droughts. The California Sportfishing Protection Alliance also noted in a protest to the approval of the Temporary Urgency Change Petition⁷ that the storage of water for Reclamation's contracts receives precedence over water for public trust flows:

the truth of the claimed accounting turns substantially on the assumption that the Districts are entitled to the "first" 600,000 acre-feet of water that enters New Melones Reservoir in any given year. This interpretation would suggest that the Bureau is not entitled to do anything with water in storage in New Melones Reservoir, including meeting its D-1641 instream flow requirements, until the Districts' annual entitlement, plus its Conservation Account water, is already physically present in New Melones Reservoir.

A more complete analysis of operational rules and carryover storage targets for New Melones is thus essential for any Use Attainability Analysis in multiple dry years.

There is thus no Use Attainability Analysis to justify the Board's severe lowering of current minimum instream flow criteria from February to June to a base flow of 1,000 cfs, adaptively managed from 800 cfs to 1,200 cfs. The new base flows could potentially cause severe adverse impacts on San Joaquin River flows at Vernalis because the tributary flows of 40% of unimpaired are not proposed to be fully implemented until 2022. As the bottom of the adaptive range from February through June, the minimum could also be implemented for substantial parts of those months once implementation starts, particularly if the tributary flows are not fully implemented.

The rationale for the Board adopting such a low base flow is also unclear. In 2016 Reclamation proposed a 1,000 cfs base flow at Vernalis in April and May as one of a series of Temporary Urgency Change Petitions during the 2013 to 2016 drought. The Temporary Urgency Change

⁷ California Sportfishing Protection Alliance et. al., Protest, Objection, Petition for Reconsideration and Petition for Hearing, April 27, 2016. Available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/jenningsemail04272016.pdf. Incorporated by reference.

Petition was approved by the Board.⁸ The Bay Institute, the Natural Resources Defense Council, Defenders of Wildlife and the Pacific Coast Federation of Fishermen's Associations protested⁹, stating in part:

There is no evidence to indicate that the base and pulse flows proposed by Reclamation in its petition will do anything more than cause very poor survival of emigrating juvenile fall-run and spring-run Chinook salmon. The proposed flows are also likely to be detrimental to adult Chinook salmon that attempt to enter the San Joaquin and Stanislaus River basins during the spring; the presence of spring-running Chinook salmon adults in San Joaquin River tributaries is well-known (Franks *unpublished*, R. Johnson, NOAA, *personal communication*). A number of other species, including migrating steelhead juveniles, white sturgeon, and fish populations in the Delta downstream of Vernalis will also likely be harmed by the proposed flows.

(p. 3.)

Since Appendix K makes no mention of requirements that Reclamation, or any other water rights holder maintain the existing flows at Vernalis until the tributary flows are fully implemented, there is a substantial risk that these conditions could be realized as a result of the reduction in minimum instream flows to 1,000 cfs.

The Phase 1 SED analyzes a No Action Alternative that limits the source of flows for meeting the existing minimum instream flow criteria at Vernalis to New Melones. The No Action Alternative is insufficient for a Use Attainability Analysis, because Reclamation has other sources of flows for meeting the objective, including the San Joaquin River Restoration flows and water transferred from other water rights holders.

Absent a more complete Use Attainability Analysis for the existing minimum instream flow criteria, there appears to be little justification for lowering the minimum instream flows at Vernalis to 1,000 cfs, with an adaptive range of 800 cfs to 1,200 cfs, except as a post-hoc justification for Reclamation's refusal to comply with Decision 1641 permit requirements.

A more complete Use Attainability Analysis for the existing flow requirements and implementation is also essential when transferring responsibility for meeting instream flow needs to more senior water rights holders. The Board is now no longer proposing to hold a Phase 3 Water Rights Hearing, which would resolve these issues.

⁸ The order approving the TUCP is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_notices/2016/sjr_tucp_order_041916.pdf. Incorporated by reference.

⁹ The April 2016 protest of The Bay Institute et. al. is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/bobkeremail_04112016.pdf. Incorporated by reference.

2. Use Attainability Analysis for Proposed Instream Flow Criteria on Tributaries

The other major revisions in Table 3 are the new percent of unimpaired flow objectives on the Stanislaus, Tuolumne, and Merced Rivers. The Phase 1 Update SED provides a structured scientific assessment of the attainment of the proposed new percent of unimpaired flow objectives, but the structured scientific assessment relies on stream accretions from the CALSIM II model.

The CALSIM II model (and its predecessor, DWRSIM) are known to have significant issues with its representation of hydrology, which should have been investigated further when Reclamation told the Board that the conclusions from the modeling for D-1641 was incorrect. A report of interviews with CalSim users, *Musings on a Model: CalSim II in California's Water Community*¹⁰ stated:

Some interviewees also want to see further improvement in CalSim II's representation of hydrologic processes. They feel that it is weak enough to undermine the entire model, as errors in this input propagate through each layer of the model. Many claim that CalSim II's hydrology uses data and methods that are decades out of date and rely on too coarse a geographic scale.

(p. 10.)

Problems were noted in the 2006 San Joaquin River module peer review¹¹ with the CALSIM model calibration, which could compromise the attainment assessment. The peer reviewers noted that the model has higher flows than gage flow data on the lower San Joaquin River during the drought years in the 1920s. Reclamation rejected the estimated flows which showed that the San Joaquin River was a losing reach during that time period:

The mass balance accretion/depletion method showed that this was a losing reach during the 1920s. This result was rejected because "the Vernalis stream flow gage was not in place until about 1929, and flows at Vernalis before this date were roughly estimated based on ..." other gages (p. 58, Reclamation, 2005). There should be more documentation of the analysis that led to abandoning the mass balance approach. The justification seems to be that the developers do not believe the regression used for the period before the Vernalis gage was installed. However, no justification is given for the method that was adopted and there was no comparison made except between the mass balance and regression methods.

(p. 18.)

The 2006 San Joaquin River Peer Review report also recommended documentation of model assumptions and error analyses. Under "Uncertainty in Model Results," the reviewers noted:

¹⁰ Ferreira et. al. *Musings on a Model: CalSim II in California's Water Community*, 2005. Available at <https://escholarship.org/uc/item/2mx392x6>. Incorporated by reference.

¹¹ Ford et. al., *Review Panel Report San Joaquin River Valley CalSim II Model Review*, 2006. Available at http://science.calwater.ca.gov/pdf/calsim/calsim_II_final_report_011206.pdf. Incorporated by reference.

Currently no general guidance is available to indicate whether differences of 1 taf, 50 taf, 100 taf, or 500 taf are significant enough to rise above the level of error and noise inherent in the model.

(p. 13)

and recommended

At a minimum, error analyses should be conducted, combining a sensitivity analysis of critical model results to some of the largest and least well supported model assumptions with an assessment of the likely range of error in these major model parameters and assumptions.

(p. 13.)

Reclamation and DWR have not done assessments of the likely ranges of error of the model, and no error information was provided for the CALSIM stream accretions which were used in the Water Supply Effects Analysis. It is thus unclear if the WSE estimates of frequency of achieving instream flows at Vernalis with 40% of unimpaired flow requirements are accurate for dry and critically dry years. The WSE model may thus understate the conflicts between Reclamation, senior water rights holders, and the environment.

3. Pelagic Organism Decline Studies

Under Water Quality Objectives for Fish and Wildlife Beneficial Uses, Appendix K also states:

Information available in 1995 indicated that, unlike water quality objectives for parameters such as dissolved oxygen, temperature, and toxic chemicals, which have threshold levels beyond which adverse impacts to the beneficial uses occur, there were no defined threshold conditions that could be used to set objectives for flows and project operations. Instead, available information indicated that a continuum of protection exists. Based on that information, higher flows and lower exports provided greater protection for the bulk of estuarine resources up to the limit of unimpaired conditions. Therefore, these objectives were set based on a subjective determination of the reasonable needs of all the consumptive and nonconsumptive demands on the waters of the Estuary. ~~After completion of the POD studies, the State Board will review the study results and may consider amending this Plan to improve water quality protections for fish and wildlife in the Estuary.~~

(p. 13.)

The Board should not delete the sentence referring to completion of the Pelagic Organism Decline studies, and reviewing the results in determining whether to amend the Table 3 objectives to improve water quality protections for fish and wildlife in the estuary. Acting on the results of the POD studies to amend the Table 3 requirements has repeatedly been deferred by the Board.

The 2006 Bay-Delta Water Quality Control Plan Update was issued before the report of the

Pelagic Organism Decline Synthesis Team was available, and did not address the Pelagic Organism Decline (“POD”). The Plan Amendment Report, Appendix 1 to the 2006 Plan¹² states:

the reasons for the POD are still unknown, and water project operations are included in the conceptual model for many of the POD studies as a possible factor/cause for the decline. The study results are expected in 2007, and may have an impact on the Delta Outflow objective and its implementation. The study results could help staff assess when the current Delta outflow objective must be met to protect the beneficial uses and whether the objective can be relaxed without causing an additional negative impact to sensitive species. In light of this, the State Water Board did not change this objective in the 2006 Plan. The State Water Board will not consider changing the Delta Outflow objective until the POD studies are completed or the Board receives other reliable technical information, warranting a change.

(Plan Amendment Report, p. 45-46.) In 2007, the Board held a workshop on the Pelagic Organism Decline.¹³ The workshop notice stated:

At this workshop, the State Water Board Division of Water Rights staff request that the IEP POD work team and any other participants present detailed, specific, current information they have on POD, including:

- 1) A progress report on current studies and available results, including the results of work conducted to investigate the effects on pelagic organisms resulting from food web changes, the establishment of invasive species, water exports, changes in salinity, and contaminant load in the Suisun Marsh and Estuary;
- 2) Proposed studies and a projected timeline for implementation;
- 3) The status of the scientific peer review of the work plan prepared by the POD work team; and
- 4) Interim actions the State Water Board should consider based on currently available information.

¹² The Plan Amendment Report for the 2006 Bay-Delta Water Quality Control Plan Update is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/wq_control_plans/2006wqcp/docs/2006_app1_final.pdf. Incorporated by reference.

¹³ The 2007 Pelagic Organism Decline Workshop Notice is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/pelagic_organism/docs/pn_pod.pdf. Incorporated by reference.

In January of 2008, the Board held a second workshop on the Pelagic Organism Decline¹⁴, and received a copy of the 2007 report of the Interagency Ecological Program Pelagic Organism Decline Management Team.¹⁵ The report noted that increases in entrainment in the winter were correlated with reductions in San Joaquin River inflow:

One piece of evidence that export diversions played a role in the POD is the substantial increases in winter CVP and SWP salvage that occurred contemporaneously with recent declines in each of the four primary fishes (Figure 14). Increased winter entrainment of delta smelt, longfin smelt and threadfin shad represents a loss of pre-spawning adults and all their potential progeny. [...]

In trying to evaluate the mechanism(s) for increased winter-time salvage, POD studies by USGS made three key observations (IEP 2005). First, there was an increase in exports during winter as compared to previous years (Figure 16). Second, the proportion of tributary inflows shifted. Specifically, San Joaquin River inflow decreased as a fraction of total inflow around 2000, while Sacramento River increased (Figure 17). Finally, there was an increase in the duration of the operation of barriers placed into south Delta channels during some months. These changes may have contributed to a shift in Delta hydrodynamics that increased fish entrainment.

(p. 18-19.)

The Board deferred consideration of the results until the studies were completed. The initial Pelagic Organism Decline studies have been completed, and academic papers from the POD studies have been published and peer-reviewed. A synthesis of results by the Interagency Ecological Program Management and Synthesis (“MAST”) team, was published in 2010 as the IEP POD Workplan Report and Synthesis of Results.¹⁶

The State Board did formally receive testimony by California Department of Fish and Wildlife Biologist Randall Baxter, who was a member of the Interagency Ecological Program Pelagic Organism Decline Management Team¹⁷, and who participated in the 2008 Board workshop on the Pelagic Organism Decline in Part 2 of the WaterFix Water Right Change Hearing. The WaterFix Water Right Petition Hearing Notice stated that the Board would consider and adopt

¹⁴ The January 2008 Pelagic Organism Decline Workshop Notice is available at Available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/pelagic_organism/docs/pod_wkshop_notice.pdf. Incorporated by reference.

¹⁵ The 2007 IEP POD Synthesis of Results is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/pelagic_organism/docs/pod_ieppodmt_2007synthesis_011508.pdf. Incorporated by reference.

¹⁶ The 2010 IEP POD Workplan and Synthesis of Results is available at <https://water.ca.gov/LegacyFiles/iep/docs/FinalPOD2010Workplan12610.pdf>, and as Exhibit FOR-60 in the WaterFix Water Right Change Petition Hearing exhibits. Incorporated by reference.

¹⁷ Mr. Baxter’s statement of qualifications for the 2010 Delta flow criteria hearing is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/exhibits/dfg_dfg_exh10_baxter.pdf. Incorporated by reference.

“appropriate Delta flow criteria,” to be included in the order taking action on the Change Petition, as required under Water Code section 85086(b)(2). “Appropriate Delta flow criteria” clearly include potential changes to objectives in Table 3. The Board needs to formally consider this testimony before any final determination that the criteria in Table 3 are sufficiently protective.

As Appendix K states, it is clear that there has been a profound shift in the Delta ecosystem, starting in the early 2000s after Decision 1641. Mr. Baxter testified that populations of pelagic species have crashed, and Delta smelt and Longfin smelt are on the brink of extinction. (WaterFix hearing transcript, April 11, 2018, 11:16-16:25, referring to Exhibit DDJ-282¹⁸.) Mr. Baxter also testified that the Delta’s food web is also less nutritious than in the past and the benthic population has shifted to include the invasive potamcorbula clam. (WaterFix hearing transcript, April 11, 2018, 11:16-16:25.) Mr. Baxter testified that the Pelagic Organism Decline Management Team hypothesized that there has been a regime shift in the Delta, as shown in Figure 8 of the IEP POD Synthesis of Results. (p. 144, reproduced below.)

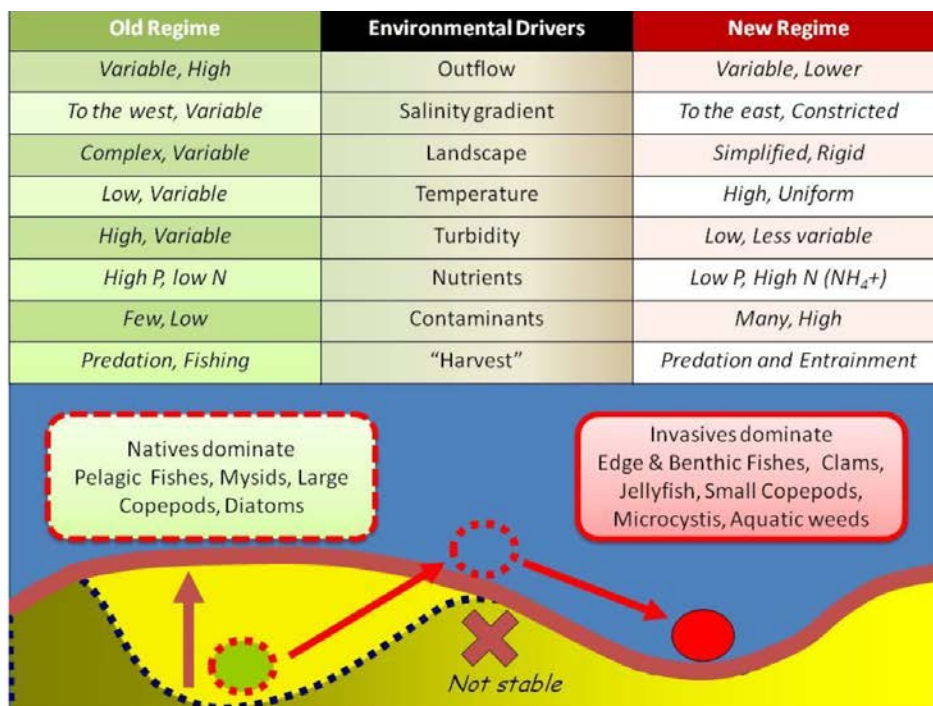


Figure 8. The ecological regime shift in the Delta results from changes in (slow) environmental drivers that lead to profoundly altered biological communities and, as soon as an unstable threshold region is passed, a new relatively stable ecosystem regime.

¹⁸ Exhibit DDJ-282, graphs of Fall Midwater trawl data is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibit_s/docs/dd_jardins/part2/ddj_282.pdf. Incorporated by reference.

Mr. Baxter testified that the POD Management Team found 8 abiotic drivers of the regime shift, and ranked them in the following order (WaterFix hearing transcript, April 11, 2018¹⁹, pp. 18:12-19:14):

The environmental, slow drivers we propose for the POD regime shift are (1) outflow, (2) salinity, (3) landscape, (4) temperature, (5) turbidity, (6) nutrients, (7) contaminants, and (8) harvest. These drivers are listed in our hypothesized order of their importance to the resilience of the system and approximate rate of change.)

(p. 90:3991-3994.)

Given the hypothesized drivers of the Pelagic Organism Decline, the Board may need to examine some of the criteria in Table 3 more closely to determine whether they are sufficiently protective. The Phase 1 SED states that “[n]o substantial changes in southern Delta and estuarine habitat would occur” under the Board’s proposed project (Impact Aqua-12, Chapter 7, p. 7-8.) Clearly the POD reports indicate that there is need for improved southern Delta and estuarine habitat.

The Board has also not evaluated the changes in operations resulting from Decision 1641 that may have contributed to the Pelagic Organism Decline. The revised Decision 1641 removed the limit on the Bureau’s diversions from Old River in Permit 12860, allowing unlimited diversions from this Old River branch of the San Joaquin River. With respect to Reclamation’s permit 12860, the Revised Decision 1641 states in part:

In the order, permit term 2 provides that, “The maximum rate of diversion through the Delta-Mendota Canal under this permit, together with other rights of permittee, shall not exceed 4600 cubic feet per second.” (SWRCB 5c, p. 20.) This language is written as a limit on other permits held by the USBR, but it in fact is set forth only in Permit 12860. This limit has the potential to constrain the use of Permit 12860 and the JPOD at times.

Permit term 2 in D-1020 was based on a stipulated agreement between the USBR and other parties. The SWRCB found that the physical capacity of the Tracy Pumping Plant and the Delta- Mendota Canal is 4600 cfs and that more water could not be diverted through the facilities. The SWRCB included the limitation because of the stipulation. There is no other basis cited in D-1020 for the restriction. As part of the approval of the USBR’s use of the Banks Pumping Plant under the JPOD, this decision deletes permit term 2 in D-1020.

(p. 97.)

The Revised Decision 1641 continues:

JPOD diversions by the USBR at instantaneous combined rates above 4600 cfs have occurred regularly in the past. No evidence in the record indicates that combined diversions in excess of 4600 cfs necessarily cause adverse impacts to the environment or to legal water users.

¹⁹ Mr. Baxter’s testimony on April 11, 2018 is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/docs/transcripts/2018/20180411_transcript.pdf. Incorporated by reference.

Furthermore, the SWP and the CVP could, under their own rights at their own facilities, divert water at a combined rate of 14,900 cfs. If the USBR could not divert more than 4600 cfs at Tracy and Banks combined, the JPOD could not be used for any purpose. (R.T. p. 10967; USDI 10, p.4.)

Any adverse effect on the SWP of authorizing the JPOD at any level is expected to be minimal. (USDI 10, p.3; USDI 10d.)

(p. 98.)

The Environmental Impact Report for the Board's proposed implementation of Decision 1641²⁰ also states that modeling by the Department of Water Resources showed that Decision 1641 would have no impact on delta smelt, longfin smelt, or the survival of juvenile chinook salmon and steelhead:

In general, the use of the JPOD is not predicted to adversely impact the through-Delta survival of juvenile chinook salmon and steelhead, or the abundance of delta smelt, Sacramento splittail, starry flounder, longfin smelt, and Crangon franciscorum, compared to the Bay/Delta Plan condition.

(p. ES-10.)

Given the Pelagic Organism Decline, the Board needs to reconsider the conclusions in the Decision 1641 EIR, and may need to consider limits on Reclamation's unlimited diversions on Old River, on the Department of Water Resources' diversions into Clifton Court Forebay, and on the Joint Point of Diversion. Requiring senior water rights holders to curtail diversions upstream will not improve estuarine habitat in the Delta if the current hydrodynamic conditions continue in the southern Delta.

Thank you for your consideration of these comments,



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²⁰ State Water Resources Control Board, *Final Environmental Impact Report for Implementation of the 1995 Bay/Delta Water Quality Control Plan*, vol. 1, 1999. Available at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/eirs/eir1999/docs/feirvoll1.pdf.

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