

1 CHRIS SHUTES
2 1608 Francisco St.
3 Berkeley, CA, 94703
4 Tel: (510) 421-2405
5 E-Mail: blancapaloma@msn.com
6 Consultant to California Sportfishing Protection Alliance

7 **BEFORE THE**
8 **CALIFORNIA STATE WATER RESOURCES CONTROL BOARD**

9 HEARING IN THE MATTER OF
10 CALIFORNIA DEPARTMENT OF WATER
11 RESOURCES AND UNITED STATES
12 BUREAU OF RECLAMATION
13 REQUEST FOR A CHANGE IN POINT OF
14 DIVERSION FOR CALIFORNIA WATER
15 FIX

16 TESTIMONY OF CHRIS SHUTES
17 ON PART 2 ISSUES:
18 EFFECTS ON FISH AND WILDLIFE
19 PUBLIC TRUST
20 PUBLIC INTEREST
21 WITH CORRECTIONS OF ERRATA

22 I, Chris Shutes, do hereby declare:

23 **I. INTRODUCTION**

24 My name is Chris Shutes. I work as a consultant to the California Sportfishing Protection
25 Alliance (CSPA). My titles with CSPA are FERC Projects Director and Water Rights
26 Advocate. I have worked on hydropower and water rights issues for CSPA since 2006. Prior to
27 beginning my work as a consultant to CSPA, I worked as a volunteer on the relicensing of three
28 hydropower projects in the American River watershed over the course of five years. Primarily
through my hydropower work, I have developed expertise in interpreting the output of water
balance models and in analyzing the interrelation of reservoir storage, instream flow,
hydropower production and consumptive water use. In my water rights work for CSPA, I have
provided written and oral testimony in three hearings before the State Water Resources Control
Board (Board) relating to water rights applications, including the 2008 hearing on the revocation
of the Bureau of Reclamation's permits for Auburn Dam. I have also provided oral and written

1 comments in multiple Board workshops and board meetings. In 2014, 2015 and 2016, I drafted
2 many of CSPA's protests, objections and petitions for reconsideration of Temporary Urgency
3 Change Petitions filed by the Department of Water Resources (DWR) and the Bureau of
4 Reclamation (Bureau) in response to hydrological conditions created by drought and by the
5 operation of the State Water Project (SWP) and Central Valley Project (CVP). My statement of
6 qualifications lists many of the hydropower projects on which I have worked and my experience
7 before the Board; it also provides more detail regarding work experience relevant to my
8 testimony.

9 My testimony will primarily focus on Key Issues 3(c) and 3(d) for this hearing, which
10 ask:

11 **Key Issue 3(c) If so for a and/or b above, what specific conditions, if any, should the**
12 **State Water Board include in any approval of the Petition to avoid unreasonable effects**
13 **to fish, wildlife, or recreational uses?**

14 **Key Issue 3(d): What Delta flow criteria are appropriate and should be included in any**
15 **approval of the petition, taking into consideration the 2010 Delta flow criteria report,**
16 **competing beneficial uses of water, and the relative responsibility of the Projects and**
17 **other water right holders for meeting water quality objectives?**

18 My testimony will describe the necessary scope of the conditions that the Board would
19 need to place on SWP and CVP permits to avoid unreasonable effects to fish and wildlife. This
20 scope is broad. The scope of conditions must be broad because of the particular breadth and
21 effect of the SWP and the CVP. The scope of conditions must be broad because of the operation
22 of all the parts of these Projects in an integrated and coordinated fashion. The scope of
23 conditions must be broad because of the specific mandates of the Water Code § 85086 (Delta
24 Reform Act of 2009). In considering conditions to place on the permits for the SWP and CVP
25 in this proceeding, the Board can and must evaluate conditions for all aspects of SWP and CVP
26 operation, not just those immediately related to the new points of diversion.

27 In some cases, I will make specific recommendations to answer Key Issues 3(c) and 3(d).
28 In other cases, I will defer to specific recommendations responsive to Key Issues 3(c) and 3(d)

1 made by other witnesses in this proceeding, particularly the recommendations of CSPA
2 witnesses Tom Cannon and Bill Jennings (CSPA-204 and CSPA-200). In still other cases, I will
3 describe specific aspects of how the Board should go about analyzing and setting specific permit
4 terms. Dr. Whitelaw, Mr. Del Piero and other witnesses for CSPA et al. will describe more
5 generally the process the Board should use to balance beneficial uses.

6 In response to the “relative responsibility of other water rights holders” that is raised at
7 the end of Key Issue 3(d), the Board must not be broad. The Board is limited in this hearing to
8 conditions it can place on DWR and the Bureau in the operation of the SWP and the CVP. The
9 Board cannot ask others to mitigate the effects of the operation of the SWP and the CVP. The
10 Board cannot assume future actions by others that might have the effect of achieving such
11 mitigation.

12 The Board must limit the use of adaptive management, some form of which is required in
13 Water Code § 85086. The Board should reject the excessively open-ended use of adaptive
14 management that DWR and the Bureau propose in this proceeding. Equally, the Board cannot
15 protect fish and wildlife from unreasonable effects by relying on the excessively open-ended use
16 of adaptive management that the fisheries agencies have described in their Biological Opinions
17 (SWRCB-105 and SWRCB-106) and Incidental Take Permit (SWRCB-107).

18 My testimony will make some responses to Key Issues 3(a) and 3(b), which read:

19 **Key Issue 3(a): Will the proposed changes in points of diversion alter water flows in a**
20 **manner that unreasonably affects fish, wildlife, or recreational uses of water?**

21 **Key Issue 3(b): Will the proposed changes in points of diversion alter water quality in a**
22 **manner that unreasonably affects fish, wildlife, or recreational uses of water?**

23 Specifically, I will refer to my testimony in Part 1 of this hearing that analyzed how
24 reservoir operations under the California WaterFix would injure legal users of water. Many of
25 the same issues I raised in Part 1 regarding reservoir operations would also cause unreasonable
26 effects to fish and wildlife. Without repeating my Part 1 testimony, I will point out some of
27 these unreasonable effects that are germane to Part 2.
28

1 In addition, I provide examples of how “adaptive management” in the drought of 2014
2 and 2015 caused unreasonable effects to fish and wildlife. I describe how the open-ended use of
3 adaptive management during 2014-2015 had devastating impacts to both pelagic and
4 anadromous fisheries. This provides part of the basis for my recommendations on limiting the
5 reliance on adaptive management in permit conditions.

6 The last section of my testimony will address Key Issue 4, which reads:

7 **Key Issue 4: Are the proposed changes requested in the petition in the public interest?**
8 **What specific conditions, if any, should be included in any approval of the Petition to**
9 **ensure that the changes are in the public interest?**

10 My testimony will describe how deferring protections for fish and wildlife to future
11 process or decisions is not in the public interest. If it approves the WaterFix petitions, the Board
12 must set permit terms now that protect fish and wildlife.

13
14 **II. THE BOARD SHOULD GIVE GREAT WEIGHT TO THE SUBMITTALS OF**
15 **THE FISHERIES AGENCIES IN THE 2010 INFORMATIONAL DELTA**
16 **FLOW CRITERIA PROCEEDING TO DETERMINE APPROPRIATE DELTA**
17 **FLOW CRITERIA FOR THE WATERFIX PETITIONS.**

18 Water Code § 85086(c)(2) (part of the Delta Reform Act of 2009) mandated: “Any order
19 approving a change in the point of diversion of the State Water Project or the federal Central
20 Valley Project from the southern Delta to a point on the Sacramento River shall include
21 appropriate Delta flow criteria and shall be informed by the analysis conducted pursuant to this
22 section.”

23 Water Code § 85086(c)(1) mandated: “For the purpose of informing planning decisions
24 for the Delta Plan and the Bay Delta Conservation Plan, the board shall, pursuant to its public
25 trust obligations, develop new flow criteria for the Delta ecosystem necessary to protect public
26 trust resources.” The Board conducted an “informational” proceeding to develop “new flow
27 criteria” pursuant to § 85086(c)(1), and in August 2010 produced and approved the document
28 entitled “*Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem,*

1 *Prepared Pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009,*” (hereinafter,
2 *2010 Delta Flow Criteria Report*, SWRCB-25). The *Delta Flow Criteria Report* stated on page
3 2: “The best available science suggests that current flows are insufficient to protect public trust
4 resources.” On page 5, it stated: “Recent Delta flows are insufficient to support native Delta
5 fishes for today’s habitats.”

6 The fisheries agencies conducted analyses in the 2010 Delta flow criteria informational
7 proceeding. In its summary filing for the proceeding, the U.S. Fish and Wildlife Service
8 (USFWS) stated (in a joint Department of the Interior filing with the Bureau): “In general, the
9 scientific information indicates that the current minimum Delta flow criteria are not adequate to
10 protect the aquatic resources and restore the Delta ecosystem.” (CSPA-300, p. 11). The
11 California Department of Fish and Game (now California Department of Fish and Wildlife,
12 CDFW) was required under §85084.5 of the Delta Reform Act to produce and deliver to the
13 Board flow criteria and quantifiable objectives for Delta fisheries. In response, CDFW produced
14 and released in 2010 “*Quantifiable Biological Objectives and Flow Criteria for Aquatic and*
15 *Terrestrial Species of Concern Dependent on the Delta.*” (SWRCB-66). This CDFW 2010
16 document stated on p. 4: “Fish population declines coupled with these hydrologic and physical
17 changes suggest that current Delta water flows for environmental resources are not adequate to
18 maintain, recover, or restore the functions and processes that support native Delta fish.”
19 (SWRCB-66, p.4).

20 Similarly, numerous experts from the NGO and academic communities concluded that
21 existing flows in the Delta were insufficient to protect public trust resources.

22 Yet the *only* proposal for Delta flow requirements and constraints that DWR and the
23 Bureau propose in their September 8, 2017 “Response to the Hearing Officers’ August 31, 2017
24 Ruling,” (*Petitioners’ September 8 Response*, Exhibit CSPA-256), are requirements and
25 constraints that exist today. On the broadest level, DWR and the Bureau effectively propose
26 that the Board *completely ignore* the analysis from the 2010 informational Delta flow criteria
27 proceeding.
28

A. Role of Fisheries Agencies in This Hearing

1 In my experience with water rights applications and petitions, the California Department
2 of Fish and Wildlife (CDFW) is almost invariably a protestant in such proceedings. As part of
3 protest resolution, or in hearing, CDFW recommends specific protection, mitigation and
4 enhancement measures, including instream flows and in some cases reservoir operations, as well
5 as measures related to terrestrial resources, under its explicitly stated responsibility as the state's
6 trustee agency for fish and wildlife resources. These recommendations are separate and distinct
7 from any of CDFW's responsibilities under CESA. In the same regard, the U.S. Fish and
8 Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) are sometimes
9 protestants in water rights proceedings, and recommend protest dismissal terms separate from
10 their ESA authorities.

11 When fisheries agencies are protestants in water rights proceedings, their status as
12 protestants does not necessarily mean that they completely oppose the subject water rights
13 applications or petitions. Often times, the purpose of protests is to ensure appropriate permit
14 terms to protect fishery and other public trust resources.

15 The fisheries agencies are conspicuously absent from these hearings. This absence is
16 reminiscent of their absence before the Board at the end of January/beginning of February 2015.
17 At that time, the fisheries agencies limited their responses to DWR and the Bureau's proposed
18 Temporary Urgency Change Petitions: the fisheries agencies offered only ESA and CESA
19 approval. In a display of remarkable candor, State Water Board Executive Director Tom
20 Howard stated bluntly on the February 3, 2015 that the fisheries agencies had failed to answer
21 the fundamental legal question posed to them in the Temporary Urgency Change Petitions filed
22 by DWR and the Bureau on (date). In the "*Order Approving in Part and Denying in Part a*
23 *Petition for Temporary Urgency Changes to License and Permit Terms and Conditions*
24 *Requiring Compliance with Delta Water Quality Objectives in Response to Drought*
25 *Conditions*" ("February 3, 2015 TUCP Order", CSPA-301), Mr. Howard stated:

26 It should be noted that while the fisheries agencies indicated that the changes proposed in
27 the TUCP could be made in compliance with ESA and CESA requirements, those letters
28

1 did not determine whether the potential impacts of the changes would unreasonably affect
2 fish and wildlife. The ESA and CESA standard of avoiding jeopardy to the continued
3 existence of a threatened or endangered species is a minimal standard, and as such may
4 differ from the Water Code requirement that the changes must not unreasonably affect
5 fish and wildlife, especially when many species have already experienced extreme
6 impacts from the drought for several years. (CSPA-301, p. 17)

7 CDFW, USFWS and NMFS have chosen to repeat this error in the present proceeding.
8 They have limited their responses to those that address ESA and CESA requirements. Unless
9 the Hearing Officers require them to appear under subpoena or similar legal instrument, CDFW,
10 USFWS and NMFS will not appear in this proceeding and will not be subject to cross-
11 examination. They will not be present to evaluate whether the requested change in the point of
12 diversion would have unreasonable impacts to fish and wildlife. They will not propose permit
13 terms that would avoid such effects. They will not offer their opinions on the “appropriate Delta
14 flow criteria” that are required in this hearing under Water Code § 85086(c)(2).

15 Because of their absence ~~of~~ from this hearing, it becomes essential to review what
16 CDFW, USFWS and NMFS have already said. Their analyses in the 2010 informational Delta
17 flow criteria proceeding required under Water Code § 85086(c)(1) take on particular
18 importance.

19 **B. Analysis and recommendations by the fisheries agencies in the 2010 Delta** 20 **flow criteria informational proceeding**

21 The submittals of the fisheries agencies and all the other contributors to the 2010 Delta
22 flow criteria informational proceeding are available on the Board’s webpage at the following url
23 or at a url linked there:

24 https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/entity_index.shtml

25 Exhibit CSPA-300 is the written submittal of the Department of the Interior to the 2010
26 Delta flow criteria informational proceeding. Exhibit CSPA-302 contains excerpts from Exhibit
27 300. Exhibit CSPA-303 is the written summary submittal of the National Marine Fisheries
28 Service to the 2010 Delta flow criteria informational proceeding. Exhibit CSPA-304 is a copy
of NMFS Exhibit 7 from the 2010 Delta flow criteria informational proceeding entitled:

1 *Residence of Winter-Run Chinook Salmon in the Sacramento-San Joaquin Delta: The role of*
2 *Sacramento River hydrology in driving juvenile abundance and migration patterns in the Delta.*
3 Exhibit CSPA-305 reproduces the first two pages of NMFS Exhibit 9 from the 2010 Delta flow
4 criteria informational proceeding: page 2 includes recommendations for flows to protect
5 sturgeon. In the original, NMFS followed pages 1 and 2 with the entire 544-page *Working*
6 *Paper on Restoration Needs* published by the Anadromous Fish Restoration Program in 1995.
7 Exhibit CSPA-306 contains the summary tables of flows recommended by the California
8 Department of Fish and Game (now Wildlife) in its November 2010 Report entitled
9 *Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of*
10 *Concern Dependent on the Delta.* The complete document is Exhibit SWRCB-66.

11 All of these documents contain extensive analysis and recommendations that have merit.
12 I summarize some of the findings below, referring to the excerpts in CSPA summary exhibits
13 for focus and ease of reference; the CSPA summary exhibits contain citations to page numbers
14 in the original documents. I also suggest where the agency analysis is particularly relevant for
15 the WaterFix petitions.

16 USFWS emphasizes the importance of outflow in maintaining the Low Salinity Zone
17 (X2) in Suisun Bay to promote phytoplankton productivity, to support fish rearing, and to
18 reduce entrainment into the south Delta pumps. (CSPA-302, Slide 3).

19 USFWS discusses the importance of keeping fish out of the “footprint of the exports,”
20 and points out that in only a “few tidal cycles” fish can enter this footprint. (CSPA-302, Slide
21 4). This is particularly important if the operation under WaterFix whipsaws exports to the south
22 Delta when the SWP and CVP are forced to reduce or limit North Delta Diversions. Ramping
23 rates for south Delta export increases will be important, as well as limiting south Delta exports
24 in general.

25 USFWS points out that San Joaquin River flows at Vernalis ~~flows~~ are of limited value in
26 protecting San Joaquin River fisheries if those flows are directed toward the south Delta pumps.
27 (CSPA-302, Slide 5). USFWS also points out the dramatic effect of reverse flows on Delta
28 smelt and other pelagic species (CSPA-302, Slide 6). More positively, USFWS describes the

1 importance of maintaining positive (westward) flow at Jersey Point (“QWEST”) on the San
2 Joaquin River. This requirement was part of draft Decision 1630 (CSPA-302, Slides 7 and 8).

3 Restrictions on exports and the importance of passing inflow from the San Joaquin
4 through to Suisun Bay remain highly relevant for WaterFix. DWR and the Bureau plan to
5 continue to operate the south Delta export facilities in conjunction with the new North Delta
6 Diversion. In spite of the branding that WaterFix will improve conditions for fish, there is no
7 operations plan that describes how DWR and the Bureau will actively manage the SWP and
8 CVP to achieve that purpose. On the contrary, the general approach in this proceeding has been
9 to recommend limited constraints on both north Delta and south Delta operations. The Board
10 must require permit conditions that protect fish from harm at the south Delta export facilities,
11 whatever the SWP and CVP’s operation of those facilities may eventually be.

12 USFWS points to the importance of maintaining flow at Rio Vista at levels of 20,000 to
13 30,000 cfs to protect outmigrating salmon. (CSPA-302, Slide 9). This flow range, which dates
14 back to studies by Brandes and Kjelson in the 1980’s, is a consistent theme among the fisheries
15 agencies. The use of Rio Vista as a point of measurement is also consistent throughout agency
16 submittals in the 2010 Delta flow informational proceeding. To the degree that I understand it, I
17 believe that DWR and the Bureau propose to do away with Rio Vista as a flow compliance
18 point. Rio Vista picks up downstream flow that makes it past the Delta Cross Channel and the
19 mouth of Georgiana Slough. It is a highly relevant and important compliance point, and the
20 Board should maintain Rio Vista as a compliance point in permit terms.

21 In its 2010 summary submittal for the Delta flow criteria informational proceeding,
22 NMFS calls out the fact that prescriptions under the Endangered Species Act are less than what
23 is required for “protection of public trust resources.” (CSPA-306, Slide 3).

24 NMFS calls particular attention to the importance of avoiding “reverse flows” on the
25 Sacramento River at the mouth of Georgiana Slough during “the salmon migrating period,” so
26 that salmon outmigrants do not enter the Central Delta (CSPA-306, Slide 4). This principle
27 clearly applies to the proposed North Delta Diversions under CA WaterFix. Reverse flows
28 created by operation of the North Delta Diversions may create reverse flows at the mouth of

1 Georgiana Slough. In addition, reverse or reduced flows will increase transit time past the North
2 Delta intakes. See also CSPA-400 and CSPA-401 for the effects of extended transit times past
3 the screens at the North Delta Diversions.

4 In its 2010 summary, NMFS devotes extensive attention to storage requirements in
5 Shasta Reservoir to protect water temperatures in the Sacramento River. (CSPA-306, Slides 5, 6
6 and 7). NMFS explicitly connects these requirements to Delta flow criteria and to the Bay Delta
7 Conservation Plan, forerunner of the California WaterFix. CSPA recommends that the Board
8 incorporate the end-of-September carryover storage targets shown on CSPA-306 Slide 7 as a
9 condition in the CVP's permits, as I discuss further below. It is likely that the end-of-April
10 targets shown on CSPA-306 Slide 6 would not allow sufficient releases from Shasta to support
11 Delta outflow in the spring; this requires further analysis.

12 In NMFS's 2010 Exhibit 7 submittal, NMFS states: "[H]igher volume of water flowing in
13 the river during the winter run emigration period results in greater abundance of winter run
14 smolts both entering the Delta at Knights Landing and subsequently exiting the Delta at Chipps
15 Island." (CSPA-306 Slide 8). This relationship is later developed in del Rosario, R. B. et al.
16 2013. *Migration Patterns of Juvenile Winter-Run-Sized Chinook Salmon(Oncorhynchus*
17 *tshawytscha) through the Sacramento–San Joaquin Delta* (CSPA-308). Del Rosario et al.
18 (2013) is the basis for much of the analysis in the NMFS Biological Opinion for WaterFix
19 (SWRCB-106); this document also discusses the relation between flow pulses and outmigration
20 and extended rearing time of winter-run in the Delta.

21 Del Rosario et al. find that "Winter-run passed Knights Landing (rkm 144 or 51 rkm
22 upstream of the Delta) between October and April, with substantial variation in peak time of
23 entry that was strongly associated with the first high flows of the migration season." (CSPA-
24 308, p. 2). Additional spikes in migration correspond to subsequent flow pulses. It is highly
25 likely that many of the relationships and patterns del Rosario et al. describe for winter-run also
26 hold for other runs of Sacramento River salmon. Winter-run Chinook provide opportunities for
27 observation and study that are unique because their early development and consequent larger
28 size relative to other runs of Chinook makes them relatively readily identifiable. In study,

1 winter-run thus eliminate multiple confounding factors that frustrate study of other runs of
2 Central Valley Chinook. For runs of juvenile Chinook that pass Freeport and rear in the Delta
3 later in the year than winter-run, it is difficult to determine when they arrived and how long they
4 have reared in the Delta. Although other runs of Chinook are harder to study and analyze with a
5 similar level of certainty, this does not mean that the same migration patterns and rearing
6 behavior in the Delta does not hold for them. They too likely migrate downstream on major
7 flow pulses. Many of them also rear for months in the Delta.

8 The Biological Opinion for WaterFix evaluates greatly reduced use of the North Delta
9 Diversions based on “Pulse Protection” when “winter-run-sized” or “spring-run-sized” fish are
10 detected in rotary screw traps at Knights Landing, although the BiOp stops short of requiring
11 even this minimal measure. (See analysis in SWRCB-106, Appendix E). The pulse in this case
12 refers to pulses of fish, not to flow pulses. There are multiple problems with this approach.
13 First, it would allow operations that are more likely to entrain, impinge or otherwise place fish at
14 risk if no target species or minimal numbers of those species are present. Other runs of salmon
15 or other species would be compelled to run the north Delta gauntlet at lower, riskier flow levels.
16 Second, it depends on detection, which is unreliable. Smolt sized salmon, for instance, are
17 often capable of swimming out of rotary screw traps. Third, it does not account for pelagic fish
18 that are too small to detect, such as larval smelt or larval stages of other species.

19 NMFS’s 2010 Exhibit 9 submittal recommends flows to protect sturgeon. NMFS
20 recommends Delta outflow at Chipps Island in ~~in~~ April and May of Above Normal and Wet
21 years that average 25,000 cfs to protect sturgeon (CSPA-306, Slide 9), and flows of 31,000 cfs
22 at Verona on the Sacramento River from February through May of Above Normal and Wet
23 years (CSPA-306, Slide 10).

24 CDFW summarizes its recommendation in a flow table on pages 105-107 of its
25 November 2010 *Quantifiable Biological Objectives and Flow Criteria* document, reproduced in
26 Slides 3-5 of CSPA-308. The areas of focus and flow numbers are generally consistent with
27 those of USFWS and NMFS. CDFW recommends 20,000 – 30,000 cfs at Rio Vista in April,
28 May and June to protect outmigrating fall-run salmon. CDFW calls for positive flows at Jersey

1 Point from November through June “when salmon are in the Delta.” While CDFW’s proposed
2 means of determining whether salmon are present is unclear, the fact that there are risk factors at
3 lower flows is clear. DFW recommends various additional limitations in different months and at
4 different levels for reverse flows in Old and Middle rivers to protect a variety of species.

5
6 **III. THE WATERFIX PERMITS IF GRANTED MUST CONDITION**
7 **OPERATIONS OF SWP AND CVP RESERVOIRS WITH FIRM**
8 **CARRYOVER STORAGE ~~RE~~ REQUIREMENTS.**

9 “Appropriate Delta flow criteria” (Key Issue 3(d)) cannot be separated from reservoir
10 operations. If the Board were to approve the WaterFix petitions with flow criteria that did not
11 also appropriately constrain reservoir operations, then DWR and Bureau operators could make
12 up all or part of any required Delta flow increases with storage withdrawals from their
13 reservoirs. This would redirect fisheries impacts upstream to the river reaches downstream of
14 any or all of the main SWP and CVP Central Valley storage reservoirs.

15 In order to assure that the construction and operation of WaterFix does not cause DWR
16 and the Bureau to unreasonably draw down their storage reservoirs, the Board should condition
17 the SWP and CVP permits to require responsible carryover storage amounts in SWP and CVP
18 reservoirs. The Board should also require additional [permit](#) conditions ~~the permits on additional~~
19 [that mandate](#) operational measures that I describe below. This will help to prevent unreasonable
20 impacts to fish and wildlife in addition to preventing injury to other legal users of water.

21 It is important that the Board develop and enforce carryover storage requirements for
22 each of the major north-of-Delta SWP and CVP storage reservoirs. Without requirements at
23 each reservoir, requirements at one or more of these reservoirs will redirect impacts to those that
24 have no requirements. The requirements for the reservoirs must be balanced in light of the
25 integrated operation of the SWP and the CVP.

26 Witnesses for DWR and the Bureau testified in Part 1 of this hearing that there are no
27 numeric carryover storage requirements for Trinity, Oroville and Folsom reservoirs, and that
28 they oppose imposition of such numeric requirements ([HT August 18, 2016, p. 197, line 19 to p.](#)

1 199, line 15; p. 236, ll. 8-17~~[cite]~~. There are numeric requirements in the Biological Opinion
2 (BiOp) for the long term-operation of the SWP and CVP for Shasta Reservoir operation, but
3 these requirements contain exceptions and are dependent on the continued existence and the
4 enforcement of those BiOps.

5 Mr. Milligan testified that there is a “philosophyprinciple” that governs how the Bureau
6 manages storage in Folsom Reservoir (DOI-32, p.1)~~[cite]~~. Mr. Leahigh testified that a “policy”
7 governs DWR’s management of storage in Oroville Reservoir (DWR-78, p. 9, ll. 16-26)~~[cite]~~. I
8 do not recall any witnesses testifying to storage management in Trinity Reservoir, and I am
9 unaware of any firm requirement for carryover storage in Trinity Reservoir. I discuss potential
10 carryover storage requirements and other operational issues for each of these reservoirs below.

11 **A. Reliance on Biological Opinions does not assure that operation of Shasta**
12 **Reservoir will not have unreasonable effects on Fish and Wildlife.**

13 At the most basic level, Biological Opinions are not necessarily durable.

14 Some of the species BiOps are designed to protect, such as Sacramento winter-run
15 Chinook salmon, may go extinct. Combined with their exceptionally low abundance, stochastic
16 management decisions or natural events could finish some species off. While it is generally
17 recognized that other species often benefit from prescriptions in BiOps, the loss of target species
18 would eliminate these protections.

19 Further, the agencies that issue and enforce BiOps are subject to both short term and
20 long-term political pressure. I provided examples in my testimony in Part 1, citing to exhibit
21 CSPA-39. The Endangered Species Act itself has also been subject to numerous legislative
22 attempts to weaken it if not outright repeal it.

23 More specifically, the protective reach of the Endangered Species Act is limited.

24 In the “NMFS Written Summary *Submitted 2.16.2010 for the Delta Flow Criteria*
25 *Proceeding*,” (Exhibit CSPA-303), the National Marine Fisheries Service stated:

26 It is important to note that the flow protections described in the project description and
27 RPA are the minimum flows necessary to avoid jeopardy. The Delta flow criteria
28 necessary to “protect public trust resources” may not be the same as those called for in
the NMFS Opinion, and will likely be greater than those described in the opinion. In

1 addition, NMFS considered provision of water to senior water rights holders to be non-
2 discretionary for purposes of the federal ESA as it applies to Section 7 consultation with
3 the Bureau of Reclamation. This constrained development of RPA Shasta storage actions
4 and flow schedules. This constraint may not apply to the SWRCB flow criteria process.
(CSPA-302, pp. 3-4).

5 As this NMFS document describes, the legal standard for jeopardy is different from the
6 legal standard “to protect public trust resources.” Neither in 2010 nor in the present WaterFix
7 hearing has NMFS opined on what Shasta storage requirements are necessary to protect public
8 trust resources. In addition, the requirements in the Biological Opinion do not protect non-listed
9 species like fall-run Chinook salmon in the Sacramento River downstream of Shasta and
10 Keswick reservoirs.

11 A specific example of how BiOp protections do not protect non-listed species is shown in
12 exhibits CSPA-310 and CSPA-311. At the beginning of November 2017, the Bureau of
13 Reclamation reduced releases from Keswick Reservoir. As shown in CSPA-310, this dropped
14 the stage height in the Sacramento River 2 feet at the gauge downstream of Keswick and by
15 more than a foot at Bend Bridge. Sacramento River fall-run Chinook prefer spawning in 1 to 2
16 foot depths (CSPA-311). In addition, water temperatures in the Sacramento River from
17 September 22 – November 22 averaged around 53° near Redding and 54° downstream near
18 Bend Bridge (CSPA-312). These temperatures are well within the thermal spawning
19 preferences of fall-run Chinook salmon, and the month of October is well within the spawning
20 window for fall-run Chinook salmon. (SWRCB-66, p. 51). Thus, the November 1, 2017 drop
21 in Sacramento River stage height likely dewatered a substantial number of the fall-run redds that
22 spawning fish had created before that date.

23 Had fall-run been a listed species, it is likely NMFS would have disallowed this drop in
24 stage height as non-compliant with the ESA protections. It is also likely that CDFW would have
25 found this action to be non-compliant with CESA. However, neither prevented this action on
26 public trust grounds to protect fall-run Chinook.

27 This incident has both general and specific applicability. The general lesson is that
28 biological opinions do not protect non-listed species, including the fall-run Chinook salmon that

1 are the backbone of California's commercial and sport salmon fishery. The specific lesson is
2 that in the absence of constraints, both the fisheries agencies and CVP operators chose not to
3 protect Sacramento River fall-run Chinook redds in the water on November 1 in one of the
4 wettest water years on record.

5 In my testimony in Part 1 of this proceeding, I described how it is likely the construction
6 and operation of WaterFix facilities will incentivize and likely lead DWR and the Bureau to
7 export more stored water than the recent baseline in wetter water years. If the State Board
8 approves the change in the point of diversion at issue in this proceeding, it must ~~to~~ protect
9 storage in Shasta Reservoir and the public trust uses and values that depend on it. In such case,
10 the State Board should at minimum incorporate into revised CVP permits the numeric storage
11 requirements for Shasta Reservoir that are present in the current NMFS BiOp for salmon. The
12 Board should do so without the exception language that allows the Bureau not to meet the
13 storage targets in some water years.

14 The Board should also incorporate into CVP permits and enforce protection from fall
15 redd dewatering in the Sacramento River from Keswick Reservoir throughout the salmon
16 spawning reach. The Board should incorporate into CVP permits and enforce the temperature
17 requirements in WRO 90-05 (SWRCB-24) that many reference but that the Board and the
18 fisheries agencies routinely do not enforce. The Board should tighten the requirements for the
19 WRO 90-05 temperature compliance points on the Sacramento River, tying them to specific
20 objective conditions, reducing or preferably eliminating agency discretion about moving those
21 compliance points upstream.

22 Additionally, if the Board grants the CWF petition for change in point of diversion, the
23 Board should modify CVP's permits ~~the Board~~ to limit the export of stored water through both
24 the North Delta Diversion and the existing south Delta facilities if such export will cause
25 violation of the Sacramento River temperature standards. The Board should include an
26 additional term to curtail CVP diversions following years in which there are violations of the
27 WRO 90-05 Sacramento River temperature standards (including the modifications I have
28 recommended).

1 **B. The Board should adopt the carryover storage and other operations conditions**
2 **for Trinity Reservoir that the Pacific Coast Federation of Fishermen’s**
3 **Association et al. recommends in this proceeding.**

4 To the degree that we have knowledge of the carryover storage and other operational
5 recommendations of the Pacific Coast Federation of Fishermen’s Association et al. (PCFFA et
6 al.) for carryover storage and other operations at Trinity Reservoir, CSPA et al. supports them.
7 The conditions should be clear, enforceable and mandatory. If CSPA et al. develop concerns
8 with the recommendations of PCFFA et al. after the presentation of the case-in-chief of PCFFA
9 et al., CSPA et al. will present those concerns in rebuttal.

10 **C. The Board should adopt the carryover storage and other operations conditions**
11 **for Folsom Reservoir that the Water Forum recommends in this proceeding.**

12 To the degree that we have knowledge of the carryover storage and other operational
13 recommendations of the Water Forum for carryover storage and other operations at Folsom
14 Reservoir, CSPA et al. supports them. The conditions should be clear, enforceable and
15 mandatory. If CSPA et al. develop concerns with the recommendations of the Water Forum
16 after the presentation of the Water Forum’s case-in-chief, CSPA et al. will present those
17 concerns in rebuttal.

18 **D. The Board should adopt carryover storage requirements for Oroville Reservoir**
19 **for September 30 and December 31.**

20 **1. The Board needs to require carryover storage in Oroville Reservoir that will**
21 **provide assurance under 99% exceedance that DWR can meet the following**
22 **water year’s in-basin uses, including fish protection, without any Temporary**
23 **Urgency Change Orders.**

24 In my testimony in Part 1 of this hearing, I stated: “There is no basis to assume that
25 additional diversion of unregulated flow using CWF facilities will reduce pressure on SWP and
26 CVP reservoirs. Instead, it is much more reasonable to expect that the availability of greater,
27 more frequent and more efficient export capacity because of CWF will add unregulated exports
28 to existing and in some cases greater levels of export of stored water.” (CSPA-4-rev, p. 3).

1 In his rebuttal testimony in Part 1 of this proceeding (DWR-78), SWP operator Mr. John
2 Leahigh described how “[CA WaterFix’s] return of flexibility would make the Projects less
3 reliant on upstream storages to meet Project objectives.” (DWR-78, p. 10, ll. 10-11). Mr.
4 Leahigh further stated on rebuttal that “no level of storage is an absolute guarantee to meet all
5 water needs during a succession of dry years” (*Id.*, p. 10, ll. 19-20). Finally, Mr. Leahigh
6 argued that “the CWF project would be neutral to water management during the exceptional
7 droughts of which we have just experienced” ([DWR-78, p. 11, ll. 26-27](#)). That certainly
8 sounds like the “flexibility” that CWF proponents seek would enhance water supply reliability
9 but would assure no benefits for fish and wildlife resources during droughts.

10 Should the Board grant the WaterFix petition, the Board should create assured benefits
11 for fish and wildlife by conditioning the permits to require compliance with water quality and
12 environmental standards without reliance on Temporary Urgency Change Orders. An essential
13 means to achieve such compliance is to condition the SWP permits with protective carryover
14 storage requirements for Oroville Reservoir. This does not request that the Board “absolutely
15 guarantee” anything. The Board can and should decide on an appropriate level of risk for fish
16 and wildlife and write a condition to limit SWP operation to that risk. The level of risk
17 protection should be high: CSPA recommends 99% exceedance. The Board should require
18 carryover storage that meets that requirement. It should also put DWR on notice that the Board
19 intends to hold the line on permit terms, and that Temporary Urgency Change Petitions are not
20 part of the normal course of business.

21 **2. DWR’s carryover storage “policy” for Oroville Reservoir is substantively**
22 **inadequate.**

23 During cross-examination on rebuttal during Part 1 of these hearings, DWR presented
24 Exhibit DWR-902, DWR’s “Monthly Water Operations Report” for February 2012. As far as I
25 could find, this was the first numeric statement of DWR’s baseline operation of Oroville
26 Reservoir anywhere in its petition or supporting environmental documentation.
27
28

1 Embedded on page 8 of DWR-902 is an equation that DWR witness and operator John
2 Leahigh represented as expressing DWR's "policy" on carryover storage at Oroville Reservoir
3 (Hearing Transcript, May 9, 2017, p. 17, ll. 9-13) That equation reads as follows:

4 **Lake Oroville storage target =**
5 **1.000 MAF + "F" x (3.045 MAF - 1.000 MAF) on September 30;**
6 **where "F" = 1/2 x Possible Table A %.**

7 Mr. Leahigh referred to the "1.000 MAF" (1 million acre-feet) part of the equation as a
8 "floor" number, the minimum storage target for Oroville storage on September 30 (Hearing
9 Transcript, May 9, 2017, p. 22, l. 22). The number in red (also in red in the original) is the
10 previous year's September 30 storage level, also expressed in million acre-feet. "F" is one-half
11 the possible amount of total annual SWP Table A deliveries to State Water Contractors in the
12 upcoming water year. "F" becomes a multiplier of the difference between the previous year's
13 September 30 Oroville storage (in this case 3.045 MAF) and the value of the floor (in this case,
14 1.000 MAF). In each successive month from February through about mid-April, the formula
15 can change. It is an iterative target that does not become final until April of any given water
16 year, when DWR sets the final Table A percentage.

17 As I understand Mr. Leahigh's explanation in the rebuttal phase of Part 1 of this hearing,
18 the purpose of the "policy" is to require somewhat higher carryover storage as deliveries to SWP
19 Table A Contractors increase. As he characterized it in his rebuttal testimony in Part 1 of this
20 hearing, the SWP has a "policy of leaving higher levels of carryover storage in Lake Oroville as
21 current year delivery capability increases. Greater emphasis is given to the next year's
22 objectives as the current year's objectives are increasingly satisfied. This supplementary storage
23 is in addition to providing a reasonable level of carryover storage necessary to meet Project
24 obligations should the following year be dry." (DWR-78, p. 9).

25 In order to evaluate the augmentation to carryover storage that this equation might
26 provide, I assembled a simple spreadsheet. I used data that DWR provided in an Excel
27 spreadsheet served on the parties on June 20, 2017; DWR represented in a cover e-mail that this
28 data underlies the summary data shown in Exhibit DWR-906. Specifically, I took the end-of-

1 September historical storage data for Oroville for the years 2000-2016 shown in Column E of
2 the “storage” tab of this DWR spreadsheet. I also took the percent of historical Table A
3 deliveries for the years 2000-2016 shown in Column E of “SWP” tab of this DWR spreadsheet.
4 Using this data, I made a simple formula in Excel to calculate the storage target for each year
5 from 2000 through 2016, consistent with the equation on page 8 of DWR-902. I also modified
6 the equation to show alternative “floor” values in the equation in DWR-902. Finally, I then
7 constructed a new Excel spreadsheet, a pdf of which is now Exhibit CSPA-313.

8 Based on review of the data, I arrived at the following conclusions. In the big picture, the
9 strength of DWR’s “policy” that ties carryover storage increases to levels of export is weak
10 under the formula shown above that Mr. Leahigh presented in DWR-902. Mr. Leahigh
11 described on further cross-examination in the rebuttal phase of Part 1 of this hearing that DWR
12 had recently modified the floor figure, changing it to 1.3 MAF. (Hearing Transcript, May 9,
13 [2016](#), p. 21, lines 21-26; p 22, l. 1) On analyzing how the increase in the floor would affect
14 the outcome, I found that in ten of the seventeen years from 2000 through 2016, that 300 TAF
15 increase in the floor would have a greater impact on target storage than the portion of the
16 equation that incorporates the anticipated level of exports. With the 1.3 MAF floor that Mr.
17 Leahigh stated is current policy, I repeated the exercise, finding that the benefit from increased
18 SWP deliveries is even smaller. I repeated the exercise one last time to evaluate a 1.6 MAF
19 floor.

20 In sum, I found that the average annual benefit to the “policy” with a 1 MAF floor is 282
21 TAF. With a 1.3 MAF floor, the average annual benefit is 203 TAF. With a 1.6 MAF floor, the
22 average annual benefit is 137 TAF. One could compare this to a savings account that in the first
23 instance starts with a low interest rate. As the principal in the bank (the “floor”) increases, the
24 already-low interest rate declines.

25 My preliminary conclusion is that the State Board should require an end-of-
26 ~~September~~[October](#) carryover storage requirement for Oroville Reservoir of at least 1.6 MAF.
27 An additional formula to increase that requirement as export deliveries increase, similar to the
28 equation in DWR-902, is also appropriate. To start, the Board should evaluate the previous

1 equations employed by DWR, as shown on Slide 7 of Exhibit DDJ-206. While this condition is
2 needed under existing conditions, granting the WaterFix petition would make it even more
3 compelling. The availability of additional export capacity at the North Delta Diversions would
4 increase opportunities to export additional stored water, notwithstanding DWR's professed
5 "policy" or the Bureau's even vaguer "[philosophyprinciple](#)."

6 In addition to evaluating end of September Oroville storage, I paid particular attention to
7 the differential between End of September and End of December Oroville storage in years 2007
8 [and 2013](#). 2007 was a Dry year that followed a Wet year. 2013 was a Dry year that followed a
9 Below Normal year. In each year, Oroville storage dropped more than 340 TAF over the three-
10 month period, ending at a level below 1.3 MAF. In 2007, there were significant discretionary
11 releases from Oroville and high SWP export levels in the October-December months. In 2013,
12 there were some, but fewer discretionary releases from Oroville in October-December, with still
13 significant SWP exports. (See CSPA-314 and CSPA-315). The last three months of these years
14 ushered in Critically Dry water years. It appears that there needs to be some mechanism to
15 maintain end of December storage at or near end of September levels. This may require that
16 releases from storage during dry October-December periods be kept at or near the minimum
17 required release.

18 **3. DWR's current carryover storage "policy" for Oroville Reservoir as**
19 **described in Exhibit DWR-902 is unenforceable and is subject to instant**
20 **change without any set process, regulatory oversight or environmental**
21 **review.**

22 On cross-examination in rebuttal, Mr. Leahigh reported that the DWR carryover storage
23 "policy" for Oroville expressed in the equation shown in Exhibit DWR-902 is subject to
24 revision on an ongoing basis. (Hearing Transcript, May 9, 2016, p. 22, lines 2-27). The
25 documents that contain the equation, though updated monthly, are not posted on the internet.
26 (Hearing Transcript, May 9, 2016, p. 26, lines 4-12). The process of changing the equation is
27 thus no more a public process than the equation was available to the public prior to the
28 production of DWR-902 in this proceeding. There is evidently no formal process for review of

1 DWR’s carryover storage policy for Oroville, and there is clearly no environmental review. An
2 internal DWR policy that can change at any time is by definition unenforceable. This lack of
3 regulatory oversight and process and lack of public review must change.

4 **E. The Board must set enforceable carryover storage requirements for Oroville**
5 **Reservoir in the permit conditions for the SWP and must set enforceable**
6 **carryover storage requirements for Trinity, Shasta, and Folsom reservoirs in the**
7 **permit conditions for the CVP.**

8 The Board must condition the water rights permits of the SWP and CVP respectively to
9 require carryover storage requirements for Oroville Reservoir (SWP) and for Trinity, Shasta and
10 Folsom reservoirs (CVP). These requirements must be clear and enforceable. There must be
11 requirements for each reservoir. These requirements must balance protections and effects for
12 fish and wildlife in each of the affected watersheds. There must be consequences for failure to
13 meet the requirements.

14
15 **IV. THE ADAPTIVE MANAGEMENT CONSTRUCT THAT PETITIONERS**
16 **PROPOSE TO DETERMINE WATERFIX OPERATIONS LACKS**
17 **ACCOUNTABILITY, IS OVERLY BROAD, AND IS UNENFORCEABLE.**

18 Water Code § 85086 (c)(2) requires: Any order approving a change in the point of
19 diversion of the State Water Project or the federal Central Valley Project from the southern
20 Delta to a point on the Sacramento River shall include appropriate Delta flow criteria” The
21 fact that this Section also requires that appropriate Delta flow criteria ~~for the~~ “be subject to
22 modification over time” does not absolve the Board from setting a protective flow requirements
23 *now*.

24 **A. 2014 and 2015 SWP and CVP Drought Operations: A Case Study In The**
25 **Failure Of Adaptive Management To Protect Fish And Wildlife**

26 In 2014 and 2015, DWR and the Bureau submitted a series of Temporary Urgency
27 Change Petitions (TUCPs) to the Board to “relax” various D-1641 and other water quality and
28 flow requirements for the SWP and CVP. The Board granted these petitions in substantial part.

1 The documentary history is available on a Board webpage at:

2 https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/index.shtml

3 In granting these petitions, the Board reduced Vernalis flow and Delta outflow
4 requirements, moved a water quality compliance point on the Sacramento River from Emmaton
5 to Three-Mile Slough, and increased allowed water temperatures in the Sacramento River
6 downstream of Keswick Dam. The Temporary Urgency Change Orders (TUCOs) effectively
7 placed management of the Bay-Delta system in the hands of the Real Time Drought Operations
8 Management Team, referred to by the cumbersome acronym RTDOMT. This “Team” was
9 made up of representatives from CDFW, USFWS, NMFS, State Board staff, DWR and the
10 Bureau. While the meetings and minutes of the RTDOMT are not public, my understanding is
11 that this “Team” consisted largely of managers, with some input from technical staff. The
12 TUCOs in 2014 and 2015 allowed DWR and the Bureau to “conserve” water in upstream
13 reservoirs by reducing Delta flow and water quality requirements; in 2015, there were 800 TAF
14 of this “conserved” water. (CSPA-317, p. 27). Nonetheless, this non-public management group
15 utterly failed to protect fish. The Executive Director of the Water Board reported: “[T]he 2014
16 winter-run brood year (BY) is estimated to have experienced 95 percent mortality.” (CSPA-
17 301, p. 11). Water Rights Order 2015-0043 (CSPA-317, p. 4) bluntly describes the gruesome
18 outcome of two years of operations under Temporary Urgency Change Orders:

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

27 At the same time winter-run Chinook salmon experienced high mortality rates, numerous
28 other threatened, endangered and commercially important species, including longfin
smelt, Delta smelt, fall-run Chinook salmon, spring-run Chinook salmon and steelhead,
also experienced significant population declines in 2015. The severity and duration of the
decline of these species during the drought is a significant concern. In particular, no

1 longfin smelt have been caught in surveys this fall and nearly no Delta smelt have been
2 caught, leading to real concern that these species may be at the brink of extinction.

3 Without evidentiary process, the Executive Director of the Board nevertheless found that
4 none of the actions taken under the TUCOs for the SWP and the CVP in 2015 had unreasonable
5 effects on fish and wildlife. (CSPA-317, pp. 35-43). WRO 2014-0029 made similar findings for
6 2014.

7 It is people from the same agencies, with the same lack of oversight and the same lack of
8 public process, whom the WaterFix petitioners propose should “adaptively” determine the flow
9 requirements and other operational rules for the SWP and CVP with WaterFix facilities in place.
10 It is fair to anticipate that there will be the same lack of environmental review, since the
11 fundamental approach of petitioners has been to attempt to somehow bracket the alternatives
12 and then affirm that environmental analysis is covered within a range of options.

13 **B. The Proposed Use of Adaptive Management Defers Fundamental**
14 **Operational Decisions.**

15 In the D-1641 hearings, the Board heard evidence, made findings and set rules. CSPA
16 strongly disagrees with many of these rules. But at least there are rules. The issue that D-1641
17 deferred, the “Phase 8” apportioning of additional responsibility for meeting water quality
18 objectives, was a can kicked so far down the road that [it](#) will end up in the recycle bin before it
19 is ever opened.

20 Over the course of ten years’ experience in water rights proceedings, I have responded to
21 many proposed projects and actions. Whether I was dealing with applications for new water
22 rights or petitions for change, in protest resolution or in hearing, I understood generally what the
23 water right holder or applicant was proposing to do. I understood proposed project operation. I
24 also understood protection, mitigation and enhancement measures that the applicant or petitioner
25 proposed to implement as conditions in a new or revised water right. These measures generally
26 included minimum instream flow requirements past diversions, ramping rates at such diversions,
27 and reservoir storage levels (where applicable), as well as measures to protect and monitor
28 terrestrial species.

1 In the present water rights hearing, the proponents have not defined an operations plan.
2 In their August 31, 2017 Ruling, the Hearing Officers directed DWR and the Bureau to “provide
3 an updated summary of operating criteria that makes explicit whether particular criteria are
4 proposed conditions of operation or are set forth solely as modeling assumptions.” In the
5 *Petitioners’ September 8 Response* (CSPA-256), DWR and the Bureau offer no affirmative
6 statement of how they plan to operate California WaterFix facilities.

7 The *Petitioners’ September 8 Response* does not describe how DWR and the Bureau will
8 coordinate operation of WaterFix facilities with other SWP and ~~D~~CVP facilities. Consistent
9 with their past approach in this proceeding, the *Petitioners’ September 8 Response* lists a series
10 of proposed constraints for California WaterFix facilities. These proposed constraints are
11 variable, with no clear statement of when one set of constraints would apply instead of another
12 set. Many of the constraints are labelled as “Final EIR/EIS Criteria,” but not one is clearly
13 stated as a proposed permit term. In thinking about this document, I keep thinking of the phrase
14 “player to be named later” as applied to trades among sports teams. In this case, all the players
15 are players to be named later.

16 There are only two unequivocal statements of proposed permit terms in the *Petitioners’*
17 *September 8 Response*. First: “Petitioners propose that the California WaterFix be conditioned
18 upon the terms contained in Water Rights Decision 1641 (“D-1641”).” (*Petitioners’ September*
19 *8 Response*, p. 1) Second: “Therefore as part of this project, Petitioners are requesting that the
20 Hearing Officers incorporate the adaptive management process into the water rights permits, and
21 Petitioners are not proposing as conditions the operational criteria contained within the
22 Biological Opinions and 2081 (b) Incidental Take Permit.” (*Petitioners’ September 8 Response*,
23 p. 2).

24 If, for the sake of argument, one was to assume that the tables presented in *Petitioners’*
25 *September 8 Response* were meaningful recommendations about proposed bypass flows for the
26 North Delta Diversion, one would be no closer to having an operations plan to evaluate. The
27 charts on pages 7 and 8 show three different tables for “post pulse bypass flows.” The document
28

1 proposes no starting point for when any or all of the requirements on any or all of these tables
2 would apply.

3 **C. The Petitioners' Proposed Use of Adaptive Management Is Inconsistent with**
4 **My Experience in Successful Adaptive Management Programs.**

5 For the last ten years, I have been part of an adaptive management work group (the
6 "Ecological Resources Committee") on the North Fork Feather River. The Committee
7 implements the FERC license for PG&E's Rock Creek – Cresta Hydroelectric Project. The
8 Federal Energy Regulatory Commission (FERC) license for the project clearly defines three
9 ranges of flows for each project-affected reach. Each range covers a five-year period. Every
10 five years, the Committee has evaluated the trout fishery in the reach and adjusted flow,
11 generally increasing it, based on monitoring of fish populations and angler success. The
12 Committee evaluated the monitoring results against pre-determined metrics of biological
13 performance. The Committee did this within a defined decision space and specific timelines. In
14 some cases, based on scientific evaluation and recreational interests, we had to change the rules
15 outside the decision space. However, to change the decision space, we went through the process
16 of amending the Forest Service's conditions for the license and of amending the license itself.
17 There was a formal regulatory process that allowed for formal participation in the license
18 amendment proceeding. FERC, the regulatory agency, was never involved in substantive
19 discussions of any license amendment prior to the time the licensee formally filed to amend its
20 license.

21 Formal process is not the model for adaptive management that petitioners have presented
22 in this proceeding.

23 In the implementation of FERC licenses, I am used to deferring some measure of
24 decision to investigation based on science, monitoring, and performance metrics. However, I
25 have never seen a situation in which stakeholders accepted conditions that were known to be
26 harmful to fish and wildlife (such as conditions under the requirements of D-1641) in order to
27 delay fundamental decisions to an undefined adaptive management process with undefined
28 metrics for evaluating success in protecting public trust resources.

1 **V. IT IS NOT IN THE PUBLIC INTEREST TO SUBSTITUTE PROCESS FOR**
2 **DEFINED PROTECTIONS FOR FISH AND WILDLIFE IN WATER RIGHT**
3 **PERMIT CONDITIONS.**

4 Other than D-1641 and an adaptive management program, petitioners recommend no
5 operations plan, initial or otherwise, for the CA WaterFix. The Biological Opinions and the
6 Incidental Take Permit do no better.

7 The NMFS BiOp for WaterFix requires on p. 1183: “Within one year of biological
8 opinion issuance, Reclamation and DWR shall establish the following multi-agency technical
9 teams for major components of the PA.” The NMFS BiOp continues on p. 1184: “Reclamation
10 and DWR shall ensure that the technical teams described in Term and Condition 2.a. complete
11 the following tasks.” On p. 1192, the NMFS BiOp proposes: “implement a phased test period at
12 the NDD to include monitoring of biological and physical parameters across a range of pumping
13 rates and flow conditions prior to operating the north Delta diversions at full capacity.”
14 (SWRCB-106). Thus, this Biological Opinion as well suffers from the pitfall of requiring such
15 things as staffing for future projects and monitoring ~~and~~ in place of requiring specific conditions
16 or measures.

17 The USFWS BiOp for WaterFix announces itself as programmatic. (SWRCB-105, p. 9).

18 The DFW Incidental Take Permit proposes to leave initial operations to other processes.
19 In its Attachment 5 on Adaptive Management, the ITP states:

20 During **Phase 1**, initial operation and research priorities are set through the respective
21 Operational criteria established through the BiOps, CESA authorizations and Bay Delta
22 Water Quality Control Plan and Science plans. The operations criteria set water supply
23 expectations while the science plans address how uncertainties associated with the
24 operational and stressors affecting covered species will be addressed. (SWRCB-107,
25 Attachment 5, p. 14).

26 It is not in the public interest to leave operation of what would be the most expensive
27 water infrastructure project in California history to be determined by other processes. It is not in
28 the public interest to allow bonding entities to set aspirational expectations for the water supply
benefits of such a project without defining those benefits. It is not in the public interest to leave

1 adaptive managers of fishery agencies and water supply agencies, operating without public
2 regulatory process, as the firewall between economically and politically supported water supply
3 aspirations and protections for fish and wildlife.

4 The Board cannot control the inadequacy of the ESA and CESA requirements that
5 NMFS, USFWS and CDFW have set forth or failed to set forth. If the Board grants the
6 WaterFix petitions, the Board can and should set permit conditions for the SWP and CVP that in
7 their own right protect affected fish and wildlife resources, beginning from the day the petitions
8 take effect.

9
10 Executed this ~~29th day of November, 2017~~ 1st day of January, 2018 at Berkeley, California.

11
12 

13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

Chris Shutes