

Stephan C. Volker
Joshua A.H. Harris (of counsel)
Alexis E. Krieg
Stephanie L. Clarke
Daniel P. Garrett–Steinman
Jamey M.B. Volker
M. Benjamin Eichenberg

Law Offices of
Stephan C. Volker
436 – 14th Street, Suite 1300
Oakland, California 94612
Tel: (510) 496-0600 ❖ Fax: (510) 496-1366
svolker@volkerlaw.com

10.513.01

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VIA EMAIL AND U.S. MAIL

BDCP Comments
Ryan Wulff, NMFS
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814
BDCP.Comments@noaa.gov

Re: Comments of the North Coast Rivers Alliance, Winnemem Wintu Tribe, San Francisco Crab Boat Owners Association, Inc. and Pacific Coast Federation of Fishermen’s Associations on the Draft Bay Delta Conservation Plan and the Bay Delta Conservation Plan Draft Environmental Impact Statement and Environmental Impact Report.

Dear Mr. Wulff:

The North Coast Rivers Alliance, Winnemem Wintu Tribe, San Francisco Crab Boat Owners Association, Inc. and Pacific Coast Federation of Fishermen’s Associations (collectively, “Conservation Groups”) appreciate the opportunity to comment on the California Department of Water Resources’ (“DWR’s”), the Bureau of Reclamation’s (“Reclamation’s”), the U.S. Fish and Wildlife Service’s (“USFWS”), and National Marine Fisheries Service’s (“NMFS”) (collectively, “Agencies”) Draft Bay Delta Conservation Plan (“Draft BDCP”) and joint Draft Environmental Impact Report and Environmental Impact Statement (“DEIR/DEIS”) thereon, which were concurrently published for public review on December 13, 2013.

I. INTRODUCTION

The largest and most productive estuary system on the west coast of North and South America – the Sacramento-San Joaquin River Delta – is collapsing for two principal reasons. First, agricultural diverters have discharged and continue to discharge too much contaminated agricultural run-off and return flows into the Delta. Second, the Central Valley Project (“CVP”) and the State Water Project (“SWP”) have diverted too much of the Delta’s fresh water flows. These unsustainable levels of diversions and discharges greatly decrease fresh water flows while increasing salinity and the concentration of herbicides, pesticides, and toxic agricultural run-off in the Delta.

These two threats to the Delta’s health have grown steadily over the past five decades, and the resulting environmental devastation has pushed the Delta’s imperiled fisheries to the

brink of extinction. Seventeen species of fish endemic to the Delta have already gone extinct; just twelve indigenous species remain. Critical habitat for the endangered Sacramento River winter run Chinook salmon, Central Valley steelhead and spring run Chinook, the Delta smelt, and the Southern Distinct Population Segment (“DPS”) of the Northern American green sturgeon suffers progressively worsening degradation.¹ The proposed project outlined in the Agencies’ Draft BDCP and associated DEIR/DEIS, which includes three new North Delta water pumping and conveyance facilities each with an “intake capacity” of 3,000 cubic feet per second (“cfs”), might push those and other species to extinction. DEIR/DEIS at 3-12 (describing the “Proposed Project”).

The Draft BDCP is a draft Habitat Conservation Plan (“HCP”) under the federal Endangered Species Act (“ESA”), 16 U.S.C. section 1531 *et seq.*, and a draft Natural Community Conservation Plan (“NCCP”) under the California Natural Community Conservation Planning Act, California Fish & Game Code section 2800 *et seq.* The BDCP and its associated permits and activities would last for 50 years, and have the dual purported goals of restoring the Sacramento-San Joaquin Bay-Delta ecosystem and securing reliable water supplies for California. In reality, however, while the proposed BDCP actions would help “[r]estore and protect the ability of the SWP and CVP to deliver up to full contract amounts” (i.e. up to several times the amount ever delivered on an annual basis to date), they would likely worsen rather than improve the Delta ecosystem and further imperil numerous fish species.

While the Draft BDCP proposes a number of activities aimed at restoring or protecting approximately 145,000 acres of Delta habitat, its centerpiece is the construction and operation of three new water intake facilities on the Sacramento River (just south of Clarksburg) that would connect to a dual-bore, 40-foot-diameter, 30-mile-long pipeline diverting up to 9,000 cfs (though likely more in the long term) around the Delta to the existing pumping facilities in the South Delta for export to Central Valley agricultural and industrial users and cities in southern California and parts of Santa Clara County. Draft BDCP at 4-7 to 4-21. As a result of these new intake and conveyance facilities (collectively, the “Peripheral Tunnels”), water that currently

¹Winter run Chinook salmon were declared threatened under the federal Endangered Species Act (“ESA”) in 1990 (55 Fed.Reg 46515), and then due to continuing population declines, declared endangered in 2005 (70 Fed.Reg 37160). Their critical habitat in the Sacramento River and its tributaries was designated in 1993. 58 Fed.Reg. 33212. Spring run Chinook salmon were declared threatened, and their critical habitat designated under the ESA in 2005. 70 Fed.Reg. 37160, 52488. Central Valley steelhead were declared threatened in 2000 (65 Fed.Reg. 52084) and their critical habitat was designated in 2005 (70 Fed.Reg 52488). The Southern DPS of North American green sturgeon was declared threatened in 2006 (71 Fed.Reg 17757) and its critical habitat was designated in 2008 (73 Fed.Red 52084). Delta smelt were declared endangered in 1993 (58 Fed.Reg. 12854) and their critical habitat was designated in 1994 (59 Fed.Reg. 65256).

flows through the Sacramento River and sloughs to and through the Delta would be diverted, further reducing freshwater flows through the sloughs and Delta. These diversions would also likely necessitate changes in reservoir management in northern California, including on the Trinity, Shasta, Folsom, and Oroville Reservoirs, and as a result reduce flows in the Trinity, Sacramento, American, and Feather Rivers. With less water in the rivers and more water in the pipes of water exporters, the fish and the Delta ecosystem will suffer, while the wasteful and polluting practices of many of those who use the exported Delta water will be allowed to continue, if not expand.

As discussed in more detail below, there is a fundamental logical flaw to a plan that aims to restore ecosystems that have been degraded by freshwater diversions by building new infrastructure enabling diversion of *even more* fresh water. This flaw pervades the Draft BDCP and the DEIR/DEIS and, along with other deficiencies discussed below including the Agencies' failure to complete the consultation and review required by the ESA, renders the DEIR/DEIS fatally inadequate under the National Environmental Policy Act ("NEPA"), 42 U.S.C. sections 4321 *et seq.*, and the California Environmental Quality Act ("CEQA"), California Public Resources Code section 21000 *et seq.* For these reasons and others, Conservation Groups oppose the Peripheral Tunnels and the "Proposed Project" identified in the BDCP and the DEIR/DEIS.

II. THE DEIR/DEIS DOES NOT COMPLY WITH CEQA OR NEPA.

The "heart of CEQA" is the environmental impact report ("EIR"). *Citizens for Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564. "The EIR, with all its specificity and complexity, is the mechanism prescribed by CEQA to force informed decision making and to expose the decision making process to public scrutiny." *California Native Plant Society v. City of Santa Cruz* ("*California Native Plant Society*") (2009) 177 Cal.App.4th 957, 978 (quoting *Planning & Conservation League v. Department of Water Resources* (2000) 83 Cal.App.4th 892, 910). Similarly, the environmental impact statement ("EIS") "serves NEPA's 'action-forcing' purpose" by ensuring that the agency "will have available, and carefully consider, detailed information concerning significant environmental impacts" and "guarantee[ing] that the relevant information will be made available to the larger audience." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

Here, however, the DEIR/DEIS' analysis of the BDCP fails to foster informed decisionmaking or to expose the decisionmaking process to the public. *California Native Plant Society*, 177 Cal.App.4th at 978. CEQA and NEPA require more.

A. The DEIR/DEIS Fails to Describe and Analyze the Whole of the Action.

CEQA and NEPA require that "[t]he entirety of the project must be described" in the EIR/EIS, "not some smaller portion of it." *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 654 (quote); 40 C.F.R. § 1508.25. Here, the DEIR/DEIS

fails to describe and analyze the “whole of [the] action” in at least two respects. CEQA Guidelines § 15378(a).

First, despite the fact that Natural Community Conservation Planning Act requires each NCCP (which the BDCP is supposed to be) to include an Implementation Agreement containing, among other things, “provisions for establishing the long-term protection of any habitat,” “provisions ensuring implementation of the monitoring program and adaptive management program,” and “mechanisms to ensure adequate funding to carry out the conservation actions,” the DEIR/DEIS *entirely fails* to describe and analyze any Implementation Agreement for the BDCP. Cal. Fish & Game Code § 2820(b). Nor could it have. The Agencies did not publish the draft Implementation Agreement until *May 30, 2014*, more than *five months after* they published the DEIR/DEIS. By failing to describe and analyze this critical feature of the BDCP, the DEIR/DEIS fails to analyze the “whole of [the] action” and violates CEQA and NEPA. CEQA Guidelines § 15378(a); 40 C.F.R. § 1508.25.

Second, while the DEIR/DEIS describes the “*intake capacity*” of the proposed project’s Peripheral Tunnels, it fails to describe the likely far greater carrying capacity of the tunnels themselves. DEIR/DEIS at 3-12; Draft BDCP at Sections 4.2.1.1 and 4.2.1.2 (likewise failing to describe the carrying capacity of the conveyance tunnels). Nor does it discuss the likelihood that the intake screens would be enlarged and pump capacity increased in the future to export additional water using any such extra capacity in the tunnels. This failure to discuss reasonably foreseeable future uses of the project violates CEQA and NEPA. *City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1455; 40 C.F.R. § 1508.25.

B. The DEIR/DEIS Unduly Constrains the Project Objectives and Fails to Analyze a Reasonable Range of Alternatives.

Both CEQA and NEPA require that the EIR/EIS analyze a reasonable range of alternatives to the proposed project. “CEQA requires that an EIR, in addition to analyzing the environmental effects of a proposed project, also consider and analyze project alternatives that would reduce adverse environmental impacts.” *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1162-1163 (citing Cal. Pub. Res. Code §§ 21061, 21001(g), 21002, 21002.1(a), 21003(c)). An EIR must “describe a range of reasonable alternatives to the project . . . which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project . . .” 14 Cal. Code Regs. [(“CEQA Guidelines”)] § 15126.6 (a). Alternatives that would lessen significant effects should be considered even if they “would impede to some degree the attainment of the project objectives, or be more costly.” Guidelines § 15126.6(b); *California Native Plant Society v. City of Santa Cruz* (“CNPS”) (2009) 177 Cal.App.4th 957, 991. The range of alternatives considered must “foster informed decisionmaking and public participation.” Guidelines §15126.6(a); *CNPS*, 177 Cal.App.4th at 980, 988. Alternatives may only be eliminated from “detailed consideration” when substantial evidence in the record shows that they

either (1) “fail[] to meet most of the basic project objectives,” (2) are “infeasibl[e],” or (3) do not “avoid significant environmental impacts.” Guidelines § 15126.6(c).

Under NEPA, the alternatives analysis “is the heart of the environmental impact statement.” 40 C.F.R. § 1502.14. An EIS must “[r]igorously explore and objectively evaluate all reasonable alternatives” so that “reviewers may evaluate their comparative merits.” *Id.* “The existence of a viable but unexamined alternative renders an environmental impact statement inadequate.” *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1038 (9th Cir. 2008). Furthermore, because a project’s purpose and need statement “dictates the range of ‘reasonable’ alternatives,” the agency may not frame the purpose and need statement narrowly “to avoid the requirement that relevant alternatives be considered.” *City of Carmel-by-the-Sea v. United States Department of Transportation*, 123 F.3d 1142, 1155 (9th Cir. 1997) (first quote); *National Parks & Conservation Association v. U.S. Bureau of Land Management* (“*NPCA v. BLM*”), 606 F.3d 1058, 1070 (9th Cir. 2010) (second quote) (“[a]n agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative among the environmentally benign ones in the agency’s power would accomplish the goals of the agency’s action, and the EIS would become a foreordained formality”).

Here, the DEIR/DEIS violates both CEQA and NEPA because it unduly constrains the project purposes and objectives and fails to analyze a reasonable range of alternatives. The fundamental purpose of the BDCP is to “restore and protect ecosystem health [in the Delta], water supplies of the SWP and CVP south-of-Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations.” DEIR/DEIS ES-8. This purpose “reflects the intent to advance the coequal goals set forth in the Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act) of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.” *Id.* at ES-10. Yet the Agencies appear to interpret these *coequal* goals as instead *prioritizing* water supply reliability *over* ecosystem restoration and requiring them to “[r]estore and protect the ability of the SWP and CVP to deliver up to full contract amounts,” which the Agencies adopted as a primary project objective. DEIR/DEIS at ES-8, 10. As discussed below, the Agencies’ interpretations and assumptions are not only wrong, they impermissibly constrained the Agencies’ selection and analysis of alternatives such that *none* of the 15 action alternatives the Agencies examined in the DEIR/DEIS would reduce water exports from the Delta, and only *one* of them excludes the Peripheral Tunnels.

The Agencies’ interpretations and assumptions underlying their stated project objective of restoring and protecting “the ability of the SWP and CVP to deliver up to full contract amounts” are wrong for at least three reasons. DEIR/DEIS at ES-10. First, *coequal* goals are *coequal*. The plain language admits of no other interpretation, and the Agencies do not have the authority to prioritize one over the other. Yet by focusing on alternatives that would “[r]estore and protect the ability of the SWP and CVP to deliver up to full contract amounts,” *i.e.* *increase* Delta exports, the Agencies impermissibly do just that, since “*increasing* freshwater flows [in the

Delta] is essential for protecting resident and migratory fish populations.” DEIR/DEIS at ES-8, 10 (first quote); Environmental Protection Agency letter to California State Water Resources Control Board, March 28, 2013, p. 2-3 (second quote; emphasis added) (attached hereto as Exhibit 1); NMFS, July 2014, *Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead* (“2014 Recovery Plan”), p. 127 (one of the first listed priority Delta recovery actions is to “[d]evelop, implement, and enforce new Delta flow objectives that mimic historic natural flow characteristics, including increased freshwater flows (from both the Sacramento and San Joaquin rivers) into and through the Delta and more natural seasonal and interannual variability” (emphasis added)).²

Second, the Agencies’ assumption that they could *ever* ensure the “ability of the SWP and CVP to delivery up to full contract amounts” ignores the stark reality that the hydrologic conditions and requirements of state and federal law have *never* allowed the delivery of full contract amounts. *See, e.g., Planning and Conservation League v. Department of Water Resources* (2000) 83 Cal.App.4th 892, 913 (“There is . . . no question that the SWP cannot deliver all the water to which contractors are entitled under the original contracts. It does not appear that SWP has ever had that ability. Nor do defendants suggest that full delivery of entitlement water is likely within the life of the contracts.”).

Third, it blinks at reality to assume that Delta Reform Act’s coequal goals – improving California’s water supply reliability and “protecting, restoring, and enhancing the Delta ecosystem” – can only be achieved by increasing Delta water exports or building the Peripheral Tunnels. *Id.* at ES-10. There are many ways to achieve both goals without increasing Delta water exports *or* building the Peripheral Tunnels. The Environmental Water Caucus’ “Responsible Exports Plan,”³ for example, does just that. Instead of building the Peripheral Tunnels and increasing water exports, the Responsible Exports Plan would, among other things, reduce exports to a maximum of 3,000,000 acre-feet, institute and improve water efficiency and demand reduction programs, including water recycling and stormwater capture and reuse, eliminate irrigation of drainage-impaired farmlands south of the Delta and institute numerous measures to protect fish and otherwise improve the Delta ecosystem. Exhibit 2.

² The 2014 Recovery Plan is available for download as a PDF here: www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/california_central_valley/final_recovery_plan_07-11-2014.pdf

³ The Responsible Exports Plan is attached hereto as Exhibit 2. The Plan has also been previously submitted to the Agencies, including as an attachment to Friends of the River’s May 21, 2014 Comment Letter re Failure of BDCP Draft Plan and Draft EIR/EIS to Include a Range of Reasonable Alternatives Including the Responsible Exports Plan Submitted by the Environmental Water Caucus.

Other proffered alternatives would also achieve those coequal goals while reducing California's reliance on water exports from the Delta. For example, the alternative developed by state Senator Lois Wolk, Chair of the Senate Select Committee on the Sacramento-San Joaquin Delta and member of the Senate Natural Resources and Water Committee, and crystallized as SB42, includes investments in ecosystem restoration and protection and flood control, while focusing on improving water supply reliability through recycling, expanded groundwater storage, desalination, and conservation. The Natural Resources Defense Council's "Portfolio" alternative likewise focuses on water recycling, conservation and other non-Delta-export mechanisms to improve water supply reliability in the State. Despite having a copy of these reasonable and feasible alternatives well before they published the Draft BDCP and DEIR/DEIS, the Agencies failed to consider *anything like them* in those documents, and thereby violated CEQA and NEPA.

By including as a project purpose and objective of "[r]estor[ing] and protect[ing] the ability of the SWP and CVP to deliver up to full contract amounts," the Agencies unduly constrained their selection of alternatives to exclude reduced export and other viable alternatives in violation of NEPA and CEQA. DEIR/DEIS at ES-8 (quote), 10 (same); *NPCA v. BLM*, 606 F.3d at 1070. By failing to analyze the Responsible Exports Plan and other "viable but unexamined alternative[s]," the Agencies "render[ed]" the DEIR/DEIS "inadequate." *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d at 1038 (quote); 40 C.F.R. § 1502.14; CEQA Guidelines §§ 15126.6(a), (b).

C. The DEIR/DEIS Remains Incomplete Due to Its Long List of Unresolved Issues.

As prescribed by NEPA and CEQA, the DEIR/DEIS includes a list of 13 issues representing "areas of known controversy and issues to be resolved." ES-41 through ES-43; 40 C.F.R. § 1502.12; Guidelines § 15123. The issues listed are complex, broad, and so important that the BDCP cannot be effectively evaluated until they are resolved. For example, one of the issues listed is "biological resources," for which the DEIR/DEIS notes that "the complexity of the BDCP raises many concerns over environmental consequences" for aquatic and terrestrial ecosystems and species, "changes in existing land uses and habitats," and "adverse effects on sensitive resources." ES-41. Another set of issues is "water supply, surface water resources, and water quality," which the DEIR/DEIS admits "remain highly controversial for a wide array of stakeholders." ES-41. Other unresolved issues include flood management, how the BDCP will affect agriculture, and "the potential conflict between conservation goals" and economic development. ES-41 through ES-42. CEQA and NEPA do not allow such critical issues to be simply listed and left unresolved.

Unacceptable levels of uncertainty pervade other sections of the DEIR/DEIS as well. For example, the DEIR/DEIS made "no determination" findings on whether the water tunnels, even after mitigation, would have adverse impacts on spawning, incubation habitat, and migration conditions for endangered Chinook salmon, steelhead, and green sturgeon. DEIR/DEIS ES-73, ES-75, ES-77, ES-79, ES-81, ES-83.

Programmatic environmental impact documents may be prepared for a series of related actions “that can be characterized as one large project” under CEQA (Guidelines § 15168), or “connected actions” that “[a]re interdependent parts of a larger action” under NEPA. 40 C.F.R. § 1508.25(a)(1). Program EIRs may omit site-specific information, but “[d]esignating an EIR as a program EIR . . . does not by itself decrease the level of analysis otherwise required.” *Friends of Mammoth v. Town of Mammoth Lakes Redevelopment Agency*, 82 Cal.App.4th 511, 533 (2000). Therefore, the EIR still must “be prepared with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences.” *Id.* at 534. Similarly, while a programmatic EIS may decline to fully evaluate site-specific impacts “until a critical decision has been made to act,” it must still “provide ‘sufficient detail to foster informed decision-making.’” *Friends of Yosemite Valley v. Norton*, 348 F.3d 789, 800 (2003) (quoting *Northern Alaska Environmental Center v. Lujan*, 961 F.2d 886, 890-891 (9th Cir. 1992)). The DEIR/DEIS here is so lacking in basic and essential information that it fails to meet this standard.

As further discussed below, the Delta Science Program Independent Review Panel also noted unacceptable levels of uncertainty in the DEIR/DEIS. *See, e.g.*, Delta Science Program Independent Review Panel Report, BDCP Effects Analysis Review, Phase 3 (“DSP Report”), p. 5 (“most of the potential BDCP effects carry a relatively high level of uncertainty,” but the effects analysis “did not sufficiently acknowledge or articulate this reality”).

D. The Agencies’ Treatment of Endangered and Threatened Species Violates Both NEPA and the ESA.

The Agencies violated NEPA and the ESA because they issued the DEIR/DEIS without first preparing and incorporating the required Biological Assessments and Biological Opinions analyzing how the proposed BDCP actions would affect the critical habitat of at least five listed fish species. The omission of this critical step means that the BDCP does not constitute an adequate HCP, and renders the DEIR/DEIS essentially useless as a disclosure document under NEPA. 40 C.F.R. § 1502.25(a) (“[t]o the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with” analyses or studies requires by the ESA); 50 C.F.R. § 402.14(a).

By enacting the ESA, “Congress intended endangered species to be afforded the highest of priorities.” *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 174 (1978). “The plain intent of Congress in enacting [the ESA] was to halt and reverse the trend toward species extinction, *whatever the cost.*” *Id.* at 184 (emphasis added.) The ESA’s goal is to ensure not only that species survive, but that their populations recover to the point that they can be removed from the endangered and threatened lists. *Alaska v. Lubchenko*, 723 F.3d 1043, 1054 (9th Cir. 2013).

Therefore, the ESA requires that federal agencies⁴ ensure that their actions, or actions that they fund or authorize, are “not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of [critical] habitat of such species.” 16 U.S.C. § 1536(a)(2) (quote); *Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F.3d 1059, 1076 (9th Cir. 2004) (“existing or potential conservation measures outside of the critical habitat cannot properly be a substitute for the maintenance of critical habitat that is required by Section 7” of the ESA).

To ensure that projects do not “tip a species from a state of precarious survival into a state of likely extinction,” agencies must review their actions “at the earliest possible time to determine whether any action may affect listed species or critical habitat.” *National Wildlife Federation v. National Marine Fisheries Service*, 524 F.3d 917, 929-930 (9th Cir. 2008) (first quote); *Karuk Tribe of California v. U.S. Forest Service*, 681 F.3d 1006, 1020 (9th Cir. 2012) (second quote), *cert. denied*, 133 S.Ct. 1579 (2013). “If such a determination is made, formal consultation [with the U.S. Fish and Wildlife Service (“FWS”) and/or the National Marine Fisheries Service (“NMFS”)] is required.” 50 C.F.R. §§ 402.14(a), 402.12(a) (a biological assessment determines whether the action will adversely affect listed species or their critical habitats, “and is used in determining whether formal consultation is required”).

At the conclusion of formal consultation, FWS prepares a Biological Opinion discussing whether the proposed action and its cumulative effects are “likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.” 50 C.F.R. § 402.14(g)(4); *see also Center for Biological Diversity v. Bureau of Land Management*, 422 F.Supp.2d 1115, 1144-45 (N.D. Cal. 2006). If the biological opinion concludes that the action may adversely affect a species or its critical habitat but will not jeopardize its continued existence, it can include an incidental take statement permitting a specific level of take, and prescribing mandatory “reasonable and prudent measures” designed to minimize harm to the species. 50 C.F.R. § 402.14(i)(5).

For nonfederal applicants, such as the state agencies here, FWS or NMFS may issue “incidental take permits” under section 10(a)(1)(B) of the ESA. An applicant for an incidental take permit must submit a “habitat conservation plan” (“HCP”) (such as the BDCP is supposed to be) describing the potential impacts of the project and the taking, and mitigation measures to minimize the taking of the species. The HCP must ensure that the “taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild,” and it must be adequately funded. 16 U.S.C. § 1539(a)(2)(B)(iii)-(iv). A similar provision exists under state law, California Fish and Game Code section 2835, which provides for take of protected species “whose conservation and management is provided for in [an approved] natural community

⁴ The ESA’s provisions for federal agencies apply here because the Bureau of Reclamation is a federal agency taking action with respect to the proposed water tunnels. *See* BDCP 1-6.

conservation plan.”

Unless it is authorized under either section 7 or section 10 of the ESA, any taking of a listed species is strictly prohibited. 16 U.S.C. § 1538(a)(1)(B). “Take” is defined broadly, including “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect.” *Id.* at § 1532(19). 50 C.F.R. § 17.3 defines “harm” to include any act that actually kills or injures the species, including any death or injuries as a result of habitat modification or degradation that impairs essential behavioral patterns such as feeding, breeding, or sheltering. NMFS regulations include spawning and migrating as “essential behavioral patterns.” 50 C.F.R. § 222.102. The California Endangered Species Act (“CESA”) contains a similar prohibition and definition of take. Cal. Fish & Game Code §§ 2080, 86.

By further reducing freshwater flows in the Delta, the Sacramento River, and sloughs including Elkhorn, Georgianna, Miners, Steamboat, and Sutter sloughs, the proposed BDCP actions would adversely modify designated critical habitat for at least five endangered and threatened species: the Sacramento River winter-run Chinook salmon, the Central Valley spring-run Chinook Salmon, Central Valley steelhead, southern distinct population segment of North American green sturgeon, and the Delta smelt. Indeed, NMFS itself has warned that the proposed BDCP actions threaten the “potential extirpation of mainstream Sacramento River populations of winter-run and spring-run Chinook salmon.” NMFS, April 4, 2013, *Progress Assessment and Remaining Issues Regarding the Administrative Draft BDCP Document*. Both FWS and NMFS have also found that continued operation of the CVP and SWP are likely to jeopardize the continued existence of the delta smelt and other various fish species. *See, e.g.*, NMFS, June 4, 2009, *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project*; FWS, December 15, 2008, *Biological Opinion of the Coordinated Operations of the Central Valley Project and State Water Project*. And in its 2014 Recovery Plan for the Sacramento River winter-run Chinook salmon, the Central Valley spring-run Chinook salmon and the California Central Valley steelhead, NMFS confirmed that “recovery” of the three listed salmonid species “would require that *no more populations are allowed to become extirpated* and that *habitat must be expanded*” – *not contracted* – “to allow for the establishment of additional populations.” 2014 Recovery Plan at 4.

Despite these known devastating threats, and the fact that the BDCP constitutes “agency action” triggering ESA obligations, no Biological Assessment or Biological Opinion has been prepared. *See Pacific Rivers v. Thomas*, 30 F.3d 1050, 1053-1054 (9th Cir. 1994) (“agency action” includes programmatic plans). The DEIR/DEIS specifies that the agencies “are applying for incidental take permits (ITPs)” and “incidental take authorization by the California Department of Fish and Wildlife (DFW).” DEIR/DEIS ES-1; *see also* BDCP 1-8 (planned BiOp will address ESA Section 10 permits decision). The BDCP states that it will “provide the basis for a biological assessment (BA) that supports new ESA Section 7 consultations,” BDCP 1-1, and “support the issuance of a joint BiOp under Section 7.” BDCP 1-8. However, conducting NEPA analysis prior to and without the benefit of the ESA consultation process violates the

ESA's mandate that the ESA process be commenced "at the earliest possible time," 50 C.F.R. § 402.14(a), and violates NEPA's requirement that the NEPA and ESA processes be carried out "concurrently" and in an "integrated manner." 40 C.F.R. § 1502.25(a).

NEPA requires that if a draft environmental impact statement is "so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion" prior to releasing a final EIS. 40 C.F.R. 1502.9. Because the DEIR/DEIS here is not informed by the required but yet-to-be-completed ESA analyses of how the proposed BDCP actions would affect listed species and their critical habitats, it is precisely "so inadequate" that it "preclude[s] meaningful analysis." CEQA likewise prohibits an EIR that is so inadequate as to prevent meaningful public review and comment. Guidelines § 15088.5(a)(4); *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449. Therefore, the agencies must conduct the required ESA consultation and analysis and revise the DEIR/DEIS in light of any information coming out of that process.

E. The BDCP's Effects Analysis Is Inaccessible and Difficult to Understand, Impeding Effective Public Review.

The BDCP's Effects Analysis (Chapter 5 of the BDCP) is so long and poorly organized and cross-referenced that even a panel of seven scientists had difficulty understanding the document. DSP Report at 5 (the "document was difficult to review and comprehend," was "fragmented in its presentation," and suffered from "inefficient organization and incomplete cross-referencing"). Therefore, the effects analysis cannot serve its purpose of providing the public with information and an opportunity to comment upon it. It is true that given the complexity of the BDCP and the relevant ecosystems, the effects analysis and environmental review will necessarily present complicated issues and uncertainties. However, the Delta Science Program's Independent Review Panel found much room for improvement.

First, the scientists noted that the document's lack of organization and appropriate cross-referencing provided "insufficient guidance for the reader." *Id.* at 5.

"[T]he Effects Analysis (Chapter 5) itself is still poorly substantiated and leaves too much to appendices and other BDCP chapters without explicit cross-references. The lack of accessibility to information within the chapter or clear reference to supporting detail inhibits rather than elucidates comprehension of the findings and thus conveys an unsatisfying 'trust us' message."

Id. at 6. Even though much of the needed information was included in technical appendices, the scientists found it "difficult to readily track down key information," and noted that they "often found assumptions and conclusions stated in the Effects Analysis to be lacking in sufficient detail to stand alone." *Id.* at 16.

Second, the scientists believe that the document fails to “sufficiently acknowledge or articulate” the high levels of uncertainty involved in the BDCP, particularly its effects on key species and the predictions regarding its beneficial effects. *Id.* at 5-6. *See also id.* at 7 (“A broad consensus exists among the Panel that Chapter 5 does not adequately acknowledge the extensive uncertainty associated with the BDCP’s assumptions and predictions”), 15 (“[l]evels of uncertainty are not adequately addressed”), 17-18.

Finally, the science panel found that the Effects Analysis’ conclusions were not appropriately supported. *Id.* at 7. In assessing the BDCP’s impacts on species, the Effects Analysis failed to consider crucial factors such as sensitive life cycle stages and variation in habitat quality. *Id.* at 14. When the extensive uncertainty involved meant that a variety of outcomes were possible, the Effects Analysis considered “only the more beneficial outcomes” in arriving at its conclusions. *Id.* at 8, 13 (“the conclusion is often overstated as the most beneficial result”). As a result, the “net effects analysis tends to overreach conclusions of positive benefits for covered fish species.” *Id.* at 7. It also failed to appreciate the complexities involved in effectively implementing an adaptive management plan, especially in light of the pervasive uncertainties. *Id.* at 8-9, 15.

The excessively complicated and incompletely cross-referenced BDCP and DEIR/DEIS do not serve NEPA’s purpose of ensuring informed decision-making and facilitating public participation. The court held in *NPCA v. BLM*, 606 F.3d at 1073, that “in determining whether an EIS fosters informed decision-making and public participation, we consider not only its content, but also its form.” The court went on to hold that the EIS in that case was insufficient because it forced readers interested in a particular environmental issue to “cull through entirely unrelated section of the EIS and then put the pieces together.” *Id.* The BDCP and DEIR/DEIS here are inadequate for the same reason. Their lack of organization, skewed treatment, vagueness and uncertainty fail to “foster[] informed decision-making and public participation.”

F. The Agencies’ Treatment of Public Trust Resources Violates both NEPA and the Public Trust Doctrine.

The DEIR/DEIS and Draft BDCP violate the Public Trust Doctrine by failing to fully consider the impacts of the proposed BDCP actions on public trust uses and the mitigation measures and alternatives that could reduce the impacts of those actions on public trust resources. The Agencies’ primary apparent goal for the BDCP – to enable the supply of full contract amounts despite the consequent harm to public trust resources – would itself constitute a violation of the Public Trust. Use of public trust resources may not be approved “without consideration of other competing public trust purposes.” *Carstens v. California Coastal Commission* (“*Carstens*”) (1986) 182 Cal.App.3d 277, 289.

“The doctrine that the public owns the right to tidelands” and submerged lands “originated in Roman law, which held the public’s right to such lands to be illimitable and

unrestrainable and incapable of individual exclusive appropriation.” *City of Berkeley v. Superior Court of Alameda* (“*City of Berkeley*”) (1980) 26 Cal.3d 515, 521. “[T]he English common law evolved the concept of the public trust, under which the sovereign owns all of its navigable waterways and the lands lying beneath them as trustee of a public trust for the benefit of the people.” *National Audubon Society v. Superior Court* (“*National Audubon*”) (1983) 33 Cal.3d 419, 434.

California’s sovereign ownership of all tidelands, submerged lands, and beds of navigable waters dates to its statehood in 1850. “When California was admitted to statehood in 1850, it succeeded to title in the tidelands within its borders not in its proprietary capacity but as trustee for the public.” *City of Berkeley*, 26 Cal.3d at 521. California holds all public trust resources for the benefit of all Californians for public trust purposes such as waterborne commerce, navigation, fisheries, recreation related to the water, aquatic and terrestrial habitat preservation, scenic beauty, and open space. *National Audubon*, 658 P.2d at 709 (California is the “trustee of a public trust for the benefit of the people”); *Marks v. Whitney* (1971) 6 Cal.3d 251, 259-60.

Today, the Public Trust Doctrine and article I section 25 and article X section 4 of the California Constitution protect the public’s rights to access, use and enjoy tidelands, submerged lands, and overlying waters for boating, fishing and other public trust uses. *National Audubon*, 33 Cal.3d at 425, 440-46. The Public Trust Doctrine is “an affirmation of the duty of the state to protect the people’s common heritage of streams, lakes, marshlands, and tidelands, surrendering that right only in rare cases where abandonment is consistent with the purposes of the trust.” *Id.* Accordingly, the California Constitution has established the State’s obligations with regard to these resources in the Public Trust Doctrine. *Id.*

Pursuant to those obligations, the Agencies must ensure that the BDCP and all actions taken thereunder are consistent with the Public Trust Doctrine by evaluating the proposed water diversions for their impact on public trust resources. *National Audubon*, 33 Cal.3d at 446; *Carstens*, 182 Cal.App.3d at 288. Indeed, the California Department of Water Resources itself has called for just such an analysis, stating that

Public Trust needs and water needed to meet water right permit terms and conditions and other regulatory requirements must be considered. The instream flows and Delta outflow must be sufficient to restore and support the interconnected ecosystem of the Bays, the Delta and the tributaries. The future availability of water for export if any will vary from year to year and it is probable that no water will be available during dry cycle hydrology such as occurred in 1929 through 1934 and 1987 through 1992. Climate change could produce dry cycles which are far more extended than those experienced in the last 100 years.

DEIR/DEIS Chapter 1, Appendix 1D, part 3 (letter dated May 14, 2009). Furthermore, as the State Water Resources Control Board has pointed out numerous times, it “has an [independent]

obligation” apart from that of the Agencies “to consider the effect of the proposed project on public trust resources and to protect those resources.” *See, e.g.*, DEIR/DEIS Chapter 1, Appendix 1D, E-161 (BDCP Scoping Report).

Yet the DEIR/DEIS does not adequately discuss impacts to public trust resources, nor does it make necessary determinations concerning the amount of water required to maintain ecosystem integrity in the Delta estuary, the amount of surplus water beyond that – if any – that is available for exports, and the economic and environmental consequences of reduced or no export scenarios. Without such analyses and determinations, including an analysis of the State Water Resources Control Board’s Delta Flow Criteria Report,⁵ any decision based on the present DEIR/DEIS would be arbitrary and capricious.

When and if the Agencies do conduct a public trust analysis, they should search for a project alternative that would both allow and protect all the public trust uses affected. If they find such an alternative, they must adopt it. *National Audubon*, 33 Cal.3d at 446-7; *Carstens*, 182 Cal.App.3d at 288; *Center for Biological Diversity, Inc. v. FPL Group, Inc.* (2008) 166 Cal.App.4th 1349, 1372.

G. The Agencies’ Refusal to Make Comments Accessible to the Public Impedes Informed Review of the Project.

The Agencies have refused to make the public’s comments accessible, and have offered no reason or explanation for this refusal. Keeping comments private serves no legitimate public purpose. The agencies should post all comments online and extend the comment period to allow members of the public to learn from and communicate with one another. Under CEQA, an agency must provide a “good faith, reasoned analysis in response [to comments]. Conclusory statements unsupported by factual information will not suffice.” PRC §§21003.1, 21091(d)(2)(A); Guidelines §§15002(j), 15087, 15088. Thus, providing the public with the opportunity to review the comments of other interested parties is vital to the public participation and informational components of CEQA.

This is especially important when a major environmental issue is raised. Guidelines §§15064(c), 15088(c). “In particular, the major environmental issues raised when the lead agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted.” Guidelines §15088(c); *San Joaquin Raptor/Wildlife Rescue Center v. County of*

⁵ The flow reports recommended substantial increase in Delta outflow and include biological performance objectives, alternatives to protect water supply and Delta infrastructure against catastrophic events, a water availability analysis, evaluation of the waste and unreasonable use of water, a cost-benefit analysis, and a balance of the public trust. *See* Water Code § 85086(c)(1).

Stanislaus (1994) 27 Cal.App.4th 713, 725; *People v. Kern* (1974) 29 Cal.App.3d 830, 842. Such controversies cannot be brought to the public's attention when the Agencies block access to comments, hindering the ability of commenters to assess this component of the required CEQA review.

III. THE DRAFT BDCP DOES NOT COMPLY WITH THE ESA.

As discussed above, a Habitat Conservation Plan must ensure that the “taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild,” and it must be adequately funded. 16 U.S.C. § 1539(a)(2)(B)(iii)-(iv). For at least three reasons, the Draft BDCP is not a permissible HCP, and any permits issued under Section 10 of the ESA are invalid.

First, the Draft BDCP does not ensure that the actions proposed therein will avoid “appreciably reduc[ing] the likelihood of the survival and recovery of the species in the wild.” 50 C.F.R. § 17.22(b)(2)(i)(D); 16 U.S.C. § 1539(a)(2)(B)(iv). The Draft BDCP lacks convincing evidence that it will protect or recover the threatened and endangered species at issue, and contains no emergency measures to protect populations if they begin to crash. To the contrary, as discussed above, the available evidence demonstrates that the proposed BDCP actions as a whole threaten the “*potential extirpation* of mainstream Sacramento River populations of winter-run and spring-run Chinook salmon.” NMFS, April 4, 2013, *Progress Assessment and Remaining Issues Regarding the Administrative Draft BDCP Document* (emphasis added). Rather than the *reduced flows* in the Sacramento River and Delta that would result if the Peripheral Tunnels are built, the listed Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon and California Central Valley steelhead need “*increased freshwater flows* (from both the Sacramento and San Joaquin rivers) into and through the Delta” to recover. 2014 Recovery Plan.

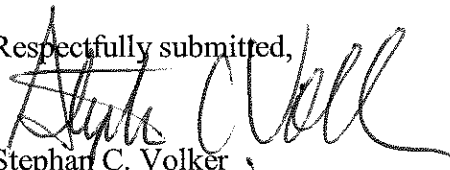
Second, the ESA requires that agencies implement the law based on “the best scientific and commercial evidence available” rather than doing so “haphazardly, on the basis of speculation or surmise.” *Bennett v. Spear*, 520 U.S. 154, 176 (1997); 16 U.S.C. § 1536(a)(2). As described above, instead of being based on the “best scientific . . . evidence available,” many of the proposed BDCP actions run directly *counter* to it. Furthermore, the BDCP and its DEIR/DEIS are riddled with uncertainties – including uncertainties improperly downplayed by the agencies. Glossing over significant risks and unknowns is the epitome of haphazard planning – precisely what the ESA prohibits.

Third and finally, the Peripheral Tunnels are the central feature of the Draft BDCP, but have *nothing* to do with habitat conservation. Simply calling a project an HCP does not make it one. The Peripheral Tunnels have no place in an HCP, and that aspect of the BDCP should be studied separately from the measures that are actually focused on habitat conservation.

IV. CONCLUSION

For the foregoing reasons, the Draft BDCP and DEIR/DEIS violate NEPA, CEQA, the ESA and the Public Trust Doctrine. For similar reasons, Conservation Groups oppose the Peripheral Tunnels and the "Proposed Project" identified in the Draft BDCP and the DEIR/DEIS, and urge the Agencies to reconsider the actions they propose to take.

Respectfully submitted,



Stephan C. Volker

Attorney for the North Coast Rivers Alliance, Winnemem
Wintu Tribe, San Francisco Crab Boat Owners Association,
Inc. and Pacific Federation of Fishermen's Associations

Enclosures

LIST OF EXHIBITS

1. Tim Vendlinski, United States Environmental Protection Agency, Letter to Jeanine Townsend, California State Water Resources Control Board, re: EPA's comments on the Bay-Delta Water Quality Control Plan; Phase 1; SED, March 28, 2013; and
2. Environmental Water Caucus, April 2013, *Responsible Exports Plan*.

EXHIBIT

1



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 28 2013

Ms. Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, California 95814-0100

RE: EPA's comments on the Bay-Delta Water Quality Control Plan; Phase 1; SED

Dear Ms. Townsend,

The U.S. Environmental Protection Agency (EPA) appreciates the opportunity to review the State Water Resources Control Board's (State Board's) *Public Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay/ Sacramento-San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality*, (SED), released on December 31, 2012. Once the State Board concludes this process, EPA will review and approve or disapprove any new or revised water quality standards pursuant to Clean Water Act §303(c).

We urge the State Board to expeditiously adopt and implement updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta WQCP).¹ The benefits of increasing freshwater flows can be realized quickly and help struggling fish populations recover. EPA respectfully submits the following observations and recommendations regarding the SED:

1. EPA supports the State Board's efforts to enhance freshwater flows for aquatic life protection as part of a multi-phase, interagency effort to address resource degradation in the San Joaquin River basin.

Multiple stressors are impacting aquatic life and degrading water quality across the Bay-Delta ecosystem.² These stressors include insufficient freshwater flow, conversion and fragmentation of floodplains and wetlands, discharge of contaminants into surface waters, introduction and spread of invasive species and the resulting alteration of food webs, and degradation of aquatic habitat through high instream water temperatures and low levels of dissolved oxygen.

The State Board, in its Strategic Plan, has articulated a valid process for considering flows and other stressors affecting the Bay-Delta ecosystem,³ and has recognized that increasing freshwater flows is

¹ State Water Resources Control Board, 13 December 2006, Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, (Bay-Delta WQCP).

² See EPA's December 11, 2012 letter to the State Board Re: The Comprehensive Review of the Bay-Delta Water Quality Control Plan. Available at: http://www.waterboards.ca.gov/waterissues/water_issues/programs/bay_delta/docs/comments121212/karen_schwinn.pdf

³ State Water Resources Control Board; Strategic Plan 2008-2012

http://www.waterboards.ca.gov/water_issues/hot_topics/strategic_plan/2007update.shtml

essential for protecting resident and migratory fish populations.⁴ The State Board correctly concluded that “[a]lthough flow modification is an action that can be implemented in a relatively short time in order to improve the survival of desirable species and protect public trust resources, public trust resource protection cannot be achieved solely through flows – habitat restoration also is needed... One cannot substitute for the other; both flow improvements and habitat restoration are essential to protecting public trust resources.”⁵ The Regional Water Boards, other agencies, and non-governmental organizations are already pursuing actions to decrease the loading of contaminants into waterways, and to restore floodplains and riparian habitat. To comprehensively address all stressors, the State Board should use its authorities to address the flow regime.

2. EPA recommends strengthening the proposed narrative fish and wildlife objective with greater definition and extending year-round protection to aquatic life.

In the SED, the State Board proposed the following narrative fish and wildlife objective to apply from February to June:

“Maintain flow conditions from the San Joaquin River Watershed to the Delta at Vernalis, together with other reasonably controllable measures in the San Joaquin River Watershed, sufficient to support and maintain the natural production of viable native San Joaquin River watershed fish populations migrating through the Delta. Flow conditions that reasonably contribute toward maintaining viable native migratory San Joaquin River fish populations include, but may not be limited to, flows that 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 abundance, spatial extent or distribution, genetic and life history diversity, migratory pathways, and productivity.”⁶

The draft narrative objective should be strengthened by replacing vague language with measurable performance targets and by having it apply during all months of the year. Clear definitions and performance targets are critical for establishing an effective objective and allow for evaluation of the attainment of the objective in the future. A water quality standard “*express(es) or establish(es) the desired condition...or instream level of protection for waters of the United States...*”⁷ The term “viable,” for example, is subject to wide variation of interpretation, which minimizes the clarity and effectiveness of the objective. Measurable performance targets should be established for “*viable,*” and the “*abundance, spatial extent or distribution, genetic and life history diversity, migratory pathways and productivity,*”⁸ Similarly, we recommend removing the phrase “*other reasonably controllable measures in the San Joaquin River watershed*” from the objective and relocating it to prefatory material that establishes the context for multiple stressors in the lower San Joaquin River watershed. Including this phrase in the objective defers decisions to future discussions about what, if anything, should be done about freshwater flows and other stressors affecting the San Joaquin River.

⁴ “The best available science suggests that current flows are insufficient to protect public trust resources.” Page 2 and “The public trust resources...include those resources affected by flow, namely, native and valued resident and migratory aquatic species, habitats, and ecosystem processes.” Page 10 in State Water Resources Control Board, 3 August 2010, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem Prepared Pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009, (2010 Flows Report), available at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf

⁵ 2010 Flows Report, p. 7.

⁶ State Water Resources Control Board, December 2012, Public Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay/ Sacramento-San Joaquin Delta Estuary: San Joaquin River flows and Southern Delta Water Quality (SED), Appendix K, Table 3, p. 1.

⁷ Environmental Protection Agency, October 2012, What is a New or Revised Water Quality Standard Under CWA 303(c)(3)? – Frequently Asked Questions, EPA Publication 820F12017. 4pp. available at <http://water.epa.gov/scitech/swguidance/standards/cwa303faq.cfm>

⁸ SED, Appendix K, Table 3, p. 1.

In addition, the proposed objective should be applied year round. Protecting the “viability” of fish populations involves protecting all of their life stages and native migratory fish are present in the San Joaquin River watershed in all months of the year. Although the proposed program of implementation currently focuses on flow-related actions in specific seasons, it seems clear the broad goal of the narrative objective, viable populations of native migratory fish, is a year-round goal. See #7 below for more detail.

The status of the existing *salmon doubling* objective⁹ for the San Joaquin River and its relationship to the proposed objective is unclear in the SED. We recommend providing a redline/strike-out version of the Bay-Delta WQCP to show that the narrative salmon doubling objective will remain as an objective in the Bay-Delta WQCP after this update. The intended relationship between the proposed narrative objective and the salmon doubling objective should be explicitly described in the final SED.

3. The proposed flows do not appear to be substantially different from existing flows.

The preferred alternative identified in the SED includes requirements for 35% unimpaired flow (UF) at the mouths of the Stanislaus, Merced, and Tuolumne Rivers (February to June) and baseflows at Vernalis of 1,000 cubic feet per second (cfs) (February to June). The State Board’s approach results in less than 35% UF at the downstream point of Vernalis because no flow requirements are proposed for the upper San Joaquin River, which contributes a significant amount of the unimpaired flow but less of the actual observed flow. The State Board proposed flows for the three major tributaries proportional to their historical and ecologically appropriate contributions but did not provide an adequate rationale for excluding the upper San Joaquin River itself.

Analyses summarized in the SED predict that, in an average year, proposed freshwater flows will increase in the Tuolumne and Merced Rivers by ~20% (February to June), decrease in the Stanislaus River by 7%, and increase at Vernalis by 8% relative to baseline.¹⁰ EPA is concerned with the proposed decrease of flows in the Stanislaus River because the proposed flows would be less than those specified by the federal National Marine Fisheries Service (NMFS) under a “jeopardy” Biological Opinion (BO) issued to prevent the extirpation of salmon populations caused by the operation of the Central Valley Project and State Water Project.¹¹ The requirements in the NMFS BO would still be in effect and supercede the 35% UF requirement. However, the percentage UF selected by the State Board should strive for a higher goal of recovering sensitive species populations, rather than prescribing flow amounts lower than what is needed to merely avoid extirpation of salmon and steelhead.

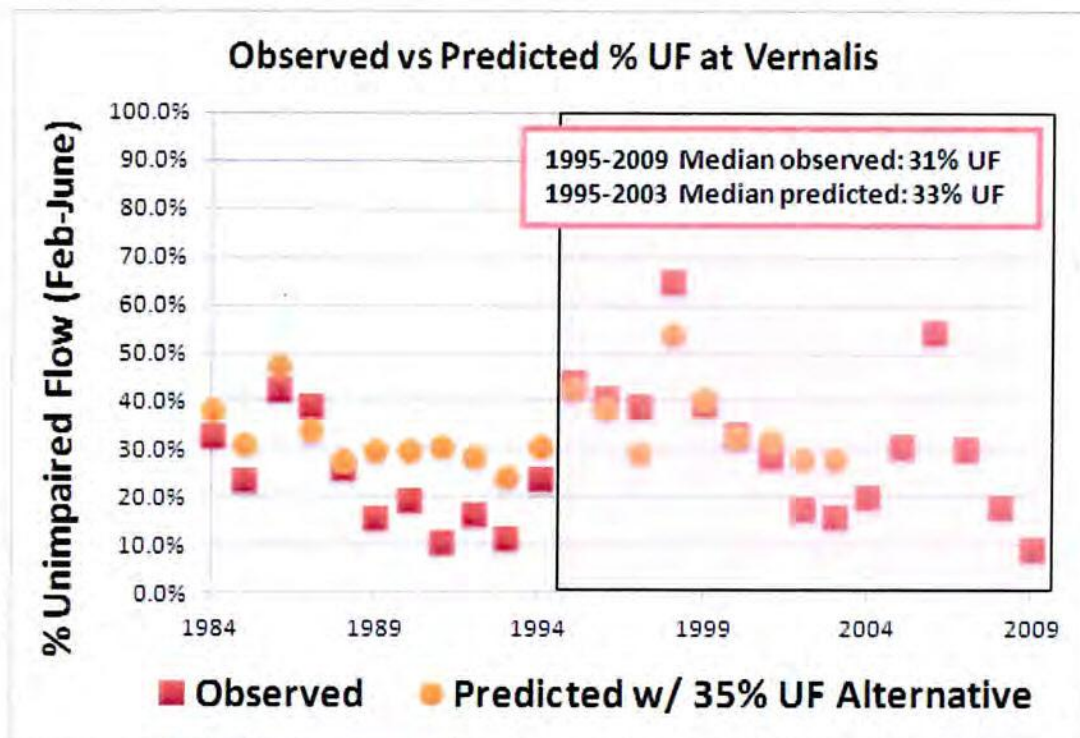
In order to understand how the predicted increases and decreases in flows in the tributaries translate at the lowest point in the watershed, through which fish from all the tributaries must migrate, EPA calculated the median percentage UF that would reach Vernalis under the proposed flow scenario and compared it to observed flows.

⁹ Bay-Delta WQCP, Table 3, pp. 14

¹⁰ SED, Table 20-2, pp. 20-5

¹¹ NMFS BO refers to NMFS, June 2009. Endangered Species Act Section 7 Consultation. Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project.

Appendix L: Sensitivity Analysis in the SED compares the NMFS Biological Opinion reasonable and prudent alternatives, including Action 3.1.3 flows required on the Stanislaus River against the flows predicted using the Water Supply Effects model under the 35% UF proposed alternative. “When the WSE model results are compared to baselines, the modeling shows some flow reductions in the Stanislaus River. However, because the LSJR alternatives would not directly result in any changes to the NMFS BO flow requirements on the Stanislaus River, actual reductions in flows below the NMFS BO flows would be unlikely.” (SED, pp. 20-5)



EPA looked at the time frame since 1995, when the last major changes to flow requirements were made in the Bay-Delta WQCP. The median of observed and predicted flows under the 35% UF alternative were calculated from 1995 to the date of last available data in the SED, in 2009. The median of the observed flows is 31.0%, whereas the median of predicted flows under the 35% UF alternative is 32.8%.¹² EPA could not find a stated margin of error on the Water Supply Effects (WSE) model used in the SED, but the minor increase in flow predicted at Vernalis is likely to fall within the margin of error of the model. The flows proposed by the State Board do not appear to translate to increased protection for aquatic life compared to existing conditions.

According to the State Board,¹³ U.S. Fish and Wildlife Service (FWS),¹⁴ NMFS,¹⁵ and the California Department of Fish and Wildlife (DFW),¹⁶ existing conditions are not protecting aquatic life. All three fisheries agencies identified salmon and steelhead populations as declining under current flow conditions. Furthermore, in October of 2011, EPA found that existing temperature conditions, which are

¹² EPA used observed flow and unimpaired flow at Vernalis from Tables 2.6 and 2.5 on pp. 2-17 and 2-16 in Appendix C of the SED. The values for the modeled flows at Vernalis under the proposed 35%UF scenario were obtained from column MG in the "Alt%WSEResults" tab in the spreadsheet titled "WSE_Model_12312012" which was provided along with the SED for public comment and is available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2012_sed/docs/wse_model_econoutput_12312012.zip; last accessed 03/13/13.

¹³ 2010 Flows Report, p.2.

¹⁴ "Interior remains concerned that the San Joaquin Basin salmonid populations continue to decline and believes that flow increases are needed to improve salmonid survival and habitat." USFWS May 23, 2011 Phase I Scoping Comments, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/cmmnts052311/amy_aufdemberge.pdf

¹⁵ "Inadequate flow to support fish and their habitats is directly and indirectly linked to many stressors in the San Joaquin river basin and is a primary threat to steelhead and salmon." NMFS February 4, 2011 Phase I Scoping Comments, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/cmmnts020811/010411dpowell.pdf

¹⁶ "...current Delta water flows for environmental resources are not adequate to maintain, recover, or restore the functions and processes that support native Delta fish." Executive Summary in 2010 CDFG Flow Criteria.

heavily influenced by flow, are not adequate to support salmonids in several segments of the lower San Joaquin River and its lower tributaries.¹⁷

4. The proposed 35% UF may be too low to provide essential ecological functions.

EPA is concerned the proposed flows will not provide essential ecological functions such as adequate variability of flows, magnitude of flows, and tributary baseflows that a natural hydrograph can provide. Reproducing the natural variability in flow is a potential ecological benefit of using an approach based on a percentage of UF. However, a great deal of the variability is lost when one moves from a 3-day average to a 14-day average;¹⁸ valuable peaks and troughs in flow are lost with the longer averaging period. In the past, DFW has recommended a 3-day average with a 3-day lag¹⁹ and the feasibility of this or a similar alternative should be evaluated in the SED.

The caps on flow proposed in the SED limit the benefits of high water years to aquatic life including the flushing of gravels used for spawning, and the creation of nursery habitat for juveniles in floodplains. These caps, which are ostensibly intended to protect against flooding, are set at the median unimpaired flows in each of the tributaries, which is a metric unrelated to flooding and well below the flood control capacity.²⁰ The caps are the equivalent of 31% of flood control capacity on the Stanislaus River, 23% of capacity on the Tuolumne River and 33% of capacity on the Merced River.²¹ The State Board should reevaluate the proposed caps because they allow for the delivery of less than 35% UF in the rivers at times when there is no risk of flooding.

The State Board should consider allowing the water from some representative selection of high flow events, to pass through the system as instream flows.²² This will help restore some of the natural amplitude of flow events and hydrogeomorphic conditions on the river that are essential for healthy plant and animal populations. As currently proposed, the State Board's approach to adaptive management allows for the shifting of flows from one time period to another and would thereby allow for the Coordinated Operations Group (COG) to send a pulse flow or storm event flow down the system. However, such a small total volume of water is available for management during the February to June period that the COG would not be able to generate a pulse flow of the magnitude recommended by DFW for fall-run Chinook salmon while also reserving a sufficient flow amount to maintain reasonable baseflows in the system for the remainder of the flow window.²³

¹⁷ See EPA's listing of several segments in the lower San Joaquin River and the Tuolumne, Merced and Stanislaus as impaired by temperature per CWA §303(d), Final Decision Letter on California's 2008-2010 §303(d) List of Impaired Waters issued October 11, 2011 and available at: <http://www.epa.gov/region9/water/tmdl/california.html>

¹⁸ Grober, Les and Rich Satkowski, State Water Resources Control Board, presentation at a UC Davis Center for Aquatic Biology and Aquiculture (CABA) Seminar, January 18, 2013, slides 24-27

http://deltacouncil.ca.gov/sites/default/files/documents/files/CABA_Grober_and_Satkowski.pdf

¹⁹ pp 23;

http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/cmmnts020811/010711cdibble.pdf

²⁰ SED, Appendix C, pp. 5-4.

²¹ SED, Appendix F, pp.F.1-32 indicates flows will be capped at 2,500 cfs on the Stanislaus, 3,500 cfs on the Tuolumne and 2,000 cfs on the Merced, yet SED, Figure 6-3 and Table 6-3 indicate that the California Department of Water Resources believes the flood capacity is 8,000 cfs on the Stanislaus, 15,000 cfs on the Tuolumne and 6,000 cfs on the Merced.

²² Dahm, Cliff, University of New Mexico, presentation titled "Examples of Managed Flow Regimes - Possible Models for the Delta?" at a UC Davis Center for Aquatic Biology and Aquiculture (CABA) Seminar, January 18, 2013, states that it is better to "retain *certain floods at full magnitude and to eliminate others entirely than to preserve all or most floods at diminished levels.*"

http://deltacouncil.ca.gov/sites/default/files/documents/files/CABA_Dahm.pdf

²³ See DFW testimony on 3/20/13.

The Independent Science Board for the Delta emphasized the importance of combining a percentage of UF approach with other measures such as tributary-specific, minimal flow criteria.²⁴ In their 2010 Flow Criteria Report, DFW recommended criteria for the recovery of fall-run Chinook salmon comprising 1,500 cfs at Vernalis (January to mid-June) in critical years, with increasing stepwise recommendations reaching 6,314 cfs in wet years.²⁵ These recommended baseflows from DFW are well above the baseflow proposed by the State Board in the SED (1,000 cfs at Vernalis). As summarized in Chapter 3 of the SED, in critical and dry years, the flows proposed by the State Board do not meet the criteria recommended by DFW²⁶ nor flows recommended by FWS.²⁷ The State Board should re-evaluate the proposed baseflow and ensure protection for aquatic life during critical and dry years.

5. The proposed percentage of UF is significantly lower than UF standards adopted elsewhere in the United States and internationally.

Established scientists recommend implementing freshwater flow prescriptions for rivers and estuaries that mimic the pattern of the natural hydrographs in order to protect aquatic species with life histories adapted to such flow patterns.²⁸ However, the flows proposed by the State Board under the UF approach described in the SED are significantly lower than flow standards resulting from the use of the UF approach elsewhere. Richter et. al.²⁹ studied rivers in Florida, Michigan, Maine, and the European Union and found that the cumulative allowable depletion of flows ranged from 6 - 20% year-round or in low-flow months (the equivalent of 80-94% UF); and 20-35% in higher flow months (the equivalent of 65-80% UF). These scientists recommended the equivalent of no less than 90% UF to achieve a high-level of ecological protection, and no less than 80% UF to achieve a moderate level of ecological protection. They concluded that alterations below an 80% UF threshold “*will likely result in moderate to major changes in natural structure and ecosystem functions.*”

6. The State Board’s proposed flows fall short of recommended targets to protect fall-run Chinook salmon

In 2010, the State Board identified three flow criteria for the San Joaquin River at Vernalis for halting declines and rebuilding fish populations.³⁰ These recommendations included a 60% UF (14-day average; February through June), the existing Bay-Delta WQCP flow objective for October, and an October pulse flow of 3,600 cfs (10-day minimum) to “*provide adequate temperature and DO conditions for adult salmon upstream migration, to reduce straying, improve gamete viability, and*

²⁴ “Worldwide, research is indicating that the percent of impaired flow should be used together with other criteria. Variability in flow, tributary-specific minimal critical flows (i.e., thresholds) and flow targets need further consideration. In particular, the combined importance of higher and more variable flows in the spring, and variables such as the timing of flows and the rate of change in flow, which have been demonstrated to provide important cues to fish and other wildlife, should be further evaluated.” Delta Independent Science Board May 22, 2012 letter to Les Grober, Re: Flow Criteria that use Percent of Unimpaired Flow http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/item8_att2_delta_isb_response.pdf

²⁵ California Department of Fish and Game, November 23, 2010, Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta (CDFG Flow Criteria), p. 105

²⁶ SED, pp. 3-12 – 3-13 and Figure 3-2

²⁷ SED, pp. 3-18 – 3-20 and Figure 3-6

²⁸ “Major researchers involved in developing ecologically protective flow prescriptions concur that mimicking the unimpaired hydrographic conditions of a river is essential to protecting populations of native aquatic species and promoting natural ecological functions”. (Sparks 1995; Walker et al. 1995; Richter et al. 1996; Poff et al. 1997; Tharme and King 1998; Bunn and Arthington 2002; Richter et al. 2003; Tharme 2003; Poff et al. 2006; Poff et al. 2007; Brown and Bauer 2009). SED, Appendix C, p. 116

²⁹ Richter, B. D., Davis, M., Apse, C., and Konrad, C. P. 2011. A presumptive standard for environmental flow protection. River Research and Applications. DOI: 10.1002/rra.1511. <http://eflownet.org/downloads/documents/Richter&al2011.pdf>

³⁰ 2010 Flows Report, pp. 119-123

improve olfactory homing fidelity.³¹ The first and last of these recommendations were identified as “Class A,” meaning there was more robust scientific information to support specific numeric criteria than some other recommendations.

As noted in #3 above, since the 35% UF proposed in the SED would be achieved in the tributaries but not at Vernalis, the flow at Vernalis is expected to be lower.³² The flows proposed in the SED almost halve the 60% UF that the State Board previously concluded was necessary to protect fall-run Chinook salmon, do not incorporate the recommendation for “Class A” pulse flows in the fall, and do not achieve DFW’s flow recommendations to protect fall-run Chinook salmon.³³

FWS identified flow targets³⁴ necessary to meet the doubling objective³⁵ for fall-run Chinook salmon in the Bay-Delta WQCP. The State Board did not analyze how frequently the 35% UF alternative in the SED meets these flow targets; however, the 40% UF alternative (which has 14% more flow than the proposed alternative) only meets these recommendations in 42% of modeled years.³⁶ In his external peer review, Dr. Olden, raised the concern that “*the rationale for examining 20-60% of unimpaired flow as the only scenarios is questionable, and it needlessly limits a full investigation of the flows required to achieve fish and wildlife beneficial use.*”³⁷ FWS recommended “*that a block of water should be allocated in each of the tributaries to manage flows on a daily basis so that water temperatures do not exceed 65F in the uppermost 5-mile reach between July 1 and mid October when the pulse flows begin.*”³⁸ The flows the State Board proposes also do not implement this latter recommendation as it falls outside the selected time frame for the objective.

7. The State Board’s proposed flows do not protect all life stages of sensitive species.

The proposed narrative objective is written to protect “*native migratory San Joaquin River fish populations*” yet the proposed 35% UF is inconsistent with the protection of the existing migratory fish in the basin. The proposed flows are restricted to the February to June timeframe, and are currently based upon the biological needs and certain life stages of only a single species, fall-run Chinook salmon. The SED recognizes that other sensitive species, such as steelhead, and other life stages of fall-run Chinook salmon occupy the San Joaquin River watershed outside the proposed February to June window.³⁹ For example, the SED states that fall-run Chinook salmon in the San Joaquin River

³¹ 2010 Flows Report, pp 121

³² SED, Appendix C and F

³³ Please refer to DFW’s testimony to the State Board on March 20, 2013

³⁴ United States Fish and Wildlife Service, September 27, 2005, Recommended Streamflow Schedules To Meet the AFRP Doubling Goal in the San Joaquin River Basin (FWS 2005), pp. 27 available at:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/sjrf_sp_prtinfo/afrp_2005.pdf

³⁵ “*Water quality conditions shall be maintained, together with other measures in the watershed, sufficient to achieve a doubling of natural production of Chinook salmon from the average production of 1967-1991, consistent with the provisions of State and federal law.*” Bay-Delta WQCP, Table 3, pp. 14.

³⁶ SED, Figure 3-6, page 3-20, graph shows the flows are met in 33 out of 79 modeled years.

³⁷ “*Given the choice of scenarios to report (20-60% of unimpaired flow) is based on TBI/NRDC analysis suggesting 5,000 cfs threshold for salmon survival (p. 3-48) and that >50% is estimated to be needed to achieve doubling of salmon production, implies that the Technical Report is only considering potential flow schedules that may lead to salmon survival at current low levels and not salmon recovery into the future. Therefore, the rationale for examining 20-60% of unimpaired flow as the only scenarios is questionable, and it needlessly limits a full investigation of the flows required to achieve fish and wildlife beneficial use.*” p. 8 of Dr. Julian Olden’s November 15, 2011 External Peer Review of “*Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives.*” http://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/sanjoaquin_river_flow/olden_pr.pdf

³⁸ FWS 2005, pp. 14-15

³⁹ SED pp. 7-14 - 7-18

watershed migrate October thru December, and spawn between November and January; and steelhead rear in the watershed for one to three years before migrating.⁴⁰

The SED clearly identifies the deficiencies in the timeframe of the proposed flows for steelhead when it states that “although water temperatures for rearing steelhead would be improved in June, especially in the Tuolumne River, the benefits would likely be limited because the extent of suitable rearing habitat would continue to be limited by late summer water temperatures.”⁴¹ Although the SED analyzed the impact of proposed freshwater flows on maximum daily water temperatures, it did not analyze the impact of the proposed alternative (35% UF).⁴² However, the analysis for the 40% UF alternative (which is 14% more flow than the proposed alternative), shows that the temperature would exceed suboptimal temperatures during six to nine months of an average year depending on location.⁴³ The SED also concludes that lethal temperatures would be reached for salmon in September on the Stanislaus, Tuolumne, and Merced Rivers; and in August, September, and October in the lower San Joaquin River (in an average year under the 40% UF alternative).⁴⁴ The restricted time frame of the State Board’s proposed flows means important life stages of sensitive species are not protected.

Flows provided for salmon during the spring rearing cycle could go to waste if salmon populations are decimated by lethal temperatures in the fall as they migrate and spawn. By focusing on the spring months, EPA concurs with Dr. Olden’s conclusion that the State Board is not fully accounting for the “range of ecologically-important flow events that occur over the entire year that are critical for salmon persistence and sustained productivity.”⁴⁵ The WSE model assumes that water diverters and dam operators will not modify their behavior July through January to compensate for the new flow requirements, but experience indicates that this assumption is flawed. The State Board should analyze the indirect impacts of the proposed alternative to flow and aquatic life during the remainder of the year. Additionally, to safeguard against these indirect impacts, the State Board should provide adequate flows on a year round basis to protect aquatic life in all their life stages.

8. The State Board should ensure proposed flows are protective of downstream waters.

The State Board is addressing downstream aquatic life uses in Phase 2 of the updates to the Bay-Delta WQCP. Flow levels established during Phase 1 will influence the ability of the State to achieve Phase 2 goals. At this time, the State Board should consider the impact of proposed flows on downstream uses, or create a provision for reconsidering flow levels established during Phase 1 so adjustments can be made consistent with Phase 2 decisions.

The ability for salmonids to migrate past Vernalis, through the Delta to the ocean, and then return to spawn is essential to achieving sustainable populations, and is expressed as a goal of the proposed narrative objective.⁴⁶ Most of the freshwater from the San Joaquin River is diverted either upstream of

⁴⁰ SED pp. 7-14 - 7-18

⁴¹ SED, pp. 7-93

⁴² SED, Chapter 20

⁴³ SED, pp. 7-95 - 7-96

⁴⁴ SED pp. 7-95 - 7-96

⁴⁵ “In summary, although I agree that a fixed monthly prescription is not useful given spatial and temporal variation in runoff (p. 3-52), the Technical Report does not account for the range of ecologically- important flow events that occur over the entire year that are critical for salmon persistence and sustained productivity.” p. 7 of Dr. Julian Olden’s November 15, 2011 External Peer Review of “Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives.”

http://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/sanjoaquin_river_flow/olden_pr.pdf

⁴⁶ “Maintain flow conditions from the San Joaquin River Watershed to the Delta at Vernalis, together with other reasonably controllable measure in the San Joaquin River Watershed, sufficient to support and maintain the **natural production of viable native San Joaquin River watershed fish populations migrating through the Delta.**” Emphasis added, SED Appendix K, pp. 1

the study area for Phase 1, or as it enters the Delta, and this creates a condition whereby almost 40 kilometers of San Joaquin River channels contain water primarily from the Sacramento River in almost all months of almost all years.⁴⁷ This discontinuity between the San Joaquin River and the Pacific Ocean adversely affects the migratory ability of salmon and steelhead due to the absence of physical and chemical cues.⁴⁸ Increased flows are needed in the San Joaquin River basin to overcome this discontinuity, and if the problem cannot be adequately addressed now in Phase 1, then it should be revisited in Phase 2.

Similarly, the SED does not analyze the effects of the proposed flows and salinity objectives on achieving existing objectives in impaired downstream river segments, e.g., attaining the dissolved oxygen objective in Old and Middle Rivers and meeting the load allocations in the Lower San Joaquin River Dissolved Oxygen Total Maximum Daily Load (TMDL)⁴⁹ through which salmon must pass. Recent provisional data from the Stockton Deep Water Ship Channel, in the lower San Joaquin River, indicates that dissolved oxygen problems can arise in the fall at flows below 2,600 cfs.⁵⁰ The State Board should carefully analyze the recommendation for baseflows of 1,000 cfs at Vernalis and its impact on meeting the dissolved oxygen objective in downstream waters.

9. The State Board should analyze the potential impacts of relaxing the salinity objective on Delta hydrodynamics

The proposed seasonal salinity numerical objectives at four compliance locations in the southern Delta would change an existing objective of 0.7 and 1.0 deciSiemens per meter (dS/m) as a 30-day running average depending on the season, to 1.0 (dS/m) during all months of the year. The SED discounts, without significant analysis, the possibility that allowing salinity concentrations to rise in the southern Delta would have associated indirect impacts on instream temperatures and pollutant concentrations.⁵¹ However, under current conditions waters are sometimes released by the U.S. Bureau of Reclamation to achieve the existing salinity objective and any change in this objective would therefore, ultimately impact flows, temperature, and pollutant concentrations in the south Delta. The SED should analyze these impacts; particularly the challenge of attaining the dissolved oxygen objective in Old and Middle Rivers and in the Stockton Deep Water Ship Channel; achieving adequate temperatures for salmonid migration; and managing the concentration and transport of selenium through the system.

⁴⁷ Fleenor, William et al., February 15, 2010, On developing prescriptions for freshwater flows to sustain desirable fishes in the Sacramento-San Joaquin delta, available at: http://watershed.ucdavis.edu/pdf/Moyle_Fish_Flows_for_the_Delta_15feb2010.pdf

⁴⁸ Marston et al. December 2012. Delta Flow Factors Influencing Stray Rates of Escaping Adult San Joaquin River Fall-run Chinook Salmon (*Oncorhynchus tshawytscha*), San Francisco Estuary and Watershed Science, 10(4) Available at: <http://escholarship.org/uc/item/6f88q6pf>, see also 2010 Flows Report pp. 55-56

⁴⁹ Central Valley Regional Water Quality Control Board's San Joaquin River Dissolved Oxygen TMDL was approved by US EPA on February 27, 2007 and can be found at:

http://www.waterboards.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/san_joaquin_oxygen/index.shtml

⁵⁰ EPA compared the daily minimum dissolved oxygen at the Department of Water Resource's Stockton Deep Water Ship Channel monitoring station 1 meter below the surface located at Rough and Ready Island available here: <http://cdec.water.ca.gov/cgi-progs/querVF?s=sdo>

with the net flow data at USGS' Garwood Bridge Station available at:

http://waterdata.usgs.gov/nwis/dv?cb_72137=on&format=gif_default&begin_date=2009-06-06&end_date=2009-06-22&site_no=11304810&referred_module=sw

Looking at data from 2007-2012; after the City of Stockton installed a nitrification system at their wastewater treatment plan, EPA concludes that excursions below the 6 mg/L criteria occur in September-November when flows are below 2,600 cfs.

⁵¹ SED, Chapter 5

10. The State Board should clarify the adaptive management framework and broaden the range of unimpaired flows.

The 25-45% UF range for adaptive management is too restrictive to achieve protections for aquatic life in all water year types. In critical years, FWS recommended 76%, 86%, and 97% UF for the Tuolumne, Merced and Stanislaus Rivers, respectively, to achieve the existing Bay-Delta WQCP salmon doubling objective.⁵² The range as currently proposed in the SED does not allow the flexibility to protect sensitive species during critical years

EPA supports adaptive management and believes it to be a promising concept. However, in practice, the methodology for effective adaptive management has often fallen short. In part this shortcoming can be traced to inadequate application and design.⁵³ To be effective, the State Board should provide more detail on the annual and long-term adaptive management described in Appendix K. This should include clearly defining the resource objectives, the roles of the Implementation Workgroup and COG, the structure and function of the decision-making process, and the specific criteria that will be used to trigger management actions. The flexibility of these groups should be constrained so as not to undermine the proposed objective, and the decision-making structure should clarify the State Board's authority to avoid any appearance of transferring authority to a third party. The State Board should coordinate and integrate the adaptive management program developed in this Bay-Delta WQCP update with ongoing monitoring efforts such as the long-established Interagency Ecological Program (IEP) and the emerging Delta Regional Monitoring Program.

Thank you for this opportunity to review and comment on the SED for San Joaquin River Flows and Southern Delta Water Quality. We look forward to working with the State Board as it completes its review and revises and implements the Bay-Delta WQCP.

Sincerely,



Tim Vendlinski
Bay Delta Program Manager
Water Division

07/28/13

Cc:

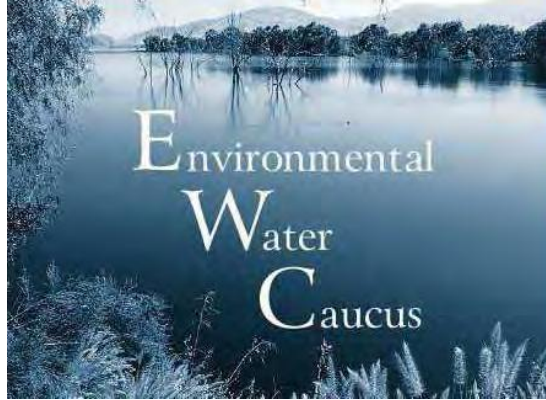
Mark Gowdy, State Water Resources Control Board
Larry Lindsay, State Water Resources Control Board

⁵² FWS 2005, pp. 27

⁵³ "Despite examples of the potential of an adaptive approach, contemporary examples of successful implementation are meager. In many ways, this seems paradoxical. On the one hand, adaptive management offers a compelling framework; i.e., learn from what you do and change practices accordingly. Yet, the literature and experience reveal a consistent conclusion; while adaptive management might be full of promise, generally it has fallen short on delivery. This dilemma is widely recognized (Halbert 1993, McLain and Lee 1996, Roe 1996, Stankey and Shindler 1997, Walters 1997), leading Lee (1999: 1) to conclude "adaptive management has been more influential, so far, as an idea than as a practical means of gaining insight into the behavior of ecosystems utilized and inhabited by humans." p. 7 in Adaptive Management of Natural Resources: Theory, Concepts, and Management Institutions available at http://www.fs.fed.us/pnw/pubs/pnw_gtr654.pdf

EXHIBIT

2



RESPONSIBLE EXPORTS PLAN

**Developed by the Environmental Water Caucus
April 2013**

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INTRODUCTION

The consensus diagnosis for the Delta estuary is dire. The California Environmental Water Caucus prescribes more river flows and reduced fresh water exports to help the Delta recover. The EWC's plan demonstrates how water supply reliability can be improved while reducing exports from the Bay Delta Estuary. Many of our recommendations have been presented to the Delta Stewardship Council as part of Alternative 2 for the Delta Plan. We have now packaged this series of related actions into a single alternative for evaluation in any future NEPA or CEQA evaluations, or by the State Water Resources Control Board. The actions are largely based on the EWC report *California Water Solutions Now*, (www.ewccalifornia.org), which can be referenced for supporting details. This package of actions ("The RX Plan") represents the EWC alternative to the BDCP.

The RX Plan includes a unique combination of actions that will open the discussion for alternatives to the currently failed policies which continuously attempt to use water as though it were a limitless resource. *The RX Plan is about far more than just reduced exports.* The uniqueness of this Plan is that while it will reduce the quantity of water exported from the Bay Delta Estuary, in order to protect the health of the Estuary's habitat and fisheries with increased inflows and outflows, it also contains actions that will reduce the demand for water and increase supplies for exporters south of the Delta in order to compensate for the reduced south-of-Delta exports. It is the only extant plan that will modernize existing facilities in the Bay-Delta with improved fish screens at the South Delta, levees reinforced above the PL84-99 standard, and significantly increased flows in order to recover habitat and fish stocks, while avoiding the huge infrastructure costs of tunnels under the Delta. It will also provide increased self-reliance for south-of-Delta water users through inter-regional water transfers and south of Delta groundwater storage. The reinforced levees will provide increased reliability of the water supplies through the Delta. And it will accomplish the legislated goals of Estuary restoration and water reliability for billions of dollars less than currently contemplated plans.

California is in the grip of a water crisis of our own making. Like all problems that humans create, we have the potential to use the crisis as an opportunity to make positive and long-lasting changes in water management. The crisis is not a water shortage – California has already developed sufficient water supplies to take us well into this century – the real crisis is that this supply is not used efficiently or equitably for all Californians, nor is it used wisely to sustain the ecosystems that support us.

The opportunity – and the basis for our positive vision – is that economically and technologically feasible measures are readily available to provide the water needed for our future. Our vision includes providing clean water for families to drink, providing water to improve the environmental health of our once-magnificent rivers, recovering our fisheries from the edges of extinction, fostering healthy commercial and recreational fisheries and a thriving agricultural industry, ensuring that all California communities have access to safe and affordable

drinking water, and contributing significantly to the state's largest industries: recreation and tourism.^{1 2}

We need to make significant changes in our water management practices in order to provide the favorable outcomes that we describe in this report. These changes are based on the following Principles for a Comprehensive California Water Policy, developed by the Planning and Conservation League and the Environmental Justice Coalition for Water to guide California water policy reform.³ They instruct that:

1. California must respect and adjust to meet the natural limits of its waters and waterways, including the limits imposed by climate change.
2. Every Californian has a right to safe, sufficient, affordable, and accessible drinking water.
3. California's ecosystems and the life they support have a right to clean water and to exist and thrive, for their own benefit and the benefit of future generations.
4. California must maximize environmentally sustainable local water self-sufficiency in all areas of the State, especially in the face of climate change.
5. The quality and health of California's water must be protected and enhanced through full implementation and enforcement of existing water quality, environmental, and land use regulations and other actions, and through new or more rigorous regulations and actions as needed.
6. All Californians must have immediate and ready access to information and the decision-making processes for water.
7. California must institute sustainable and equitable funding to ensure cost-effective water reliability and water quality solutions for the state where "cost-effective" includes environmental and social costs.
8. Groundwater and surface water management must be integrated, and water quality and quantity must be addressed on a watershed basis.
9. California's actions on water must respect the needs and interests of California Tribes, including those unrecognized Tribes in the State.
10. California must overhaul its existing, piecemeal water rights policies, which already over-allocate existing water and distribute rights without regard to equity.

A major influencing factor in future California water solutions will be the impact of global climate change. Based on the scientific information available, the natural limits of our water supply will become more obvious, the economics of water policies will change significantly, and our ability to provide sustainable water solutions for all Californians will become more challenging. Unless we manage our water more efficiently and account for the current and future effects of global climate change, the costs of providing reliable water to all users will overwhelm our ability to provide it.

¹ California's Rivers A Public Trust Report. Prepared for the State Lands Commission. 1993. P. 47.
http://www.slc.ca.gov/Reports/CA_Rivers_Rpt.html

² California Travel and Tourism Commission. California Travel Impacts by County. 2008 Preliminary State Estimates. Total direct travel spending alone was \$96.7 billion in 2008. ES-2. <http://tourism.visitcalifornia.com/media/uploads/files/editor/Research/CAImp08pfinal.pdf>.

³ Aquaformia: the California Water News Blog of the Water Education Foundation. <http://aquaformia.com/archives/8374>.

In addition to the commonly accepted NEPA and CEQA requirements for any Delta Estuary plan, there are five fundamental criteria that any plan for recovering the health of the Bay Delta Estuary and fish species must successfully meet. Those criteria are:

1. A water availability analysis must be conducted to align water needs with availability.
2. A benefit/cost analysis must be conducted to determine economic desirability of any plan.
3. Public trust and sociological values must be balanced against the value of water exports.
4. Existing water quality regulations must be enforced in order to recover the Estuary.
5. The plan must meet the NCCP *recovery* standard for fish species.

All of the current and past plans for the Delta Estuary have failed, partly because the responsible state and federal authorities have refused to apply or to test their projects with these above criteria. The EWC would welcome this Responsible Exports Plan being judged by these pragmatic and acceptable criteria.

PREFACE

There are several overarching issues that run through all our efforts to develop sustainable, effective, and equitable water policies. They are: climate change, periodic drought, environmental justice, the preservation of cultural traditions by Native Americans, the precautionary principle, and population pressures. They are covered in this preface to avoid repetition in each of the individual actions described below.

Climate Change. Climate models indicate that climate change is already affecting our ability to meet all or most of the goals enumerated in this report and must be integrated into the implementation of the recommendations. The main considerations are:

- More precipitation will fall as rain rather than snow and will result in earlier runoff than in the past.⁴
- Less snow will mean that the current springtime melt and runoff will be reduced in volume.
- Overall, average precipitation and river flow are expected to decrease. A recent paper in *Frontiers in Ecology and the Environment*⁵ predicts that the average Sacramento River flow will decrease by about 20 percent by the 2050s.
- Precipitation patterns are expected to become more erratic including both prolonged periods of drought and greater risks of flooding.
- Sea level rise will impact flows and operations within the Delta, endanger fragile Delta levees, and increase the salinity concentration of Suisun Bay and the Delta, as well as increase the salinity concentrations of some coastal groundwater aquifers.

These changing conditions could affect all aspects of water resource management, including design and operational assumptions about resource supplies, system demands, performance requirements, and operational constraints. To address these challenges, we must enhance the resiliency of natural systems and improve the reliability and flexibility of the water management systems. Specific recommendations are proposed as part of this document.

Periodic Drought. Drought is a consistent and recurrent part of California's climate. Multiple-year droughts have occurred three times during the last four decades.⁶ In creating a statewide drought water "bank," there is a clear need for a long-term version of a drought water bank. California's experience of multiple-year droughts should force state and local water and land use authorities to recognize the recurrence of drought periods and to put more effective uses of water

⁴ National Wildlife Federation and the Planning and Conservation League Foundation. On the Edge: Protecting California's Fish and Waterfowl from Global Warming. 10-11. www.pcl.org/projects/globalwarming.html.

⁵ Margaret A Palmer, Catherine A Reidy Liermann, Christer Nilsson, Martina Flörke, Joseph Alcamo, P Sam Lake, Nick Bond (2008) Climate change and the world's river basins: anticipating management options. *Frontiers in Ecology and the Environment*: Vol. 6, No. 2, pp. 81-89.

⁶ California Drought Update. May 29, 2009. P.5. http://www.water.ca.gov/drought/docs/drought_update.pdf.

in place permanently. The Governor's current policy on water conservation⁷ should be mandatory for all water districts and become a permanent part of water policy, rather than a response to current dry conditions. Only by educating the public, recognizing limits, and learning to use the water we do have more efficiently can Californians expect to handle future drought conditions reasonably.

Environmental Justice. It is imperative that water policies and practices are designed to avoid compounding existing or creating new disproportionately adverse effects on low income Californians and communities of color. Conversely, water policies and practices must anticipate and prepare for anticipated disproportionately adverse effects and to provide equitable benefits to these communities, particularly those afflicted by persistent poverty and which have been neglected historically. For example, water moving south through the California Aqueduct and the Delta Mendota Canal flow past small valley towns that lack adequate or healthy water supplies. We know that under conditions of climate change and drought, catastrophic environmental changes will occur in California. Environmental justice requires that water policies and practices designed to account for climate change and drought include a special focus on preventing catastrophic environmental or economic impacts on environmental justice communities. Other, specific environmental justice water issues include:

- Access to safe, affordable water for basic human needs.
- Access to sufficient wastewater infrastructure that protects water quality and prevents overflows and other public health threats.
- Restoration of water quality so that environmental justice communities can safely feed their families the fish they catch in local waters to supplement their families' diets.
- Equitable access to water resources for recreation.
- Equitable access to statewide planning and funding to ensure that in addition to safe affordable water, and wastewater services, environmental justice communities benefit equitably from improved conservation, water recycling and other future water innovations that improve efficiency and water quality.
- Mitigation of negative impacts from the inevitable reallocation of a portion of the water currently used in agriculture – the state's biggest water use sector – to water for cities and the environment. Reallocation will reduce irrigated acreage, the number of farm-related jobs, and local tax revenues.
- Mitigation of third party impacts, including impacts on farm workers, associated with land conversion.
- Ideally, mitigation will be based on a comprehensive plan to transition local rural economies to new industries such as solar farms and other clean energy business models and provide the necessary job training and policies necessary to enable environmental justice community members to achieve the transition.
- Protection from the impacts of floods and levee breaks, including provisions for emergency and long-term assistance to renters displaced by floodwaters.

⁷ 20x2020 Water Conservation Plan DRAFT, April 30, 2009. Executive Summary.
http://www.swrcb.ca.gov/water_issues/hot_topics/20x2020/index.shtml.

Native American Traditions. Many of California's Historical Tribes have a deep and intrinsic relationship with California's rivers, lakes, streams and springs. This relationship goes to the very core of their origin, cultural, and spiritual beliefs. Many of the Tribes consider the fish that reside in these waters as gifts from their creator, and the fish are necessary to the continued survival of their people and their cultural and spiritual beliefs. Historically, California's water policy has failed to recognize the importance of the needs of one of its greatest natural and cultural resources - its Historical Tribes - and has only sought to manage water for economic gain. California water policies and practices must change to provide sufficient water to support fisheries and their habitats for both cultural and economic sustainability, and provide for the restoration of and access to those fisheries for its Native Peoples.

The Precautionary Principle. The Precautionary Principle states that: “Where there is scientific evidence that serious harm might result from a proposed action but there is no certainty that it will, the precautionary principle requires that in such situations action be taken to avoid or mitigate the potential harm, even *before* there is scientific proof that it will occur.”⁸ Numerous actions recommended in this report fit that criteria and the precautionary principle is therefore implicit throughout the report recommendations.

Population Pressures. California’s human population is expected to continue to increase from the current population of more than 37 million to 49 million by 2030 and 59 million by 2050.⁹ In 2008, 75 percent of the population growth came from natural growth (births) and 25 percent came from immigration, both foreign and interstate. In each of the data sources utilized in this report, population increases have been factored into the conclusions, unless otherwise noted.

⁸ A. I. Schafer, S. Beder. Role of the precautionary principle in water recycling. University of Wollongong. 2006. 1.1.

⁹ California Department of Finance, Demographic Research Unit. 2009. Table 1.
<http://www.dof.ca.gov/research/demographic/reports/#projections>.

THE EWC RESPONSIBLE EXPORTS PLAN ACTIONS

The main actions included in The Plan are underlined and described below:

1. Reduce Exports To No More Than 3MAF In All Years, In Keeping With SWRCB Flows Criteria.

Numerous scientific and legal investigations have identified Delta export pumping by the state and federal projects as one of the primary causes of the decline of the health of the Delta estuary and its fish. They include the California Fish and Game Commission's 2009 listing of longfin smelt under the Endangered Species Act; the US Fish and Wildlife Service's 2008 Biological Opinion for Delta smelt; the National Marine Service June 4, 2009 Biological Opinion on Central Valley Project (CVP) and State Water Project (SWP) Operations, the State Water Resources Control Board's Bay-Delta Water Quality Control Plan and Water Rights Decision 1641; the CALFED Bay-Delta Program's 2000 Ecosystem Restoration Program Plan; and the Central Valley Project Improvement Act's Anadromous Fish Restoration Program.

The guidelines of the Fish and Wildlife Service's Biological Opinion require reduced pumping in order to minimize reverse flows and the resultant fish kills during times of the year when Delta Smelt are spawning and the young larvae and juveniles are present.

The long-term decline of the Delta smelt coincides with large increases in freshwater exports out of the Delta by the state and federally operated water projects, (Figure 1). CALFED's Ecosystem Restoration Program reminds us that "the more water left in the system (i.e., that which flows through the Delta into Suisun Bay and eventually the ocean), the greater the health of the estuary overall; there is no such thing as 'too much water' for the environment."¹⁰

The main input to the Delta – the Sacramento River, which provides 70 percent of Delta inflow in average years¹¹ – does not provide sufficient water for all the present claimants except in wet years, and climate change is expected to decrease flows in the future. The system cannot provide full delivery of water to the most junior CVP and SWP contract holders in most years. Recent court-ordered water export limits that protect endangered fish species, the continuously deteriorating Delta earthen levees and the potential adverse effects of climate change on water supplies combine to make Delta water supply reliability a roll of the dice.

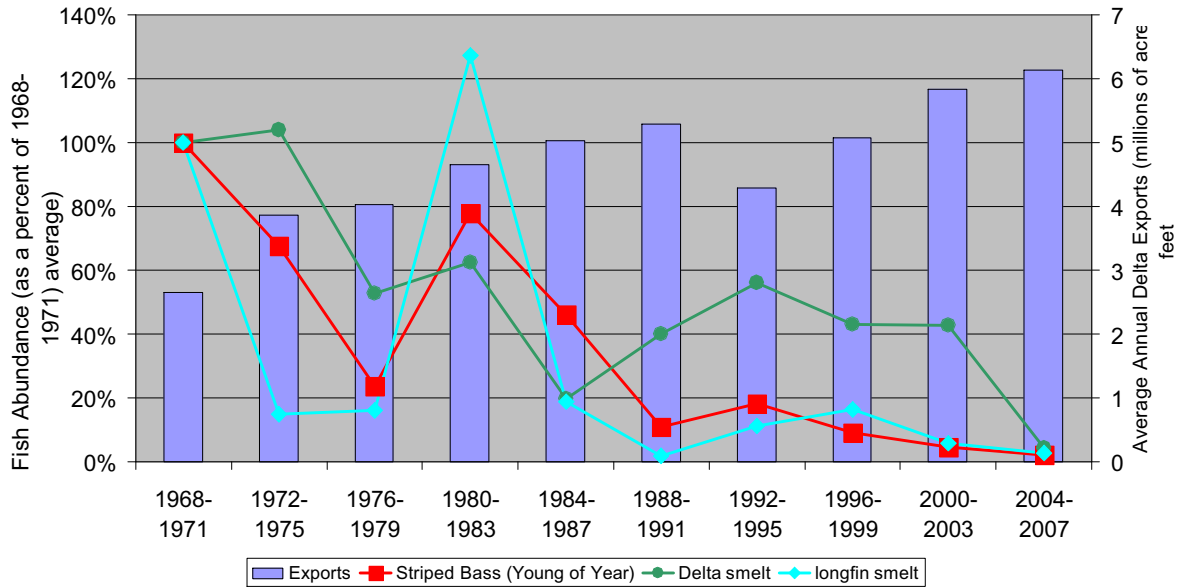
¹⁰ CALFED Ecosystem Restoration Program. 2008. Stage 2 Implementation Draft. P. 23.
http://www.delta.dfg.ca.gov/erp/reports_docs.asp

¹¹ Delta Vision Final Report. 2008. State of California Resources Agency. P. 41.
http://deltavision.ca.gov/BlueRibbonTaskForce/FinalVision/Delta_Vision_Final.pdf.

According to the recent National Marine Services Biological Opinion, the proposed actions by the CVP and SWP to increase export levels will exacerbate problems in the Delta.¹² We do not believe that the water exporters' goals of maintaining or increasing Delta exports are attainable; neither are the junior water rights holders' expectations that they should have a full contracted water supply each year, especially in view of the collapse of the Delta's fisheries and the impacts of climate change.

Figure 1

Historic Delta Exports and Estuarine Fish Populations



Source: Environmental Defense Fund.¹³ Original source is California Data Exchange Center and California Department of Fish & Game - Midwater Trawl Data

Strategic alternatives to the recent high levels of Delta water exports should now be the highest priority considerations for the state's water planning – especially in tandem with aggressive water use efficiency measures. The two are closely linked.

Over time, annual Delta outflows have been reduced on average by one half,¹⁴ with associated declines in native fish abundance. Export pumping from the Delta is a major cause of reduced outflows, but not the only one. Diversions for CVP contractors upstream of the Delta,

¹² National Marine Fisheries Service, Southwest Region. June 4, 2009. Biological Opinion And Conference Opinion On The Long-Term Operations Of The Central Valley Project And State Water Project. Page 629. http://swr.ucsd.edu/ocap/NMFS_Biological_and_Conference_Opinion_on_the_Long-Term_Operations_of_the_CVP_and_SWP.pdf.

¹³ Environmental Defense Fund. 2008. Finding the Balance. P. 3. http://www.edf.org/documents/8093_CA_Finding_Balance_2008.pdf

¹⁴ CALFED Ecosystem Restoration Program. 2008. Stage 2 Implementation Draft. P. 21. http://www.delta.dfg.ca.gov/erp/reports_docs.asp

combined with “non-project” (that is, non-federal, non-state) diversions, account for a significant portion of the reduction in outflow. In fact, 31 percent of upstream water is diverted annually before reaching the Delta.¹⁵ In the 1990s, under the threat of federal intervention, California increased the required outflow to the Bay, but not enough to restore the Delta ecosystem or prevent further declines.

Over the years, a number of processes have identified the need to dramatically improve outflows in order to recover listed species to a sustainable level and restore ecosystems in the Bay-Delta. From 1988, when the State Water Resources Control Board (SWRCB) proposed – but withdrew without public discussion – standards that would have required an average increase in outflow of 1.5 million acre-feet over the lower diversion levels of the period before the late 1980s, to 2009, when the California Legislature adopted a new policy of reducing reliance on the Delta for water supply uses, the need for greater outflow and reduced exports has been acknowledged – but not achieved. In 2010, the State Board is required to develop flow criteria that will fully protect public trust resources in the Delta. In all these years, no information has been developed that would contradict the Board’s 1992 draft finding that maximum Delta pumping in wet years should not exceed 2.65 million acre-feet in order to provide the necessary outflows to protect fish and the Bay-Delta ecosystems.¹⁶ The rebuttable presumption, consistent with the evidence of the last two decades and with the new state policy to reduce Delta water supply reliance, is that a total export number of no more than 3 million acre-feet in all water year types is prudent. The EWC organizations believe that a number at or near this level should now be used by the state and federal governments in planning and permitting future Delta export operations – with or without a Peripheral Canal – in order to promote the recovery of the Delta’s ecology and its fishery resources and to provide healthy Delta outflows to San Pablo and San Francisco Bays.

The Delta Flows Criteria promulgated by the State Water Resources Control Board (SWRCB) clearly indicates that the state has reached – and exceeded – the amount of water that can responsibly be diverted from the Bay Delta and Estuary. As a result, this plan anticipates future limitations on Delta exports below the level of the 2000-2007 time periods in its plan to meet Delta ecosystem restoration goals. The recent PPIC report reinforces this: “given the extreme environmental degradation of this region, water users must be prepared to take less water from the Delta, at least until endangered fish populations recover.”

As indicated in the recent SWRCB report,¹⁷ in order to preserve the attributes of a natural variable system to which native fish species are adapted, many of the criteria developed by the State Water Board are crafted as percentages of natural or unimpaired flows. These criteria include:

¹⁵ CALFED Ecosystem Restoration Program. 2008. Stage 2 Implementation Draft. P. 20.
http://www.delta.dfg.ca.gov/erp/reports_docs.asp

¹⁶ California Department of Fish and Game. 1992. Testimony on the Sacramento-San Joaquin Estuary to SWRCB Hearings on Bay Delta Water Quality Hearings. Page 11.

¹⁷ State Water Resources Control Board and California Environmental Protection Agency. DRAFT Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem. July 2010. Pp. 5.

- 75% of unimpaired Delta outflow from January through June;
- 75% of unimpaired Sacramento River inflow from November through June;
- 60% of unimpaired San Joaquin River inflow from February through June.
-

This compares with the historic flows over the last 18 to 22 years, which have been:

- About 50% on average from April through June for Sacramento River inflows;
- Approximately 30% in drier years to almost 100% of unimpaired flows in wetter years for Delta outflows;
- Approximately 20% in drier years to almost 50% in wetter years for San Joaquin River inflows.

In 2014, the State Board is required to develop flow criteria that will fully protect public trust resources in the Delta and Estuary. In all the years since 1988, no information has been developed that would contradict the Board's 1992 draft finding that maximum Delta pumping in wet years should not exceed 2.65 million acre-feet in order to provide the necessary outflows to protect fish and the Bay-Delta and Estuary ecosystems. The rebuttable presumption, consistent with the evidence of the last two decades and with the new state policy to reduce Delta water supply reliance, is that a total export number of no more than 3 million acre-feet in all water year types, except for drought years, is prudent.

The current approach of managing the Delta for water supply will almost certainly lead to intense pressures to make increased exports the major goal of a Peripheral Canal or tunnel while the health of the Delta and Estuary will be a lower priority. One of the main objectives of this Responsible Exports Plan is to decrease the physical vulnerability and increase the predictability of Delta supplies, not to increase average annual Delta exports. The current fallacy of the BDCP to increase exports while somehow recovering fish species and ecosystems leads directly to a warped scientific program as pointed out by The Bay Institute in their recent Briefing Paper on the BDCP Effects Analysis.¹⁸

Recent letters from the EPA and the Bureau of Reclamation indicate that the EPA believes that the (BDCP) EIS/EIR will need to include a significant analysis of alternatives reflecting reduced Delta inflow and reduced exports¹⁹ and that a significant increase in exports out of the Delta is inconsistent with recent state legislation (to reduce reliance on the Delta).²⁰

Changing the infrastructure will not solve the problem of a shrinking Delta water supply. A vigorous debate is now underway over whether a new isolated conveyance facility to move water around or under the Delta should be constructed – a revised version of the Peripheral Canal. Even those who support a new facility (and dual conveyance) as a solution to improve

¹⁸ The Bay Institute and Defenders of Wildlife. The BDCP Effects Analysis, Briefing Paper. February 2012. <http://www.bay.org/assets/BDCP%20EA%20Briefing%20Paper%2022912.pdf>

¹⁹ http://www.epa.gov/region9/water/watershed/sfbaydelta/pdf/EPA_Comments_BDCP_3rdNO_051409.pdf

²⁰ <http://www.epa.gov/region9/water/watershed/sfbay-delta/pdf/EpaR9CommentsBdcpPurpStmt6-10-2010.pdf>

environmental conditions and water supply reliability, including the Public Policy Institute,²¹ the Delta Vision Blue Ribbon Task Force, and some environmental groups, do not believe that constructing this new facility will generate any new water. Whether or not a new conveyance facility is approved and built, the inexorable trend will be for the reliability of north-to-south water transfers through or around the Delta to decline, and for water users who currently rely on Delta exports to seek alternative sources of supply and to increase their conservation and reuse of that supply.

According to the Bay Delta Conservation Plan,²² the version of the Peripheral Canal now under consideration would have the capacity to export 9,000 to 15,000 cubic feet of water per second (112,000 gallons per second) from a series of three to five massive intake structures on the Sacramento River north of the Delta. This almost exactly matches the existing capacity of the combined state and federal pumps. The current approach of managing the Delta for water supply will almost certainly lead to intense pressures to make increased exports the major goal of a Peripheral Canal while the health of the Delta will be a lower priority.

Reduced dependence on the Delta by south-of-Delta water users would also obviate the need for new conveyance around or under the Delta (a Peripheral Canal or tunnel) and new surface storage reservoirs, avoiding costs of perhaps tens of billions of dollars for taxpayers and the potential for stranded assets resulting from climate change and sea level rise in the Bay-Delta and Estuary. This reorientation will undoubtedly require some south-of-Delta infrastructure enhancements, but not nearly to the magnitude of costs for a Peripheral Canal or tunnels and a new reservoir north of the Delta.

Climate change projections indicate that over the longer term global warming will reduce the total amount of precipitation, including significant reductions in Sacramento River water. There is no indication that this has been factored into present plans, and it is possible that new conveyance for Sacramento River water may become a stranded asset.

Implementation and Funding. Implementation (and funding, if necessary) for the level of reduced exports will depend on the results of the State Water Resources Control Board hearings on Delta flows, which are scheduled to be completed during 2014. Subsequent to those hearings, implementation and funding plans will most likely fall within the purview of the state legislature.

²¹ Public Policy Institute of California. 2008. Comparing Futures for the Sacramento-San Joaquin Delta. P. 123-124.
http://www.ppic.org/content/pubs/report/R_708EHR.pdf

²² Bay Development Conservation Plan.
http://www.baydeltaconservationplan.com/CurrentDocumentsLibrary/Chapter_3_Conservation_Strategy_Combined_v2.pdf

2. Expand Statewide Water Efficiency And Demand Reduction Programs Beyond The Current 20/20 Program And Maximize Regional Self-Sufficiency In Accordance With The 2009 Delta Reform Act.

California has developed huge amounts of water for our cities and farms. Urban users consume 8.7 million acre-feet of water, and agriculture uses 34 million acre-feet in a typical year. (An acre-foot of water is the volume of water required to cover one acre of surface area to a depth of one foot, which is 325,900 gallons.) California has 1,400 major reservoirs with a combined storage capacity of 40 million acre-feet, thousands of miles of canals and enormous energy-consuming pumps to move the water around the state.

Despite all this abundance, there are fears of monumental water shortages, amplified by periodic drought conditions and climate change. One-third of water years in California since 1906 are considered “dry or critical” by the California Department of Water Resources; since 1960, dry or critical years have occurred 37 percent of the time, the increased frequency probably reflecting effects of our warming climate.²³ The worst and longest modern droughts have occurred since 1976. Farmers are concerned that they will be driven out of business for lack of water. In response, politicians want to build more major dams and canals to store and move more water at a time when climate change will most likely make less water available. More than 90 percent of our rivers have already been diverted for our use and publicly subsidized farm water has created an insatiable appetite for more. In view of the critical nature of water supply, irrigating water-intensive crops and drainage-impaired lands with huge amounts of water hardly fits a 21st century definition of the “beneficial and reasonable use” criteria called for in state law.

Recommendations made by the Environmental Water Caucus to the Delta Stewardship Council included an aggressive urban water conservation and efficiency program – more aggressive and of longer duration than the 20/20 program – and included both urban and agricultural users as a necessary component for reducing reliance on the Delta and achieving the water supply reliability goals for south-of-Delta users. A more aggressive conservation program also supports the goal of the reduced exports level of this alternative. We intend to continue our advocacy for this type of program with the Delta Stewardship Council.

Overwhelming evidence shows that a suite of aggressive conservation and water efficiency actions will reduce overall demand and provide cost effective increases in available and reliable water supply. These measures will handle California’s water needs well into the foreseeable future and will do so at far less financial and environmental cost than constructing more storage dams and reservoirs. This conclusion is reinforced by the current State Water Plan (Bulletin 160-09), by the Bay Institute’s “Collateral Damage” report, and by actual experience in urban areas and farms.

²³ California Data Exchange Center “WSIHIST,” Department of Water Resources.
<http://cdec.water.ca.gov/cgi-progs/iodir/wsihist>

Southern California, with its huge urban populations, can provide the major conservation impetus for water savings and demand reduction, as highlighted by the “Where Will We Get the Water?” report produced by the Los Angeles Economic Development Corporation.²⁴ This report shows a potential savings and demand reduction combination of approximately 1,700,000 million acre feet. These are potential savings that can be achieved through three main measures: urban conservation, recycling, and storm water capture. The potential recycling savings are larger with more investment in recycling facilities and potential future regulations related to outdoor urban usage. Southern California should clearly be the main focus for urban conservation measures.

These water efficiency and water use reduction actions are:

- Urban Water Conservation – including installing low-flow toilets and showerheads, high-efficiency clothes washers, retrofit-on-resale programs, rainwater harvest, weather-based irrigation controllers, reducing water for landscaping via drip and xeriscape, more efficient commercial and industrial cooling equipment, and tiered price structures.²⁵ According to the 2009 State Water Plan, total urban water demand can be reduced by 2.1 million acre-feet with these measures.²⁶ The referenced Los Angeles Economic Development Corporation report found that in Los Angeles, Orange, San Bernardino, San Diego, Riverside and Ventura counties, “urban water conservation could have an impact equivalent to adding more than 1 million acre-feet of water to the regional supply” (about 25 percent of current annual use). The same LAEDC report shows that urban conservation is by far the most economical approach, at \$210 per acre-foot, and especially compared with new surface storage at \$760 to \$1,400 per acre-foot.
- Urban Conservation Rate Structures – including the establishment of mandatory rate structures within the Urban Best Management Practices that strongly penalize excessive use and reward low water usage customers with lower rates, with the lowest being a lifeline rate to provide water for low income and low-water-using ratepayers. The savings that result from pricing policies are included in the 2.1 million acre-feet reduction cited above.
- Agricultural Water Conservation – including the continuing trend towards use of drip, micro sprinklers and similar higher technology irrigation, reduced deficit irrigation, transition to less water-intensive crops, reduced overall farmland acreage, elimination of the irrigation of polluted farmland, and tiered price structures. Conservation measures also include the elimination of indirect water subsidies provided to agriculture for Central Valley Project (CVP) water, which will drive some of the efficiencies shown in Figure 1.

²⁴ Los Angeles County Economic Development Corporation (LAEDC). 2008. Where Will We Get the Water? Assessing Southern California’s Future Water Strategies. P 6. http://www.laedc.org/consulting/projects/2008_SoCalWaterStrategies.pdf.

²⁵ A detailed treatment of urban water conservation is contained in *Waste Not, Want Not: The Potential for Urban Water Conservation in California*, by the Pacific Institute. http://www.pacinst.org/reports/urban_usage/waste_not_want_not_full_report.pdf.

²⁶ California Department of Water Resources. Update 2009. California Water Plan Update. Bulletin 160-09. V-2, P3-23. http://www.waterplan.water.ca.gov/docs/cwpu2009/0310final/v2c03_urbwtruse_cwp2009.pdf.

Demand reduction of as much as 5 million acre-feet per year could be achieved by 2030, according to Pacific Institute's *California Water 2030: An Efficient Future* report.²⁷

- Recycled Water – including the treatment and reuse of urban wastewater, gray water, and storm water, and achievement of the State Water Resources Board goal of increasing water recycling by at least an additional 2 million acre-feet per year by 2030. The 2009 State Water Plan indicates a figure of 2.25 million acre-feet that could be recovered. The LAEDC report shows recycled water costs \$1,000 per acre-foot.
- Groundwater Treatment, Demineralization and Desalination – including the treatment of contaminated groundwater and the use of groundwater desalination. The cost of groundwater desalination ranges from \$750 to \$1,200 per acre-foot.
- Conjunctive Management – which engages the principles of conjunctive water use (the planned release of surface stored water to recharge groundwater basins), where surface water and groundwater are used in combination to improve water availability and reliability. It also includes important components of groundwater management such as monitoring, evaluation of monitoring data to develop local management objectives, and use of monitoring data to establish and enforce local management policies. Now that the value of maintaining integrated, healthy hydrologic systems for ecological and economic purposes is well known, the use of conjunctive management should give priority to seriously disrupted groundwater basins. Without scientific studies that are needed to support conjunctive water management, or judicial oversight in some cases, many aquifers and surrounding groundwater can be harmed by the biggest users.
- Storm Water Recapture and Reuse – The 2008 Scoping Plan for California's Global Warming Solutions Act of 2006 promotes storm water collection and reuse. The plan finds that up to 333,000 acre-feet of storm water could be captured annually for reuse in urban southern California alone.²⁸ The LAEDC report also found the potential for "hundreds of thousands of acre-feet" of water from storm water capture and reuse in southern California counties.²⁹ The Los Angeles and San Gabriel Watershed Council has estimated that if 80 percent of the rainfall that falls on just a quarter of the urban area within the watershed (15 percent of the total watershed) were captured and reused, total runoff would be reduced by about 30 percent. That translates into a new supply of 132,000 acre-feet of water per year or enough to supply 800,000 people for a year.³⁰

²⁷ Pacific Institute. *California Water 2030: An Efficient Future*. September 2005.
http://www.pacinst.org/reports/california_water_2030/ca_water_2030.pdf

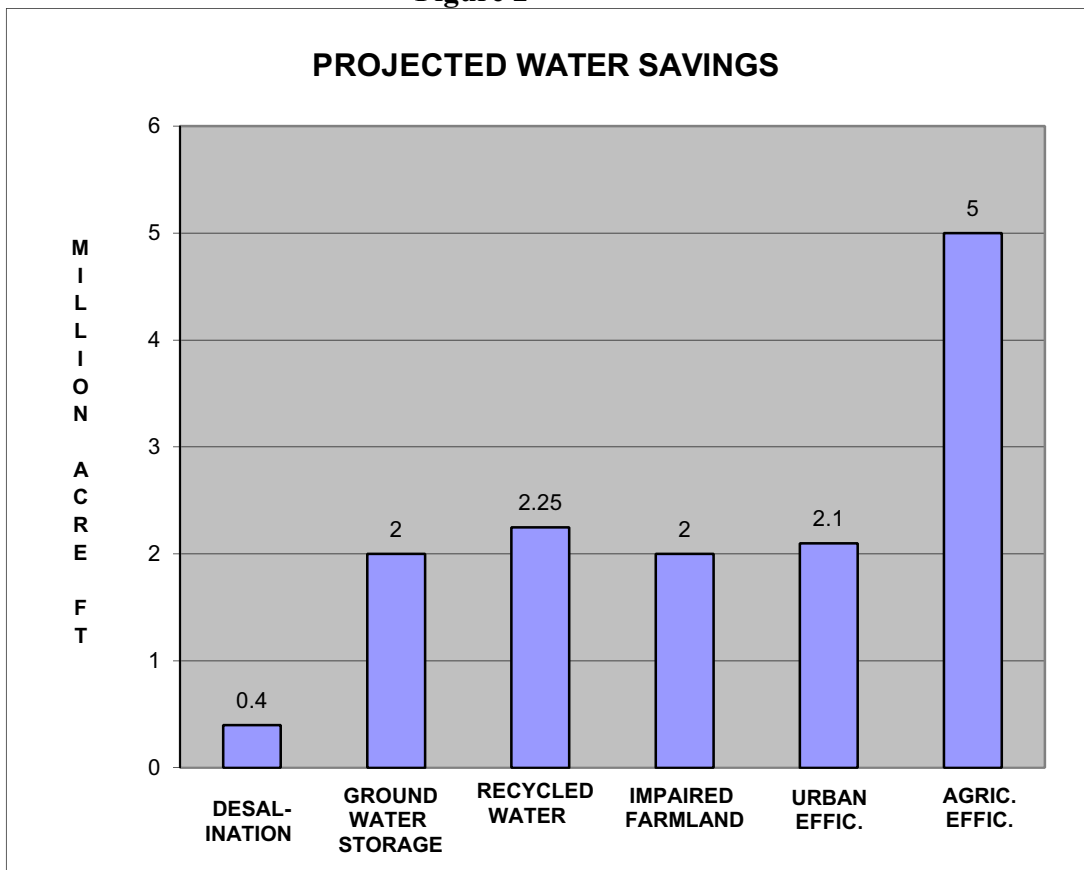
²⁸ Climate Change Scoping Plan Appendices Volume I. December 2008. Pursuant to AB 32 The California Global Warming Solutions Act of 2006. C-135.
http://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdf.

²⁹ Los Angeles County Economic Development Corporation (LAEDC). 2008. *Where Will We Get the Water? Assessing Southern California's Future Water Strategies*. P 32-33.
http://www.laedc.org/consulting/projects/2008_SoCalWaterStrategies.pdf.

³⁰ California Department of Water Resources. Update 2005. *California Water Plan Update*. Bulletin 160-05. P..21-3.
<http://www.waterplan.water.ca.gov/previous/cwpu2005/index.cfm>

Based on data from the State Water Plan (Bulletins 160-05 and 160-09),³¹ the Planning and Conservation League (PCL)³² and the Pacific Institute,³³ the savings that can be achieved from these efficiency scenarios are estimated to be 13 million acre-feet per year (Figure 2). Perhaps the most authoritative report on the subject, the Pacific Institute's *California Water 2030: An Efficient Future* shows that overall statewide water usage can be reduced by 20 percent below 2000 levels – given aggressive efforts to conserve and reduce usage with readily available

Figure 2



technology and no decrease in economic activity. The urban water savings of approximately 5 million acre-feet a year (when including recycled municipal water and part of the groundwater

³¹ California Department of Water Resources. Update 2005. California Water Plan Update. Bulletin 160-05. V2 1-5.
<http://www.waterplan.water.ca.gov/previous/cwpu2005/index.cfm>

³² Planning and Conservation League. 2004. Investment Strategy for California Water. P. 8-11.
<http://www.pcl.org/projects/investmentstrategy.html>

³³ Pacific Institute. 2005. California Water 2030: An Efficient Future. ES-2.
http://www.pacinst.org/reports/california_water_2030/ca_water_2030.pdf

storage) shown in Figure 1 is enough water to support a population growth of almost 30,000,000 people. According to the California Water Plan Update 2009, the state's population can be expected to increase by 22,000,000 over the next 40 years if current population trends hold. Clearly, a well-managed future water supply to take us to 2050 is within reach with current supplies and with an aggressive water conservation program.

In order to translate these aggressive efficiency measures into actual demand reductions, we need heightened public awareness of these targets and focused state oversight and coordination of local and statewide actions. Existing success stories from urban communities and on-farm operations reinforce the savings potentials and the need for efficiency-driven policies; they are described in detail in a number of the references cited in this report. The Governor's recent mandate for a 20 percent reduction in per capita urban water use by 2020 is the kind of action that will help this effort, although it may prove insufficient in view of projected population growth. Under the Governor's plan, per capita urban use would be reduced from the current 192 gallons per capita daily to 154 gallons, resulting in an annual savings of 1.74 million acre-feet. The projected water savings shown in Figure 1 are more aggressive than the Governor's plan. A similar mandate should be extended to agriculture, since agriculture uses more than three quarters of the state's developed water supplies. Water savings through efficiency measures can result in direct reductions in the volume of Delta exports since most of the savings would occur in cities and farms south of the Delta. These water savings are necessary to reduce the exports and to restore the stream flows called for in this plan.

The Natural Resources Defense Council's report *Transforming Water Use: A California Water Efficiency Agenda for the 21st Century* cites the state's successes in energy efficiency as a model for water efficiency while noting that the state lags far behind in water efficiency policies, programs, and funding. A key component of the success in energy efficiency has been the development of a priority system called a Loading Order.³⁴ As applied to water policy, a Loading Order system would require demand reductions through improved water efficiency to be the first priority in addressing water supply, the second priority would be developing alternative sources including water recycling, groundwater clean-up and conjunctive use programs (with priority going to seriously disrupted hydrologic systems or where judicial oversight occurs), and third would be the use of more traditional supply options. A Loading Order approach, if applied to statewide, regional, and local water plans, would shift the emphasis to the more efficient and cost effective approaches advocated in this report. Reducing water use through conservation efficiencies or water recycling also has a favorable impact on energy use, as pointed out by *Energy Down the Drain*, a report produced by the Natural Resources Defense Council and the Pacific Institute.³⁵ The report makes a strong case for the link between water and energy efficiencies. All of these conservation and efficiency methods are known to produce available water at significantly less cost than constructing new storage dams and reservoirs—the third

³⁴ Natural Resources Defense Council. 2007. *Transforming Water Use: A California Water Efficiency Agenda for the 21st Century*. P. 2. www.deltavision.ca.gov/BlueRibbonTaskForce/Feb28_29/Handouts/BRTF_Item_5A_HO2.pdf.

³⁵ Natural Resources Defense Council and Pacific Institute. 2004. *Energy Down the Drain*. ES-v. http://www.pacinst.org/reports/energy_and_water/index.htm.

option in the Loading Order. According to the Los Angeles County Economic Development Corporation (LAEDC) report,³⁶ water produced from the proposed Sites and Temperance Flat Reservoirs would cost \$760 to \$1,400 per acre-foot, while conserved or recycled water typically costs between \$210 and \$1,000 per acre-foot. New surface storage is by far the highest cost alternative per acre-foot of water for all the alternatives examined by the Legislative Analysts Office (LAO) report *California Water: An LAO Primer*,³⁷ while providing less total annual yield than most alternatives. Statewide, the costs of all of these efficiency measures will in all probability not exceed the potential \$78 billion price tag for the various Peripheral Canal and new surface storage proposals.³⁸ For all of these reasons – as well as the historically ecosystem damaging impacts of major dams – EWC member organizations oppose the construction of Sites and Temperance Flat Reservoirs and the raising of Shasta Dam in favor of the more effective efficiency measures described above. Raising Shasta Dam on the Sacramento River would also be illegal because of its impact on the Wild River status of the McCloud River and its damaging impact on Winnemen Wintu sacred areas.

Implementation Considerations. Implementation requires legislative to accomplish the following:

- Establish a statewide oversight unit responsible for the coordination of the level of supply enhancements and demand reductions called for in this report. This measure can be accomplished with little additional cost to the state by utilizing some of the existing DWR staff, supplemented with additional funding to coordinate the water efficiency program targets.
- Pass legislation and provide funding to establish a California water efficiency education and publicity program, similar to other health and safety programs that are sponsored and publicized by the state. The program must ensure the equitable distribution of conservation investments among rural and low income communities.
- Adopt the Natural Resources Defense Council’s recommendations to the Delta Vision Commission regarding water efficiency Loading Order. That would include a Loading Order policy through the State Water Control Resources Board, the State Public Utilities Commission and the Legislature that establishes water use efficiency as the top priority as well as a public goods surcharge on every acre-foot of water delivered in California, with the proceeds used to fund or subsidize efficiency programs.

Implementation and Funding for the above actions can come from existing or future bond funds, from Title 16 funding, or through regulatory changes. Additionally, since rate payers will bear the ultimate costs of these and other types of changes, rate payers will have to be given a voice in the choices made. Based on the LAEDC report, estimated costs for a statewide program along

³⁶ Los Angeles County Economic Development Corporation (LAEDC). 2008. Where Will We Get the Water? Assessing Southern California’s Future Water Strategies. P 32-33. http://www.laedc.org/consulting/projects/2008_SoCalWaterStrategies.pdf.

³⁷ Legislative Analyst’s Office. 2008. California’s Water: An LAO Primer. P. 67. http://www.lao.ca.gov/2008/rsrc/water_primer/water_primer_102208.aspx.

³⁸ Strategic Economic Applications Company. 2009. The Sacramento San Joaquin Delta – 2 0 0 9, An Exploration of Costs, Examination of Assumptions, and Identification of Benefits, Draft.

the lines shown in Figure 2 might range up to \$2.7 billion (through 2025), with most of the costs occurring in Southern California urban areas.

3. Provide Public Trust Protections And Thorough Economic And Sociological Analyses Of Reasonable Alternatives To Various Export Levels.

The California Supreme Court, in the Mono Lake decision, explicitly set forth the state's "affirmative duty to take the public trust into account in the planning and allocation of water resources and to protect public trust uses whenever feasible." Planning and allocation of limited and oversubscribed resources imply analysis and balancing of competing demands. So far we find little effort to balance the public trust obligations and resolve competing demands within the current planning processes (BDCP).

One of the significant flaws of previous and unsuccessful Bay-Delta proceedings has been the absence of a comprehensive economic evaluation of the benefits of protecting the estuary and in-Delta beneficial uses compared to the benefits of diverting and exporting water from the estuary. This absence has deprived decision makers and the public of critical information fundamental to reaching informed and difficult decisions on balancing competing demands.

Beyond protecting California's common property right in public trust resources, the balancing of limited water supplies must address the relative economic value of competing interests. For example, what is the societal value in providing Kern County, comprising a fraction of one percent of the state's population and economy, the same quantity of Delta water as the South Coast, with half the state's population and economy? What is the value to society of using public subsidies to irrigate impaired lands to benefit some 600 landowners, and that, by the nature of being irrigated, discharge harmful quantities of toxic waste that impairs other beneficial uses? What is the economic value of using twice the amount of water to irrigate an orchard in the desert than is required elsewhere? What are the costs and benefits of reclamation, reuse, conservation, and development of local sources? The preceding are only examples of the difficult questions that must be addressed in any allocation of limited resources and balancing of the public trust. Economic analysis is crucial to providing the insight and guidance that will enable and Delta plan to meet its mandate. Without such analysis, we do not believe a Delta plan can successfully or legally comply with its legislative and constitutional obligations.

An excellent description of the public trust type of issues caused by the current operations in the Delta and Estuary are contained in the Bay Institute report "Collateral Damage."³⁹

Implementation and Funding for a balancing of the public trust values will depend on the results of the State Water Resources Control Board hearings on Delta flows, which are

³⁹ The Bay Institute. Collateral Damage. March 2012. <http://www.bay.org/publications/collateral-damage>

scheduled to be completed during 2014. Subsequent to those hearings, implementation and funding plans will most likely fall within the purview of the state legislature.

4. Reinforce Core Levees Above PL84-99 Standards.

This plan accepts and supports the Delta Protection Commission's recommendation in their Economic Sustainability Plan to: "Improve many core Delta Levees beyond the PL 84-99 standard that addresses earthquake and sea-level rise risks, improve flood fighting and emergency response, and allow for vegetation on the water side of levees to improve habitat. Improvement of most core Delta levees to this higher standard would cost between \$2 to \$4 billion."⁴⁰

There is a plausible public interest in providing public funds to Delta reclamation districts and other Delta interests for levee upgrades since the Delta serves as the water conveyance facility for much of California. Water exporters should be required to identify which levees, if any, *they want to fund to a higher standard* (for example more earthquake resistant) to protect their water supply, beyond the current standards. Recommendations should also include assisting Delta counties and communities in meeting FEMA/NFIP programs. The plan should also contain a recommendation to support and increase public funding for permanent continuation of existing and highly successful statutory cost-share formula and funding for Delta (Subventions) Levee Program. Public safety and flood protection must remain the top priority of the State Plan of Flood Control, including its levees and bypasses. The levees should be vegetated with native species to help stabilize the levees and support endangered species.

Because earthquake risks to the levees are one of the main justifications for a Peripheral Canal or Tunnel in the Delta, and there is evidence that the earthquake risks to the Delta levees may have been exaggerated in previous drafts of the Economic Sustainability Plan, the comparison of costs of the two alternatives (\$2 to \$4 billion for levee strengthening versus \$15-\$16 billion for new conveyance) is significant and should be incentive enough to immediately initiate this levee reinforcement program and make catastrophic levee failure a questionable justification for new conveyance.

Implementation and Funding would be in keeping with the Delta Protection Commission's Economic Sustainability Plan, between \$2 to \$4 billion.

⁴⁰ Draft Executive Summary, Economic Sustainability Plan for the Sacramento-San Joaquin River Delta, March 10, 2011
http://www.delta.ca.gov/res/docs/ESP_ESUM.pdf

5. Install Improved Fish Screens At Existing Delta Pumps.

A recent report by Larry Walker Associates indicates that a 1996 report by DWR and DFG concluded that for every salmon salvaged at the fish protection facilities more than three are lost to predators or through fish screens.⁴¹ The same report also indicated that over a 15 year period (1979-1993), 110 million fish were reported to have been salvaged at the Skinner Fish Facility, the fish protection facility at the SWP. In 2000, the CALFED Record of Decision highlighted the need to improve the fish screens at the South Delta pumps. Between 2000 and 2011, more than 130 million fish have been salvaged at the State and Federal Project water export facilities in the South Delta, according to a more recent DFG report.⁴² Actual losses are far higher. For example, recent estimates indicate that 5-10 times more fish are lost than are salvaged, largely due to the high predation losses in and around water project facilities.⁴³ Additionally, the fish screens are unable to physically screen eggs and larval life stages of fish from diversion pumps.⁴⁴ The losses of eggs and larval stages of fish, as well as the enormous losses of zooplankton and phytoplankton that comprise the base of the aquatic food chain, go publically unacknowledged and uncounted.

As pointed out in the Walker Associates report, the fish protections at the South Delta pumps, including the fish screens and salvage facilities, remain largely unchanged since they were first engineered more than 40 years ago.⁴⁵ Currently only about 11-18% of salmon or steelhead entrained in Clifton Court Forebay survive. Based upon numerous studies by DFG, DWR and academic researchers, 75% of fish entering Clifton Court Forebay are lost to predation, 20-30% of survivors are lost at the salvage facility louvers, 1-12% of salvaged fish are lost during handling and trucking plus an additional 12-32% lost to post-release predation.⁴⁶ As related above, losses to other species, such as Delta smelt or the egg and larval stages of pelagic species and salmon fry, are believed to be much higher. For example, some species, like Delta smelt, cannot survive salvage transport, and the losses approach 100%.

According to the draft BDCP Effects Analysis' Summary of Effects of BDCP on Entrainment of Covered Fish Species, South Delta export facilities could potentially increase entrainment of:

- Juvenile steelhead in dry and critical dry years,
- Juvenile Winter-run Chinook salmon in above normal & below normal years,

⁴¹ Larry Walker Associates. A Review of Delta Fish Population Losses from Pumping Operations in the Sacramento-San Joaquin River Delta. January 2010. <http://www.srcsd.com/pdf/dd/fishlosses.pdf>. Page

⁴² California Department of Fish and Game annual salvage reports for the State Water Project and Central Valley Project's fish facilities, 2000-2011.

⁴³ Larry Walker Associates. A Review of Delta Fish Population Losses from Pumping Operations in the Sacramento-San Joaquin River Delta. January 2010. P. 2. <http://www.srcsd.com/pdf/dd/fishlosses.pdf>

⁴⁴ DWR. Delta Risk Management Strategy, final Phase 2 Report, Risk Report, Section 15, Building Block 3.3: Install Fish Screens. June 2011. P. 15-18.

⁴⁵ Ibid, Larry Walker Associates,

⁴⁶ Larry Walker Associates. A Review of Delta Fish Population Losses from Pumping Operations in the Sacramento-San Joaquin River Delta. January 2010. P. 2.

- Juvenile Fall-run Chinook salmon in all below normal & dry years and Fall-run smolts in all years,
- Juvenile late fall-run Chinook salmon in dry and critical dry years,
- Juvenile Longfin smelt in above normal, below normal, and dry years and adults in critical dry years, and
- Juvenile Sacramento splittail in all years.⁴⁷

Because of flow requirements and biological constraints affecting diversions from the Sacramento River, exports from the South Delta pumps will remain a significant percentage of total water exports with BDCP. BDCP currently estimates that 50% of State and Federal Project exports would come from the existing South Delta diversion facilities in average water years and as much as 75-84% in dry and critical water years.⁴⁸ In fact, BDCP modeling suggests that exports and fish entrainment from South Delta diversions could potentially increase in certain water year types and for critical life stages of certain species.⁴⁹

The *CALFED Bay-Delta Program Programmatic Record of Decision* and associated Biological Opinions required the construction of new state-of-the-art fish screens at existing South Delta export facilities in 2000.⁵⁰ A funding plan was to be completed by early 2003, facilities design completed by the middle of 2004, and operations and performance testing to begin by the middle of 2006.⁵¹ However, the explicit commitment to construct new screens was put on hold in 2003 after the State and Federal Project Contractors indicated that they would not pay for them. New South Delta screens are not included as part of the BDCP. As BDCP will continue to rely on the South Delta pumps for a substantial percentage of project exports, new screens must be required to mitigate for project impacts.

DWR's *Delta Risk Management Strategy (DRMS) Phase 2 Report* found that the South Delta pumping facilities could be successfully screened by multiple in-canal vee-type screens of about 2,500 cfs capacity in each module. These new state-of-the-art South Delta screens, placed

⁴⁷ ICF International. BDCP Effects Analysis, Entrainment, Appendix 5.B, Entrainment, Administrative Draft Bay Delta Conservation Plan. March 2012. PP. B.7-2 – B.7-4.

⁴⁸ NRDC. A Portfolio-Based BDCP Conceptual Alternative. February 2013.

<http://switchboard.nrdc.org/blogs/bnelson/Portfolio%20Based%20BDCP%20Conceptual%20Alternative%201-16-13%20V2.pdf>

ICF International. BDCP Effects Analysis, Appendix 5.B, Entrainment, Administrative Draft Bay Delta Conservation Plan. March 2012. P. B.0-8.

http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/BDCP_Effects_Analysis_-_Appendix_5_B_Entrainment_3-30-2012.sflb.ashx

⁴⁹ ICF International. BDCP Effect Analysis, Appendix 5.B, Entrainment, Administrative Draft Bay Delta Conservation Plan. March 2012. PP. B.0-4 – B.0-11.

⁵⁰ CalFed. Programmatic Record of Decision. August 2000. P. 49. Including Attachment 6A, U.S. Fish and Wildlife, Programmatic Endangered Species Act Section 7 Biological Opinion, P. 36 and Attachment 6B, National Marine Fisheries Service, Programmatic Endangered Species Act Section 7 Biological Opinion, P. 27. <http://www.calwater.ca.gov/content/Documents/ROD.pdf>

⁵¹ Larry Walker Associates. A Review of Delta Fish Population Losses from Pumping Operations in the Sacramento-San Joaquin River Delta. January 2010. P. 18.

at the entrance to Clifton Court Forebay, would eliminate the 75% predation in the Forebay and successfully protect fish longer than about 25 mm in length.⁵² While new screens would be expensive, still require transport of salvaged fish, not totally resolve debris removal issues or eliminate all fish entrainment, they would dramatically reduce the appalling fish losses that occur at present.⁵³

Modernizing the fish screens at the South Delta facilities is an integral part of the EWC's RX Plan in order to reduce fish killing at the pumps. The South Delta pumps will continue to be the primary diversion facilities under this RX Plan.

While experience with the existing fish screens at the South Delta have yielded much data on how to design more effective fish screens, modernizing the fish screening designs and operations would also require hydraulic and physical modeling, dimensional testing of dynamic baffling systems, and consideration of future hydrologic conditions associated with climate change.

The EWC supports the development and implementation of significantly modernized, new fish screening facilities with the best available technology, in keeping with original CALFED plans, and at other existing in-Delta diversions. This would include installation of positive barrier fish screens on all diversions greater than 250 cfs in both the Sacramento and San Joaquin River Basins as well as a significant percentage of smaller and unscreened diversions in these ecosystems.

An alternative possibility is the use of non-physical barriers to deter fish from entering the intake zones of the South Delta pumps. Non-physical barriers include the use of the following methods: electrical barriers; strobe lights; acoustic fish deterrents; bubble currents; velocity barriers; chemical toxicants; pheromones; and magnetic fields. In view of the criticality of recovering fish populations through reduced mortality at the pumps, the feasibility of these types of non-physical barriers should not be overlooked. The Bureau of Reclamation has recorded some research results of the use of non-physical barriers.⁵⁴

Implementation and Funding. Based on unpublished CALFED cost estimates improved fish screen facilities at the Banks Pumps would be more than \$1 billion in 2007 dollars; the cost estimate for Tracy would be \$290 million.⁵⁵

⁵² DWR. Delta Risk Management Strategy, final Phase 2 Report, Risk Report, Section 15, Building Block 3.3: Install Fish Screens. June 2011. P. 15-18.

http://www.water.ca.gov/floodsafe/fessro/levees/drms/docs/DRMS_Phase2_Report_Section15.pdf

⁵³ Id. 15.5.2.1 Conclusion at PP. 15-19 & 15-20.

⁵⁴ Bureau of Reclamation. Non-Physical Barrier (NPB) for Fish Protection Evaluation: Can an Inexpensive Barrier Be Effective for Threatened Fish? <http://www.usbr.gov/research/projects/detail.cfm?id=8740>

⁵⁵ http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/DRMS_Phase2_Report_Section15.pdf

6. Keep Water Transfers Within The Revised Delta Export Limits.

Since the early 1990s, water transfers via market transactions have been used to overcome what some economists and water managers feel is the inflexibility of California water rights priorities—first in time, first in right. Such transfers typically become most visible to the public during drought years, when junior water rights holders like the federal Central Valley Project and the State Water Project face cutbacks as more senior water right holders exert their priority to what water that remains. Junior water rights holders attempt to obtain more surface water supplies by offering to purchase water directly from willing sellers, who are usually holders of senior water rights. With groundwater unregulated in California, these willing sellers are able to make large profits by pumping groundwater to irrigate their crops to substitute for the surface supplies they sold to other users.

This is a recipe for ecological disaster in the Delta and both ecological and economic disaster in the Sacramento Valley. Water transfers are intended to overcome water rights priorities, but they also have the potential to cause falling groundwater elevations, overdraft (pumped supplies outracing the rate of recharge to the aquifer), land subsidence (where the elevation of the land surface actually falls as emptied aquifers collapse and lose storage capacity), and increased stream flow losses (chasing a falling groundwater table). This has been the experience of agricultural regions in the Santa Clara Valley (before it urbanized into Silicon Valley) and the San Joaquin Valley, as well as in urban groundwater basins of the Los Angeles region. These conditions (falling groundwater elevations, overdraft, land subsidence, and stream flow losses) combined to destabilize once healthy hydrologic systems, which created the exploited conditions that make “conjunctive use” water strategies possible. This must not be repeated in the Sacramento Valley.

The State of California during past droughts has operated a “drought water bank” program which arranges the sales of Sacramento Valley region surface water to buyers south of the Delta. Two environmental problems arise from this program: First, the water that is sold must be moved through the Delta to be pumped by the dangerous export pumps of the CVP and SWP. Second, landowners selling their surface water may then pump groundwater to irrigate their crops, which causes groundwater elevations to fall for all users. If these conjunctive use programs continue in the Sacramento Valley, its aquifers are in jeopardy. This Valley’s agricultural economy, ecology, and surface waters are highly dependent on its natural groundwater abundance.

No net new water transfers should be exported from north of the Delta beyond those of the most senior water rights of the San Joaquin River Exchange Contractors in the San Joaquin Valley. Their supplies are already imported to the San Joaquin Valley as part of normal export operations of the Central Valley Project from the Delta, and the Exchange Contractors have already begun operating a water transfer program consisting of a maximum of 150,000 acre-foot for sale (about 5 percent of EWC’s recommended cap on Delta exports). This policy protects the Delta from new export pumping impacts, but it also protects for the long term the groundwater supplies of the Sacramento Valley. Having such a policy in place is the only way

for the Valley's farmers to avoid having their groundwater usage go the way of the San Joaquin Valley's in the 19th and 20th centuries. There are other senior water rights holders in the San Joaquin River Basin who are also being approached for dry year water supplies, such as San Francisco seeking to purchase water from irrigation districts along the Tuolumne and Stanislaus rivers.

Water transfers through the Sacramento-San Joaquin-San Francisco Delta and Estuary – which include individual water sales transactions, Article 21 State Water Project pumping and the pumping of the Central Valley and the State Water Projects' contracts – play, at times, a significant role in the movement and transfer of water throughout the state and have significant impacts on the ecology of the Estuary. The two latter projects provide the largest percentage of transfers through the Delta while water sales and Article 21 pumping in some years is significant.

A new paradigm is needed in California water policy that would simultaneously reduce the transfer pumping through the Delta to a level that maintains a healthy ecosystem and is consistent with the most senior water rights of the Exchange Contractors while providing more logical and reliable sources of water for south-of-Delta water users. Instead of continuing to export extraordinary amounts of water from the Delta, south-of-Delta water users could obtain significant amounts of water from localized south-of-Delta sources in the San Joaquin Valley region. Such “south-to-south” of Delta trades would avoid the impacts on fish and wildlife species, water quality, ecosystem conditions, flow volumes and directions, and groundwater in the Sacramento Valley that come with excessive Delta export pumping. It would also avoid the groundwater substitution transfers that could ruin the agricultural economy of the Sacramento Valley and the vital streams necessary for already struggling aquatic and terrestrial species. This type of move toward regional self-sufficiency is now state law from passage of the Delta Reform Act of 2009. As of early 2012, however, pending federal legislation would go in the opposite direction and allow more dependence on Delta exports through water sales and “surplus” water pumping.

A more favorable scenario than the present and contemplated heavy north-to-south Delta pumping consists of the following changes in supply orientation:

- San Joaquin Valley water users could be incentivized to voluntarily share resources by providing southern Sierra water to south-of-Delta water users through new interties with existing infrastructure, or by providing for the movement of agricultural water from the east side of the San Joaquin Valley, where water is more abundant, to west side agriculture, where the water supply is more limited. This kind of change can be facilitated with efficiency incentives for east side water users and might result in as much as 500,000 acre-feet of additional water for the west side. Although politically difficult, this is an elegantly simple and effective solution for regional self-dependency for south-of-Delta agriculture users and for all of California. This kind of change would have to consider the required outflows to the Delta Estuary from the San Joaquin River.

- Supplies for the Metropolitan Water District and other south-of- Delta users could be sourced from the natural reservoir that is Tulare Lake by allowing flows from the Kern, Kings, Kaweah, and Tule Rivers to flow into the Tulare basin. This option is being advocated by the San Joaquin Valley Leadership Forum, which has determined that surface storage capacity in the Tulare Lake Basin could be more than 2.5 million acre-feet. This option may require a new Kern-San Joaquin intertie. Reorienting water transfer policies to benefit south-of-Delta water users will require further detailed analysis to confirm its feasibility; however, the potential for these measures to comply with the state requirement to reduce reliance on the Delta to the level recommended above deserves serious consideration.

A Water Transfer Matrix and a set of Water Transfer Principles are included in the referenced EWC report *California Water Solutions Now*.

As called for in the California Water Code, transfers that use State, regional or a local public agency’s facilities require that the facility owner determine that the transfers not harm any other legal user of water, not unreasonably affect fish and wildlife, and not unreasonably affect the overall economy of the county from which the water is transferred. Unfortunately, there is no enforcement mechanism except litigation, which is an onerous burden for the public. This is a particular concern in the Sacramento Valley, where existing healthy aquifers could be over drafted by willing sellers in order to supply the same San Joaquin irrigators who caused the existing overdraft conditions in the San Joaquin areas. In addition, the State Water Plan points out that “some stakeholders worry that State laws and oversight of water transfers may not be adequate to protect the environment, third parties, public trust resources, and broader social interests that may be affected by water transfers, and transfers that involve pumping groundwater, crop idling, or crop shifting.” The EWC plan would come down on the side of county of origin protections and the “precautionary principle” in order to protect existing healthy groundwater aquifers north of the Delta Estuary.

Implementation and Funding. No estimates available

7. Eliminate Irrigation Water On Drainage-Impaired Farmlands Below The Bay Delta.

Selenium, boron, molybdenum, mercury, arsenic and various other salts and minerals are highly concentrated in the soils of the Delta-Mendota Service Area and the San Luis Units of the CVP, as well as portions in the Kern and Tulare basins served by the SWP. Descriptions of these soils are presented in the 1990 joint federal and state report known as “The Rainbow Report.”⁵⁶

⁵⁶ U.S. Department of the Interior, California Resources Agency. September 1990. A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley. P. 2-3.
http://www.water.ca.gov/pubs/groundwater/a_management_plan_for_agricultural_subsurface_drainage_and_related_problems_on_the_westside_san_joaquin_valley/rainbowreportintro.pdf

The San Luis Act of 1960 requires a drain system as a condition of approval of the San Luis Unit CVP contracts, which includes the Westlands Water District. Initially, the Bureau of Reclamation planned to build a San Luis Master Drain to the Bay-Delta from these lands, but construction of the drain to the Delta was stopped after 93 miles were completed to the Kesterson Reservoir near Los Banos. The US Geological Survey recently estimated that even if the San Luis Drain were completed, irrigation of the San Luis Unit of the CVP were halted, and 42,500 pounds of selenium a year were discharged into the Delta, it would take 65 to 300 years to eliminate the selenium already built up in valley groundwater.⁵⁷

Since the late 1960s and 1970s, the State Water Project and Central Valley Project have been supplying water to approximately 1.3 million acres of drainage impaired land on the west side of the San Joaquin Valley; this is a clear violation of the State Constitution's prohibition against unreasonable use of the state's water.⁵⁸ Eliminating or reducing the irrigation of this land would save up to 2 million acre-feet of water in most years.⁵⁹

Farmers and water districts throughout the Western San Joaquin Valley try to reduce their drainage water. However, retiring these lands from irrigated agriculture remains by far the most cost-effective and reliable method to eliminate harmful drainage discharges to water bodies and aquifers. The Westlands Water District has already retired 100,000 acres; a recent federal report discusses an option to retire 300,000 acres of drainage-impaired lands.⁶⁰ Any long-term solution to the west side's drainage problem must be centered on larger-scale land retirement, complemented by selective groundwater pumping, improved irrigation practices, and application of new technologies where appropriate. Any approach that is not founded on land retirement will ultimately continue to store and concentrate selenium and salts in the shallow aquifers, where they may be mobilized by flood events or groundwater transport.

Taking much of these "badlands" out of production would reduce demand for Delta water diversions and significantly improve water quality in the San Joaquin River. A planned program of land retirement and other drainage volume reduction actions should also provide for mitigation for impacts to the farm labor community. Even if irrigation deliveries continue, these lands will ultimately go out of production because of drainage impairment, as pointed out in the federal "Rainbow Report." A far better use of these impaired farmlands would be to provide state or federal incentives for the production of solar energy farms.

Implementation and Funding. No current estimates available.

⁵⁷ Presser, Theresa S. and Samuel N. Luoma. 2007. Forecasting selenium discharges to the San Francisco Bay-Delta Estuary: Ecological effects of a proposed San Luis Drain Extension. The US Geological Survey, Professional Paper 1646. Abstract P. 1. <http://pubs.usgs.gov/pp/p1646/>

⁵⁸ California Constitution. Article 10, Section 2. http://www.leginfo.ca.gov/const/article_10.

⁵⁹ Pacific Institute. 2008. More with Less: Agricultural Water Conservation and Efficiency in California. P.7. http://www.pacinst.org/reports/more_with_less_delta/index.htm

⁶⁰ U.S. Geological Survey. 2008. Technical Analysis of In-Valley Drainage Management Strategies for the Western San Joaquin Valley, California

8. Restore Delta Estuary and Riverine Habitats and Integrate Floodplains With Rivers.

In keeping with the Legislature which has expressly declared that *permanent protection* of the Delta's natural and scenic resources is the *paramount* concern to present and future residents of the state and nation, habitat restoration projects should be aimed at public lands as a first priority. Habitat restoration projects must consider connectivity between areas to be restored and existing habitat areas needed for the full life cycle of species targeted to benefit from the restoration project. Where feasible, restoration should be accomplished along with levee reinforcement and where possible, restoration projects should emphasize the potential for water quality improvement. Restoration projects should also incorporate input from effected Delta landowners.

Priorities for restoration should include the following areas, since they would meet most of the criteria described above:

- Cache Slough Complex
- Cosumnes River–Mokelumne River Confluence
- Cosumnes River ground water basin depletion
- Lower San Joaquin River Floodplain
- Suisun Marsh
- Yolo Bypass

Although the EWC has not estimated the amount of acreage that would be involved in the priority areas, our priorities would go to the 50,000 acres of public lands, and our estimate would be well below the more than 100,000 acres called for in the BDCP plan. That plan is impractical from the viewpoint of costs and from the opposition it will engender among residents and landowners in the Delta. Any resulting plans would need to heavily involve residents of the Delta, something that has not been accomplished to date.

Floodplains benefit the people and ecology of California in numerous ways. Floodplains are extremely productive ecosystems that support high levels of biodiversity and provide valuable ecosystem services.⁶¹ The floodplain of a river is a relatively level area on both sides of the stream channel that carries excess waters the channel cannot handle at various times. During a flood, the floodplain becomes the additional part of the stream to do the extra work for the stream channel. The floodplain allows flood waters to spread out, thus reducing the flood water's potential energy. As a result, less damage occurs downstream. If the flood plain is not allowed to work properly and the channel is narrowed, dredged, or rip wrapped the stream is forced to handle more of the flow and damage occurs. Channelization and dredging have caused the disappearance of the river's healthy sandbars and islands. Flood plains contain wetlands which function to slow and filter flood water, thus improving water quality. Wetlands also provide habitat for a diversity of wildlife. Floodplains, therefore, are extremely productive ecosystems

⁶¹ Postel, Sandra. Richter, Brian. 2003. Rivers for Life. Island Press. P 20-21.
<http://islandpress.org/bookstore/details.php?sku=1-55963-444-8>.

that support high levels of biodiversity and provide valuable ecosystem services. Studies have shown that healthy floodplains can have an extremely high monetary value due to these ecosystem services, which also include flood attenuation, fisheries habitat, groundwater recharge, water filtration, and recreation.

To function properly, floodplains must, by definition, periodically flood. Floodplains store floodwaters that recharge groundwater supplies, maintain proper instream flows, prevent bed-bank scour, are a source of organic carbon, and support a healthy population of aquatic species essential to both ecosystems and our economy. (See photo.⁶²) The extent of functional floodplains in California has been dramatically reduced from historical conditions because levees, dams, flood control projects, and development have reduced or eliminated connectivity between rivers and floodplains. To reverse these losses, numerous agencies and organizations have spent significant resources to restore floodplains while simultaneously minimizing future flood risk.

With climate change, we can expect to have less snowpack, quicker spring snow melts, and increased flood pressures. Establishing natural floodplains connected with our rivers and avoiding development in floodplains will become more critical to community sustainability in the future.

The current restoration plans for the Yolo Bypass, including more frequent use of the Yolo Bypass, and similar conservation actions are encouraged as a part of this plan.

The following actions need to be included with any planned floodplain restoration:

- Where possible, remove or at least set levees back from riverbanks to allow for floodwaters to expand into the floodplain.
- Where it is not possible to remove levees, they should at least be vegetated with native riparian vegetation to provide the maximum achievable ecosystems functions.
- Make the purchase of floodplains or flowage easements a top priority for flood

During an experiment comparing the growth of juvenile Chinook in floodplain and river habitats of the Cosumnes River, fish reared in the floodplain (right) grew faster than those reared in the river (left) T.R. Sommer et al. 2001.



Photo by Jeff Opperman; from Cosumnes River field study by Carson Jeffres

⁶² Sommer T.R., Nobriga M. L., Harrell B., Batham W., Kimmerer W. J. 2001. Floodplain rearing of juvenile chinook salmon: evidence of enhanced growth and survival. Canadian Journal of Fisheries and Aquatic Sciences. P. 325-333. http://iep.water.ca.gov/AES/Sommer_et_al_2001.pdf

control agencies and prevent new levees from being constructed and development in floodplains.

- Ensure that low-income communities impacted by floodplain restoration are involved in the development of restoration plans, and that any impacts of restoration are fully mitigated.

Implementation and Funding. Costs might be approximately \$1.6 billion, based on half of the comparable restoration costs of BDCP from 2010 documentation.⁶³

9. Return The Kern Water Bank To State Control, Restore Article 18 Urban Preference, And Restore The Original Intent Of Article 21 Surplus Water In SWP Contracts.

The Monterey Amendments changed significant provisions of the original State Water Project and, as an unintended consequence, increased pressure for exports from the Delta and increased pumping beyond healthy limits. The changes that caused these conditions were: the elimination of Article 18a, the “Urban Preference;” the elimination of Article 18b, the “Paper Water” safeguard; the change of orientation for Article 21 “surplus water;” and the privatization of the Kern Water Bank.

As a part of this plan, the following changes should be made in order to reduce reliance on the Delta, to assure Public Trust protections for a public resource, and to provide greater reliance for urban water users in the state’s largest population centers.

- The “urban preference,” that was eliminated as a component of State Water Project contracts due to the Monterey Amendments, must be reinstated. California should return to its original plan of giving priority to the water needs of its burgeoning population rather than giving farm water equal priority, per the Monterey Amendments changes.
- The contracted amounts of water for CVP and SWP Table A users are unrealistically high and must be brought in line with historic “firm yield” experience, as required in the contracts. The overall water supply reductions forecasted with global climate change adds to the urgency to bring these contracted amounts in line with current realities and for future planning.
- The pumping of “Article 21” (so-called surplus) water is unnecessary and has proven to be damaging to the fisheries and ecology of the estuary, especially the pumping of this “surplus” water in dry years, which should never be permitted. In reviewing the different types of water transfers that can occur throughout the state, some are more logical and favorable from an ecosystem and cost viewpoint, while others are clearly damaging by the same two criteria.
- The Kern Water Bank – initially a public asset – has been inappropriately turned over to private interests as a part of the Monterey Amendments and must be reestablished as a

⁶³ Highlights of the BDCP, pamphlet published December 2010

state entity under the ownership and operational control of the Department of Water Resources (DWR) for the benefit of all Californians, as it was when DWR purchased the land for the bank in the 1980s. When combined with the reinstatement of the urban preference in the State Water Project, this change would enhance water supply reliability for urban southern California users and would eliminate profiteering from the public's water by private corporate interests.

Implementation and Funding. No cost estimates available.

10. Conduct Feasibility Study For Tulare Basin Water Storage.

Supplies for south-of- Delta users and the Metropolitan Water District could be sourced from the natural reservoir that is Tulare Lake by allowing flows from the Kern, Kings, Kaweah, and Tule Rivers to flow into the Tulare basin. This option is being advocated by the San Joaquin Valley Leadership Forum, which has determined that surface storage capacity in the Tulare Lake Basin could be more than 2.5 million acre-feet.⁶⁴ The concept would require bi-directional conveyance with both the Kern Canal and the California Aqueduct.

The restoration of the Tulare Lake basin in the San Joaquin Valley is a unique opportunity to provide for the quality, quantity, and reliable regional sourcing and use of water for agricultural, economic development and environmental needs on a self-sufficiency basis. At one time, Tulare Lake was the largest freshwater body west of the Mississippi River storing up to 25 million acre feet. The concept proposal put forth by the San Joaquin Valley Leadership Forum is based upon technical, financial, and environmental analysis which is superior to the only other storage proposal currently under study within the San Joaquin Valley – known as Temperance Flat on the Upper San Joaquin River above Millerton Lake/Friant Dam. As an example, the restoration of just 10% of the historic Tulare Lake would be nearly twice the surface storage capacity of Temperance Flat – let alone the fact that the Tulare Lake basin provides ground water storage capabilities as well – and Temperance does not. Another important distinction between Temperance Flat versus Tulare Lake is the fact that the Tulare Lake basin can support the collection and management of flood waters from at a minimum of four south Sierra river systems – Kings, Kaweah, Tule, and Kern – as well as the upper San Joaquin. Temperance Flat would only support the flood waters of the upper San Joaquin River.

There is a possibility of ground contaminants in the basin that may be at harmful levels. The feasibility study would need to examine this potential issue closely. California does not need another set of impaired lands similar to what already exists in the west side of the San Joaquin.

Implementation. This proposed concept should be evaluated as part of this “Responsible Exports” plan. The preliminary concept described by the San Joaquin Valley Leadership Forum is estimated to cost \$800 million.

⁶⁴ San Joaquin Valley Leadership Forum, www.sjvwlf.org

Implementation and Funding. According to the San Joaquin Valley Leadership Forum plan, under \$1 billion.

11. Enforce Water Quality Standards In The Estuary And In Impaired Rivers.

California's Porter-Cologne Act of 1969 and the 1972 federal Clean Water Act both were enacted with the goal of restoring the quality of our water resources. These resources have been seriously degraded by over a century of heavy industry and agriculture, the indiscriminate extraction of natural resources, and the continued discharge of inadequately treated sewage. Progress in reversing this degradation has been slow. While upgrades to wastewater treatment and discharge requirements for industrial polluters have improved water quality in many areas, the fact remains that almost 700 reaches of California waterways are still unable to support beneficial uses, including providing potable water supply and supporting ecosystem health.

These problems have contributed to ecosystem crashes in San Joaquin Valley rivers and the Delta, severe groundwater depletion and contamination in the San Joaquin Valley⁶⁵ and Central Coast that impacts low-income rural communities, and ocean pollution. Though state and federal laws already give regulators ample powers to improve water quality, this authority has not been exercised sufficiently to protect the health of the state's waterways or its residents. The continuing acceptance of agricultural waivers by Regional Water Quality Control Boards is a major contributor to the state's impaired waterways.

Diverting Sacramento River flows for export without significantly protecting existing groundwater basins and increasing the amount of fresh water flow dedicated to reaching San Francisco Bay, as currently planned for BDCP, will only degrade water quality and habitat conditions and aggravate the negative impact on Delta aquatic and terrestrial species. On the other hand, a future scenario that places less emphasis on the Delta as a water supplier and allows more water to be left instream, can dramatically reduce the environmental and water quality effects of exporting water – whether through or around the Delta. Although increasing flows, as described in this “Responsible Exports” alternative, will improve many aspects of Delta water quality, this plan must continue to pursue specific and targeted water quality actions in order to contribute to restoring the health of the Delta.

Implementation and Funding. Implementation will depend on the results of the State Water Resources Control Board hearings on Delta water quality and flows, which are scheduled to be completed during 2014.

⁶⁵ National Marine Fisheries Service. 2009. Endangered Species Act Section 7 Consultation Biological Opinion Environmental Protection Agency Registration of Pesticides Containing Carbaryl, Carbofuran, and Methomyl. P. 481-483. <http://www.epa.gov/espp/litstatus/effects/comments-2nd-draft.pdf>.

12. Monitor And Report Statewide Groundwater Usage.

Environmental organizations are generally disappointed with the groundwater monitoring features that were built into the Delta Reform Act of 2009. Earlier drafts of the 2009 legislation required groundwater monitoring and reporting throughout the state, while the final legislation was weakened to make groundwater reporting a voluntary effort. Since groundwater represents 30% of California's water supply in most years, the state must face this politically difficult situation with actions for mandatory groundwater reporting throughout the state.

This action needs to include a discussion of the Water Code's requirement for additional South-of-Delta underground storage, and the ability to meet that requirement through public control and expansion of the Kern Water Bank. The impacts of the additional capacity for Delta exports as provided by a public Kern Water Bank should be considered here. Given its location, size, and relative cost of development compared to surface storage, the Kern Water Bank is a facility which could greatly assist balanced export controls for the Delta and could be the single greatest improvement to overall state-wide water supply reliability. This plan strongly advocates for the return of the Kern Water Bank to state control as a water management conservation measure.

Implementation and Funding. No estimates available.

13. Provide Fish Passage Above And Below Central Valley Rim Dams For Species Of Concern.

Dams have made California a well-watered paradise for most of its human inhabitants. Dams are also killers of river habitats. Although California's vast system of water storage, hydropower and flood control dams has provided enormous economic benefits, it is not without downsides. Dams have been a major factor - in many cases the major factor - in the decline and extinction of numerous fish species, especially anadromous fishes that migrate to and from the ocean and must have access to the more favorable upper reaches of rivers to spawn and rear the next generation⁶⁶. Every salmon and steelhead run in Central Valley rivers is either extinct, endangered, or in decline due to the overall habitat destruction and degradation caused by dams.⁶⁷ A 1985 California Department of Fish and Game study has indicated that the economic losses due to the declines of salmon, steelhead and striped bass which spawn in the Central Valley tributaries at \$116,000,000 per year.⁶⁸

⁶⁶ National Marine Fisheries Service, Southwest Region. June 4, 2009. Biological Opinion And Conference Opinion On The Long-Term Operations Of The Central Valley Project And State Water Project. Page 660.
http://swr.ucsd.edu/ocap/NMFS_Biological_and_Conference_Opinion_on_the_Long-Term_Operations_of_the_CVP_and_SWP.pdf.

⁶⁷ Friends of the River. 1999. Rivers Reborn: Removing Dams and Restoring Rivers. P 4-16.
<http://www.friendsoftheriver.org/site/DocServer/RiversReborn.pdf?docID=224&AddInterest=1004>.

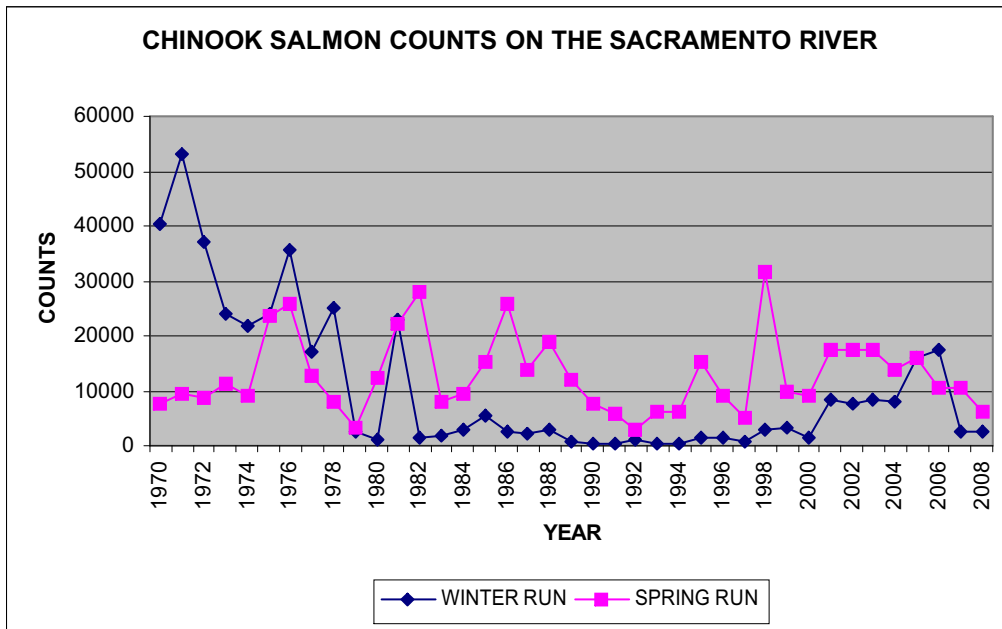
⁶⁸ California Department of Fish and Game. 1985. Administrative Report 85-03.
http://deltavision.ca.gov/docs/externalvisions/EV8_Allied_Fishing_Group_Vision.pdf

The most serious fishery problem caused by major dams is the blockage of migratory fish passage. Over 95 percent of the historic salmon and steelhead spawning habitat in Central Valley river systems has been eliminated by the construction of large dams on every major river. Fish passage was not a serious consideration in the early part of the last century when most of the major dams were built; there were no Endangered Species Act or National Environmental Policy Act considerations at the time. California Fish and Game Code Section 5937, which mandates that dam operators keep fish in good condition below dams has largely been ignored outside the Mono Basin. The construction of Friant Dam on the San Joaquin River resulted in the extinction of the largest spring-run chinook population in the state. The dam blocked upstream spawning grounds that were known to be the best of the Central Valley rivers. Figure 3 shows the long-term downward trend for Chinook salmon in the Central Valley.

There are numerous solutions available that can provide fish passage around dams. They include construction of fish ladders or upstream fish channels, fish elevators, trap and truck operations, downstream bypasses, removal of smaller fish barriers, and dam removal. All of these techniques have been used at multiple locations with varying success rates. Some of the larger dams on the Columbia River system have been operating fish ladders for many years. While the costs of many of the techniques are substantial, the economics of industries and recreational activities that depend on healthy rivers and fish stocks can justify the investment. The appropriate comparison by which to measure such costs is the sum of agricultural, industrial, and municipal benefits that accrue via the diversion of tens of millions of acre-feet of water annually. Tourism and recreation is now California's largest industry at more than \$96 billion annually, and river recreation is a large part of that industry. Recreational fishing generates \$1.5 billion annually in retail sales and provides thousands of jobs.⁶⁹

⁶⁹ Restore the Delta. April 7, 2009. Press Release.
<http://archive.constantcontact.com/fs062/1102037578231/archive/1102546423830.html> .

**Figure 3
Central Valley Chinook Salmon Population⁷⁰**



An important aspect of fish passage above dams is the benefits to Native American Tribes in gaining access to historic cultural resources. These would include: the Winnemen Wintu on the Upper Sacramento, McCloud, and Pit Rivers; the Karuk Tribe on the Klamath; and the California Valley Miwok and Maidu on the American and Feather Rivers.

This plan supports, as a conservation measure, the National Marine Fisheries Service Biological Opinion on CVP and SWP operations that recommends fish passage pilot program plans and analysis for dams connected to the Delta, such as the Sacramento, American and Stanislaus rivers. This plan also encourages the State Water Board to direct the controlling agency of each Central Valley rim dam connected to the Delta to study the feasibility of fish passage for each dam that blocks the passage of listed salmonid species, similar to the NMFS Biological Opinion.⁷¹ Costs should be borne by the dam operators since they are the main beneficiaries of the water storage operations.

Implementation and Funding. No estimates available.

⁷⁰ California Department of Fish & Game, Native Anadromous Fish & Watershed Branch. GRANDTAB Data Sets. <http://www.calfish.org/IndependentDatasets/CDFGFisheriesBranch/tabid/157/Default.aspx>

⁷¹ National Marine Fisheries Service, Southwest Region. June 4, 2009. Biological Opinion And Conference Opinion On The Long-Term Operations Of The Central Valley Project And State Water Project. Page 660. http://swr.ucsd.edu/ocap/NMFS_Biological_and_Conference_Opinion_on_the_Long-Term_Operations_of_the_CVP_and_SWP.pdf

14. **Retain Cold Water For Fish In Reservoirs.**

Salmon, steelhead, and trout need cold water for their existence. As California has grown in size, the dams that have been built on virtually every major river have significantly changed both upstream and downstream river flows; high downstream water temperatures are one of the damaging results. Temperatures of 57-67 degrees Fahrenheit (F) are typically ideal for upstream fish migration and 42-56 degrees (F) are ideal for spawning. Water temperatures over 70 degrees (F) can be lethal to anadromous fish but are common on major rivers in the summer. Some fish populations have been able to adapt and carry on spawning and rearing below these major barriers, though in much smaller numbers than previously. Because farms need the most water in the summer, water behind reservoirs is low by the fall when many of the remaining populations of migrating fish return to the rivers. At that point the lack of cold water is a clear threat to their survival. Many of these fish species are now listed under the federal Endangered Species Act (ESA), and maintaining water temperatures suitable for survival has become a critical part of the actions required under the ESA.

This plan supports, as a conservation measure, the NMFS Biological Opinion recommendations for cold water releases on rivers connected to the Delta, such as the Sacramento, American, and Stanislaus rivers,⁷² as well as supporting regulations and legislation to retain sufficient water in other major reservoirs to support fish populations in Delta-connected rivers below dams. The latter would include the Trinity River, so long as the current management plan protections for the Trinity are complied with.

Implementation and Funding. No estimates available.

15. **Fund Agencies With User Fees.**

Agencies that benefit from any new or existing conveyance facilities should pay the full cost of the facilities, including mitigation costs.

Costs of fixing the Delta and Estuary that are related to existing and planned water delivery systems, including related costs of environmental mitigation and restoration, should be financed by the agencies that deliver water and ultimately should be passed on to their retail customers.

Cost responsibilities for land acquisition and restoration of river and Delta floodplains should be distributed 75 percent through a broad-based water use fee (applied to all agencies whose supplies are diverted from a river or the Delta watershed.) and 25 percent through public funds.

⁷² National Marine Fisheries Service, Southwest Region. June 4, 2009. Biological Opinion And Conference Opinion On The Long-Term Operations Of The Central Valley Project And State Water Project. Pages 590-620.
http://swr.ucsd.edu/ocap/NMFS_Biological_and_Conference_Opinion_on_the_Long-Term_Operations_of_the_CVP_and_SWP.pdf.

Agencies that divert water from the Delta should pay their fair share of maintaining and replacing the Delta levees on which they depend and for protecting water conveyance facilities. The share of Delta levee repair costs assigned to these agencies should reflect the extent to which the levee repairs are essential to ensuring uninterrupted diversions.

In developing funding sources, special care should be taken that low income communities not be impacted by new fees and second, that appropriate set-asides be created to ensure that these communities can access funding needed to comply with new regulations and policies.

Implementation and Funding. No estimates available.

IN CONCLUSION

California is at an historic point in the evolution of our water usage. With the onset of global climate change, the natural limits of our water supply have become more obvious and the economics of our solutions are changing drastically. No longer will policy makers be able to advocate for multi-billion dollar bonds that saddle Californians with decades of tax burdens. And no longer will they be able to sell the public on monumental changes to our rivers and bays in the guise of restoring our ecosystems or providing subsidized water to corporate agriculture. The results of decades of those kinds of decisions are now in full view and we know that more effective solutions are available. Intergenerational equity demands better solutions than those of the last century.

Unless we manage our water more efficiently and account for the current and future effects of global climate change, the costs of water to all urban, agricultural, and industrial water users will exceed our ability to provide Californians with reliable, affordable water. The needs of communities of color and the Native American Tribal claims will remain unmet.

The water efficiency and sustainability solutions that are proposed in this report have already proved to be more economical than overtaxing our rivers and bays with more dams and canals. The combination of water efficiency solutions and reduced reliance on the Delta that are recommended in this report obviate the need for increased surface storage and increased conveyance through the Delta. We have shown that water efficiency actions can provide California with the largest increment of future water supply that is currently available to us; the solutions will also provide ample water supplies for population growth, agricultural and industrial growth, and for improving the conditions of our natural landscapes.