From: Troutnk@aol.com
Sent: Wednesday, June 11, 2014 2:10 PM
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Cc: info@ios.doi.gov; secretary@resources.ca.gov; TheSec@doc.gov; matthew.rodriquez@calepa.ca.gov
Subject: BDCP Comments from the Environmental Water Caucus
Attachments: BDCP Final Comments June 11.pdf

Attached are comments from the EWC that describes our rationale that this is not a legal project and should be discontinued.

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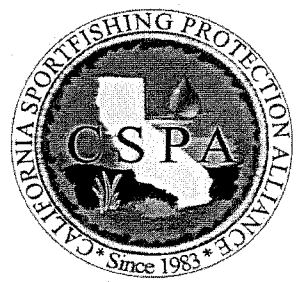
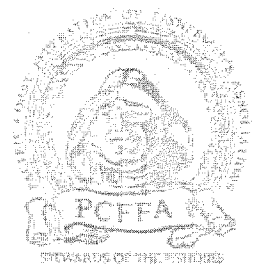
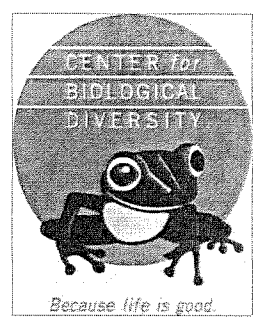
BDCP 778

ENVIRONMENTAL WATER CAUCUS COMMENT LETTER
BAY DELTA CONSERVATION PLAN AND EIR/EIS
JUNE 11, 2014







Foothill Conservancy

Lower Sherman Island Duck Hunters Association

Butte Environmental Council
Protecting Butte County's Land, Air & Water Since 1975

epic
wildcalifornia.org

CA Save Our Streams Council

California Rural Legal Assistance Foundation

earth LAW CENTER

Tuolumne River Trust

sacramento river preservation trust

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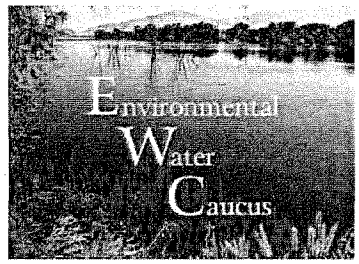

BDCP Comments
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Via Email to: BDCP.Comments@noaa.gov

June 11, 2014:

Subject: Comments on the Draft BDCP and Draft BDCP EIR/EIS

The Environmental Water Caucus and affiliated organizations throughout the state have consistently opposed the Bay Delta Conservation Plan in concept. After careful review of the actual December 2013 BDCP Plan and EIR/EIS documents, we see no reason to change our position. In fact, our review of the Draft BDCP Plan and its Draft EIR/EIS only heightens our opposition to the project, reinforcing our view that this project must not go forward.

Originally, the BDCP plan was conceived as a collaboration among south of Delta water export agencies. Their object was to increase exports from the Delta, using water supply "reliability" and ecosystem restoration as their stalking horse. Given the political power and influence of these large state, federal, and special district agencies[1], claims by BDCP officials that the Twin Tunnels will not increase water exports must be taken with many grains of salt. Our comments, attached, demonstrate that BDCP's Twin Tunnels project will increase contract-based deliveries in wetter years, *and* will increase Delta exports in dry and drought years as the Tunnels increase water transfer opportunities for California's water market. The Bay Delta "Conservation" Plan has little to do with conservation. Indeed, the very name of the project is disingenuous at best and deeply cynical at worst. Even the planned tunnels – which are essentially a means for draining the Delta of life-sustaining fresh water in the most expeditious way possible – are perversely referred to as "Conservation Measure 1."

The BDCP project objective to export more water from the Delta is a foregone conclusion, essentially predetermined from the start of the project and advocated by major south of Delta water exporters referenced above. In this pursuit, they have been

1 We refer here to the California Department of Water Resources, the US Bureau of Reclamation, Kern County Water Agency, the Metropolitan Water District of Southern California, Westlands Water District, and a handful of other water contractors supporting BDCP.

aided and abetted by the Department of Water Resources whose goal is to procure and sell more water to these same proponents, who are also their main water customers. In order to hide these objectives, they have jointly utilized consultants through the BDCP project who have cherry picked the science and who have developed 40,000 pages of biased analytical findings to support their predetermined objectives, thus obfuscating their real intent in the process. Their representatives in Congress have used the safeguards of the Endangered Species Act as their whipping post, while the main reason for the current lack of adequate water supplies (water supply "reliability") has obviously been a persistent drought, not endangered species restrictions. A chronology of events to support these findings of a predetermined and predecisional project to move more water south is shown as Attachment 3.

BDCP documents total more than 40,000 pages. The size, complexity, and obfuscation it displays are gross and inexcusable abuses of NEPA and CEQA mandates. Their sheer volume subverts NEPA and CEQA objectives, defeats the rights of the public and decision-makers for clarity about the scientific and analytic bases for government actions. The impossibility of analyzing objectives and impacts in these documents makes a mockery of the environmental review process and fails NEPA and CEQA standards for clarity.

The BDCP fundamentally will fail to achieve its core purpose of restoring the Delta's ecosystem. The conservation measures promoted by the Plan would be unlikely to work for the Delta's listed fish species and their costs would be fobbed off on the taxpaying public – the Twin Tunnels beneficiaries would at most pay 10 percent of habitat restoration costs. Thus, the BDCP fails miserably as a "comprehensive conservation strategy" for the Delta. The era of ruinously expensive, environmentally destructive and inefficient infrastructure projects is dying, but rather than continue in that vein, we must embrace bold and innovative strategies that will insure the restoration and stability of the Delta and provide sustainable sources of water to our cities and farms, ideas that the Environmental Water Caucus has laid out in our Responsible Exports Plan for California.[2]

Numerous scientific elements of the plan have been questioned by federal regulatory and fishery agencies, the National Research Council and the Delta Independent Science Board. All these entities emphasize that the outcomes of the BDCP are rife with uncertainties. In short, the plan puts billions of taxpayer dollars at risk, with little if any benefit for listed species. Alternative means to address California's water future and restore the Delta and its species of concern must be examined. The current plan and preferred alternative should be abandoned.

The federal and state habitat conservation plan laws require that a permissible project contain a vetted financing plan – precisely the kind of plan that BDCP lacks. Even after seven years of public debate, BDCP's Implementing Agreement, a required document that spells out the financial and other obligations of BDCP applicants, was absent from the December 2013 draft plan and the draft EIR/EIS. The delayed June 2014 release of

[2] Online at http://ewccalifornia.org/reports/responsibleexportsplanmay2013.pdf.

an Implementing Agreement is not adequate, and will be commented on by the EWC in an Addendum by the July 29 deadline.

BDCP is a bad deal for California.

While California is now getting out from under the mountains of bonded debt it incurred to remain solvent in the previous decade, BDCP would cause the state's debt burden to increase again. BDCP lacks required financial assurances that guarantee that not only the Twin Tunnels would be built but that all of the Plan's mitigation measures would be funded throughout the 50-year term of the permits they seek. It fails to demonstrate that taxpayers would *not* be on the hook for the project if its finances falter and that ratepayers in southern California would be protected from steep, long – term rate hikes to pay its costs. It violates numerous state and federal laws, ranging from the Delta Reform Act of 2009 the federal Clean Water Act, the Porter-Cologne Water Quality Control Act, and state and federal endangered species and habitat conservation laws, to the public trust doctrine and the California's constitutional ban on waste and unreasonable use and method of use and diversion of water (adopted by California voters in 1928). It would grant veto power to the BDCP water agencies to control construction and manage restoration of habitat in the Delta with public taxpayer funds, BDCP's method for the fox to guard the chicken coop.

BDCP is an even worse deal for the Delta.

Purporting to restore Delta ecosystems and protect its most vulnerable fish species, BDCP would instead further reduce natural Delta outflows to San Francisco Bay, helping push listed, vulnerable salmon, sturgeon, and resident fish species into permanent oblivion. The people of the Delta, especially its poorest and most economically vulnerable, would endure a ten-year construction period only to find that the remaining catchable fish species would be more contaminated with mercury and selenium than they now are today. They would find that their agricultural, recreational, and regional economies would be decimated by the disruption from BDCP construction activities.

While BDCP now trumpets the risks to California's water supply of massive Delta levee failures due to earthquakes and sea level rise, BDCP lifts not a finger to address these supposed seismic levee issues. At the same time, the Department of Water Resources ignores seismic risks to other components of the State Water Project underlain by active seismic faults at the San Luis Reservoir and in the Tehachapi Range crossing of the California Aqueduct. By the 2030s the Delta residents will see their levees further deteriorated from being ignored by the state, fresh water supplies exported, prime farmlands converted, and beloved fishable, swimmable and drinkable places of recreation ruined from Delta exports to San Joaquin Valley agribusinesses and southern California suburban development. Instead of the thriving regional economy the Delta is today—integrated into the state, regional and global economies—it would by the 2030s be a subject colony of the Bay Delta Conservation Plan self-appointed "authorized entities." The parallel of this prospect with the control of Owens Valley by the Los Angeles Department of Water and Power is impossible to miss.

BDCP and its EIR/EIS are meant to sell the project and try to limit the potential for critical thinking by an otherwise skeptical public. They conceal the Twin Tunnels' ulterior purpose of increasing the State Water Project's delivery capacity for enlarging the market for cross-Delta water transfers from Sacramento Valley "willing sellers." They reveal that Delta exports won't just increase in the wetter years, they will rise in the drier years as the water market grows in proportion that the Delta is colonized and controlled by BDCP. But by selectively modeling only the contractual water volumes and not the non-contractual amounts transferred via the water market in drier times, BDCP would prefer the public think they are merely "protecting and restoring" supplies already under contract from the effects of climate change and sea level rise.

The BDCP fails to provide an adequate range of alternatives to new conveyance as required by the National Environmental Policy Act and the California Environmental Quality Act; the listed "alternatives" to the tunnels are simply variations on tunnel export capacities and operational rules, none of which have any basis in existing water quality and operational regulations in the Delta. Alternatives that significantly reduce exports from recent historical levels have been ignored despite support from numerous environmental and water agency organizations throughout California, and despite scientific evidence confirming reduced exports and increased outflows to San Francisco Bay directly benefit Delta habitat restoration and fisheries recovery.

BDCP also proffers a snake-oil hypothesis that restored habitats can substitute for the river flows to and through the Delta that are needed for true recovery of the Delta's common wealth—its fish and its healthful, flowing waters. Time and again in our comments, in BDCP's own modeling results we find evidence that this hypothesis is sheer puffery. *Fish and people need both habitat and flows to recover the Delta. BDCP will accomplish neither for the people of the Delta nor the people of California. It is a fraudulent water grab grander in scale and skullduggery than any before seen in the American West.*

Our review and detailed responses are shown in the more technical document attached to this summarizing letter. Our thanks go to Tim Stroshane and Tom Stokely and numerous EWC organizations that have collaborated to prepare the technical and detailed comments which follow.

Nick Di Croce David Nesmith

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Co-Facilitators
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Comments[1] of the Environmental Water Caucus on the Bay Delta Conservation Plan and Its Environmental Impact Report/Statement

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[1] Comment preparation and consultation managed by Tim Stroshane for the Environmental Water Caucus. Contributors include Colin Bailey (Environmental Justice Coalition for Water), Barbara Barrigan-Parrilla and Jane Wagner-Tyack(Restore the Delta), Bill Jennings (California Sportfishing Protection Alliance), Carol Perkins (Butte Environmental Council), Linda Sheehan and Grant Wilson (Earth Law Center), Tom Stokely (EWC and California Water Impact Network), and Bob Wright (Friends of the River).

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I. Introduction

After eight years in the works, the Bay Delta Conservation Plan applicants have delivered a Plan that is as flawed as it is expensive and monstrous.

The Twin Tunnels project it contains would divert more of the Delta common pool to benefit state and federal water contractors at a time when California the state has over-promised, wasted, and inequitably distributed scarce water resources, when the Delta is deteriorating from state mismanagement during the current drought, listed fish species are on the brink of extinction, and low-income communities of color who rely on the Delta for subsistence fishing, jobs, and recreation struggle to survive and thrive.

The Twin Tunnels project would be a new facility provide the State Water Project (SWP) with three new diversion points (or "north Delta intakes") for water along the lower Sacramento River. These new intakes would divert the river into two gigantic tunnels that would isolate the river water from salty tidal flows for direct delivery to Harvey O. Banks Pumping Plant for export to the California Aqueduct of the SWP. This misnamed "conservation measure" would expand California's cross-Delta water transfers market, and enable the US Bureau of Reclamation to receive Sacramento River flow diversions via the intertie between the state's California Aqueduct and the Bureau's Delta Mendota Canal or via the intermingling of stored water at San Luis Reservoir south of the Delta.[2] For reasons we describe in this comment letter, there is nothing authorized or authorizable about the efforts of the BDCP Applicants.

The Environmental Water Caucus (EWC), a coalition of over 30 nonprofit environmental and community organizations and California Indian Tribes, urges the National Marine Fisheries Service, the US Fish and Wildlife Service, and the California Department of Fish and Wildlife to disapprove the Bay Delta Conservation Plan and deny incidental take permits that are requested by the plan's "Authorized Entities."[3] ***The EWC objects to the approval of the Plan, the execution of its Draft Implementing Agreement, and the issuance of incidental take permits to the Bay Delta Conservation Plan.***

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[2] This is possible in part under State Water Resources Control Board approval in March 2000 of "joint points of diversion" in Water Rights Decision 1641.

[3] According to Bay Delta Conservation Plan, Chapter 1, *Introduction*, p. 1-1, the "authorized entities" for the Bay Delta Conservation Plan include:

- California Department of Water Resources, which would own the Twin Tunnels Project described in Conservation Measure 1
- US Bureau of Reclamation (whose authorization for take is sought under Section 7 of the ESA)
- Kern County Water Agency
- Metropolitan Water Agency of Southern California
- San Luis & Delta Mendota Water Authority
- Santa Clara Valley Water District
- State and Federal Contractors Water Agency
- Westlands Water District
- Alameda County Flood Control and Water Conservation District (Zone 7 Water Agency)

In these comments EWC will refer to the "Authorized Entities" as simply "the Applicants," "the BDCP Applicants" or "Applicants." The term "Authorized Entities" implies improperly that this group of state and federal water agencies, and regional wholesaling water agencies, have already been authorized to receive incidental take permits. In actuality, at this time they are merely aspiring to be "applicants." No incidental take permits have yet been submitted to the fishery agencies because a completed application must also contain an "implementing agreement," which has not yet received public review.

We ask of BDCP: Why should BDCP Applicants be granted such legal privilege from the federal Endangered Species Act as the "regulatory stability" of the "No Surprises Rule" that would favor their conveyance investments over the "regulatory stability" of senior water right holders and a huge array of human and non-human beneficial users of water and land in the Central Valley and the Delta? What makes these Applicants worthy of the public's trust that they should be permitted to construct a second set of maelstrom-generating diversions along the lower Sacramento River to augment the hydraulic maelstrom they already operate at the South Delta export pumps, with their attendant ecological and hydrodynamic havoc? What makes them worthy of special treatment, just because they divert water from the Delta?

The EWC incorporates by reference in these comments those of several other correspondents regarding BDCP.[4]

The Bay Delta Conservation Plan is challenging to grasp. It contains both a strategic plan for habitat restoration and a quasi-project description of the proposed Twin Tunnels export facility. The Tunnels project is considered as a "conservation measure," due to hyped reduction of harm to listed species at the federal and state South Delta export pumps. Among the Plan's other conservation measures is a "reserve system" containing dispersed "restoration opportunity areas" in the legal Delta region. Its "conservation strategy" contains 21 other specific "conservation measures." The strategy also puts forward detailed biological goals and objectives, yet states that none of these goals and objectives will be used to measure compliance of the Plan with respect to the Endangered Species Act (about which more shortly). Also among its conservation measures are actions aiming to address "other stressors" to covered aquatic species. Unfortunately, some stressors, like selenium toxicity and nonnative invasive clams like *Potamocorbula amurensis*, are ignored altogether.

The Bay Delta Conservation Plan, when all is said and done, is a bad deal for California for several broad reasons and a long list of specific ones. The broad reasons include:

- It relies on a deeply flawed scientific hypothesis that habitat restoration can substitute for river flows as the chief strategy for "fixing the Delta." Its implementation will likely be catastrophic for the Delta's aquatic ecosystems, because it uses science in the service of marketing the Twin Tunnels, not for solving Delta problems.

- It is contrary to law—actually, many laws.

- Its financial and economic risks exceed benefits on offer from BDCP. Far more cost-effective water supply solutions are available to California and at far lower cost.

- If implemented, its hyper-bureaucratic organization will result in "paralysis by analysis" to the detriment of the Delta ecosystem it purports to "fix," particularly because water agencies will have veto power over changes to BDCP's non-water project conservation measures.

Section II of our comments focuses on what the Environmental Water Caucus believes are the "big picture" issues that BDCP raises, willingly or not.

BDCP's approach to habitat conservation, examined in Section III, relies on magical thinking, an excess of "adaptive management," and a clause declaring its biological goals and objectives

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[4] The Environmental Water Caucus incorporates by reference the comments of Restore the Delta, Local Agencies of the North Delta, North Delta Water Agency, Central Delta Water Agency, and South Delta Water Agency, San Francisco BayKeeper, Friends of the River, Earth Law Center, Friends of the San Francisco Estuary, California Water Impact Network, California Sportfishing Protection Alliance, and AquAlliance.

irrelevant to plan implementation and incidental take permit compliance. We diagnose these problems in Section III. The key magical thoughts of BDCP's conservation strategy are that, on one hand, terrestrial and tidally-influenced wetland habitat restoration will increase overall food supplies for listed fish species. BDCP believes this "boost" to food supplies will overcome the bad effects on these same fish of operating the state and federal Delta water facilities.

On the other hand, BDCP barely acknowledges that ***invasive nonnative clam species are themselves likely to outcompete listed fish species (as they already do) as more food is made available and as salinity moves inland as a result of the new North Delta diversions.*** Controlling these clams would require greater river inflow to the Delta to successfully control their spread, not less, as is proposed by BDCP.

BDCP fails to account for the possibility that the predators of listed species will enjoy these new habitats at least as much as the listed and other covered species might. In neither case—the clams and the predator fish species—does BDCP contain conservation measures that directly addresses these fatal flaws. For the Applicants, the whole point of BDCP is to avoid having to increase river inflow and Delta outflow to achieve real ecosystem improvements in the Delta, while still claiming to have tried to help the Delta. The member organizations of the Environmental Water Caucus stoutly believe that habitat restoration is as important as ever. But from extensive review and analysis of its documents released last December 2013, we find that ***BDCP is the most lavish greenwashing campaign our members have ever seen.***

A similar level of magical thinking appears in the hyping of floodplain habitat to benefit salmonid fish and Sacramento splittail. BDCP fails to analyze the likelihood that introduced predators will find such enhance floodplains as attractive as would BDCP's covered fish species. Other flaws are identified in BDCP's approach to habitat restoration and ecosystem recovery, and are described more later. BDCP's methyl mercury management conservation measure provides little in the way of actual mitigation on Delta floodplains, while putting off to adaptive management the most difficult questions. Adaptive management would provide mere window dressing, application of scientific lipstick to what is ultimately, just a big hydraulic pig.

To add insult to injury, a clause in the Plan's conservation strategy states that ***its biological goals and objectives shall not be a basis for determining compliance with plan implementation and permit conditions.***

BDCP's financing plan and economic justification, examined in Section IV, remains sketchy at best and will externalize all the important costs of habitat restoration and selenium management onto the California electorate. In short, rate paying customers (both farmers and urban customers) will pay skyrocketing water charges for water that the Twin Tunnels project will not make available in dry years (because of the projects' junior water rights). Nearly all of the state funds for habitat restoration activities proposed in BDCP are to be paid for by water bonds not yet proposed or approved by California voters. The Tunnels would come first; habitat restoration ***maybe*** second, if at all. Early indications are that the draft Implementing Agreement reinforces this prioritization of funding for the Twin Tunnels over habitat restoration.

BDCP's governance approach, examined in Section V, is to give as much control to the Applicants as possible over Twin Tunnels operations and consequently over the Delta itself. Allowing greater control of the Delta's common water pool to the State Water Project would create a hydrodynamic maelstrom in the lower Sacramento River from Twin Tunnels diversions there. While much lip service is given to limiting the presence of political concerns in deciding important water operations and management and protection of listed fish species in the Delta, BDCP's proposed governance structure would provide veto power to the Applicants, the same folks who have already brought these same listed fish species to the brink of extinction.

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The long list of statutes BDCP violates includes the state and federal endangered species acts, the Delta Reform Act of 2009, state and federal clean water acts, the California water code, the California Constitution's ban on wasteful and unreasonable use and method of diversion of water, and the Public Trust Doctrine. There is little, if any assurance that the Brown Act, which sets standards for the conduct of open public meetings by local and regional governments in California, will apply to the meetings of the group of groups and teams that proliferate from the BDCP Implementation Office, and which the Office will be tasked with herding and supporting. Our analysis is provided in Section VI.

Finally, the BDCP EIR/EIS is examined in Section VII. Despite producing in excess of 30,000 pages of analysis, BDCP's environmental documents contain an inadequately and improperly formulated purpose and need statement that:

- Omits its water transfer marketing purpose,
- Leaves yawning holes in its setting/affected environment descriptions,
- Gapes huge blind spots where it should have analyzed numerous environmental justice issues in the Delta Plan area (including toxic contamination of fish), groundwater and water transfer issues in the Sacramento Valley region and Central Valley study area, and
- Glaringly and indefensibly omits storage, levee and restoration projects from its cumulative impacts.

Thus, BDCP has it backwards when it comes to prioritizing recovery of the Delta's aquatic ecosystems and listed fish species, and its most socially vulnerable and environmentally unequal communities.

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II. BDCP and Big Picture Issues

The BDCP documents—the habitat conservation plan (BDCP) and its lengthy environmental impact statement/environmental impact report (EIS/EIR) and its Draft Implementing Agreement are intended for many decisions by many different state and federal regulatory agencies. Despite its length, BDCP musters only a partial list.[5] This list omits the State Water Resources Control Board's authority over water right permit issuance under the California Water Code for new points of diversion and rediversion. This section identifies many other areas where BDCP documents will be incorporated or factored into societal decisions in California for years to come.

A. Recovering Endangered Species Populations, Habitat Conservation Plans and Incidental Take Permits

Section 9 of the Federal Endangered Species Act prohibits the take of any listed species.[6] Section 10 of the Act, however, provides that habitat conservation plans may be prepared that enable an applicant to take listed species if the take is "incidental" to, and not the purpose of, an otherwise lawful activity.[7] Habitat conservation plans are subject to specific criteria for preparation and approval, and the National Marine Fisheries Service and the US Fish and Wildlife Service promulgated regulations and published a handbook on habitat conservation plans and incidental take permits that guide the entire Section 10 process.[8] The California Endangered Species Act contains similar provisions of take prohibition followed by a path for permitted incidental take of listed species.[9]

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[5] Bay Delta Conservation Plan, Chapter 7, *Implementation Structure*, p. 7-33, lines 19-40, p. 7-34, lines 1-10. Sections 404 and 401 of the Clean Water Act (the US Army Corps of Engineers and the State Water Resources Control Board); Sections 10 and 14 of the Rivers and Harbors Act of 1899 (again, the Corps), Section 1602 of the California Fish and Game Code (California Department of Fish and Wildlife); Section 106 of the National Historic Preservation Act (Delta Protection Commission, Delta Conservancy, California Historic Preservation Commission, Native American Heritage Commission, possibly others); encroachment permits from the Central Valley Flood Control Protection Board and various Reclamation Districts for work on Delta levees; Federal Energy Regulatory Commission; and the National Environmental Policy Act and California Environmental Quality Act for full disclosure environmental review.

[6] Section 9(a)((1)(B) prohibits anyone subject to the jurisdiction of the United States to "take...any such species within the United States or the territorial sea of the United States". "Take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or to attempt to engage in any such conduct, according to Section 3 of the Endangered Species Act, subsection (19). The act is accessible online at http://www.nmfs.noaa.gov/pr/pdfs/laws/esa.pdf.

[7] Section 10(a)(1)(B).

[8] US Department of the Interior, Fish and Wildlife Service, and US Department of Commerce, National Marine Fisheries Service, *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, November 4, 1996. Hereafter cited as *HCP Handbook*.

[9] California Fish and Game Code Section 86 defines "take" to mean "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" a listed species. Section 2080 of the Fish and Game Code prohibits take of listed species, Section 2081(b) authorizes the California Department of Fish and Wildlife to authorize incidental take permits under which incidental take of a listed species is "minimized and fully mitigated, and 2081(c) specifies that no incidental take permit may be issued if its issuance would "jeopardize the continued existence of the species." The California equivalent of a habitat conservation plan is called a "natural community conservation plan" or NCCP. NCCPs are authorized under the state's Natural Community Conservation Planning Act (NCCPA) in California Fish and Game Code Section 2800 *et seq.*, provided they meet the statutory standards provided in Section 2820 of the act.

BDCP is a habitat conservation plan (HCP) that may be employed to satisfy both California's Endangered Species Act (where it is considered a "natural communities conservation plan" or NCCP under California Fish and Game Code Section 2800 *et seq.*) and the federal Endangered Species Act, Section 10. In each law the HCP/NCCP is required as part of an application by a developer for an incidental take permit (a permit which would allow the taking, harming, or killing of listed species incidental to development or operational activities that would otherwise be lawful).

The HCP is the centerpiece of the incidental take permit application for purposes of the Endangered Species Act. It must document the expected level of take of listed species, and must provide measures that minimize and mitigate the impacts of take on those listed species so that the permitted takings "will not appreciably reduce the likelihood of survival and recovery of the species in the wild." It must document how the applicants will assure the National Marine Fisheries Service and the US Fish and Wildlife Service that the plan will be implemented as anticipated.[10]

Once each fishery agency deems the application complete and acceptable, they each provide incidental take permits and contractual assurances through the "Implementing Agreement" with the Applicants that unforeseen circumstances will not require additional commitment of land, money or water during the term of the permits.[11] The assurance come under the "No Surprises" rule. The Plan provides the analytic framework for an "Implementing Agreement" that is to contain the terms by which the fishery agencies will determine the Applicants' ongoing compliance with the terms of the incidental take permits. The Bay Delta Conservation Plan proposes that the term of the incidental take permits issued to the Applicants run for 50 years from the date of issuance. As of May 30th a draft Implementing Agreement was finally released, and the Department of Water Resources extended the comment period until July 29th, the minimum amount of time required for public review of the Agreement. The EWC will submit supplemental comments dealing with the Draft IA at that time.

B. Free Speech, Transparency, and Democracy

In late 2013, the Bay Delta Conservation Plan web site was reorganized and redesigned. The site's "Correspondence" page contains the statement: "The BDCP encourages public participation. Below is a list of correspondence and public comments that have been received in regards to the BDCP from 2007-2013." It appears BDCP's ongoing experiment in digital democracy ended in 2014, however. BDCP has precisely one comment letter posted to the Correspondence section of its web site, despite our being aware that many other comment letters have been sent to BDCP concerning its public review documents.

In January 2014, Friends of the River, Restore the Delta, and the Environmental Water Caucus sent a cease and desist demand letter to the California Resources Agency, California Department of Water Resources (DWR) and the Bureau of Reclamation about their recent decision to stop posting public comment letters and other vital information on their jointly hosted the BDCP website

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[10] *HCP Handbook*, Chapter 7, *op. cit.*, footnote 7 above, "Endangered/Threatened Species Permit Issuance Criteria," pp. 7-2 through 7-6.

[11] "Unforeseen circumstances" means "changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers and the Service at the time of the conservation plan's negotiation and development, and that result in a substantial and adverse change in the status of the covered species." 50 CFR 17.3, as amended, February 23, 1998, *Federal Register* 63(5): 8870. See also Appendix A to this review.

(baydeltaconservationplan.com) just after issuance of the public drafts of the BDCP Plan and Environmental Impact Report/Environmental Impact Statement (EIR/EIS) on December 13, 2013.[12] When our country was formed, people peaceably assembled in order to hear each other's views on matters of public importance. Informed public debate is the hallmark of our democracy. The modern equivalent of the venerable town hall/public park assembly is the public comment process via the Internet on proposed major government actions. Americans have fought wars to retain these freedoms. The BDCP Applicants, however, seem intent upon wresting these hard-earned freedoms from the public. These freedoms have been suppressed by their decision to stop posting critical comment letters on the established project website. If we lived in Communist China, we might expect thoughtful or critical public comment to be suppressed. We do not expect this in the United States of America.

The Twin Tunnels is another effort by the same Governor and others to develop the old peripheral canal project that was defeated by a referendum vote by a margin of nearly 2 to 1 in June 1982. The Twin Tunnels are identified as Alternative 4, DWR's Preferred Alternative. (BDCP Draft EIR/EIS, 3-3). The Twin Tunnels are one of, if not the most, controversial proposed public works projects in California history, certainly since 1982.

1. Recent Website Change Regarding Posting of Comments

The initial Friends of the River comment letter was submitted to the National Marine Fisheries Service (NMFS) as instructed by the BDCP website on January 14, 2014. Receipt was confirmed by reply email from NMFS that same date also advising that "Additional information can be found at www.baydeltaconservationplan.com." What can be found on the BDCP website are the 40,000 pages of the consultant prepared Plan and EIR/EIS documents which the federal Bureau of Reclamation, NMFS and United States Fish and Wildlife Service (USFWS), have previously called "advocacy" and/or "biased" documents for the Twin Tunnels project. (Federal Agency Release, Bureau of Reclamation Comments p.1; NMFS Comments p.2): USFWS Comments p.1, July 18, 2013).

No longer found on the BDCP website is the January 14, 2014 Friends of the River initial comment letter explaining among other things that the Twin Tunnels project "is not a permissible project under the Endangered Species Act (ESA) because it would adversely modify designated critical habitat for at least five Endangered and Threatened fish species." (p.1). What also cannot be found on the BDCP website is the December 19, 2013 Environmental Water Caucus (EWC) (a coalition of more than 30 public interest organizations) letter requesting that the public review and comment period be extended from April 14, 2014 to August 15, 2014. The EWC letter explains that "there are 40,214 actual pages of the released documents" and that "these documents represent 20% more pages than the 32 volumes of the last printed edition of the Encyclopedia Britannica."

To explain the change in policy regarding posting of correspondence on the BDCP website, the following language initially appears under "Correspondence": *"In order to maintain the integrity of the formal public review period, incoming correspondence will not be available via the website beginning December 13, 2013 to the close of the public comment period April 14, 2014."*[13]

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[12] Letter transmitted via email to Sally Jewell, Secretary of the Interior; Penny Pritzker, Secretary of Commerce; Michael Connor, Commission, Bureau of Reclamation, John Laird, Secretary of California Natural Resources Agency, Mark Cowin, Director of California Department of Water Resources, and BDCP.Comments@noaa.gov from E. Robert Wright, Senior Counsel, Friends of the River, concerning *Demand to Cease and Desist Unlawful Vieiwpoint Discrimination and Denial of Public Access on BDCP Website and Comment Letter re Same*, dated January 28, 2014, 6 pages.

[13] See http://baydeltaconservationplan.com/library/Correspondence.aspx , emphasis added.

The obvious purpose of refusing to post comment letters is to hide critical comments from the public. It limits the information available to the public to the pro-Twin Tunnels documents posted in December 2013. In so doing, BDCP perversely and falsely uses NEPA and CEQA as pretenses not to post comments. This restriction is an unconstitutional and unlawful exercise of viewpoint discrimination by the State agencies, the Resources Agency and DWR, aided and abetted by the participating federal agencies, NMFS which is receiving the comments but not posting them on a website, and USFWS and Reclamation. The First Amendment prohibits viewpoint discrimination. This restriction is also an unlawful denial of public access to the comments prohibited by the California Constitution. Furthermore, the decision to withhold posting of comments is a direct violation of the environmental full disclosure purposes of both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

2. The Closing of the Forum to Critical Comment Is Contrary to the Promise of Encouraging Public Participation

The State claims that "The BDCP encourages public participation." (BDCP website under "Correspondence".) Secretary Laird of the California Natural Resources Agency and numerous other state officials have claimed that the BDCP process is open and transparent. Those claims of encouraging public participation and openness are false. By refusing to post critical comment letters, the speech of the commenters on BDCP is silenced in this age of the Internet. The public is shielded from seeing the other side of the Twin Tunnels story.

Meanwhile, the BDCP Applicants continue to tout the Twin Tunnels on the website. (Spanish language posting, January 3, 2014 entitled *Breve Informativo*; English language Overview Presentation posting, January 20, 2014**).** The BDCP Applicants have been free to misrepresent and omit knowledgeable and unpalatable facts from the web site while silencing responsive correction.

Instead of encouraging public participation, the agencies are doing everything in their power to discriminate against and exclude views opposing the Twin Tunnels from the public website forum they have created. This is part of a pattern of suppression of free speech that was displayed in the summer of 2013 when CalTrans employees trespassed on private property in the Delta to remove signs carrying the message "Save the Delta! Stop the Tunnels!" That thuggery by the State only stopped after it was brought to widespread public attention by media coverage and rallies protesting the sign removals; no legal basis for the sign removals was ever provided by CalTrans.

Claiming that taking more water away from the fish will be good for the fish, that taking more freshwater away from the Delta would be good for the Delta and that a water grab for the benefit of the exporters is really a conservation plan is false propaganda intended to deceive and confuse the public. This pattern and practice of viewpoint discrimination by the BDCP proponent agencies is the strongest self-indictment that could be made of the folly, environmental destruction and economic waste threatened by the Twin Tunnels project. The government would not suppress the speech of project opponents if it had true confidence that its own claims about the asserted benefits of the Twin Tunnels.

3. Viewpoint Discrimination on the BDCP Website Violates the First Amendment

The First Amendment of the United States Constitution provides in pertinent part that there shall be no law "abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances." Similarly, the California Constitution commands that "A law may not restrain or abridge liberty of speech or press" and the

people have the right to "assemble freely to consult for the common good."[14] "In a public forum, by definition, all parties have a constitutional right of access and the state must demonstrate compelling reasons for restricting access to a single class of speaker, a single viewpoint, or a single subject. When speaker and subject are similarly situated, the state may not pick and choose."[15] "Any access barrier must be reasonable and viewpoint neutral [citations]."[16] "When the government targets not subject matter, but particular views taken by speakers on a subject, the violation of the First Amendment is all the more blatant. [Citation.] Viewpoint discrimination is thus an egregious form of content discrimination. The government must abstain from regulating speech when the specific motivating ideology or the opinion or perspective of the speaker is the rationality for the restriction."[17]

Under the current regime, only those viewpoints that the government chooses will be posted on the BDCP website. For example, the website continues to include blogs purporting to debunk alleged "Myths" about the BDCP, and other materials written to promote BDCP and discount public concerns.[18] This blog suggests that a comment on the blog may be provided by clicking on a link. ("Click here to contact us with your questions or comments about the BDCP Blog.") Yet that link is the same link to the email address for submitting formal public comments on the Plan and EIR/EIS (BDCP.comments@noaa.gov). As explained clearly on the BDCP website, such comments will not be posted. The exclusion of critical comments from the BDCP website at the same time as the government agency proponents continue to post materials that promote their viewpoint that BDCP is a worthwhile project violates the First Amendment prohibition of viewpoint discrimination in forums created by the government.

4. The Denial of the Right of Access to Critical Comments Violates the California Constitution

The California Constitution provides in pertinent part that "The people have the right of access to information concerning the conduct of the people's business, and, therefore, the meetings of public bodies and the writings of public officials and agencies shall be open to public scrutiny."[19] Moreover, any authority "shall be broadly construed if it furthers the people's right of access, and narrowly construed if it limits the right of access."[20]

"Given the strong public policy of the people's right to information concerning the people's business (Gov.Code, § 6250), and the constitutional mandate to construe statutes limiting the right of access narrowly, all public records are subject to disclosure unless the Legislature has *expressly* provided to the contrary."[21]

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[14] California Constitution, Article I, § 2(a); § 3(a).

[15] *Perry Educ. Assn. v. Perry Local Education Assn,* 460 U.S. 37, 55 (1983).

[16] *Christian Legal Soc. Chapter of the University of California, Hastings College of the Law v. Martinez,* 130 S.Ct. 2971, 2984 (2010).

[17] *Rosenberger v Rector and Visitors of University of Virginia,* 515 U.S. 819, 829 (1995).

[18] See, e.g., http://baydeltaconservationplan.com/news/blog/14-01-10/Correcting_Stubborn_Myths_Part_II.aspx.

[19] California Constitution, Article I, § 3(b)(1).

[20] California Constitution, Article I, § 3(b)(2).

[21] *Sierra Club v. Superior Court,* 57 Cal.4th 157, 166 (2013) (internal quotation marks deleted).

The complexity of the BDCP and the volume of documents being circulated for public review to explain that complexity make review challenging even for professionals. For an average member of the public, the job is almost impossible. The public's ability to be informed regarding this project is facilitated by having access to comments being made by others during the review process, including non-profit environmental groups and other public agencies. The refusal to publish comment letters on the website as they come in denies the public the right of access to the comments in violation of the California Constitution.

5. The Exclusion of Environmental Information Contrary to the Opinions of the Project Proponents Violates NEPA and CEQA

NEPA and CEQA are both "environmental full disclosure laws."[22] Both laws require that an agency "use its best efforts to find out all that it reasonably can" about the subject project and its environmental impacts.[23]

Interfering with review by members of the public of comments made by other members of the public is environmental concealment, not disclosure, and is calculated to prevent the public from finding out all that it reasonably can about the subject project and its impacts.

CEQA provides that "notwithstanding any other provision of law" the record of proceedings "shall include, but is not limited to," written documents submitted by any person relevant to findings and all written correspondence submitted to the respondent public agency with respect to compliance with CEQA or the project.[24]

The NEPA Regulations require that federal agencies make comments received under NEPA available to the public pursuant to the provisions of the Freedom of Information Act and that they shall be provided without charge to the extent practicable.[25]

The CEQA Regulations provide that:

> Public participation is an essential part of the CEQA process. Each public agency should include provisions in its CEQA procedures for wide public involvement, formal and informal consistent with its existing activities and procedures, in order to receive and evaluate public reactions to environmental issues related to the agency's activities. *Such procedures should include, whenever possible, making environmental information available in electronic format on the Internet, on a web site maintained or utilized by the public agency.*[26]

Instead, the BDCP proponent agencies have selectively published environmental information favorable to the project on their website while concealing what they consider to be unfavorable information that they would rather not share with the public until it is too late for cross-pollination

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[22] *Silva v. Lynn*, 482 F2d 1282, 1284 (1st Cir. 1973)(NEPA); *Communities for a Better Environment v. City of Richmond*, 184 Cal.App.4th 70, 88 (2010)(CEQA).

[23] *Barnes v. U.S. Dept. of Transp.* 655 F.3d 1124, 1136 (9th Cir. 2011)(NEPA); *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova*, 40 Cal. 412, 428 (2007)(CEQA).

[24] Public Resources Code § 21167.6(e)(3), (7).

[25] 40 C.F.R. § 1506.6(f).

[26] 14 Code Cal. Regs § 15201(emphasis added).

of ideas to occur among the public. Making the comments available only *after* the comment period has closed makes a mockery of the promise of a fair, transparent and open process. Members of the public will have no opportunity to learn information provided by those with concerns about the BDCP in time to help them develop their own timely comments, including suggested alternatives to the project. The exclusion of comments from the website violates the environmental full disclosure purposes of both NEPA and CEQA, and the CEQA regulation requiring the posting of environmental information on the agency's website.

Exclusion of public comments from the BDCP website makes the claim that the BDCP encourages public participation a lie, and violates the First Amendment, California Constitution, NEPA and CEQA. This blatant viewpoint discrimination will not be tolerated. We demand that your agencies immediately commence posting all comment letters received on the BDCP website as soon as they are received, and confirm in writing that you are now doing so.

C. Government's Public Trust Responsibility, the Delta Common Pool, and the ESA

Enforcing the Public Trust Doctrine is an environmental justice issue, both broadly and narrowly construed. The Delta's public trust resources—the listed and covered fish species and the non-covered fish species of the Delta—are all nurtured at some point in their lives (if not their whole lives) in the Delta common pool. Protecting the commons in the Delta common pool is at stake from the proposed activities of the Bay Delta Conservation Plan. Governments have a permanent fiduciary responsibility and obligation to protect the public trust. In *National Audubon Society v. Superior Court*, the court held that "the public trust is more than an affirmation of state power to use public property for public purposes. It 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 of protection only in rare cases when abandonment of that right is consistent with the purposes of the trust."

The Public Trust Doctrine is an affirmation of the duty of the state to protect the people's common heritage in streams, lakes, marshlands, and tidelands.[27] The Delta is a common pool resource. DWR acknowledges this legal reality.[28] The application of the Public Trust Doctrine requires an analysis of the public trust values of competing alternatives, as was directed by the State Water Board in the Mono Lake Case. Its applicability to alternatives for the Delta, where species recovery, ecosystem restoration, recreation and navigation are pitted against damage from water exports, is exactly the kind of situation suited to a Public Trust analysis, which should be required by the Delta Plan and BDCP. The act of appropriating water—whether for a new use or for a new method of diversion or of use— is an acquisition of a property right from the waters of the state, an act that is therefore subject to regulation under the state's public trust responsibilities.

Aspects of the Public Trust Doctrine are taken up and fulfilled by adequate conduct of the habitat conservation planning process. For instance, both ESAs require the state and federal fishery agencies to find and demonstrate the BDCP will not result in take of listed species that would appreciably reduce their chances of survival and recovery must apply as well to what it means to protect these species under the public trust doctrine. The Services' HCP Handbook states in pertinent part:

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[27] *National Audubon Society v. Superior Court* (1983) 33 Cal 3d, 419, 441.

[28] California Department of Water Resources, *Water Transfer Approval: Assuring Responsible Transfers*, July 2012, page 3. Accessible online 16 February 2014 at http://www.water.ca.gov/watertransfers/docs/responsible_water_transfers_2012.pdf. In addition, the Delta Protection Act of 1959 also acknowledges this reality, California Water Code Sections 12200-12205.

> This finding typically requires consideration of two factors: adequacy of the minimization and mitigation program, and whether it is the maximum that can be practically implemented by the applicant. To the extent[ ]that the minimization and mitigation program can be demonstrated to provide substantial benefits to the species, less emphasis can be placed on the second factor. *However, particularly where the adequacy of the mitigation is a close call, the record must contain some basis to conclude that the proposed program is the maximum that can be reasonably required by that applicant. This may require weighing the costs of implementing additional mitigation, benefits and cost of implementing additional mitigation, the amount of mitigation provided by other applicants in similar situations, and the abilities of that particular applicant.* Analysis of the alternatives that would require additional mitigation in the HCP and NEPA analysis, including the costs to the applicant is often essential in helping the Services make the required finding.

The federal ESA further requires adequate funding for the habitat conservation plan and its associated procedures are dealt with. This funding must adequately cover "procedures to deal with unforeseen circumstances" as well.

> *...The Services must ensure that funding sources and levels proposed by the applicant are reliable and will meet the purposes of the HCP, and that measures to deal with unforeseen circumstances are adequately addressed. Without such findings, the section 10 permit cannot be issued.*[29]

Because "the adequacy of mitigation" in BDCP is *definitely* "a close call," the Plan also provides an economic analysis in an attempt to address the fishery agencies' concerns over whether additional mitigation is needed before approving the BDCP. Thus, in the ESA regulatory framework, the implementation of assured mitigation requires an economic analysis of each take alternative examined in the habitat conservation plan.[30]

Unfortunately, the benefit-cost analysis called for in HCP guidelines and in BDCP need only consider whether the benefits of the Plan outweigh costs to the Applicants.

The public trust doctrine requires government to go further. In the case of the Bay Delta Conservation Plan, it demands an accounting of the benefits of nature's services and the cost to society of replacing what ecosystem services are damaged by water development under BDCP. This way, government assesses whether the BDCP represents net benefits over its costs to society as a whole, beyond the net benefits to the Applicants, as provided under the ESAs. Put another way, the ESA economic analysis asks what the net payoff is to the Applicants of the project, while the public trust doctrine requires of examination of the overall net benefits to society as whole, including to future generations. It can be successfully used to value nature's services.[31]

But the HCP process for obtaining incidental take permits and "no surprises" in endangered species treatment flies in the face of the public trust doctrine. In the absence of any legal analysis, we are deeply concerned that the State of California would contract away its obligation to protect Delta public trust resources as the ink dries on the BDCP, its Implementing Agreement, and the incidental take permits. The EIR/EIS fails to disclose and analyze this crucial issue. In so doing, it fails to

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[29] *HCP Handbook*, pages 7-3 and 7-4. Emphases added.

[30] *Bay Delta Conservation Plan.*, November 2013, Chapter 9, p. 9-38, lines 12-15, p. 9-39, lines 1-4.

[31] ECONorthwest, *Bay-Delta Water: Economics of Choice*, prepared for the California Water Impact Network as part of comments on the Delta Stewardship Council's Delta Plan, January 11, 2013. Accessible online at http://www.c-win.org/webfm_send/282.

address our introductory question: why are the BDCP Applicants deserving of 50 years of regulatory stability when their activities to date have caused the problems they claim BDCP will solve? Without this information, decision makers cannot make fully-informed decisions as required by the California Environmental Quality Act and the National Environmental Policy Act.

The Delta Stewardship Council and the State Water Board clearly have trustee responsibilities in balancing the public trust here in California. However, the final Delta Plan and BDCP both gratuitously mention the public trust obligation but provide no analysis.[32]

D. Restoring the Delta for All

An environmental justice vision of the Delta reflects principles that apply beyond the life of the BDCP planning process and can be used to guide future Delta planning decisions. A sustainable Delta that provides for the needs of environmental justice communities, currently spread broadly across the legally defined Delta, will provide a safe, livable environment for all current and future residents of the Delta. That environment will include necessary infrastructure for water, flood protection, adequate transportation, etc., and will include economic opportunities for current and future community residents.

Environmental justice and disadvantaged communities face multiple barriers in trying to address the needs of their communities. These include:

- Competing priorities. These communities face multiple challenges that, due to a lack of resources, are often addressed on an emergency basis, if at all.
- Lack of access to decision-making processes, including language translations and meeting interpretation.
- Limited data on the scope of their issues
- Lack of resources

Achieving a BDCP—or, preferably, some set of actions that literally "restores the Delta" for all its species, residents and visitors—that addresses these barriers will require special focus on communities that lack the financial flexibility to easily adapt to substantial changes in the way of life in the Delta, as well as when planning for climate change and catastrophic events. There are key elements and considerations necessary to ensure that EJ communities do not suffer disproportionately and, conversely, that EJ communities benefit equitably from new policies governing the Delta, its economy, and its common pool resources.

1. Procedural Elements

- *The Delta decision-making structure must recognize and address the differing capacity for participation among interested stakeholders in order to ensure a fair and balanced BDCP.*
- *Planning and implementation of the BDCP must incorporate meaningful stakeholder engagement that contributes to and impacts the outcome of the BDCP.*
- *Data gaps relevant to disadvantaged and environmental justice communities must be identified and addressed.*

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[32] Environmental Water Caucus, *Response Letter to the Final Delta Plan, Recirculated Draft PEIR and Rulemaking Package*, January 14, 2013, page 5. Accessible online 16 February 2014 at http://ewccalifornia.org/reports/ewcdeltaplancommentsfinal.pdf.

- *Decisions based upon inconclusive data should be made in a provisional and reversible manner.*

A sustainable Delta will be governed by a diverse and representative set of agencies and interested stakeholders. The best and most defensible decisions are made with full participation of all interested stakeholders. The current and historical make-up of Delta policy decision-making structures focus representation on those stakeholder groups with the most powerful voices. Not surprisingly, this has limited the range of discussion to focus on areas of conflict. Broadening the stakeholder base increases the range of topics to be discussed, but also provides an opportunity to reach consensus on issues that have not previously been central to the discussion.

Enabling meaningful engagement and statewide investment in Delta restoration and management will require education and capacity building around the state. California's residents, by and large, have no idea where the Delta begins and ends or the role it plays in providing for California's water resources. Education can serve multiple purposes including the development of a greater investment in the Delta that may translate into support for additional resources to sustain the Delta. In addition, education can help to build capacity for more meaningful participation. Delta planning will benefit greatly from a more informed and engaged community who can impact the Delta through their individual behaviors (i.e.: conservation, reduced pesticide use, alterations in boating practices, etc.) and in their contributions to the greater decision-making process.

Implementing agencies and impacted communities need basic information upon which to base decisions and evaluate outcomes. For impacted communities, a lack of data monitoring and evaluation means that information about cumulative impacts is absent from decision-making, and that funding opportunities are missed. For agencies, decisions made on this uncertain foundation are subject to challenge. The BDCP process must, as part of its recommendations, identify areas in which key information must still be gathered to support its conclusions.

The Delta is a dynamic system. Any ideal developed in a one-time process will fail to account for unknowns that are difficult to predict. Thus, the most important element of a new vision for the Delta is a governance structure that will be flexible, and able to make decisions in a timely fashion and in the face of uncertainty, but will also provide full opportunity for participation and review of previous decisions and course change as necessary to achieve a sustainable delta. The proposed BDCP does neither. We don't see such a governance structure in BDCP.

2. Water Supply/Water Quality

- *Drinking water quality and supply, both groundwater and surface water, must be adequate for all people who live in California.*

- *The public health impacts on subsistence fishers from eating unsafe amounts of contaminated fish must be addressed through efforts to improve water quality and to reduce exposure to mercury and other harmful bio-accumulative contaminants.*

While the major focus in the BDCP has been on water supply, water quality is a key component of a functional Delta. High quality water is necessary for the proper functioning of the ecosystem, drinking water supply, and provision for dietary subsistence.

Any water quality requirements set for the Delta must take into consideration the fact that people eat the fish swimming through the Delta. We estimate that more than 20,000 people, including young children, eat fish from the Delta as a dietary staple. These families often lack the economic flexibility to purchase alternative sources of nutrition. Because it will take generations to reduce

mercury contamination in fish, risk reduction activities must be developed with community input and implemented—*that will actually reduce their risk of exposure and mitigate health impacts when they occur.* We believe selenium toxicity in fish is understated in BDCP documentation (see elsewhere in Section II and III).

In addressing the clear and pressing issues of surface water quality in the Delta, the continuing deterioration of groundwater quality within the Delta and its source watersheds must also be of concern. A BDCP that ignores groundwater quality condemns a significant number of California residents to continue reliance on substandard drinking water supplies, and ignores the potential for great improvement in water supply reliability that can be made through groundwater conjunctive use south of the Delta.

3. Land Use

- *Impacts on low-income homeowners, such as threats to public safety and lowered home values must be addressed as part of any proposed land use changes called for by the new BDCP.*
- *Affordable housing opportunities must be maintained as land use changes are implemented.*
- *The disproportionate impacts of flooding on renters must be mitigated for all resident of the Delta, including those who work and live in the Delta, but do not own land.*
- *The impacts on existing communities of alterations in land use plans must be evaluated, particularly the potential for increased vulnerability to flooding.*
- *Emergency response plans must address the needs of the low-income and Latino populations at disproportionate risk from flood events.*

A sustainable Delta will require dramatic changes in land use decisions. The Delta is already over-developed limiting choices for flood attenuation and increasing the potential for catastrophic damage associated with a seismic event. As those choices are made the potential exists to provide equitable benefits in planning for EJ communities, but there is also the threat of disproportionate impacts on those same communities. For this reason, a sustainable vision for the Delta must identify and account for the particular impacts on EJ communities.

Changes in allowable land use patterns must be an element of a sustainable Delta. Current patterns of development will leave entire communities at risk in the event of seismic activity or flooding. We are deeply concerned that BDCP facilities and alignments may foreclose options for improving land use and affordable options for the Delta's poorest residents. A disproportionate number of these at-risk developments are populated by low-income, predominantly Latino residents. Changes in flood mapping and zoning will have a profound effect on their investments, while their ability to recover from a flood event is limited. Moreover, these existing communities may be detrimentally impacted by the advent of upper scale developments protected by new "super levees," which have the potential to re-route flood waters in ways that may negatively impact lower income communities.

In addition, Hurricane Katrina ("Katrina") provided a vivid illustration of the potential impacts of a catastrophic event. Katrina made it very clear that the people with the fewest resources tend to suffer the most, and as many remaining homeless families in New Orleans will tell you, recover the slowest from a catastrophic event. If we want to avoid a similar tragedy any BDCP must protect communities remaining in the Delta and expedited emergency evacuation plans with special focus

on educating environmental justice communities to be aware of the plan and with the resources necessary to actually evacuate these communities.

At an even greater disadvantage are communities that reside in, but don't own property in, flood plains—including tenants and farmworkers. These communities receive less assistance than property owners after a flood event and are more likely to be permanently displaced. Any emergency plan must target the special needs and vulnerabilities of these residents as well as their leadership capacity, if supported with resources.

Finally, as development becomes limited and/or more expensive in flood plains, the supply of low-income housing will be curtailed. Any land use changes must include a plan for provision of affordable housing for the current and expected population in the Delta region. This BDCP fails on each of these points.

4. Local and State Economies

- *Proposed changes in agricultural practices or other economic activities must evaluate the potential impacts of those changes on Delta residents, particularly farmworker and other disadvantaged communities.*

- *Implementing the BDCP should provide economic opportunities to current Delta residents.*

The "legal" Delta is largely an agricultural and recreational economy. As such, many of the employment opportunities require only lower levels of educational attainment. Changing crops, fallowing or retiring land, shifts in recreational opportunities and supporting service industry will impact Delta communities who provide this labor force. Such dislocations go beyond the paycheck these individuals receive, to include loss of the very communities where these individuals live. While they may comprise migrant communities, in fact these are stable, established communities, often now for the past two generations. Any changes in the economic viability of these communities must be accommodated in a sustainable BDCP.

Conversely, proper care-taking of the Delta and its resources can provide new economic opportunities that should be targeted at these residents. Water quality monitoring, wetland restoration, and levee reconstruction and repair all provide new or continuing job opportunities for Delta workers.

5. Environment

- *A sustainable Delta must provide necessary water flows to maintain the common pool and ecosystem, and regulators must have the flexibility to amend these flows as circumstances dictate.*

- *Ecosystem impacts, beyond flow, must be considered and altered to improve ecosystem health.*

- *BDCP must recognize the impact of upstream source control and flood attenuation activities on the health and viability of the Delta.*

The collapse of Delta smelt and other fish populations calls for sober reflection on the dangers of unintended consequences. Environmental justice communities have a similar unfortunate history; that is, the dismissal of cumulative impacts on their communities as insignificant until such time as their impact on the community's health is undeniable and perhaps irreversible.

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To ensure that community health and the environment are protected in the BDCP process, we recommend that decisions on changes in conveyance and operation of Delta water infrastructure be incremental and reversible, dependent upon the measured impact on the ecosystem. This can only be done by having habitat restoration proceed first, so that society knows it will succeed. Success for the Delta common pool resources should be assured before any Twin Tunnels project is deemed safe to develop. Agricultural and storm water discharges be limited to protect water quality. Remediation of mine sites and stream beds be prioritized and ecosystem restoration projects be prioritized, sited, and designed so as to limit the potential for additional methylation of mercury and the related health impacts to wildlife and human health.

E. The Delta Plan

The Bay Delta Conservation Plan enters a larger context beyond the state and federal Endangered Species Acts. In 2009, the State Legislature approved new initiatives in California water policy. Key among these was creation of the Delta Stewardship Council (with its Delta Science Program) and the Council's Delta Independent Science Board. The legislation required the Council to complete a Delta Plan that regulates "covered actions" in the Delta. BDCP and its Twin Tunnels project is one such covered action. The legislation describes criteria for how the Council and the California Department of Fish and Wildlife must consider the Bay Delta Conservation Plan for inclusion in the Delta Plan. DFW is responsible for making findings under the state's Natural Communities Conservation Planning Act and the California Environmental Quality Act. Once these findings are made and the Department issues its incidental take permit approval, the law requires the Delta Stewardship Council to incorporate BDCP into the Delta Plan. However, the same section of the law requires the Delta Stewardship Council to hold a public hearing about the incorporation of BDCP into the Delta Plan, and allows that the Department's approval of BDCP may be appealed to the Delta Stewardship Council. By this reading of the law, the Delta Stewardship Council may have some type of veto power over BDCP.[33]

F. The State Water Resources Control Board's Bay-Delta Plan

Since 2009, the State Water Board has sought to update its water quality control plan (WQCP) for the Bay Delta Estuary. The Board is not legally bound to consider incorporating the BDCP the way that the Delta Plan is. However, Conservation Measure 1 (CM 1), Water Facilities, of the Bay Delta Conservation Plan employed modeling criteria for the Twin Tunnels project that, if elevated to the status of flow and operational objectives in the WQCP, represent the likely shape of "regime change" for water quality control in the Bay Delta Estuary should the Twin Tunnels move forward. Neither the BDCP nor its EIR/EIS acknowledge the Twin Tunnels need for "regime change." They do not analyze how it will likely force the State Water Board to revisit most if not all its current Delta water quality objectives while also adding new ones to accommodate operation of new intakes along the lower Sacramento River.

Currently, the Bay-Delta WQCP and its implementing water rights decision D-1641 regulate salinity and flow conditions for the legal Delta region's water ways. Flow objectives in the Plan currently cover Delta outflow, Sacramento and San Joaquin Rivers' inflow, the ratio of exports to inflows, the size and position of the low salinity zone (the estuarine objective, X2), and the operation of the Delta Cross Channel gates near Walnut Grove.

The modeling criteria for CM 1 would introduce "bypass flows" on the lower Sacramento River as well as new diversion objectives for the three North Delta intakes of the Twin Tunnels project that

[33] California Water Code Section 85320. This section as written is silent about the possibility of the Delta Stewardship Council upholding such an appeal, and on what legal grounds for upholding an appeal would be.

would be located between Clarksburg and Courtland. It would also introduce new Old and Middle River (reverse) flow objectives as well. It would revise the inflow-to-export ratio objective and may force reconsideration of salinity objectives at Emmaton on the Sacramento River and Jersey Point on the San Joaquin. Operational objectives for a gate at the head of Old River would be needed as well.

The State Water Board will need to prepare and adopt a new Bay Delta Plan before authorizing water rights permits for new north Delta diversions for the Twin Tunnels project, otherwise BDCP-project water rights permits will not conform to the current Bay Delta plan. The Bay Delta Plan must come first and must demonstrate compliance with the federal Clean Water Act (CWA), including its anti-degradation policy. BDCP must also comply with federal Clean Water Act regulations and water quality objectives as well. The Bay Delta Plan must also meet the obligation for state flow (and salinity) standards to protect—not "reasonably" protect under Porter Cologne provisions such as Sections 13000 and 13241—the most sensitive beneficial uses, as is required by the CWA. Where there are multiple beneficial use designations, the Bay Delta Plan must protect the most sensitive beneficial use.[34] The State Water Board typically reserves jurisdiction upon issuing new or modified water right permits.

It is our understanding that the BDCP and its Environmental Impact Report/Statement are to be employed not only for making findings to support approval of the Applicants' incidental take permits but also to support issuance of the State Water Board's water rights permits for the proposed Twin Tunnels and associated uses of water (such as increased flows for Yolo Bypass associated with the BDCP's seasonal floodplain inundation strategy). ***In their current condition, these documents are at best unready to fulfill such a role.***

Both the US Bureau of Reclamation and the California Department of Water Resources filed petitions with the State Water Board to extend the time on their water rights permits to allow additional time to complete facilities on the Central Valley Project and the State Water Project. No mention is made of these time extension requests in the BDCP or its EIR/EIS, despite several governmental and nonprofit entities filing protests of the requests with the Board.[35]

G. Availability of Water

At this time, the Bay Delta Conservation Plan's Applicants *assume* that the Twin Tunnels project will have sufficient water rights to carry out its operations. Water quality control planning efforts to date have led the Board to consider proportional tributary contributions needed to meet Delta inflow objectives from the Sacramento and San Joaquin River Basins to improve water quality and protect all beneficial uses, including fish and wildlife, in the Delta. The State Water Resources Control Board has authority over water rights in the Basins that would enable it to reallocate water usage and ensure compliance with the Board's new instream flow objectives.

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[34] See 40 CFR § 131.11; *see also* 40 CFR § 131.6.

[35] Among those entities filing protests were EWC member groups California Water Impact Network, California Sportfishing Protection Alliance, and AquAlliance.

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The Environmental Water Caucus has previously illustrated how the Central Valley Project and the State Water Project have failed for decades to have enough water to fulfill the contract-based demands of their numerous contractors in the Central Valley and southern California.[36]

Water availability analysis is an important method for modeling how the Board would implement new flow objectives. Testimony submitted in 2012 by EWC member organizations California Water Impact Network, California Sportfishing Protection Alliance, and AquAlliance illustrates the use of a planning-level water availability analysis for the Trinity River (much of whose flows are diverted to the Central Valley watershed of the Bay-Delta Estuary), and the major tributaries of the Sacramento and San Joaquin River Basins. The analysis incorporated the Basins' hydrologic variability, instream flow requirements based on the Board's 2010 public trust Delta flow determinations[37], and then allocated the divertable flows that remain in the system according to known publicly available water rights data and priorities. They found that under public trust protective flow determinations, the promised water represented in water rights claims exceed flow conditions available to these claims.

In addition, the California Water Impact Network has shown that total consumptive water rights claims for the Sacramento and Trinity River basins exceed annual average unimpaired flows by a factor of 5.6 acre-feet of claims per acre-foot of flow. A similar ratio occurs in the San Joaquin River Basin. The river basins of the Delta's Central Valley watershed are over-appropriated. The analysis showed that Bureau and DWR water rights had potentially clouded titles to water on the Sacramento, Feather, American, Stanislaus, and San Joaquin Rivers.[38]

The EWC objects to approval of BDCP and its EIS/EIR because they fail to disclose the root cause of Delta water supply "unreliability" and the "Delta crisis." The State Water Resources Control Board, the Department of Water Resources and the US Bureau of Reclamation are unwilling to eliminate the paper water in both the overall water rights system of the Central Valley and the excess contractual amounts of the state and federal water projects. The absence of clearly analyzed and legally reliable water availability for nature as well as for society means that the state and federal fishery agencies risk issuing incidental take permits for supply benefits to the Applicants that are based on wishes and prayers. Failure of these fictitious benefits could jeopardize the Applicants' continued ability to pay for and comply with BDCP covered activities and programs. That funding ability is crucial to adaptively manage the conservation, avoidance and minimization measures that are crucial to BDCP's conservation strategy, flawed as it is.

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[36] Letter from David Nesmith and Nick Di Croce, co-facilitators of the Environmental Water Caucus, to Katrina Chow, Project Manager, Shasta Lake Water Resources Investigation, United States Department of the Interior, Bureau of Reclamation, dated September 30, 2013, *Comments on Draft Environmental Impact Statement dated June 2013*, pp. 6-8.Accessible online 21 March 2014 at http://ewccalifornia.org/reports/shastadeiscomments.pdf.

[37] State Water Resources Control Board, *Developing Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem*, prepared pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009, August 2010, 178 pages. Accessible online 7 April 2014 at http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/final_rpt.shtml.

[38] Stroshane,T., *Testimony on Water Availability Analysis for Trinity, Sacramento, and San Joaquin River Basins Tributary to the Bay-Delta Estuary*, Submitted by the California Water Impact Network on behalf of California Sportfishing Protection Alliance, and AquAlliance on October 26, 2012, for Workshop #3: Analytic Tools for Evaluating Water Supply, Hydrodynamic, and Hydropower Effects of the Bay-Delta Plan. Accessible online at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/comments111312/tim_stroshane.pdf

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The failure to adequately define and quantify "water supply reliability" renders these documents legally inadequate. CEQA and NEPA require that an EIS and EIR inform the public and decision-makers about adverse consequences of a project or program. These findings are crucial parts of BDCP's affected environment and environmental and regulatory baseline. **Absent a thorough documentation of the purpose and need for BDCP with respect to water supply reliability, decision makers cannot understand what type and level of reliability might be achieved. The National Environmental Policy Act and the California Environmental Quality Act are both violated as a result.**

The EWC has presented clear alternatives for achieving water supply reliability and Delta ecosystem restoration (Responsible Exports Plan) but our alternative was not considered in the Draft EIS/EIR. The EWC Reduced Exports Plan contains numerous actions that compensate for reduced Delta exports. This reasonable alternative has not been evaluated in the BDCP or in the Draft EIS/EIR. The EWC alternative has relied on strict enforcement of water quality laws, adoption of the State Water Resources Control Board and Fish and Game flow recommendations, shoring up of existing levees, ceasing the unreasonable use of water to irrigate toxic soils (primarily in the western San Joaquin Valley) that return pollution to the estuary, while also providing for modest export water supply with statewide water conservation, efficiency, and recycling measures to ensure existing supplies are extended to meet demand.

As we describe in Section VII, BDCP's Twin Tunnels project will function to increase the Central Valley Project and State Water Project's ability to arrange and facilitate cross-Delta water market transfers in drier and drought years. ***The very existence of the water transfer market is due to this lack of water available to fulfill SWP and CVP water right claims, and the contractual demands of their south of Delta customer agencies.***

BDCP all but ignore this crucial purpose of the Twin Tunnels project. They fail to call it out as a purpose to comply with CEQA and NEPA. The project itself increases reliance on the Delta in flagrant defiance of the Delta Reform Act of 2009, and fails utterly to justify why the Twin Tunnels are needed.

H. Reasonable Use of Water

California's constitution recognizes water rights only to the extent they are reasonable. No one has a right in California to use water unreasonably, not even the state and federal governments. (California Constitution, Article X, Section 2) Moreover, the state constitution also states that "such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water." The EWC believes that because lack of water availability and the precarious population status of listed fish species go unaddressed, the Bay Delta Conservation Plan's Twin Tunnels project (often referred to as "North Delta Intakes") in Conservation Measure 1 would be an unreasonable method of diversion of water, and that continued provision of a supposedly more reliable irrigation water supply to the drainage impaired lands of the western San Joaquin Valley, as is implied but not disclosed in the Bay Delta Conservation Plan and its EIS/EIR, would continue to be a wasteful and unreasonable use of water.

The Bay Delta Conservation Plan would violate the California Constitution's ban on wasteful and unreasonable use of water and method of diversion of water because BDCP:

- Fails to demonstrate and disclose its purpose and need,
- Reduces Delta outflow by increasing exports in violation of legal requirements to reduce reliance on Delta exports,
- More than appreciably reduces the likelihood that listed species can survive and recover in the Delta under operating conditions of the Twin Tunnels project, and

- Disconnects biological goals and objectives intended to help species survive and recover in the Delta from accountability of the BDCP Applicants for successful performance of the Plan.

I. Selenium Toxicity and Fate in the Delta

BDCP's analysis of selenium as a water quality stressor is inadequate for failing to acknowledge or address uncertainties about the regulatory and technological setting of the Grassland Bypass Project and long-term management and mitigation of selenium loading to the San Joaquin River in the western San Joaquin Valley. The California Water Impact Network provided the State Water Board with testimony about the Grassland Bypass Project's limitations and the broad overview of the challenges Grassland area farmers face in developing and implementing a cost-effective treatment technology for concentrating, isolating, managing and sequestering selenium.[39]

These projects indicate the ecological and public health risks of various scenarios of selenium loading to the Bay-Delta Estuary. BDCP irresponsibly downplays the risks and foreseeable costs and circumstances involved. See our detailed analysis of this issue in Section III.

J. Adaptive Management and the Rule of Law

Adaptive management "serves as a tool to address the uncertainty associated with the needs of species covered by" an HCP or NCCP. According to BDCP, the fishery agencies consider adaptive management to be "an integrated method for addressing uncertainty in natural resource management" that must be "linked to measurable biological goals and monitoring."[40] The EWC does not see how adaptive management can be accomplished on behalf of listed species in the Bay Delta Estuary with No Surprises rules applied to their protection and recovery. ***"Regulatory stability," No Surprises, and "adaptive management" mutually contradict each other.***

Estuaries like the San Francisco Bay-Delta are by definition areas where fresh water flows from rivers meet tidal flows from the ocean. Estuaries depend for their ecological productivity on interactions between fresh water from rivers and salt water from tides. Managing estuaries requires that resource managers and regulators have available *all* the tools they need—including fresh water inflows from major tributaries to the estuary—so they may act effectively for the good of the resource and the public trust, in real-time and over the long term.

Adaptive management has been described elsewhere as "an approach for simultaneously managing and learning about natural resources..."[41] BDCP recognizes this need to learn more about the mechanisms of flow, water project operations, and habitat functions in the Delta. To excess.

There are two adaptive management precedents for the massive restructuring of the Delta's hydrodynamics and ecology with insufficient advance knowledge of ill-conceived and damaging effects—the Central Valley Project and the State Water Project. We are still dealing with the projects' effects in an ex post facto adaptive management era that was capped by the enforcement of

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[39] Stroshane, T. 2012. *Testimony on Recent Salinity and Selenium Science and Modeling for the Bay-Delta Estuary,* prepared for the California Water Impact Network and submitted to the State Water Resources Board Workshop #1 Ecosystem Changes and the Low Salinity Zone, September 5 (and 6, if necessary), 44 pages plus appendices. Accessible online 21 March 2014 at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/cmnt081712/tim_stroshane.pdf.

[40] *Bay Delta Conservation Plan*, November 2013, Chapter 3, Section 3.6, p. 3.6-4, lines 2-3.

[41] Byron K. Williams, "Adaptive management of natural resources—framework and issues," *Journal of Environmental Management* 92 (2011): 1346.

the 2008 Delta smelt biological opinion and the 2009 salmonid biological opinion. It took four decades for adaptive management to begin to limit just the risk of jeopardy to Delta smelt and salmonids from project operations.

There is indeed much that remains unknown in the Bay-Delta estuary. BDCP's conservation strategy contains 22 conservation measures entailing at least 43 compliance actions required, 86 effectiveness monitoring actions, and 48 research actions to address uncertainties and risks of the plan. Any or all of these 175 research and monitoring-related actions could trigger further "adaptive management" actions to resolve uncertainties associated with BDCP implementation. This is a virtual, profound, and enormous reservoir of uncertainty and bureaucratic delay concerning BDCP risks. Uncertainty in one area adds uncertainty in others and must be accounted for.[42] All such delays work to the detriment of the fish species BDCP purports to help.

The Applicants request incidental take permits with 50-year terms. Under federal "No Surprises" rules, HCPs (including BDCP) are to identify which future circumstances it will accept responsibility for mitigating. All other circumstances will be deemed "unforeseen" and therefore beyond the scope of the HCP. Determining this scope of BDCP will ultimately limit the fishery agencies' authority to require additional mitigations from the Applicants in the form of land, money, or water.

BDCP's fine print (that is, the terms of the BDCP implementing agreement and the conditions of the incidental take permits) will determine how these risks and uncertainties will be apportioned according to "No Surprises" requirements. Once set, they last for 50 years.

With "No Surprises" in the ESA legal framework, the constraints of law trump the reasonable need to manage natural resources effectively. This is what we mean by adaptive management and "No Surprises" mutually contradicting each other. The "toolbox" for truly restoring the Delta and recovering listed species must include managing inflow to and outflow from the Delta. The Environmental Water Caucus would appreciate an explanation from the Applicants and the fishery agencies: How can the Bay-Delta estuary be managed adaptively if regulations, implementing agreements, and permit conditions governing the Twin Tunnels project preclude provision of additional flows from rivers controlled by the Applicants for the next 50 years? It is already the case that flows are documented to be inadequate for the protection and recovery of public trust resources (especially fish resources) in the Bay-Delta Estuary.[43] Without the ability to manage fresh water inflow to the Delta beyond parameters provided in BDCP (through No Surprises), and which currently assume Water Rights Decision 1641 (which is well-known to provide inadequate flows to the Estuary already), the Delta will continue to decline and fish species now on the brink of extinction will likely fall into it.

K. EWC Responsible Exports Plan

Development and evaluation of a range of reasonable alternatives are the declared "heart" of both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA)

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[42] Delta Science Program Independent Review Panel, *BDCP Effects Analysis Review, Phase 3,* p. 32, 40. Accessible online 7 April at http://deltacouncil.ca.gov/sites/default/files/documents/files/Delta-Science-Independent-Review-Panel-Report-PHASE-3-FINAL-SUBMISSION-03132014_0.pdf.

[43] See Note 21 above, p. 4, where the State Water Board states: "There is sufficient scientific information to support the need for increased flows to protect public trust resources; while there is uncertainty regarding specific numeric criteria, scientific certainty is not the standard for agency decision making."

required EISs and EIRs.[44] Despite that, the alternatives section (Chapter 3) of the Draft EIR/EIS and the Endangered Species Act (ESA) required Alternatives to Take section (Chapter 9) of the BDCP Draft Plan fail to include even one, let alone the CEQA, NEPA and ESA required range of, reasonable alternatives that would increase water flows in the San Francisco Bay-Delta by reducing exports. These serious violations of law, brought to your attention by the Environmental Water Caucus (EWC)(a coalition of over 30 nonprofit environmental and community organizations and California Indian Tribes) and Friends of the River (FOR), require corrective action.

The BDCP omission of alternatives reducing exports to increase flows is deliberate. A claimed purpose of the BDCP Plan is "Reducing the adverse effects on certain listed [fish] species due to diverting water." (BDCP Draft EIR/EIS Executive Summary, p. ES-10). "There is an urgent need to improve the conditions for threatened and endangered fish species within the Delta." (*Id.*). The omission of a range of reasonable alternatives reducing exports to increase flows violates CEQA, NEPA and the ESA. The failure to include even one alternative reducing exports to increase flows is incomprehensible. Alternatives reducing the exporting/diversion of water are the obvious direct response to the claimed BDCP purpose of "reducing the adverse effects on certain listed [fish] species due to diverting water."

The BDCP agencies have been marching along for at least three years in the face of "red flags flying" in their deliberate refusal to develop and evaluate a range of reasonable alternatives, or indeed, any alternatives at all, that would increase flows by reducing exports. Three years ago the National Academy of Sciences declared in reviewing the then-current version of the draft BDCP that: "[c] hoosing the alternative project before evaluating alternative ways to reach a preferred outcome would be post hoc rationalization—in other words, putting the cart before the horse. Scientific reasons for not considering alternative actions are not presented in the plan." (National Academy of Sciences, Report in Brief at p. 2, May 5, 2011).

The EWC Responsible Exports Plan contains numerous constructive actions to compensate for our recommendation to reduce exports.[45] This is a reasonable alternative that has not been considered in the BDCP or DEIS/EIR. These actions include alternatives for achieving water supply reliability and Delta ecosystem restoration. This alternative relies on strict enforcement of water quality laws, adoption of the SWRCB 2010 Delta Outflow and Fish and Game flow recommendations, shoring up existing levees, ceasing the unreasonable use of water to irrigate toxic soils that return pollution to the estuary, while also providing for exports and water supply along with water conservation measures to ensure existing supplies are extended to meet demand.

Unless the state is willing to write off restoring vibrant Delta waterways, and abundant fish and wildlife, the state needs to plan effectively for the water needs of both Californians and California ecosystems. The vicious spiral of "use, overuse, environmental decline, then hasty and unplanned reaction" can begin to be unwound by granting waterways the right to be at the planning table from the beginning, at a level truly "co-equal" to human water uses, rather than at the end when the damage has been done.

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[44] These comments were originally provided to Bay Delta Conservation Plan officials in a joint letter from Nick Di Croce, Co-Facilitator of the Environmental Water Caucus and E. Robert Wright, Senior Counsel of Friends of the River, "Comment Letter re Failure of BDCP Draft Plan and Draft EIR/EIS to Include a Range of Reasonable Alternatives Increasing Flows and Reducing Exports Including the Responsible Exports Plan Submitted by the Environmental Water Caucus," May 28, 2014. Accessible online at http://www.friendsoftheriver.org/site/DocServer/Cmt_817.pdf?docID=8741.

[45] Accessible online 14 May 2014 at http://ewccalifornia.org/reports/responsibleexportsplanmay2013.pdf.

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More than two years ago, on April 16, 2012, the Co-Facilitators of the EWC transmitted a short, 1 ½ page letter to Gerald Meral, Deputy Secretary of the California Resources Agency, sharing "concerns with the current approach and direction of the [BDCP] project and we would like to share those concerns with you." (Letter, p. 1). Most of the paragraphs in the letter dealt with the types of issues involving consideration of alternatives. The penultimate paragraph of the letter specifically pointed out:

> *The absence of a full range of alternatives,* including an alternative which would reduce exports from the Delta. It is understandable that the exporters, who are driving the project, are not interested in this kind of alternative; however, in order to be a truly permissible project, an examination of a full range of alternatives, including ones that would reduce exports, needs to be included and needs to incorporate a public trust balancing of alternatives. (Letter, p. 2).

We attached (for BDCP.Comments@noaa.gov) and incorporated by reference a copy of the April 16, 2012, EWC letter. As you can see from the letter's distribution list, the letter was also distributed to a number of other federal and State officials involved in the BDCP process and BDCP decision-making in addition to Gerald Meral who was leading the BDCP process.

On December 15, 2012 by email, and December 17, 2012 by letter, Nick Di Croce, Co-Facilitator of the EWC transmitted the EWC's Reduced Exports Plan to the California Resources Agency Deputy Secretary and requested "that you include it among the alternatives to be included in the BDCP." On November 18, 2013, FOR submitted a comment letter in the BDCP process urging those carrying out the BDCP to review the "Responsible Exports Plan [a later, more detailed version of the Reduced Exports Plan]" proposed by the EWC:

> as an alternative to the preferred tunnel project. This Plan calls for reducing exports from the Delta, implementing stringent conservation measures but no new upstream conveyance. This Plan additionally prioritizes the need for a water availability analysis and protection of public trust resources rather than a mere continuation of the status quo that has led the Delta into these dire circumstances. Only that alternative is consistent with the EPA statements indicating that more outflow is needed to protect aquatic resources and fish populations. The EWC Responsible Exports Plan is feasible and accomplishes project objectives and therefore should be fully analyzed in a Draft EIS/EIR."[46].

FOR specifically pointed out (at p. 3, fn. 1) that the plan was online at http://www.ewccalifornia.org/reports/resonsibleexpltsplanmay2013.pdf. We incorporate by this reference a copy of FOR's May 21, 2014 BDCP comment letter explaining in greater detail the failure of the Draft BDCP Plan and EIR/EIS to include the required range of reasonable alternatives as well as supporting legal citations. (The FOR letter is in the BDCP comments Record and may also be found online at www.friendsoftheriver.org/bdcpcomments). We also reiterate that the May 21, 2014 FOR comment letter attached and incorporated by reference a copy of the 39 page "Responsible Exports Plan" of May 2013 as setting forth a feasible alternative that must be considered in the BDCP process.

We repeat the EWC's demand for consideration of the Responsible Exports Plan alternative and reasonable variants on that alternative. This demand follows up EWC's similar requests which started back on April 16, 2012 but have to date been ignored in the BDCP process.

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[46] Friends of the River, November 18, 2013 comment letter at p. 3, Attachment 4 to FOR January 14, 2014 comment letter. Accessible online at http://www.friendsoftheriver.org/site/DocServer/Cmt_94.pdf?docID=7621.

We also urge you to not load up the Responsible Exports Plan alternative with "poison pills" designed to make the alternative or variants on the alternative appear infeasible or undesirable. Our suspicions of future BDCP process intentional violations of CEQA, NEPA and the ESA are heightened by the flat refusal of the BDCP agencies to develop or even consider a reasonable range of alternatives despite the clear warnings in this regard given by the National Academy of Sciences three years ago, and repeated by the EWC over the past three years. In addition, obvious variants on the Responsible Exports Plan alternative creating a range of reasonable alternatives will include reducing exports both more and less than the 3,000,000 acre-feet reduction called for by the Responsible Exports Plan alternative as well as phasing in reductions in exports over time.

Finally, the BDCP agencies have failed to produce an alternatives section that "sharply" defines the issues and provides a clear basis for choice among options as required by the NEPA Regulations, 40 C.F.R. § 1502.14. The choice presented should include increasing flows by reducing exports, not just reducing flows by increasing the capacity for exports as is called for by ***all*** of the so-called "alternatives" presented in the BDCP Draft Plan and EIR/EIS. No matter how badly the BDCP proponents do not want to reduce exports and increase flows, during the Draft CEQA, NEPA and ESA processes inclusion of such alternatives as part of a range of reasonable alternatives is mandatory. Because of the gross deficiencies in the BDCP alternatives and Alternatives to Take sections in the Draft BDCP Plan and EIR/EIS it will be necessary for the BDCP agencies to prepare and release for decision-maker and public review a ***new*** Draft Plan and ***new*** Draft EIR/EIS. Those new Draft documents ***must*** include alternatives and Alternatives to Take sections that present the required evaluation of a range of reasonable alternatives.

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III. BDCP fails to provide adequate ecological assurances under the endangered species laws.

A. No Quantified Incidental Take Estimates

The Bay Delta Conservation Plan fails to provide clear, direct analysis and findings of effects of the Twin Tunnels and other elements of the Plan on take of listed species, as a result of the Twin Tunnels' effects on population abundance, distribution, and critical habitat and whether those effects could result in jeopardy to listed species.

Chapter 9 of the Bay Delta Conservation Plan addresses alternatives to take. It provides no summary of what are anticipated quantified levels of incidental take for covered and listed fish species in the BDCP "proposed action" despite having used over 37 different types of models and generated 68 different models as a whole.[47] The chapter describes how the proposed action and its alternatives to take were developed, and how the take alternatives differ from EIS/EIR alternatives (Tables 9-1 and 9-2). It provides summary descriptions of the take alternatives (Table 9-3), their conveyance facilities components (Table 9-4), and their overall comparative differences relative to the BDCP proposed action (Table 9-5). It describes the "permanent effects" by natural community type of each take alternative relative to the BDCP proposed action, and summarizes the change in take for each alternative relative to the BDCP proposed action (Tables 9-6 and 9-7). It summarizes differences in consistency of each take alternative with BDCP goals (Table 9-8). It summarizes other environmental consequences of take alternatives that vary from those of the BDCP proposed action (Table 9-9). None of these comparisons are quantified despite all the modeling done for BDCP.

Chapter 9 ranks each take alternatives' expected change in incidental take ***in relative terms*** for each covered fish species (Tables 9-10 through 9-26, pages 9-49 through 9-184). After reviewing take alternatives' effects on all covered species using this relativistic method, BDCP summarizes the relative take effects on all covered species in Table 9-31, where it can be seen that among them are several take alternatives that are deemed to perform better than the BDCP proposed action from the standpoint of decreasing take on covered fish: the so-called "portfolio alternative" (Alternative D) containing just one 3,000 cubic feet per second (cfs) intake in the north Delta; "isolated conveyance" (Alternative E) would have reduced take for nine covered fish species, and "more restoration" (Alternative H) would have reduced take for 11 covered fish species both relative to the BDCP proposed action. Also significant is Take Alternative G, calling for less tidal restoration (which would consume more terrestrial habitat currently occupied by mammals, birds, reptiles, amphibians, and invertebrates). Take Alternative G which would result in no (zero) increase in take of covered species and reduced take relative to the BDCP proposed action for 20 species (over half of whom would be birds). We still do not know how much take would be occurring and what levels would be deemed incidental to the operations of an otherwise lawful activity.

Nowhere to be found in Chapter 9 is an estimate first of the ***absolute*** incidental take quantities for each covered fish species for the Bay Delta Conservation Plan's proposed action (i.e., the Twin Tunnels project of Conservation Measure 1); and second, no quantified estimate of the take alternatives ***in comparison to the absolute take*** of the BDCP proposed action. This is the central analysis needed for the fishery agencies to understand the magnitude of incidental take and level of regulatory effort they will face should they decide to issue incidental take permits to the BDCP proposed action.

[47] Bay Delta Conservation Plan, Chapter 5, Effects Analysis, Table 5.2-5, pages 5.2-17 to 5.2-21.

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As a result of this omission, it becomes impossible for the fishery agencies to quantify a magnitude, or a schedule of magnitudes, based on flow or other BDCP- or regulatory agency-controllable criteria for incidental take limits to be included in the conditions of incidental take permits.

Chapter 9 provides only ***a relative sense*** of incidental take outcomes: Alternatives D, E, and G would result in less overall incidental take of covered species (especially fish) than would the BDCP proposed action. While useful to know for whether to like one or another alternative, the relativistic analysis provided in Chapter 9 is an insufficient base of knowledge, analysis, and understanding of the covered species involved for regulating a set of 50-year incidental take permits on any of these alternatives.

What are the sizes of the population of each covered species involved? What are the permissible levels of take for each covered species for each life stage that occurs in the Delta that can be managed by actions organized under BDCP and its conservation strategy? Which alternatives would not appreciably reduce the likelihood and recovery of any of the listed species among those that are covered by BDCP? We were unable to locate this vital information in the Bay Delta Conservation Plan.

B. Inadequate Biological and Ecological Assurances

The Bay Delta Conservation Plan fails to provide adequate assurances that its biological goals and objectives will be implemented and used to hold the Applicants accountable for making progress towards recovery of listed species and minimizing incidental take, as well as compliance with the terms of the implementing agreement and incidental take permit terms.

Chapter 3, Section 3.3 of BDCP's conservation strategy discloses that:

> Failure to achieve a biological goal or objective will not be a basis for a determination by the fish and wildlife agencies of noncompliance or for the suspension or revocation of the [incidental take] permits as long as the Permittees are properly implementing the BDCP and in compliance with the Implementing Agreement and the permit terms and conditions.[48]

This passage early in the BDCP conservation strategy belittles the importance of biological goals and objectives, renders them irrelevant to the implementation of the BDCP and to whether BDCP complies with incidental take permit terms and conditions. ***This is unacceptable.*** How do the Applicants explain this passage? What is its basis, if any, in ESA law, regulation, fishery agency practice, and handbook usage? If the biological goals and objectives are irrelevant to determining compliance or making findings as to whether suspension or revocation of incidental take permits is warranted, why include the biological goals and objectives, conservation measures 4 through 10, and the entire adaptive management program contained in the draft Bay Delta Conservation Plan? If they are irrelevant to accountability of the Applicants throughout the 50-year term of the incidental take permits, then how could the fishery agencies be assured, in advance of permit issuance, that implementation of the Bay Delta Conservation Plan "*will not appreciably reduce the likelihood of the survival and recovery* of the species in the wild," as stated in the federal Endangered Species Act?

This question applies to several listed species addressed by the rest of the biological goals and objectives in BDCP: Delta smelt, longfin smelt, winter-run and spring-run Chinook salmon, and green sturgeon.

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[48] Bay Delta Conservation Plan, Chapter 3, Section 3.3 Biological Goals and Objectives, p. 3.3-2, lines 2-5. We note that the July 2013 draft implementing agreement states, "...will not be *the sole* basis..." for this clause, p. 25 of the implementing agreement. Emphasis added. We also note with concern that the November 2013 BDCP may represent the more recent formulation of this clause.

Combined with the absence of modeled estimates of quantified incidental take levels, this passage of the conservation strategy makes the thousands of pages of earnest analysis and detailed description of habitat restoration actions and covered fish species seem like an elaborate exercise in greenwashing and busy-making.

There are many more reasons to doubt, and reject, BDCP ecological assurances.

1. Flawed Habitat Restoration Hypothesis for Increasing Food web Productivity

Omitting a conservation measure that would use freshwater flow to manage nonnative invasive clam ranges and abundance is fatal to BDCP's habitat restoration plans and activities. ***Therefore BDCP cannot fulfill the Endangered Species Acts' requirements for ecological assurances that should not appreciably reduce the likelihood of the survival and recovery of listed species. The BDCP application for incidental take permits should be rejected by the fishery agencies.***

Even if the Environmental Water Caucus tries to take the habitat restoration component of the Bay Delta Conservation Plan seriously, flaws in the Plan's presentation and analysis are not addressed clearly and comprehensively. The flaws are likely fatal to success of the habitat conservation plan. They fail to provide adequate assurances for the ecological performance of its conservation strategy. Lack of realistic analysis and of planned corrective actions makes it extremely problematic for the fishery agencies to make findings on ecological and conservation assurances in support of issuing incidental take permits based on the Bay Delta Conservation Plan.

In essence, the most central ecological gamble of BDCP is that habitat and its food production capability can substitute for freshwater inflows to the Delta at key times of year in the service of protecting listed fish species so they have a chance to recover. This hypothesis is tenuous to start with, and BDCP stretches its thin threads across the relevant listed species: Delta smelt and longfin smelt and salmon smolts, Central Valley steelhead, and green sturgeon.

The hypothesis has two major components: the Twin Tunnels project (providing operational "dual conveyance flexibility" for moving water from the Sacramento Valley to the San Joaquin Valley) and physical habitat restoration. We take up the Twin Tunnels in the next section on hydrodynamics below. Physical habitat restoration is intended to protect, enhance, and restore natural habitat communities that provide food resources to covered fish species. Limited food availability is known as a factor in the catastrophic decline of Delta fish populations, including Delta smelt, longfin smelt, and juvenile salmonids since the 1970s.[49]

> Restoration of large, connected tracts of these natural communities is intended to substantially increase the extent of physical habitat for covered species (including cover, rearing habitat, nesting habitat, and food resources) and improve overall food web productivity in the restoration areas and adjacent aquatic habitat.[50]

Three principal types of terrestrial and tidal habitat are intended in the BDCP to boost food production for the listed and covered species: tidal natural communities, seasonal floodplain

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[49] For instance, the US Fish and Wildlife Service's Delta smelt biological opinion from December 2008 reported that summer copepod blooms were impaired by state and federal export pumping operations in the south Delta. Essentially, Delta smelt's major food supply and ecosystem support was being exported by the pumps, contributing to the reduction in Delta smelt abundance (page 197).

[50] Bay Delta Conservation Plan, Chapter 3, p. 3.2-10, lines 2-6.

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inundation, and channel margin habitat.[51] By increasing food supplies throughout the Delta-located life stages for covered fish species, BDCP hypothesizes it will increase fish health and improve overall fish fitness for reproducing and thereby increase the abundance of covered fish populations.

The food resources to be produced from restored habitat will originate onshore or nearshore in tidal marshes and riparian corridors, or offstream altogether in seasonally inundated floodplains. How will covered fish species access the food that will be produced? Some live away from shore in open water, while salmonid smolts, may or may not frequent tidal wetlands. BDCP believes optimistically that tidal wetlands, especially in the Cache Slough restoration opportunity area at the southern end of Yolo Bypass (combined with "floodplain enhancement"), and Suisun Marsh will "provide tidal freshwater wetland structure and functions that exchange with and benefit adjacent open-water habitat [citation]."

> Tidal wetlands...have the capacity to export food resources to adjacent channels and to downstream systems [citation]. The export of food to open-water areas may include movement of phytoplankton and zooplankton by advection and tidal exchanges and the export of productivity in the form of macro-invertebrates, small fishes, and other larger organisms [citation]. Of the Delta habitats, the tidal marsh sloughs have the highest particulate organic matter and phytoplankton concentrations and support the greatest zooplankton growth."
>
> ...[T]here are local examples of tidal marsh production being advected [that is, lateral flow vectors from shore to open water, rather than vertical or downstream flow with gravity] and/or tidally dispersed to adjacent habitats [citation]. Production from the lower Yolo Bypass, including Liberty Slough and Cache Slough marshes [where there is currently a Delta smelt refuge population in residence], stays relatively intact as it moves down the estuary [citation]. This production may contribute significantly to the greater foodweb, ultimately benefiting open-water species such as delta smelt [citation].[52]

Elsewhere in the BDCP, it is stated:

> The main hypothesis behind CM4 [tidal natural communities restoration] is that restoration of shallow tidal marshes and associated shallow subtidal habitat will increase the growth of phytoplankton and thereby increase the amount of zooplankton that are the food base for delta smelt [citation].[53]

BDCP more directly articulates a further hypothesis that habitat restoration-generated foodweb productivity can provide greater ecosystem services than can provision of additional freshwater river inflow to the Delta for eventual outflow from the Delta.[54] "Two key areas of uncertainty for the BDCP are the importance of fall outflow in achieving abundance and habitat objectives for delta smelt and the importance of spring outflow for achieving the longfin smelt abundance objective."[55]

These two "key areas of uncertainty" are framed as four hypotheses competing within the pages of both Chapters 3 and 5 of the Bay Delta Conservation Plan:

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[51] Each type of habitat community is provided its own conservation measure discussion in the Bay Delta Conservation Plan: Conservation Measure 4 (Tidal Natural Communities), Conservation Measure 5 (Seasonally Inundated Floodplain Enhancement), and Conservation Measure 6 (Channel Margin Habitat).

[52] Bay Delta Conservation Plan, Chapter 3, p. 3.3-105, lines 7-17 and 21-25.

[53] *Ibid.*, Chapter 5, p. 5.5.1-13, lines 20-22.

[54] In particular, BDCP states, "An analysis of food change potential for juvenile delta smelt is provided...for it has considerable relevance to the Fall X2 decision tree." Page 5.5.1-13, lines 22-24.

[55] *Ibid.*, Chapter 3, p. 3.3-24, lines 6-8.

- The US Fish and Wildlife Service's Delta smelt biological opinion in 2008 put forward the hypothesis that "the fall habitat objective will be achieved by providing fall (September-November) flows necessary to position X2 in or near Suisun Bay in wet or above-normal years." **Hypothesis:** Fall outflow provides key delta smelt habitat attributes, either directly or by providing delta smelt with maximum opportunity to access areas providing key habitat attributes.[56]
- Alternatively, it is hypothesized by BDCP that "new shallow-water habitat areas created through restoration of tidal natural communities (CM4) could accomplish this objective with lower outflow during the fall. If restoration of habitat for delta smelt is successful, there may be no need to provide the 'high outflow scenario' fall outflows...."[57] **Competing hypothesis:** Population performance of delta smelt is enhanced by biotic or abiotic habitat features that are *not dependent* on fall outflow of the magnitude described by the Fish and Wildlife Service's Fall X2 requirement.
- Concerning the longfin smelt **hypothesis:** Spring outflow provides key longfin smelt habitat attributes, either directly or by providing longfin smelt with maximum opportunity to access areas providing key habitat attributes.[58]
- BDCP's **competing hypothesis** that CM4 (tidal natural communities restoration) provides a "functional lift" in the form of "enhanced productivity and expanded habitat availability and that this lift will increase longfin smelt recruitment "per unit of Delta outflow," adding:

> Under this hypothesis, substantial benefits of tidal natural community restoration provide for the conservation and management of longfin smelt and help meet the biological objectives for this species. Therefore, the high-outflow scenario for spring outflow...would not be needed.[59]

These "decision trees" for spring and fall outflow are touted as analytical processes to compare these alternative hypotheses to identify strategies most likely to achieve BDCP biological goals for longfin smelt (via spring outflow determination) and Delta smelt (Fall outflow/X2 determination).

The decision trees are also a way to delay increased outflow requirements in the Delta. The State Water Resources Control Board has already determined that flows into and out of the Delta are insufficient for recovery of public trust fish resources in the Delta.[60] Moreover, the 9th Circuit Court

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[56] *Ibid.*, Chapter 5, p. 5.5.1-17, lines 9-11.

[57] *Ibid.*, Chapter 5, p. 5.5.1-16, lines 12-19.

[58] *Ibid.*, Chapter 5, p. 5.5.2-9, lines 22-24. The California Department of Fish and Game certainly acknowledges that longfin smelt are food-limited in their abundance, but their scientists argued in the 2009 incidental take permit effects analysis prepared on the operations of the State Water Project in the Delta that "food production is not the only factor involved because the X2 response [of longfin smelt abundance to high Delta outflows] has persisted [citations]." Quoted in lines 38-43, same.page.

[59] *Ibid.*, Chapter 5, p. 5.5.2-12, lines 20-23.

[60] State Water Resources Control Board, *Development of Flow for the Sacramento-San Joaquin Delta Ecosystem*, prepared pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009, August 3, 2010, p. 4, where the Board states: "There is sufficient scientific information to support the need for increased flows to protect public trust resources; while there is uncertainty regarding specific numeric criteria, scientific certainty is not the standard for agency decision making."

of Appeals recently upheld the 2008 Delta Smelt biological opinion by the US Fish and Wildlife Service, including its Fall X2 provision.[61]

But the decision trees concerning spring and fall outflow/X2 are relevant to BDCP's flawed habitat restoration for another reason. The presence of nonnative invasive clams (overbite clam, *Potamocorbula amurensis*, and the Asian clam, *Corbicula fluminea*) are likely to undermine the basis for the pro-habitat hypothesis by expanding their range and abundances to consume whatever zooplankton abundance increase is created by BDCP. No matter how much foodweb productivity may be boosted by BDCP-sponsored habitat restoration, that productivity can be consumed by invasive nonnative clams, particularly that of the salt-water overbite clam.

The problems posed by these two clam species is that they graze the same water column as Delta smelt and longfin smelt. They can graze the water column clean of food every day in a hurry, making it difficult if not impossible for the two small fish species to compete for food. According to Appendix 5.F of BDCP, at typical north Bay densities, *Potamocorbula,* which tends to occupy benthic sediments in Delta and Suisun Bay waters *downstream of X2's position in fresher water areas),* can filter phytoplankton from the entire water column more than once per day in open water Delta channels and almost "13 times per day over shallow areas." This filtration rate by *Potamocorbula* enables its consumption to exceed the phytoplankton growth rate in the Delta.[62] *Corbicula,* which tends to occupy benthic sediments in Delta and Suisun Bay waters *upstream of X2's position*, is considered in BDCP, Appendix 5.F to be less efficient than *Potamocorbula* at filtering out shallow water bodies like Franks Tract. But *Corbicula* can still "filter out the entire water column in less than a day."[63]

The good news, however, is that the invasive clams' relative abundances and location are susceptible to changes in habitat conditions, especially salinity which can be managed with applications of freshwater flows to affect their location and abundances. *Potamocorbula* larvae has a tremendous salinity tolerance range (suspended but mobile in the water column) ranging from 2 to 30 parts per thousand (ppt) salinity in the Delta.[64] This tolerance range enables *Potamocorbula* to become established upstream in the Delta during low flow/high salinity and drought years. Fresh water flows are lethal to adult *Potamcorbula* specimens. In wetter years and seasons, *Corbicula* is more adapted to freshwater conditions and can migrate downstream of the Delta into Suisun Bay sediments, displacing *Potamocorbula*'s range further downstream to some extent.

BDCP acknowledges this in Appendix 5.F:

> If Fall X2 [that is, higher fall Delta outflow] is implemented...no change in suitable habitat for *Potamocorbula* from water operations would occur. However, if Fall X2 is not implemented, X2 would occur more easterly than under [the Existing Conditions Scenario with Fall X2 implemented under the Delta smelt biological opinion], *and therefore the suitable habitat for Potamocorbula would be expanded in wet and above normal water years.* Likewise, increased tidal habitat from restoration of tidal natural communities (CM4) may facilitate recruitment and expansion of *Potamocorbula* if located in areas with

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[61] *San Luis & Delta-Mendota Water Authority, et al v. Sally Jewell,* No. 11-15871, D.C. No. 1:09-cv-00407-OWW-DLB, 168 pages, decision released March 31, 2014. Accessible online 8 May 2014 at http://earthjustice.org/sites/default/files/files/Delta_smelt_biop_ruling_3-13-14.pdf.

[62] Bay Delta Conservation Plan, Appendix 5.F, p. 5.F-110, lines 7-13.

[63] *Ibid.*, Appendix 5.F, p. 5.F-111, lines 18-25.

[64] *Ibid.*, Appendix 5.F, Table 5.F.7-1, p. 5.F-113.

> salinity greater than 2 ppt. *If this occurs, the foodweb benefits described [elsewhere in BDCP] may be reduced.*[65]
>
> [Also] if Fall X2 is not implemented, operations would comply with...Water Right Decision 1641 (D-1641) Delta outflow requirements. In that situation, outflow in wet and above normal years would be similar to [the Existing Conditions Scenario without Fall X2] in which X2 is more east than under [the Existing Conditions Scenario with Fall X2]. *This situation may allow for Potamocorbula to recruit farther into the Central Delta, and conversely, reduce habitat for Corbicula, which requires more freshwater conditions (<2 ppt). These invasive clams have the potential to reduce food production and export from Restoration Opportunity Areas (ROAs).*[66]

Thus, BDCP acknowledges the potential for both of these nonnative invasive clam species to consume, but ultimately discounts it in the Plan's conservation strategy. "The export of marsh production can help transfer the higher production of shallow-water habitats to the less productive deepwater habitats preferred by pelagic fish species such as delta smelt, but this process can be interfered with by nonnative clams [citation]," states BDCP.[67]

Our point is: *Flow could be used to manage the nonnative invasive clams, but under BDCP it would not be.* To address the issue of getting food resources to Delta smelt, the more desirable of the two nonnative invasive clams to have to manage would be *Corbicula* since its filtration of the water column is less efficient than the other invasive clam. *Corbicula* also coexisted with all of the covered species in the Delta since the 1940s when it first arrived in California. Given this record of *Corbicula*, ***we find it undermines the credibility of BDCP's conservation strategy that there is no conservation measure in BDCP to constructively manage the nonnative invasive clams—because it would involve managing freshwater flows differently than is now done.***

BDCP's treatment of longfin smelt is just as problematic. The Plan, based on scientific research, blames longfin smelt decline on the late-1980s *Potamocorbula* invasion and its disruption of the foodweb on which longfin smelt relies. It claims that "increasing the density of zooplankton will be further achieved through reduced water diversions from the South Delta [because more water diversions would occur through the Twin Tunnels' north Delta intakes] (and associated phytoplankton and zooplankton entrainment)."[68]

BDCP concludes that its activities will result in moderate positive change to zooplankton abundance for larval longfin smelt, low positive change to zooplankton abundance for juvenile longfin smelt, with low certainty for both.[69] ***The gap in knowledge represented by such low levels of uncertainty are put off into the BDCP adaptive management program. "Trust us," is the strongly implied message, "let us build the Tunnels, then the wetlands maybe later, and we will let you know."***

The report of an expert panel convened by American Rivers and the Nature Conservancy on BDCP also concluded of the nonnative invasive clams issue as analyzed from the March 2013 draft of the plan:

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[65] *Ibid.*, Appendix 5.F, p. 5F-v, lines 26-42. Emphasis added.

[66] *Ibid.*, Appendix 5.F, p. 5F-vi, lines 1-14. Emphasis added.

[67] *Ibid.*, Chapter 3, p. 3.3-105, lines 18-20.

[68] *Ibid.*, Chapter 3, p. 3.3-126. **LINES?**

[69] *Ibid.*, Chapter 5, p. 5.5.2-13, lines 39-46, and p. 5.5.2-14, lines 1-4.

> The BDCP documents acknowledge (but mostly ignore) that grazing by clams that settle in or near restored subtidal areas may remove all or most of the phytoplankton production and some of the zooplankton. Grazing by clams and zooplankton (including microzooplankton) removed all of the phytoplankton production in the [low salinity zone] nearly all the time from late spring through fall during 1988 - 2008 [citation]. Whether clams settle in the newly restored areas is critical in determining whether the area can export any phytoplankton [citation].
>
> ...Nevertheless, this analysis raises significant questions about the putative subsidy from restored areas to estuarine foodwebs. To address this uncertainty, long before any actual restoration takes place a program of analysis, modeling, and experimental restoration should be undertaken.
>
> *...The idea that restored marsh and floodplain will export substantial amounts of zooplankton to the open waters of the estuary is not tenable.* The ecology of shallow waters suggests that shallow areas are more likely sinks for zooplankton [because of clam grazing behavior]. Even if they were sources, simple mass-balance considerations indicate that the resulting export would produce at most a small enhancement of extant zooplankton of the open waters. *This idea should be dropped from discussions of BDCP, although experimental work should press ahead to determine under what conditions marsh habitats could be sources of significant food for delta and longfin smelt in the open waters.*[70]

BDCP will not readily drop its line of magical thinking about food for fish because it is the core concept of its greenwashing strategy. Dropping would mean their "conservation strategy" would collapse like a house of cards.

For winter-run and spring-run Chinook salmon, the benefits of habitat-as-food-source the story is similar.[71]

The BDCP conservation strategy for salmonids (that is, the various runs of Chinook salmon as well as Central Valley steelhead rainbow trout) focuses on those life stages that occur in the Delta: juvenile salmon that have left their natal streams, are rearing along the way, and undergo smoltification (the physiological process that enables these fish to osmo-regulate saltier conditions they face in ocean water where they are headed) before emigrating to sea. This strategy includes restoration of tidal natural communities to increase rearing habitat in Suisun Marsh, Cache Slough, the west Delta and the south Delta restoration opportunity areas, as well as seasonal floodplain inundation, channel margin habitat and riparian natural communities. Each of these communities contributes to food production for diffusion and advection from shallow-water, low-velocity rearing habitat for juvenile salmonids. Conservation Measure 13 is intended to control invasive aquatic

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[70] Jeffrey Mount, William Fleenor, Brian Gray, Bruce Herbold, and Wim Kimmerer, *Panel Review of the Draft Bay Delta Conservation Plan*, prepared for the Nature Conservancy and American Rivers, September 2013, p. 78, 82. Emphasis added. Accessible online at http://mavensnotebook.com/wp-content/uploads/2013/09/FINAL-BDCP-REVIEW-for-TNC-and-AR-Sept-2013.pdf. John Cain of American Rivers and Leo Winternitz of the Nature Conservancy presented the report's results to the Santa Clara Valley Water District on October 2013, reported in Maven's Notebook at http://mavensnotebook.com/2013/11/26/mavens-minutes-santa-clara-valley-water-district-bdcp-workstudy-session-part-2-american-rivers-john-cain-and-the-nature-conservancys-leo-winternitz-discuss-the-bdcp/. Mount presented this report's results orally as well to the Delta Independent Science Board on January 17, 2014. Emphasis added. See also Bruce Herbold, Donald M. Baltz, Larry Brown, Robin Grossinger, Wim Kimmerer, Peggy Lehman, Charles Si Simenstad, Carl Wilcox, and Matthew Nobriga, "The Role of Tidal Marsh Restoration in Fish Management in the San Francisco Estuary," *San Francisco Estuary and Watershed Science* 12(1): 6 pages. Accessible online 7 April 2014 at http://escholarship.org/uc/item/1147j4nz.pdf.

[71] Bay Delta Conservation Plan, Chapter 5, p. 5.5.4-22, lines 1-6.

vegetation to reduce nonnative fish predator habitat cover, such as for largemouth bass. But food production is the chief reason for habitat restoration in BDCP.

There is considerable uncertainty in the pages of BDCP's Chapter 3 and Chapter 5 as to whether the habitat restoration efforts will work as intended. It appears from BDCP's analysis that Central Valley steelhead will have little to no use for seasonal floodplain inundation or channel margin habitat, and there is "high certainty" that channel margin habitat is of most use to emigrating steelhead smolts. Yearling spring-run Chinook salmon may also prefer to migrate rather than forage in these habitats.[72] The food benefits are touted, but BDCP notes that for steelhead, zooplankton occurrence is of "low certainty" as a benefit because their seasonality may not match up for lack of "co-occurrence" and because ***nonnative invasive clams may consume most of the primary and secondary food resources created by new habitat production.*** Moreover, behaviorally, steelhead smolts prefer to migrate rather than rear when passing through the Delta.

Despite repeated acknowledgment that they threaten the near- and long-term productivity of habitat restoration efforts in the Delta, ***there is no conservation measure proposed in BDCP to manage either of the most abundant nonnative invasive clams.*** Invasive vegetation has its own conservation measure. But the single greatest biotic stressor that could consume most of the new food production from BDCP's habitat restoration program intended to benefit listed and covered species in the Delta goes unaddressed: ***what to do about Potamocorbula and Corbicula? The omission strains credulity.*** Both climate change and Twin Tunnels operations have the potential to reduce Delta outflows and cause X2, the low salinity zone in the Delta, to migrate further east and upstream in the decades to come. As X2 goes, the food production from BDCP restoration opportunity areas could be fully absorbed by *Potamocorbula* (which would spread eastward into the Delta, particularly in drier years) and somewhat by *Corbicula*, turning the western Delta and Suisun restoration areas from net exporters of food for Delta smelt and longfin smelt in open water into sinks for clam production instead.[73]

2. Spreading Hydrodynamic Nightmares to the North Delta

BDCP fails the Endangered Species Acts' requirements for ecological assurances that the habitat conservation plan, with its proposed Twin Tunnels project and North Delta Intakes, not appreciably reduce the likelihood of survival and recovery of listed species. The BDCP application for incidental take permits should be rejected by the fishery agencies.

Our comments in this section focus on two hydrodynamic nightmares BDCP will create and worsen in the Delta: First, the massive disruption of the flow regime of the lower Sacramento River used seasonally and inter-annually by several distinct salmonid populations, two of which are highly vulnerable to the threat of extinction; and second, further reduction of Delta outflows and the eastward-moving position of X2 worsening the risks of entrainment, ***this time in the North Delta to go along with continuing drier year entrainment risks in the South Delta.*** This second nightmare threatens both longfin smelt and Delta smelt with extinction.

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[72] Delta Science Program, Independent Review Panel, *op. cit.*, note 27 above, p. 30.

[73] Researchers Lisa Lucas and Janet Thompson of the US Geological Survey found that phytoplankton biomass and productivity in the Delta do not necessarily correlate with either water depth or the residence time of water. ***The single most important factor that determined whether shallower water depth or greater residence time of water resulted in greater phytoplankton productivity was the absence of invasive nonnative clams.*** Lisa V. Lucas and Janet K. Thompson, "Changing restoration rules: Exotic bivalves interact with residence time and depth to control phytoplankton productivity," *Ecosphere* 3(12): Article 117, December 2012, 26 pages.

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In the Administrative Draft of the Bay Delta Conservation Plan issued in March 2013, the conservation strategy announced: "*The BDCP will fundamentally alter the hydrodynamics of the Delta.*"[74] This sentence has since been toned down to read, "The BDCP will modify the hydrodynamics (i.e., tidal flows) in the Delta channels," but the original formulation is truer.[75] Overall, says BDCP, east to west flows will increase; the frequency and magnitude of reverse flows in Old and Middle River will decrease because of reduced south Delta pumping in most water year types. In the north Delta, flow patterns will "change" from increased diversions to Yolo Bypass with the proposed modifications to Fremont Weir. BDCP states:

> These changes in flow patterns in the north Delta present ecosystem-level tradeoffs between habitat in the Yolo Bypass and the Sacramento River during the winter-spring migration period, resulting in both positive and negative effects on the migration and passage of fish through and within the Delta...[76]

The Twin Tunnels project is ***intended*** to:

- Improve "hydrodynamic and water quality conditions that create barriers to movement and high susceptibility to predators,"
- Reduce "risk of entrainment of covered fishes by conveying from either the north or south Delta, depending on the seasonal distribution of their sensitive life stages," and
- Create "new opportunities to restore tidal natural communities in the east and south Delta" by reducing entrainment risks for food produced in restored areas and all life stages of delta smelt and longfin smelt and juvenile salmonids and sturgeons using restored areas.[77] The flexibility that north and south Delta intakes would create—the Applicants hypothesize—would enable state and federal water exporters to "substantially reduce the entrainment of covered fish species while providing the desired average water supply."[78]

This is the stated rationale for calling the Twin Tunnels a "conservation measure." ***It is claptrap.*** On one hand, the Tunnels will increase exports and the Delta's loss of outflow at the same time, both wet and above normal years.[79] (Moreover, in drought years, the Bureau and the Department typically petition the State Water Board to have Delta water quality objectives waived, and the Board grants this request. There is little reason to believe the Twin Tunnels would change the outcome, meriting its continued designation as a BDCP "conservation measure.) On the other, the BDCP assumes it will reduce entrainment risk, but its own data shows otherwise as we will see.

BDCP's stated water operations strategy for the Twin Tunnels project and their North Delta Intakes is to maximize their use during wet and above-normal years. It would refrain from using the North Delta Intakes during periods of each year when covered fish species would be present in the lower Sacramento River channel between Courtland and Walnut Grove where the intakes would be located. (The modeling assumptions for operating the North Delta Intakes appear to double as likely proposed flow and operational criteria that could be proposed to remake how the Delta is currently

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[74] Administrative Draft of the Bay Delta Conservation Plan, March 2013, Chapter 5, *Effects Analysis*, p. 5.3-2, line 23. Emphasis added.

[75] Bay Delta Conservation Plan, November 2013, Chapter 5, *Effects Analysis*, p. 5.3-2, line 23.

[76] *Ibid.*, p. 5.3-2, lines 34-37.

[77] Bay Delta Conservation Plan, Chapter 3, p. 3.2-7, lines 24-34.

[78] *Ibid.*, Chapter 3, p. 3.2-8, lines 1-10.

[79] We take up the matter of BDCP's unacknowledged purpose of expanding opportunities for cross-Delta water market transfers in Section VII of this comment letter.

regulated by the State Water Resources Control Board through its Bay-Delta Water Quality Control Plan and Water Right Decision 1641. We discuss this in our comments on the EIR/EIS in Section VII below.)

Figure 5.B.4-1 of Appendix 5.B on *Entrainment*, summarizes visually the average modeled water exports from both the North and South Delta intakes by water year, as well as total BDCP Twin Tunnels exports compared with Existing Baseline Condition scenarios with and without implementation of the Fall X2 requirement in the 2008 Delta Smelt biological opinion. This figure reveals that at key times of year, the Twin Tunnels will *increase* average monthly exports relative to existing baseline conditions by 2025 and 2060. It shows too that from December through August in wet and above normal years, the North Delta Intakes will enable the State Water Project and the Central Valley Project to export 300,000 to 350,000 acre-feet more water in each of the months of April and May than they can currently. About 75 to 80 percent of these increased export levels stems from being able to use the North Delta Intakes instead of the South Delta pumps to draw water from the Delta.

Figure 5.B.4-1 also shows that the North Delta Intakes will be used only minimally during below normal, dry, and critically dry water years. In these years, the South Delta intakes will continue to operate as they have in the past during these years. In the 82-year record on which CalSIM II modeling is based for BDCP purposes, just 38 years have been above normal or wet; the remaining 44 years are generally much drier (dry and critically dry years account for 30 (or 37 percent) of the remaining 44 water years). Both this figure and Figure 5.B.4-4 (here in Figure 1) show that the utility of the North Delta Intakes would decrease dramatically in drier weather patterns and climate conditions. It appears to us that the analyses in these figures rely on the existing variability of California's hydrologic record and its existing frequency of water year types. What is the risk in terms to fish entrainment and cost-effectiveness of the Twin Tunnels project if in a future of climate change the proportion of dry years increases relative to wet years?

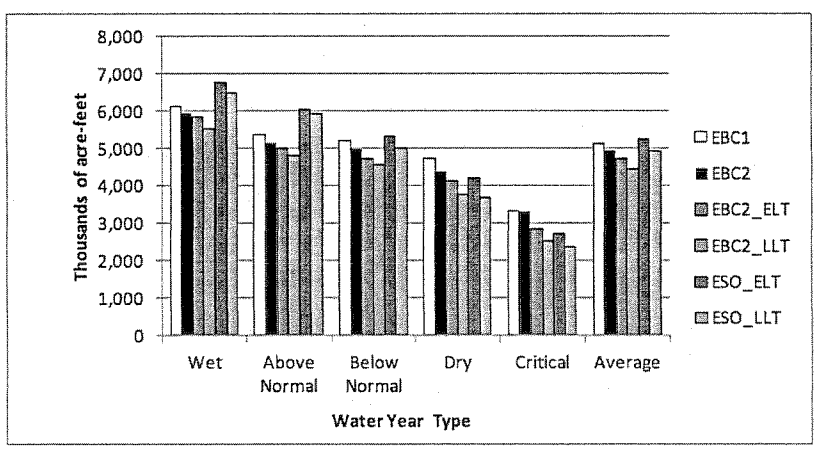

Figure 5.B.4-4. Total Exports from Combined North Delta and South Delta Pumping Facilities under the BDCP Evaluated Starting Operations (ESO) in the Early Long-Term (ELT) and Late Long-Term (LLT) Compared to the Existing Biological Condition (EBC) Baselines

Figure 1

Figure 1 (Figure 5.B.4-4 of BDCP) shows that, ***on average,*** combined Delta exports (North Delta plus South Delta intake/exports) will change little from current conditions whether BDCP operates with higher Fall X2 flows or not. ***But the Twin Tunnels and their North Delta Intakes will not be operated to the average year.*** They will be operated according to the type of water year California is in, year in and year out. In the wet and above normal years, combined Delta exports will jump dramatically by as much as 700,000 acre-feet in wet years and above normal relative to existing baseline conditions.[80] Indeed, it appears to us they expect to set Delta export records with the Twin Tunnels project for wet and above normal years. (Figure 5.B.4-4 indicates an average wet year export level of about 6.8 million acre-feet, while the record export year for the combined CVP and SWP projects was 6.67 million acre-feet in 2011, a wet year. This likely means that some wet years, when they occur in the future, will potentially enable combined exports north of 7 million acre-feet a year.)

In drier water year types, average combined exports keep pace with existing baseline conditions or are somewhat lower in future water years. However, further probing of Chapter 5 and the EIR/EIS's water transfer-related appendices reveals that BDCP intends for conservation measure 1's Delta facilities to expand dry and drought year capacity to arrange and consummate water transfers. They would occur in years when excess capacity to pump exists when Table A and CVP contract amounts to water contractors cannot be met by DWR and the Bureau (again, see Section VII for more discussion.)

We find other changed flow patterns from our review of the Bay Delta Conservation Plan:

- Flow splits in the area of the lower Sacramento River below Freeport would be dramatically altered once the North Delta Intakes go into operation. Consequently, the flow network changes for Elk, Steamboat and Sutter sloughs (on the right bank), and of Georgiana Slough and Delta Cross Channel (on the left bank) as distributaries from the Sacramento River between Freeport and Rio Vista. These aquatic crossroads are crucial to the survival of salmonid smolts and juveniles that emigrate from the Sacramento River basin to the Pacific Ocean.

- Potential reverse flows from Georgiana Slough into lower Sacramento in order to minimize movement of migrating salmonid smolts into the Central Delta where predation rates are higher.[81] This is the first we heard that there would be *reverse flows on the Sacramento River as a result of putting the North Delta Intakes there.*[82] For the Sacramento River, California's equivalent of the Mississippi River, to undergo reverse flows in its lower reach would be a travesty to the Delta and its aquatic ecosystems.

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[80] *Ibid.*, Appendix 5.B, *Entrainment*, p. 5.B-19.

[81] *Ibid.*, Chapter 3, p. 3.3-143, lines 11-20. "The north Delta intakes will be operated so as to not increase the incidence of reverse flows in the Sacramento River at the Georgiana Slough junction, thereby limiting the potential for covered salmonids to inadvertently migrate into the interior Delta. Juvenile salmonids can be drawn into alternative channels, such as Georgiana Slough and the Delta Cross Channel, and into the interior Delta region where survival has generally been shown to be lower than in the Sacramento River mainstem or Sutter and Steamboat Sloughs [citation]." Lines 11-16.

[82] There is no disclosure of potential reverse flows in the Sacramento River that we found in Appendix 5.C, Attachment 5C.A, *Modeling Results*, in either the Sacramento at Freeport or Sacramento at Rio Vista flow tables (Tables C.A-22 and C.A-29). Flow results for Georgiana Slough are combined with the results for the Delta Cross Channel (located between Freeport, the North Delta Intakes and Rio Vista), so any upstream (reverse) flows in Georgiana Slough are submerged and cannot be verified by readers of BDCP.

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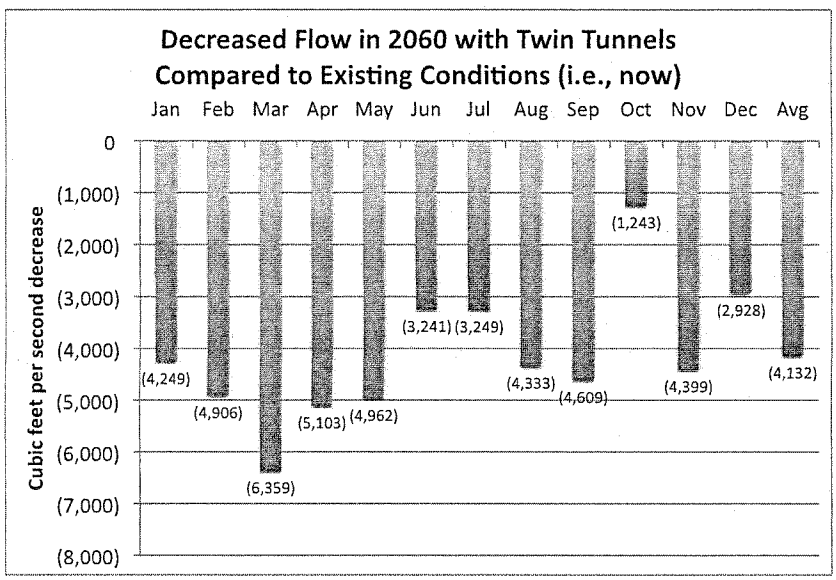
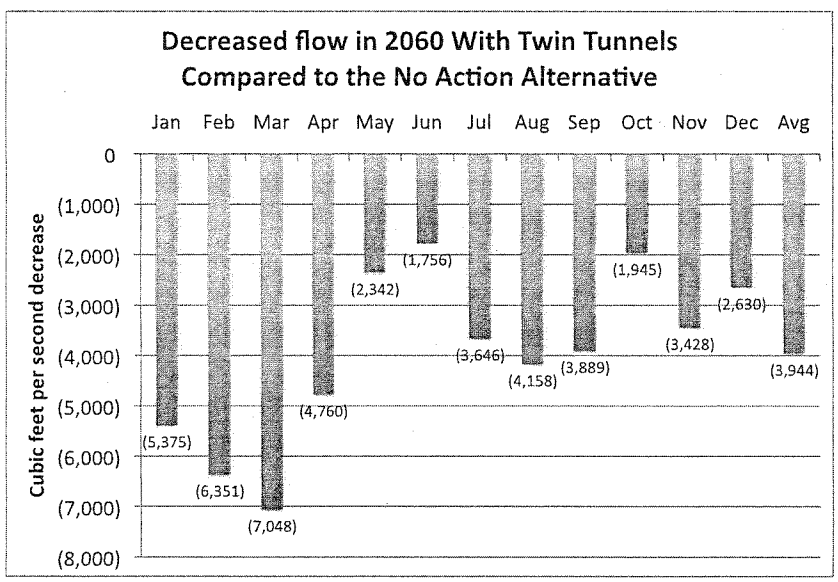
- Reduced Sacramento River flows ***below*** the north Delta intakes. As shown below in Figure 2, the flow differences between present conditions and in 2060 with and without the Twin Tunnels varies across months. But in both cases, these charts, and the BDCP data table on which they rely, show direct reductions every month in every year. The average flow reduction is about 4,000 cubic feet per second.

Figure 2
Comparison of Average Monthly Sacramento River Flow Reductions Below the North Delta Intake Diversions

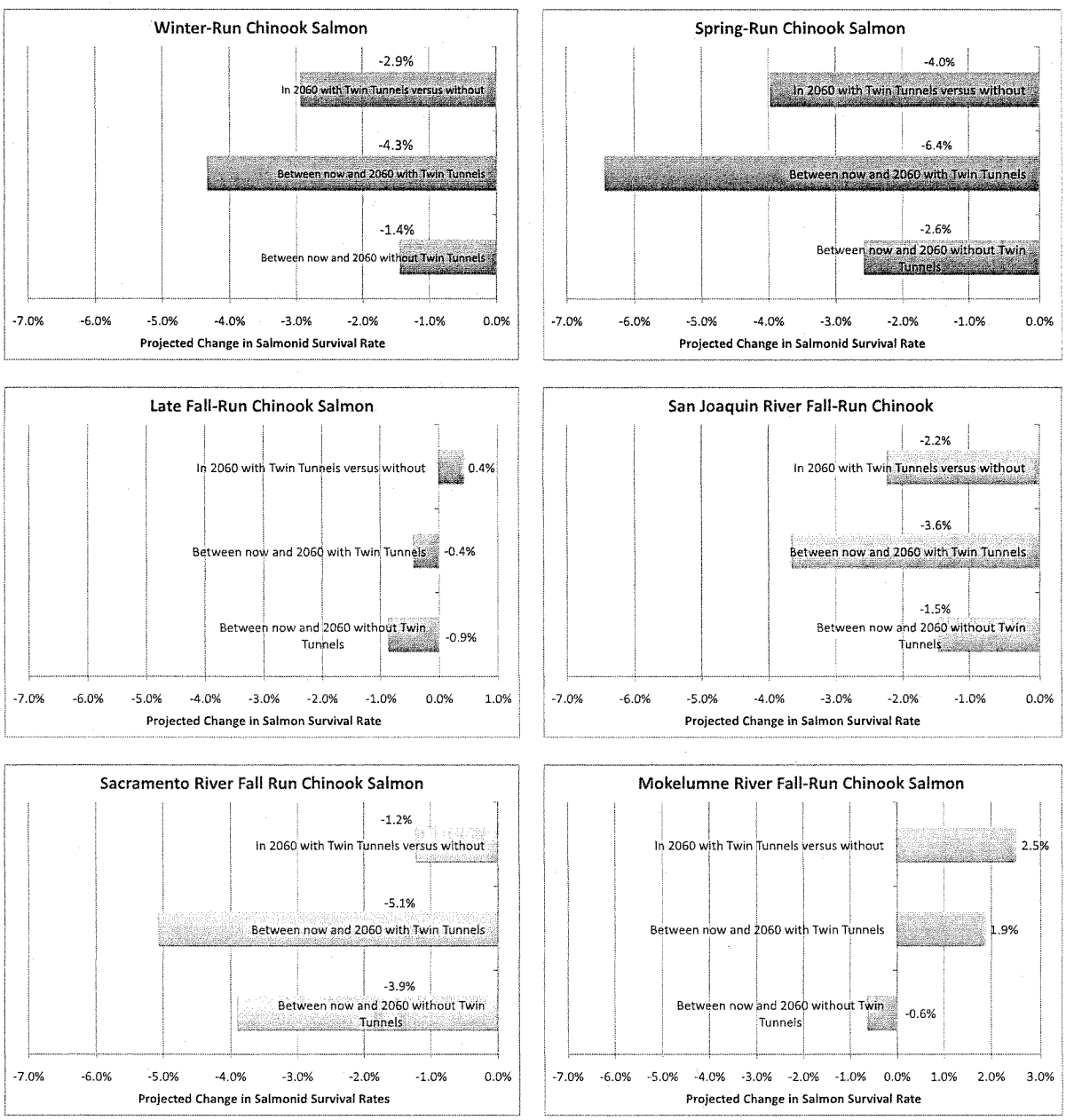




Source: BDCP, Chapter 5, Table 5.5.3-9, p. 5.5.3-26.

- The Bay Delta Conservation Plan modeling results reveal salmon smolt survival rates will decrease through the Delta as a result of Twin Tunnels operation in the North Delta (Figure 3).

Figure 3
Percentage Change in Salmon Smolt Survival Rates with and without BDCP



Source: BDCP, November 2013, Chapter 5, *Effects Analysis*, Sections 5.5.3 through 5.5.6. Based on Tables 5.5.3-10. 5.5.4-5, 5.5.5-8, 5.5.5-10, 5.5.5-18, and 5.5.5-20.

The middle bars in each graph of Figure 3 show the comparison between present baseline conditions and 2060 with operation of a Twin Tunnels project and North Delta Intakes. For Winter-

run Chinook, smolt survival through the Delta is expected by BDCP to *decrease* 4.3 percent. For Spring-run Chinook, smolt survival through the Delta is expected by BDCP to *decrease* by 6.4 percent. For Sacramento River Fall-run Chinook, smolt survival is expected to *decrease* 5.1 percent. For San Joaquin River Fall-run Chinook, smolt survival is expected to *decrease* 3.6 percent. (No model results were available for Central Valley steelhead.) ***These are significant, appreciable reductions to listed species during critical life stages as they move through the Delta.***

These decreases would come on top of massive long term declines in winter-run and spring-run Chinook salmon populations in the Sacramento River Basin, as documented by the US Fish and Wildlife Service's Anadromous Fish Restoration Program (Figure 4). Adult escapement for both of these runs has reached dangerously low levels; they are extremely vulnerable to catastrophic events everywhere throughout their range, including in the Delta. Introduction of the Twin Tunnels right in the middle of their Delta migration corridor (only a small percentage of smolts are expected to take advantage of the Yolo Bypass diversion, see next section) could be one such foreseeable catastrophe for these populations of Chinook salmon.

Figure 4
Declines of Winter-run Chinook and Spring-run Chinook Salmon
Sacramento River Basin

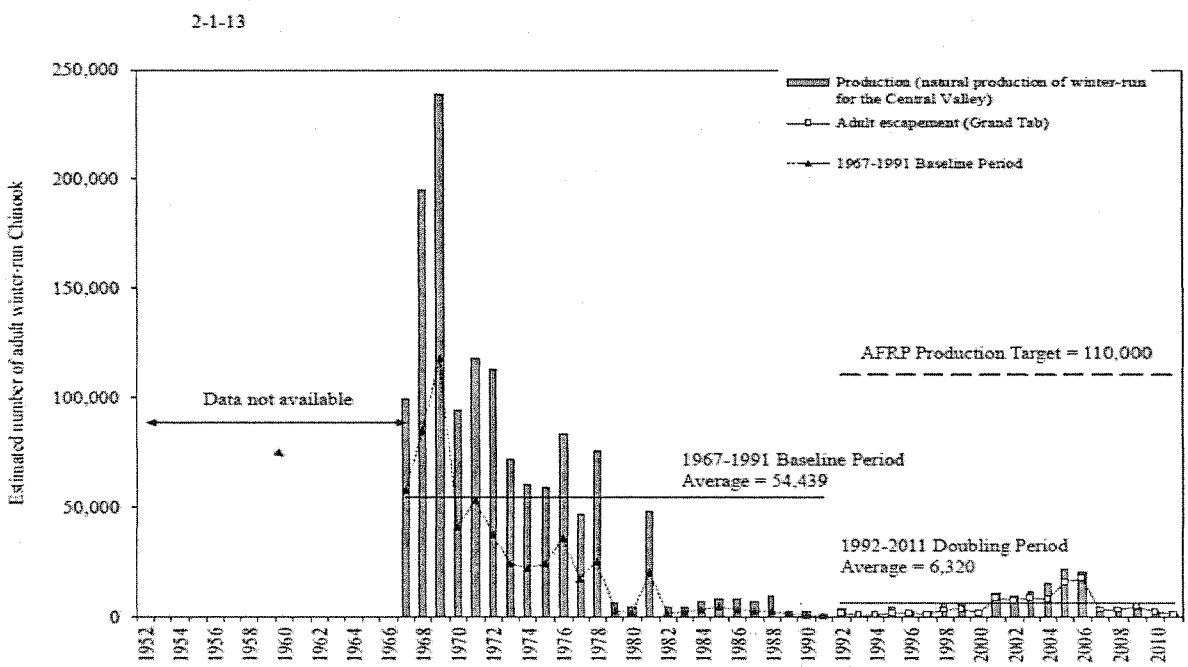


Figure 4. Estimated yearly adult natural production, and in river adult escapements of winter-run Chinook salmon in the Central Valley rivers and streams. 1992 - 2011 numbers are from CDFG Grand Tab (Apr 24, 2012). 1967-1991 Baseline Period numbers are from Mills and Fisher (CDFG, 1994).

Winter-run Chinook salmon adult escapement.

Figure 4
Declines of Winter-run Chinook and Spring-run Chinook Salmon
Sacramento River Basin

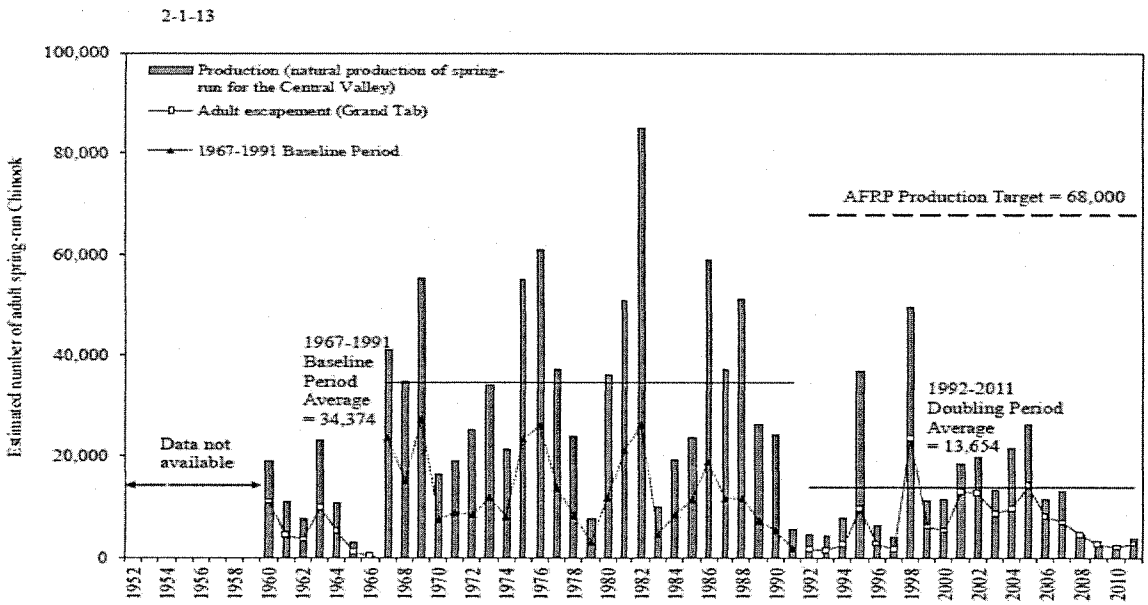


Figure 5. Estimated yearly adult natural production, and in-river adult escapements of spring-run Chinook salmon in the Central Valley rivers and streams. 1960 - 1966 and 1992 - 2011 numbers are from CDFG Grand Tab (Apr 24, 2012). 1967-1991 Baseline Period number are from Mills and Fisher (CDFG, 1994).

Spring-run Chinook salmon adult escapement.

Source: US Fish and Wildlife Service, Anadromous Fish Restoration Program, http://www.fws.gov/stockton/afrp/Documents/Doubling_goal_graphs_020113.pdf.

With Winter-run and Spring-run Chinook salmon as already-listed species, decreasing predicted trends in long-run survival rates for their smolts under BDCP activities would appreciably jeopardize the ability of these populations to avoid extinction.[83] Given that climate change threatens to reduce the size of cold water pools in upstream reservoirs and raise temperatures in upstream river reaches for these species, introducing operation of the T win Tunnels project as a human-generated threat to survival of these salmon runs is unacceptable. ***Therefore BDCP cannot fulfill the Endangered Species Acts' requirements for ecological assurances that the habitat conservation plan would not appreciably reduce the likelihood of the survival and recovery of listed species. The BDCP application for incidental take permits should be rejected by the fishery agencies.***

The other major hydrodynamic nightmare for fish posed by construction and operation of the Twin Tunnels project is whether the project's effects would increase the risk of entrainment (leading

[83] "Appreciable" is defined by the *Oxford English Dictionary* as "describing something that is large or important enough to be noticed."

directly to take of covered and listed species of fish).[84] Within this issue there are a few specific concerns:

- Are modeled entrainment risks for fish reduced at the South Delta pumps under BDCP?
- What would be entrainment risks for listed species at the North Delta Intakes for the Twin Tunnels project?
- How does climate change interact with Twin Tunnels operation to affect entrainment risk?

For most covered fish species, according to Table 5.B.0-2 of BDCP[85], entrainment risk *at the South Delta export pumps* would decrease dramatically. Juvenile salmonids would see significant reductions in entrainment on the order of 50 to 75 percent, particularly during wet and above normal years when the North Delta Intakes would be used more intensively to divert lower Sacramento River flows for export. Entrainment risks for Winter-run and Spring-run Chinook salmon smolts would decrease also between 50 to 75 percent over the 50-year term of the incidental take permits.

This table, titled "Summary of Effects of the BDCP on Entrainment of Covered Fish Species," provides modeled results only for the South Delta export pumps. There is no attempt to model results for entrainment risk at the North Delta Intakes. We could find no explanation of this omission. This information is crucial to evaluating BDCP's goal that the Twin Tunnels would provide operational flexibility to help reduce entrainment and salvage risks for fish throughout the Delta. The table only discloses as its methods "screening effectiveness analysis" and "screen passage time" analysis, and claims as results "100% screened" intakes in the North Delta with "screen passage time lower with higher sweeping velocity, shorter screen, and smaller fish." There are no quantified modeling results in which presence of listed species are correlated with times in which the North Delta Intakes would operate to indicate levels of entrainment that could occur.

This criticism holds true for Delta smelt and longfin smelt, two listed species that reside full-time (Delta smelt) or part-time (longfin smelt) in Delta channels and open water. Table 5.B.0-2 provides proportional entrainment regression results for larval and juvenile Delta smelt that show on average a 3 percent *decrease* in entrainment risk across all water year types at the South Delta pumps. Entrainment rates would decrease even further to between -16% to -24% at the South Delta pumps during wet and above normal years when the North Delta Intakes operate. Adult Delta smelt entrainment risks would be even further decreased in wet and above normal water years.

However, in drier years, when the North Delta Intakes would be used far less, ***larval and juvenile Delta smelt entrainment rates would increase over existing baseline conditions*** (i.e., relative to having no Twin Tunnels project operating in the future) throughout the 50-year term of the incidental take permits. This may have everything to do with use of the Twin Tunnels' extra capacity to transport water transfers. But it appears water transfers were not modeled or evaluate for impacts in the EIR/EIS. This would be the situation for a majority of water years assuming that the future will be like the 82 years in the CalSIM II modeling activity on which these entrainment estimates rely in part. ***If California's climate becomes drier (and more years in the future are below the present normal, dry or critically dry) then these entrainment risks would be***

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[84] "Entrainment" is not equivalent to death of individual fish from different species. Rather, it is a measure of hydrodynamic conditions overcoming fishes' swimming ability, forcing fish into water facilities that may result in their "salvage" and relocation. However, the process of handling fish during "salvage" operations can result in injury and death to fish. Entrainment can mean death as a result of predation, as in the case of fish winding up in Clifton Court Forebay where predator fish like bass species are well known to prey upon smaller fish like Delta smelt, longfin smelt, and juvenile salmonids. "Salvage" does not usually lead to salvation.

[85] BDCP, Chapter 5, *Effects Analysis*, Appendix 5.B, *Entrainment*, Table 5.B.0-2, p. 5B-vii.

expected to increase. Water transfer diversions may also have something to do with this as well. The fact that they are positive in the BDCP analysis reveals that ecological assurances for Delta smelt are overly optimistic, even hyperbolic, for reducing entrainment risk overall for Delta smelt, *even at the South Delta pumps.* This means ***it is critical for the EIR/EIS to model and analyze the effects on Delta smelt and longfin smelt at the North Delta Intakes during dry and critically dry years, since DWR and the Bureau of Reclamation hope to increase water transfers in those years.***

Larval and juvenile longfin smelt entrainment risk averaged over all water year types would also decrease at the South Delta pumps, according to Table 5.B.0-2. However, BDCP makes no attempt to model larval longfin smelt risk by water year type. This is significant because according to the California Department of Fish and Game's 2009 effects analysis for the State Water Project incidental take permit for longfin smelt, larval longfin smelt can be entrained as larvae in the early spring in the western Delta and be too small to track. They grow along the way upstream through Old and Middle Rivers where they are counted as juveniles once they reach Clifton Court Forebay and the State Water Project fish salvage facilities later in the spring or early summer.[86]

For the North Delta Intakes, BDCP indicates for "results" in Table 5.B.0-2 that the Intakes would be "100% screened" (as if that is a sure thing for avoiding entrainment, injury, or death at the intakes) and that "entrainment occurs in proportion to flow diverted, but the great majority of larvae would be downstream of the intake and not susceptible to entrainment." This language is employed for both larval Delta smelt and larval longfin smelt in the table. These assertions occur without support visible evidentiary support. The table also states that for juvenile and adult Delta smelt, there is "potential for screen contact-related mortality increases with increasing approach and sweeping velocity, by night, and with longer screens."

"Approach velocity" is flow speed whose direction is perpendicular to the face of the intake screens, and reflects the rate of diversion occurring at the Intakes. It is the cross-flow that the North Delta Intakes would generate in the flow-field of the lower Sacramento River as the Intakes are operated (that is, as they fill the Twin Tunnels). "Sweeping velocity" is the net speed of downstream flow parallel to the face of the intake screens. Generally, if the combined vector of flow is toward the Intake screen and the swimming ability (vector) of individual fish does not exceed that flow, the fish will be pushed against the screen, possibly pinned or impinged, injured or killed by the force of the intake diversion flow.

BDCP proposes for the North Delta Intakes the longest and largest fish screens ever attempted. (Imagine a fish screen as long and tall as some CalTrans sound walls along any urban California freeway, and you have some idea of the scale of the fish screens that are contemplated.)[87] Screens this size have never been used, let alone tested, as we understand the situation. While the screens would be designed to meet California Department of Fish and Wildlife and National Marine Fisheries Service fish screen design criteria, the sheer size of the North Delta Intake screens would be unprecedented.[88] Table 4-2 of Chapter 4 in BDCP provides general specifications for the North

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[86] California Department of Fish and Wildlife, Effects Analysis: State Water Project Effects on Longfin Smelt, prepared by R.D. Baxter, M.L. Nobriga, S.B. Slater, R.W. Fujimura, February 2009, four parts. See discussion of "Juvenile Entrainment," p. 31. Accessible online 14 May 2014 at http://www.dfg.ca.gov/delta/data/longfinsmelt/documents/LongfinSmeltIncidentalTakePermitNo.2081-2009-001-03.asp.

[87] Schematic drawings of North Delta Intake structures (Figures 4-6 and 4-7, Chapter 4) omit the location or extent of fish screens proposed to protect fish from entrainment.

[88] California Department of Fish and Wildlife, "Fish Screening Criteria," accessible online 14 May 2014 at http://www.dfg.ca.gov/fish/Resources/Projects/Engin/Engin_ScreenCriteria.asp. See also National Marine Fisheries Service, *Fish Screening Criteria for Anadromous Salmonids*, Southwest Region, July 1997.

Delta Intakes, and states that there will be a total cumulative fish screen length of 4,420 feet, or 0.84 miles, across three separate intakes. The screens are expected to range from 10 to 22 feet in height.[89]

A team of scientists at UC Davis led by biologist Christina Swanson developed equations for fish screen designs with sweeping velocities to optimize protection of fish attempting to pass fish screens.[90] BDCP tested these equations but found them not to their liking:

> The equations of Swanson and coauthors [citation] give very long screen passage times at certain sweeping velocity and approach velocity combinations, e.g., nearly 7,000 minutes [or about 117 hours, or nearly 5 days] for a 4.4 cm fish along a 2,000 foot screen with approach and sweeping velocities of 0.33 [centimeters per second]. Such estimates are far in excess of the duration of the experimental trials (120 minutes) used to derive the data and therefore should be treated with caution.[91]

Five days is indeed a very long time for a juvenile salmonid to be attempting to swim past what would seem like a never-ending cross-flow of water without also having additional food and opportunity to rest to sustain its journey through such a maelstrom. Such a modeled condition does not support BDCP's hoped-for reduction in salmonid entrainment through construction and operation of the North Delta Intakes and the Twin Tunnels project. Indeed, such results from Swanson's equations would lead one to conclude that building the North Delta Intakes in a crucial reach of the migration corridor of listed salmonid populations would be a recipe for salmonid jeopardy. BDCP clearly finds it easier to "treat the equations with caution" than admit the possibility that the fish screens would not work as BDCP has hyped.

Yet Swanson's work may be the "best available science" on which BDCP could rely, for BDCP presents no other more recent systematic treatment of the variables of fish behavior, fish screen design, and hydrodynamic conditions in the lower Sacramento River. ***If so, then DWR and the rest of the Applicants have shunned usage of the best available science to analyze their project, violating their duties under ESA.***

When it comes to entrainment of Delta smelt at the North Delta Intakes, BDCP soft-pedals their risk. They state that most of the time, Delta smelt at any life stage will be located downstream of the Intakes, and therefore at little risk of entrainment. For instance, they are all but absent in the fall months (September through December) from upstream Sacramento River locations in the Delta, as measured by the Fall Midwater Trawl. However, when one moves out of the shallow waters of BDCP's chapters 3 and 5 to the deeper, more open waters of Appendix 5.B on *Entrainment*, one finds

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[89] Bay Delta Conservation Plan, Chapter 4, p. 4-9, lines 7-13.

[90] Christina Swanson, Paciencia S. Young, and James J. Cech, "Swimming in Two-Vector Flows: Performance and Behavior of Juvenile Chinook Salmon near a Simulated Screed Water Diversion," *Transactions of the American Fisheries Society* 133(2): 265-278, 2004; Swanson, Young, and Cech, "Close Encounters with a Fish Screen: Integrating Physiological and Behavioral Results to Protect Endangered Species in Exploited Ecosystems," *Transactions of the American Fisheries Society* 134(5): 1111-1123, 2005; Swanson, Young, and Cech, "Close Encounters with a Fish Screen II: Delta Smelt Behavior Before and During Screen Contact," *Transactions of the American Fisheries Society* 136(2): 528-538, 2007; Swanson, Young, and Cech, "Close Encounters with a Fish Screen III: Behavior, Performance, Physiological Stress Responses, and Recovery of Adult Delta Smelt Exposed to Two-Vector Flows near a Fish Screen," *Transactions of the American Fisheries Society* 139(3): 713-726, 2010; Swanson, Young, and Cech, "Swimming Performance of Delta Smelt: Maximum Performance and Behavioral and Kinematic Limitations on Swimming at Submaximal Velocities," *Journal of Experimental Biology* 201(1998): 333-345. This latter article accessible online 14 May 2014 at http://online.sfsu.edu/modelds/Files/References/Swanson1998JEB.pdf.

[91] Bay Delta Conservation Plan, Appendix 5.B, *Entrainment*, p. 5.B-303, lines 30-33.

that BDCP is much less confident that Delta smelt would not be placed in harm's way by the North Delta Intakes and their sound-wall-scale fish screens:

> [S]eine data do indicate that adult delta smelt do occur in the reach of the river where the proposed north Delta intakes would be sited....Overall, the results from the various surveys suggest that a low proportion of the delta smelt population would have the potential to occur in the reach of the Sacramento River where the north Delta intakes will be located (River miles 37-41). There is uncertainty in the proportion of the population that could occur in this reach [because seine sampling has, as of yet, not included documentation of the delta smelt population that now occupies the Cache Slough area].
>
> Recent research suggests that delta smelt may use tidal currents to facilitate movement upstream by migrating to channel margins during ebb tides and into the channel during flood tides. [citation] Depending on which side of the channel the fish move to, such behavior may place delta smelt close to the channel margins and potentially close to the proposed north Delta intakes. Flows toward the intakes may also increase the chance of delta smelt within the vicinity encountering the screen. *The summary of percentage of flows diverted for salmonids (Tables 5.B.6-222 and 5.B.6-223) also encompasses the main period of potential delta smelt occurrence near the proposed north Delta intakes. The extent to which delta smelt would occur near the on-bank intakes is uncertain; monitoring of the north Delta intakes would provide data to reduce this uncertainty.*[92]

Complicating matters still further is the fact that Delta smelt are highly sensitive to injury easily resulting in death. Glancing blows against fish screens or other structures for them can be fatal. They are already well-known for not surviving the handling and transport they already receive from salvage at the state and federal pumps' fish facilities.

Under conditions of climate change, X2 (the isohaline marker for the location of the Bay-Delta Estuary's low salinity zone) is expected to migrate upstream as Delta watershed runoff overall decreases in the future. Reduced Delta outflow resulting from Twin Tunnels operations will contribute to this trend. Delta smelt are well known to inhabit the area of Delta waters immediately upstream (toward fresher water) of X2. The further upstream X2 moves, the closer it gets to River Miles 37 through 41 where the North Delta Intakes would be located. BDCP's entrainment appendix acknowledges this possibility:

> Delta smelt may occur more frequently in the north Delta diversions area under future climate conditions if sea level rise [and reduced Sacramento River inflow below Freeport] induces movement of the spawning population farther upstream than is currently typical.[93]

In sum, BDCP Applicants do not know (nor do they reveal from modeling results) the proportion of the Delta smelt population that could be at risk of entrainment in this reach of the Sacramento River (River Miles 37-41) from the North Delta Intakes. BDCP does not know which side of the river Delta smelt may prefer on ebb tides, and why. BDCP lacks confidence in the Swanson team's equations for modeling fish behavior, fish screen design criteria and hydrodynamic parameters.

Yet the BDCP Applicants would naively forge ahead with construction and operation of the Twin Tunnels project despite such huge uncertainties posing grave risks for listed salmonid and smelt species. They build into the BDCP a number of monitoring and effectiveness actions that strongly imply, "Let us construct these systems and we will fix them later (much the way the State Water Project and Central Valley Project were justified when it came to fish impacts). ***Trust us.***"And they include in "research actions" two potential studies that would:

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[92] *Ibid.*, p. 5.B-306, lines 2-3, 6-9, and 14-18. Emphasis added.

[93] *Ibid.*, p. 5.B-310, lines 17-19.

> Develop physical hydraulic model(s). If intake screen locations differ significantly in terms of river flow conditions or structure geometry, then more than one physical model study is needed. A physical model provides the capability to optimize hydraulics and sedimentation in the chosen river reach. Differences between the average channel velocity in the river and sweeping velocity adjacent to the screen face will be identified. Neutrally buoyant particles will be tracked to provide information on larval fish movement [citation].
>
> Develop computational fluid dynamics model to provide information on how tidal changes and flow withdrawals affect flow conditions and sweeping velocities at screening locations.[94]

The uncertainties acknowledged for these two research actions are, on one hand, the "relationship between proposed intake design features and expected intake performance relative to minimization of entrainment and impingement risks," and on the other, the "evaluation of tidal effects and withdrawals on flow conditions at screening locations." ***This reveals that fundamental scientific and design components of avoidance and minimization measures for listed species cannot assure protection and survival (let alone recovery) given the current state of scientific and engineering knowledge.***

Nowhere in BDCP is there a conservation measure to install fish screens on the South Delta export pumps or to improve operations of their fish salvage facilities as required by the 2000 CalFED Record of Decision.[95] BDCP Applicants are apparently not serious about protecting fish from the hydrodynamic nightmares they propose to inflict on the Delta's listed species and aquatic ecosystems from the Twin Tunnels, the North Delta Intakes, and related Delta facilities in "conservation measure" 1.

The Delta's fish face an extinction crisis. The Twin Tunnels would adversely modify designated critical habits and thus promote species extinction and preclude species recovery. The Twin Tunnels project is not a permissible project under the Endangered Species Act (ESA) because it would adversely modify designated critical habitat for at least five Endangered and Threatened fish species. BDCP's own modeling results indicate that Tunnels operation would appreciably reduce the likelihood of survival and recovery of listed fish species in the Plan Area of the Bay Delta Conservation Plan.

We incorporate by reference a comments from the California Advisory Committee on Salmon and Steelhead Trout to the Director of the California Department of Fish and Wildlife dated February 26, 2014.[96] The Advisory Committee concludes among other things that: "The BDCP does not meet the requirements of Fish and Game Code 2820 for an NCCP and cannot legally be approved because it will contribute to the further decline of Sacramento River Winter Run and Spring Run Chinook salmon." (Letter p. 1). The Advisory Committee also concludes that: "In summary, the Bay-Delta Conservation Plan does not meet the requirements of the California Endangered Species Act or the Natural Communities Conservation Plan Act to recover Sacramento River winter-run and spring-run Chinook salmon." (Letter p. 4).

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[94] *Ibid.*, Appendix 3.D, *Monitoring and Research Actions,* Table 3.D-3, p. 3.D-28,.

[95] CalFED Record of Decision, pages 26, 52, and 131. Accessible online June 3, 2014 at http://calwater.ca.gov/content/Documents/ROD8-28-00.pdf.

[96] Letter of California Advisory Commission on Salmon and Steelhead Trout to Charlton Bonham, Director, California Department of Fish and Wildlife, "Recommendation to deny incidental take permit and Natural Communities Conservation Plan for Bay Delta Conservation Plan," February 26, 2014. Accessible online June 4, 2014, at http://www.friendsoftheriver.org/site/DocServer/Atc_13.pdf?docID=8313.

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For the same reasons, the Twin Tunnels plan likewise does not meet the Section 10 requirements of the ESA and cannot legally be approved because it will contribute to the further decline of Sacramento River Winter Run and Spring Run Chinook salmon.

3. Stranding and Entrainment Risks of Seasonal Floodplain Enhancement Measure

BDCP fails the Endangered Species Acts' requirements for ecological assurances that the habitat conservation plan, with its proposed seasonal floodplain inundation of Yolo Bypass, will not appreciably reduce the likelihood of survival and recovery of listed species. Key assurance uncertainties are put off into the plan's adaptive management process. The BDCP application for incidental take permits should be rejected by the fishery agencies.

BDCP Applicants propose to take advantage of recent scientific findings that seasonal inundation of floodplains can expand food production for covered and listed anadromous and other fish species out of the mainstem channels they use to emigrate to the ocean or to other parts of the Delta's Central Valley watershed. The fish species that are targeted for this type of restoration approach, and the related changes to flow patterns and flood control facility operations, appear from our review of BDCP to include most runs of salmon and Sacramento splittail (which is a covered species but is not ESA-listed).[97] Juvenile salmon (but not Central Valley steelhead trout) and splittail are found to grow larger faster when floodplains are available for them to rear in (periods where they feed and grow). Such growth is found by scientists to improve overall fitness of emigrating salmon smolts for reaching adulthood, surviving the ocean phase of their life history, and eventually returning to natal streams to reproduce.

The Sacramento River Basin Flood Control Project is proposed by BDCP for some alterations in its southernmost reach, Yolo Bypass. This bypass extends from the Sacramento River just west of the town of Verona south to its outlet into the Cache Slough complex just north of Rio Vista along the Sacramento River as it concludes its route through the north Delta to Suisun Bay, a distance of about 38 miles. At the northern mouth of Yolo Bypass, high flood flows during and after storms spill over a structure along the right bank of the Sacramento River called Fremont Weir. In addition, flows from the Feather River, whose confluence with the Sacramento River is located at Verona, enter the Sacramento and raise the river level still further, backing those waters up and over Fremont Weir as well, enabling Yolo Bypass to take considerable flood flow pressure off of the mainstem of the Sacramento River, thereby protecting farmlands, the City of Sacramento, and other small communities further downstream from most flood peaks.

Adult salmon will sometimes choose upstream migration routes through Yolo Bypass trying to reach their natal stream or tributary of the Sacramento River, until they find Fremont Weir obstructing further upstream progress toward the Sacramento River. These fish sometimes head up the drainage canals that enter the Bypass from the Colusa Basin and from Cache Slough to Cache Creek, but may perish from the effects of stranding without having spawned successfully. If state fish wardens and biologists become aware, they organize rescue efforts to capture and relocate these fish into the Sacramento River so they may attempt to carry on their upstream travel. They are

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[97] The main salmonid beneficiaries of Yolo Bypass inundation are Winter-run, Spring-run and Fall-run Chinook salmon, and Central Valley steelhead, which are emigrating substantially during periods (mid-November through May) that overlap with the December through April time frame of notched Fremont Weir spillage proposed under BDCP. However, Late Fall-run Chinook yearlings (November through early February) and young-of-the-year (mid-April through mid-May) will likely benefit least from seasonal inundation of Yolo Bypass. *Ibid.*, Chapter 3, Table 3.4.2-1, "Potential Operations pattern for Fremont Weir Gated Channel and Other Considerations," p. 3.4-57.

often unsuccessful, and many fish are lost, as occurred in the summer of 2013 elsewhere in Yolo Bypass and other parts of the lower Sacramento Valley.[98]

Juvenile Sacramento splittail can find their way into Yolo Bypass to spawn. Their larval and juvenile life stages rear in the shallow, warm and productive ponds and slow-moving floodplain flows. However, they too face a risk of stranding if too little water inundates the Bypass and ponds and channels dry out before their young can mature and emigrate to other Delta channels.

When Yolo Bypass is completely inundated, the wetted area there doubles the total wetted area of the Delta, according to BDCP. The Bypass is also considered inundated when the water level at Toe Drain at Lisbon Weir (at the south end of the Bypass) exceeds 8 feet NGVD.

BDCP Applicants propose to "notch" Fremont Weir so that Sacramento River flows will spill into the Yolo Bypass at lower flow levels. This will increase the amount of time water inundates areas of Yolo Bypass, and increase the amount of floodplain acreage that is stimulated into primary and secondary ecosystem productivity (from phytoplankton to zooplankton to various kinds of aquatic invertebrate organisms). The notch in Fremont Weir would be 225 feet long, as compared with the Weir's existing one-mile length (5,000 feet), and would be operable with one or more gates to regulate spillage and flow to the Bypass. The notch would lower the spill elevation of the Weir from 33.5 feet to about 17.5 feet.[99] The Applicants propose an inundation regime for Yolo Bypass that would provide flows of 3,000 to 6,000 cfs for substantial increases in fish habitat during many years. Average water depths would generally be 2 to 3 feet, with velocities of less than 2 feet per second and water travel times in the Bypass would generally be 3 to 4 days. At 3,000 cfs of flow into the Bypass over the notched Weir, about 10,000 acres and at 6,000 cfs of flow, the inundated area would reach about 20,000 acres, according to BDCP.[100] The number of days the Bypass would inundate is projected by BDCP to more than triple, from 26 days (when Sacramento River flow exceeds 60,000 cfs) in the key December through April period to about 81 days (when Sacramento River flow would exceed just 20,000 cfs or so). We estimate that this investment of seasonal spillage at Fremont Weir would cost the Sacramento River between December and April about 480,000 acre-feet to about 960,000 acre-feet of flow depending on water year type, and would contribute by subtraction to the hydrologic and hydrodynamic mayhem in the lower Sacramento River that would adversely affect fish that did not enter Yolo Bypass.

BDCP identifies the key uncertainties as "Do the modifications at Yolo Bypass function as expected, and if so, how effective are they?" To answer that question, the Applicants identify a lengthy list of potential research actions to cope with this uncertainty:

- Evaluate the effectiveness of the fish passage gates at Fremont Weir.
- Evaluate the effectiveness of sturgeon ramps.
- Determine whether stilling basin modification has reduced stranding risk for covered fishes.

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[98] Bill Jennings, "Massive loss of endangered Winter-run salmon," July 28, 2013, online at http://calsport.org/news/massive-loss-of-endangered-winter-run-salmon/. "During April, May and early June, perhaps half of this year's spawning population of endangered winter-run Chinook salmon were drawn into the irrigation channels of the Yolo Bypass and Colusa Basin and stranded. Approximately 300 fish were rescued and returned to the Sacramento River but most were lost. The majority of those rescued were in such poor condition that biologists doubted they would successfully spawn. Other winter-run were stranded in the Sutter-Butte Basin on the east side of the Sacramento but no rescues were attempted. This has been a recurring problem well known to state and federal fish agencies since the 1990s."

[99] Bay Delta Conservation Plan, Appendix 5.C, Attachment 5C.A, Table C.A-12, p. 5C.A-60.

[100] *Ibid.*, Chapter 3, Conservation Strategy, p. 3.4-44, lines 2-3; Appendix 5.C, Attachment 5C.A, *Flow Results*, Section 5C.A.3.4.4, p. 5C.A-58, lines 3-16.

- Determine whether Sacramento Weir improvements have benefited fish passage and minimized stranding risk.
- Determine effectiveness of Tule Canal/Toe Drain and Lisbon Weir improvements to reduce the delay, stranding, and loss of migrating salmon steelhead, and sturgeon.
- Determine growth rates of juvenile salmonids that have entered the Yolo Bypass during Fremont Weir operation.
- Document Sacramento splittail spawning and spawning success in Yolo Bypass during Fremont Weir operation.
- Evaluate whether the Lower Putah Creek realignment improves upstream and downstream passage by covered fish.
- ***Determine severity of predation effects on covered fish using the Yolo Bypass.***[101]

This last potential research action, concerning the potential predation effects in Yolo Bypass of enhancing fish passage and floodplain productivity to promote rearing needs far more advance planning and research than has occurred ***before the decision is made to remove a half million to a million acre-feet of water from the Sacramento River nearly every year to provide an alternative route to the comparatively efficient migration corridor of the mainstem lower Sacramento River.*** The BDCP Applicants put this research off into the dustbin of its adaptive management laundry list.[102] There is no attempt to model or otherwise estimate the effect of seasonal floodplain inundation in Yolo Bypass on listed species survival rates. Such a modeling effort must factor in the degree to which predator fish would also seek to take advantage of seasonally inundated floodplain productivity, and whether the loss of additional flows from the Sacramento River mainstem channel (and its safer distributaries in the North Delta) contribute to a net increase or decrease of survival rates of listed salmon populations. There is also no mention of methylation of mercury occurring with increased wetting and drying of the floodplain, which can cause methyl mercury levels to spike in the floodplain. The State Water Resources has found that when Yolo Bypass is flooded, it becomes the dominant source of methylmercury to the Delta, and that restoration activities with the increase in wetting and drying periods could exacerbate the existing mercury problem.[103]

4. Climate Change Analysis and Modeling Results

BDCP Applicants recognize that climate change is with us and that it must be accounted for in making plans for the future of California water and the Bay-Delta Estuary.

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[101] *Ibid.*, Table 3.4.2-3, "Key Uncertainties and Potential Research Actions Relevant to CM2," p. 3.4-61. Emphasis added.

[102] *Ibid.*, Appendix 3.D, *Monitoring and Research Actions*, provides additional detail on the depth and breadth of compliance, effectiveness monitoring and research actions that will be needed. This appendix contemplates for Conservation Measure 2 a total of 11 compliance monitoring actions, three effectiveness monitoring actions, and two research actions, one of which is described in our narrative here and contains nine sub-actions.

[103] State Water Resources Control Board, *2009 Periodic Review of the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin River Delta Estuary*, adopted resolution 2009-0065, p. 29. Accessible online 14 May 2014 at http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/periodic_review/docs/periodicreview2009.pdf; and Chris Foe, Stephen Louie, and David Bosworth, *Task 2: Methyl mercury concentrations and loads in the Central Valley and Freshwater Delta,*CALFED, August 2008. Accessible online 14 May 2014 at http://mercury.mlml.calstate.edu/wp-content/uploads/2008/10/04_task2mmhg_final.pdf.

The California Department of Water Resources projects sea level rise by 2030 at about 6 inches, and by 2060 at about 18 inches in the Delta.[104] Snowmelt will continue to decrease in California and more precipitation will fall as rain, so winter season runoff will increase this century while summer (warm) season runoff will decrease.[105] In addition, extreme weather events are expected to become larger and more frequent in many parts of California. During the 21st century, the Sacramento River Basin is expected to experience on average about 32 more hot days, 30 more frost-free in the cold season, 36 fewer extremely cold days, 47 fewer days below freezing, nearly two fewer 7-day cold spells, and a half day's worth of fewer "cold spells." The San Joaquin River Basin is expected to see 11 more hot days per year, 1.6 more "hot events," 40 more frost-free days in the cold season, 35 fewer extremely cold days, 36 fewer days below freezing, 1.2 fewer prolonged (7-day) cold spells, and 3 fewer days of cold spells than in the recent past.[106]

To incorporate climate change effects into BDCP's extensive modeling effort, the Applicants' consultants relied on downscaled general circulation models to the regional level of California. The climate "normal" was taken to be the period of 1971 through 2000 (consistent with the National Oceanic and Atmospheric Administration's practice in climate modeling), in part because it represents the most recent climate time period commonly used for analysis (although it gets more difficult to know what is normal for California as our grasp of paleoclimate records indicates[107]). For BDCP, future climate periods are denoted as "approximately 2025" (the mid-point year of 2011 through 2040, or the "early long term" [ELT] and 2060 (the mid-point year of 2046 to 2075, or the "late long term" [LLT]). BDCP chose the difference in temperature and precipitation among the two future periods to represent the increment of change attributed to climate change.

Because there are so many variables that go into climate models, there are numerous potential permutations that are grouped into large numbers of climate change scenarios. BDCP acknowledges four different potential approaches to projecting climate change effects in the Bay-Delta watershed, and settled on the "multi-model ensemble-informed approach." Their median projections of temperature and precipitation from this approach can be used to divide the scenarios' results into four quadrants. In addition, a fifth region was identified by BDCP that

> samples from inner-quartiles (25th to 75th percentile) of the ensemble and represents *a central region of climate change.* In each of the five regions, the sub-ensemble of climate change projections, made up of those contained within the region bounds, is identified. The Q5 scenario is derived from the central tending climate projections and thus favors the consensus of the ensemble.[108]

BDCP performed further testing on the climate change ensembles to test their sensitivity to a loss of variability in the climate change ensembles due to combining the ensembles. The state and federal fishery agencies agreed to accept BDCP's approach to climate change ensembles, their approach to

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[104] *Ibid.*, Appendix 2.C, *Climate Change Implications and Assumptions*, Table 2.C-8, p. 2.C-13.

[105] *Ibid.*, p. 2.C-10, lines 2-4.

[106] *Ibid.*, Table 2.C-1, "Projected Weather Extremes in the Delta," p. 2.C-16.

[107] B. Lynn Ingram and Frances Malamud-Roam, *The West Without Water*, Berkeley, CA: University of California Press, 2014. Ingram and Malamud-Roam conclude that the American West, in which California figures prominently, will likely see much warmer and drier conditions punctuated by extreme flood events. It is arguable how use of central tendencies from the last 150 years of comparatively wet conditions in California can be used to model this expected future accurately.

[108] BDCP, Appendix 5A. 2, *Climate Change Approach and Implications for Aquatic Species*, p. 5.A.2-6, lines 15-19. Emphasis added.

bounding the sensitivity of the various quadrants, and the reliance on the fifth quadrant as a "consensus" characterization of climate projections.[109]

This approach to incorporating climate change effects into water resources and ecosystem planning is based on a fundamental fallacy in the era we are entering: that of "***stationarity***." The assumption of stationarity means that planners and decision makers rely on the range, central tendency and variability of a known sequence of past records of various environmental attributes in planning activities for decision-making about the future—in short, they make decisions relying on a belief that the future will resemble California's recent past.

Contemporary understanding of past climate records and future climate change forces us to break with the assumption of "stationarity." Currently, California water resources planning, particularly for droughts, is premised on an assumption that the "worst case scenario" for drought contingencies is a six-year drought like the one California experience between 1987 and 1992. However, paleoclimate researchers have examined tree rings and sediment records from Great Basin and other lakes, the Bay-Delta estuary, and the Santa Barbara Channel, as well as geomorphological evidence. They find that there have been several extended 100 to 300-year periods in the last two millennia that have been as dry or drier than the last century of historical records available to California.[110] Looking toward the future, other climate researchers and modelers find that "stationarity is dead."

> Stationarity is dead because substantial anthropogenic change of Earth's climate is altering the means and extremes of precipitation, evapotranspiration, and rates of discharge of rivers [citation]. Warming augments atmospheric humidity and water transport. This increases precipitation and possibly flood risk, where prevailing atmospheric water-vapor fluxes converge [citation]. Rising sea level induces gradually heightened risk of contamination of coastal freshwater supplies. Glacial meltwater temporarily enhances water availability, but glacier and snow-pack losses diminish natural seasonal and interannual storage.[111]

On one hand, BDCP cautiously acknowledges that the loss of stationarity has some merit, but clings on the other hand to its reliance on standard statistical "central tendencies." Its climate change analyses acknowledge that "natural variability is often greater than the magnitude of change expected over several decades" under climate change conditions. But the Applicants begin working stationarity back into their modeling projections, because the modeling systems are what they have to work with:

> In many water resource management areas, it is the extreme events (droughts and floods) that drive the decision-making and long-term planning efforts. Thus *there is a need* to combine the climate change signal with the range of natural variability *observed in the historical record.*
>
> *...[C]limate change is unlikely to manifest itself in a uniform change in values.* In fact, the climate projections indicate that the changes are nonlinear, and shifts in the probability distributions are likely, not just the mean values.[112]

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[109] *Ibid.*, p. 5.A.2-6, lines 20-44, and p. 5.A.2-7, lines 1-11.

[110] Ingram and Malamud-Roam, *op. cit.*

[111] P.C.D. Milly, Julio Betancourt, Malin Falkenmark, Robert M. Hirsch, Zbigniew W. Kundzewicz, Dennis P. Lettenmaier, and Ronald J. Stouffer, "Stationarity is Dead: Whither Water Management?" *Science* 319(2008): 573-574, February. Accessible online at http://wwwpaztcn.wr.usgs.gov/julio_pdf/milly_et_al.pdf.

[112] Bay Delta Conservation Plan, Appendix 5.C, Attachment 5.A.2, *Climate Change Approach and Implications for Aquatic Species*, p. 5.A.2-8, excerpted from lines 2-12. Emphasis added.

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So BDCP embarked on a process of incorporating both the climate change signal and the natural variability of the historical record to create "an expanded series that allows use of the long-term observed records." This kind of approach has been used in the Pacific Northwest and the lower Colorado River Basin, according to BDCP.[113]

BDCP's "need to combine the climate change signal with the range of natural variability observed in the historical record" signals the Applicants' unwillingness to operationalize the recognition that the past is no longer prologue in water resources planning. This is also signaled by their earlier statement that assumes that combining the various quadrants of climate change scenarios somehow represents "consensus." ***Whose consensus? EWC believes this consensus belongs entirely to the Applicants supporting BDCP.*** A related question is "why need consensus around a central tendency in the future climate of California?" *Why not* develop plans as though California should expect an *increase* in the number of below normal, dry and critically dry years in the future as our climate changes and the shifts in precipitation and temperature play out? We doubt that scarce ratepayer and taxpayer funds would be spent for a Twin Tunnels project were that sort of planning effort undertaken.

So while BDCP has acknowledged the reality of climate change with rising temperatures, reductions in future snowpack, the shift of runoff from spring peaks to late winter peaks, and so on, it has retained stationarity to bracket future climate variability within the "fifth quadrant" that gathers the central tendencies of its climate change scenarios together. This "ensemble approach" may take account of climate change central tendencies, but those tendencies have little to do with how climate change is likely to unfold during the rest of the 21st century.

Even with this fundamental problem in the BDCP approach to climate change modeling and analysis, there are some important results to acknowledge here.

- Expected sea level rise is expected to range from 6 inches in 2025 to 18 inches in 2060.
- Tidal amplitude is uncertain and may be negated by habitat restoration activities in the Delta Estuary.
- Air temperatures are expected to increase at Central Valley Project and State Water Project reservoirs by 1.7 to 2.0 degrees F on average by 2060.[114]

BDCP confirms our characterization of their approach to climate modeling, stating, "The climate change adjustments to runoff and reservoir inflow did not modify the historical sequence of conditions; *the annual runoff sequence remained similar to the historical record with only incremental changes in each month.*"[115] BDCP acknowledges implicitly it is assuming stationarity of the sequence of runoff events when the future is likely to be quite different in terms of both sequence and the frequency and magnitude of variable climate events, dry and wet. We question the efficacy of this approach to climate change. It serves the Applicants first and foremost, not the covered fish or the people of California as a whole, and it fails to provide assurances that BDCP relies on the best available climate change science.

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[113] *Ibid.*, p. 5.A.2-8, lines 14-19.

[114] *Ibid.*, p. 5.A.2.2-10, Figure 5.A.2-3; and Table 5.A.2.3-2, p. 5.A.2-19. The reservoirs modeled include Trinity, Shasta, Oroville, Folsom, Whiskeytown, and New Melones.

[115] *Ibid.*, p. 5.A.2-44, lines 11-13.

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Figure 5

Climate Change Approach and Implications for Aquatic Species — Appendix 5.A.2

Table 5.A.2.7-2. Percentage of Years with "Good" Conditions for Winter-Run Chinook Salmon Habitat Metrics in the Upper Sacramento River (from SacEFT)[1]

Metric	EBC2	EBC2_ELT	EBC2_LLT	EBC2 vs. EBC2_ELT	EBC2 vs. EBC2_LLT
Spawning WUA[2]	58	46	32	12	26
Redd Scour Risk	98	98	98	0	0
Egg Incubation	97	88	74	9	23
Redd Dewatering Risk	40	37	25	3	15
Juvenile Rearing WUA	32	32	31	0	1
Juvenile Stranding Risk	0	0	0	0	0

[1] Please refer to Appendix 5.C, *Flow, Passage, Salinity, and Turbidity* Attachment C.B, *SacEFT Documentation*, for definition of "good" for each performance measure.

[2] WUA=Weighted Usable Area.

Note: The SacEFT model classifies spawning habitat conditions based on WUA, which was derived from the River 2D simulation model, fitted to data obtained and parameterized by Mark Gard (U.S. Fish and Wildlife Service 2005a).

Although SacEFT operates on a daily time step, results are presented in terms of the percent of years that are classified as good, which is defined differently for each parameter analyzed (see SacEFT documentation for further details). SacEFT classifies spawning habitat conditions as good in 58% of the years under EBC2 (Appendix 5.C, Table 5.C.5.2-10).

BDCP projects climate change effects on fish upstream and in the Delta. Table 5.A.2.7-2 (excerpted above) shows that climate change's effects on Winter-run Chinook salmon will reduce spawning habitat upstream dramatically, will decrease available cold water for egg incubation, and increase risks in the future of dewatering redds.[116]

[116] *Ibid.*, Table 5.A.2.7-2, p. 5.A.2-106.

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Figure 6

Climate Change Approach and Implications for Aquatic Species — Appendix 5.A.2

Table 5.A.2.8-1. DSM2 Temperature Results for Delta Smelt in Plan Area

Subregion	Criteria	EBC2	EBC2_ELT	EBC2_LLT	EBC2 vs. EBC2_ELT	EBC2 vs. EBC2_LLT
Cache Slough	Median Spawning Day (Adult)	130	126	116	4	14
	Number of Stressful Days (Juvenile)	74	90	111	16	37
	Number of Lethal Days	0	0	1	0	1
East Delta	Median Spawning Day (Adult)	132	128	115	4	17
	Number of Stressful Days (Juvenile)	84	96	118	12	34
	Number of Lethal Days	0	0	2	0	2
North Delta	Median Spawning Day (Adult)	132	129	116	3	16
	Number of Stressful Days (Juvenile)	82	95	114	13	32
	Average Lethal Days	0	0	6	0	6
San Joaquin Portion of the South Delta	Median Spawning Day (Adult)	125	121	123	4	2
	Number of Stressful Days (Juvenile)	90	101	101	11	11
	Number of Lethal Days	0	0	0	0	0
South Delta	Median Spawning Day (Adult)	124	119	117	5	7
	Number of Stressful Days (Juvenile)	85	97	113	12	28
	Number of Lethal Days	0	0	1	0	1
Suisun Bay	Median Spawning Day (Adult)	134	129	121	5	13
	Number of Stressful Days (Juvenile)	73	87	111	14	38
	Number of Lethal Days	0	0	0	0	0
Suisun Marsh	Median Spawning Day (Adult)	131	125	117	6	14
	Number of Stressful Days (Juvenile)	73	88	109	15	36
	Average Lethal Days	0	0	0	0	0
West Delta	Median Spawning Day (Adult)	136	129	119	7	17
	Number of Stressful Days (Juvenile)	77	90	113	13	36
	Number of Lethal Days	0	0	0	0	0

In the Delta, water temperature is closely related to air temperature because of the relatively shallow channels in the Delta and the relatively slow flow velocities at certain times of year. BDCP projects in Table 5.A.2.8-1 (Figure 6, excerpted above) that for Delta smelt there will be significant increases in the median spawning day of the year for adult Delta smelt, and will occur two weeks earlier by 2060, and that the number of "stressful days" (defined as days with daily average temperatures of 68 to 77 degrees F) increases from about 10 to 13 weeks at present (about 74 to 90 days depending on the sub-area of the Delta) to nearly four months (with increases ranging from 11 to 38 more stressful days).[117]

BDCP modeling results suggest the Delta will become a more stressful place for Delta smelt to live than it is today with potentially fewer refuges to escape to, even with habitat restored under BDCP. No similar analysis is provided for longfin smelt or other covered resident fish species to enable either the fishery agencies or the public to discern whether habitat restoration efforts create

[117] *Ibid.*, Table 5.A.2.8-1, p. 5.A.2-108.

adequate refugia to which Delta smelt may escape from rising Delta water temperatures by either 2025, let alone 2060.

BDCP's climate change analysis also informs the modeled effects of the Twin Tunnels versus scenarios without the Twin Tunnels, as shown in the sequence of charts for February through June Delta outflow and X2 position in the Delta.

As indicated in Figure 7 (below), the Delta's low salinity zone (as measured by the position of X2, the 2 ppt isohaline) will migrate upstream over time due in part to sea level rise and decreased upstream runoff, and it will take more inflow to maintain the LSZ in the same position. Without more inflow, Delta smelt habitat will move close to the North Delta Intakes. Construction and operation of North Delta Intakes for the Twin Tunnels would significantly increase, not decrease, entrainment threats to Delta smelt and longfin smelt in the long-term especially when combined with the continuing threats posed by the South Delta export pumps in below normal, dry, and critically dry years.

In January 2014, civil engineer and hydraulic modeler Walter Bourez of MBK Engineers in Sacramento presented results to the Delta Independent Science Board of a modeling study he performed of BDCP operations for a number of non-BDCP water agencies and water contractors involved in the Central Valley watershed of the Bay-Delta Estuary.[118] Bourez concluded from his modeling review of BDCP operations modeling that:

- There were "several shortcomings" with respect to climate change and operational adaptation to climate change.
- Using a more recently updated and improved version of CalSIM II incorporating operator adaptation to climate change, these shortcomings were corrected.
- Key operational results changed considerably as a result of modeling revisions:
  - Total Delta exports (South and North Delta sources) *increased* by about 200,000 acre-feet annually over current BDCP modeling results;
  - Total South Delta exports *decreased* by about 466,000 acre-feet on average relative to current BDCP modeling results; and
  - Total North Delta diversions *increased* by about 686,000 acre-feet on average relative to current BDCP modeling results.[119]

The export splits for north versus south Delta diversions changed dramatically, with much more exports occurring directly from the lower Sacramento River/North Delta Intakes than BDCP has previously disclosed, and total exports increased only somewhat.

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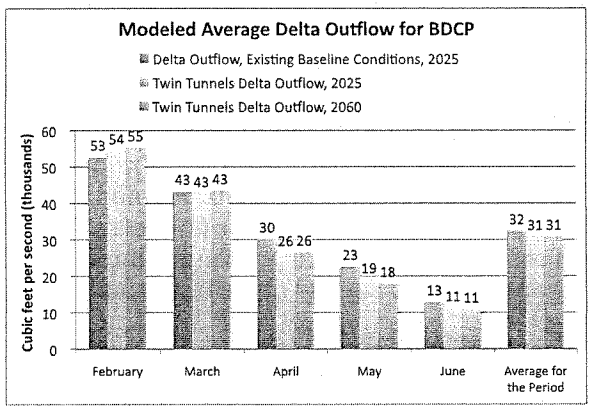
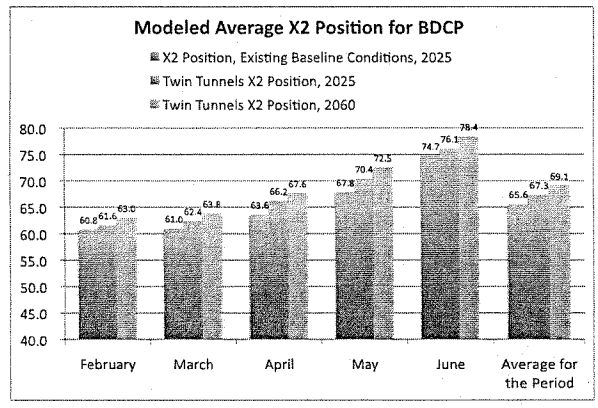
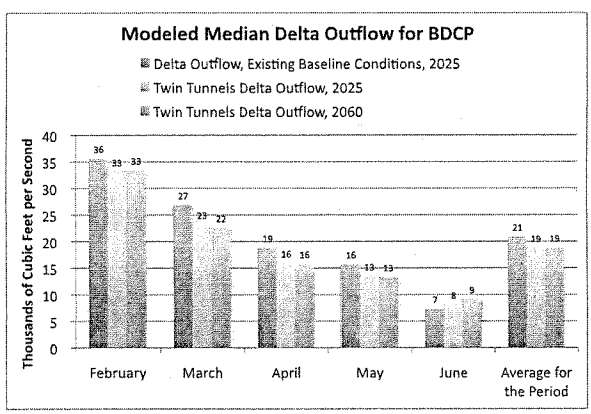
[118] MBK Engineers, *BDCP Operations Modeling Review*, January 17, 2014, presented to the Delta Independent Science Board, 21 slides. Bourez presented his results to the Delta Independent Science Board on January 17, 2014. Among the funders of Bourez's operational modeling review are Friant Water Authority, San Joaquin River Exchange Contractors, Contra Costa Water District, San Joaquin Tributaries Authority, East Bay Municipal Utilities District, Tehama Colusa Canal Authority, and the North Delta Water Agency.

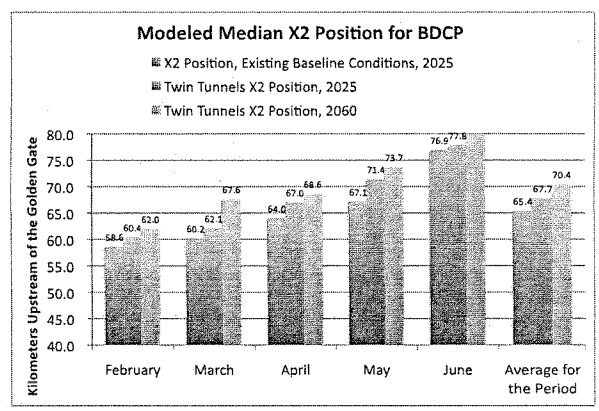
[119] *Ibid.*, slide 11.

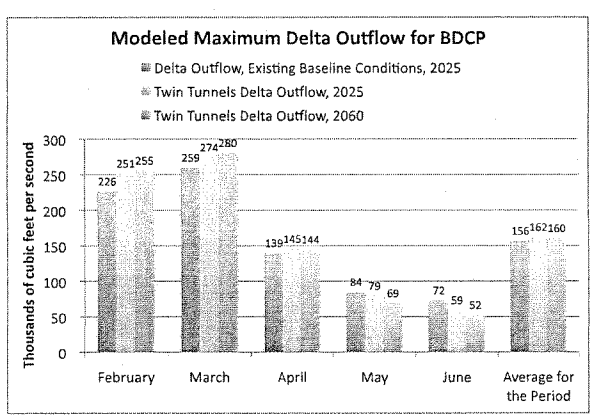
Figure 7
Delta Outflow to Decrease in Future Scenarios with Twin Tunnels, Average X2 Position to Move Eastward with the Twin Tunnels

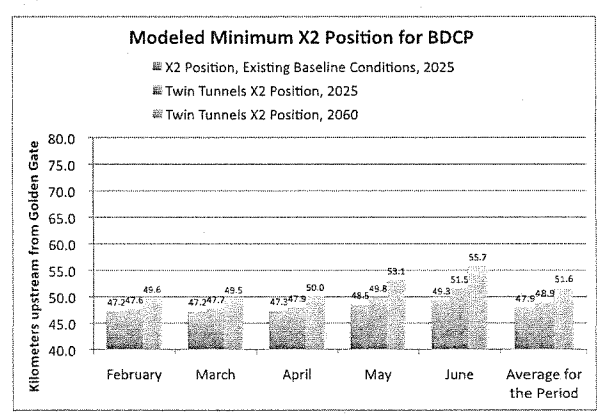












The average value is skewed somewhat by presence in the data of high outflow and low X2 years. The median is the value where half of all other values in the dataset are greater than the median value, and half are less. Delta outflow and X2 are inversely related. Greater outflow means less distance of X2 from the Golden Gate.

Sources: Bay Delta Conservation Plan, Appendix 5.C., Attachment 5C.A, Table C.A-41, p. 5C.A-174; and Table C.A-42, p. 5C.A-176.

Mr. Bourez's water agency clients wanted to factor in climate change adaptation by water facility operators into their modeling assumptions. So they worked in an aspect of climate change into the operator side of the modeling, rather than in the hydrologic side.

Mr. Bourez explained to the Delta Independent Science Board, that BDCP's modeling effort began with the 2009 version of CalSIM II. BDCP's modeling effort was largely completed in 2010, and was not updated for release of the current set of public review documents, even though the California Department of Water Resources subsequently updated and improved CalSIM II. The MBK approach starts with reliance on the CalSIM II modeling used by DWR to construct the 2013 SWP reliability study. Mr. Bourez praised DWR's CalSIM II 2013 improvements, and stated his belief that had this version of CalSIM II been used by BDCP, it would have yielded a different answer than is now seen in BDCP's modeling results.[120] After altering the underlying CalSIM II assumptions, they layered on the BDCP facilities and operations.[121] ***As a result of this disclosure by Mr. Bourez, it appears that the BDCP modeling effort is not based on the best available science as called for under the federal Endangered Species Act.***

Mr. Bourez also stated that it was "unrealistic" to model BDCP's High Outflow Scenario by placing all of the high outflow releases onto Oroville operations. The Coordinated Operation Agreement between DWR and USBR would require that this "debt" be repaid to the SWP somehow, but it is not revealed in BDCP modeling. However, NMFS specified that "high outflow scenario" (HOS) flows should not come from Shasta or Folsom in order to protect cold water pools. ***Therefore, water transfer programs would become the "source" to provide the flows needed for the high outflow scenario in BDCP.*** Water transfer market activity (which, in recent years, has relied heavily on groundwater substitution as the proxy supply enabling Sacramento Valley growers to sell surface water south of the Delta) would become the "source" to provide flows needed for the high outflow scenario in BDCP in drier years. (See our discussion in Section VII.) "There are no defined operating criteria for HOS as of yet," he stated. So actual operating criteria for the High Outflow Scenario remain, from a modeling standpoint, undefined, and impacts resulting from it go unrevealed in BDCP's existing modeling results.

Of the total combined exports increase, about 170 TAF would go to CVP south of Delta contractors, and 40 TAF (again, round numbers) would go to SWP contractors).[122] Mr. Bourez stated that Delta outflow would *decrease* by about 200 TAF on average, although there would be an average increase across all water years in the month of October (largely from implementation of Fall X2 requirements under the Delta smelt biological opinion).[123]

According to Mr. Bourez, ***there would be significantly higher North Delta diversions and much lower inflows to the Delta along the lower Sac River. This portends greater potential for reverse flows in Georgiana Slough.*** Over time as X2 migrates upstream due to climate change, it threatens to draw Delta smelt and longfin smelt closer to entrainment risk at the north Delta diversions especially in July and August (prime months for juvenile rearing and growth), even more than is implied in BDCP's present operational modeling. Greater usage of North Delta Intakes in October, as shown in Mr. Bourez's presentation, indicates greater risk of delayed passage for adult Fall-run Chinook salmon as they attempt to head to their natal streams to spawn, and greater risk of

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[120] Mr. Bourez's remarks were recorded in the personal notes of Tim Stroshane, EWC consultant, present at the Delta Independent Science Board meeting, January 17, 2014.

[121] MBK Engineers, *BDCP Operations Modeling Review*, January 17, 2014, presented to the Delta Independent Science Board, slides 7 and 8.

[122] *Ibid.*, slide 12.

[123] *Ibid.*, slide 13.

entrainment and impingement for juvenile Winter-run and Spring-run Chinook salmon and their smolts emigrating to the ocean in the fall.

Mr. Bourez's operational modeling review methodology included climate change adaptation practices that reservoir operators would employ. Factoring in such behavior at the major CVP and SWP reservoirs, Mr. Bourez's results found greater summertime storage in dry years when operators try to manage cold water pools for fish, and no dead pools. So this finding bodes improved upstream effects than now expected by BDCP modeling results on salmon rearing, spawning, and protection of redds as well as less chance of "superposition" competition among spawning fish for space in river gravels (where spawning females lay their redds atop previously laid redds due to a lack of sufficient wetted habitat in upstream locations).

We present Mr. Bourez's critical review of BDCP modeling as evidence that the best available science and methods were not employed in the development of the Bay Delta Conservation Plan nor its Environmental Impact Statement/Environmental Impact Report. Mr. Bourez readily acknowledges that his BDCP operational modeling review for MBK Engineers and their clients does not include the hydrological/climatic effects of climate change and is thus itself a limited form of analysis. ***But Bourez's remarks spotlight omissions and oversights in the conduct of BDCP modeling, including of climate change effects, that render the analyses of the documents released by BDCP Applicants in December 2013 inadequate to the task of providing ecological assurances needed by the fishery agencies to support issuance of incidental take permits to the BDCP Applicants.***

5. Real-Time Protective Operations and Adaptive Management

BDCP fails the Endangered Species Acts' requirements for ecological assurances. The habitat conservation plan, through its anticipated reliance on extensive use of real-time operations (RTOs) and adaptive management, provides a highly unstable analytical basis for ecological assurances. This makes it likely that BDCP will appreciably reduce the survival and recovery of listed species. Key assurance questions are put off into the plan's adaptive management process. The BDCP application for incidental take permits should be rejected by the fishery agencies.

The current draft Bay Delta Conservation Plan fails to clearly distinguish between the roles of real-time protective water facility operations and adaptive management of operations.

Section 3.4.1.4.5 of Chapter 3, Conservation Strategy, in the Bay Delta Conservation Plan begins with this "Note to reader:"

> At the time of this Public Draft, the applicants and Reclamation are continuing to coordinate with the permitting agencies on the details of the real-time operations procedures to be consistent with the operations of the SWP and the CVP. This section is therefore preliminary. The final BDCP document will describe operational criteria to guide project operations.[124]

The fishery agencies are obligated by ESA regulations to cooperate with habitat conservation planning applicants to make their plans as effective as possible. The presence of a note like this indicates that there is still considerable controversy between the Applicants, Reclamation, and the fishery agencies over how "real-time operations" are to be handled in the context of Twin Tunnels operations. ***The issue is crucial because the complexity of "flexible" operations touted for the Twin Tunnels means that the North Delta Intakes must be operated in part according to whether listed or covered fish species are present in the vicinity of the Intakes to warrant***

[124] Bay Delta Conservation Plan, Chapter 3, *Conservation Strategy*, p. 3.4-26, lines 10-13.

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sharp reductions in diversions. If ESA-listed or BDCP-covered fish suddenly appear in the vicinity of River Miles 37 through 41 unexpectedly, the RTO team—at least in concept—would have the discretionary power to shut down or dramatically curtail diversions in order to protect the fish that are present. It is next to impossible to model RTOs; by definition they are not predictable, which is why they are called "real-time" operations.

The essential purpose of real-time operations (or "RTOs"), as described in BDCP, is to

> maximize water supply for SWP and CVP relative to the Annual Operating Plan and its quarterly updates subject to providing the necessary protections for covered species. RTOs would be implemented on a timescale practicable for each affected facility and are part of the water operating criteria for CM1 [i.e., the Twin Tunnels project and related facilities], which will be periodically evaluated and possibly modified through the adaptive management program [citation]. The RTOs will satisfy Water Code Section 85321: "The BDCP shall include a transparent, real-time operational decision-making process in which fishery agencies ensure that applicable biological performance measures are achieved in a timely manner with respect to water system operations."

When developing adjustments to Twin Tunnels operations in real-time, the RTO team[125] would consider covered species risks, actions needed to avoid adverse effects on covered fish species, water allocations currently or in future years, "end of year [reservoir] storage," the San Luis Reservoir low point[126], delivery schedules for any SWP or CVP contractor, and "actions that could be implemented throughout the year to recover any water supplies reduced by actions taken by the RTO team."[127] These criteria for consideration place a great deal of pressure on the RTO team to minimize water costs to North Delta Intake diversions, lest they be compensated later.

RTO team activities would be needed under BDCP not only at the North Delta Intakes, but at the Delta Cross Channel gates, Head of Old River gate, the Fremont Weir operable gate, and the "nonphysical barriers" intended to shoo fish away from certain channels without actually blocking river flows.

The RTO team will attempt to plan RTOs as part of BDCP's "Annual Delta Water Operations Plan," by anticipating periods when RTOs may be employed, alternative responses to be considered, the intended benefits to covered species, any expected effects on water supply, and the monitoring and analysis procedures used to track adjustments. RTOs will necessitate an elaborate range of accounting procedures since the state and federal water projects will not tolerate net losses of water exports just because covered fish show up unannounced and uninvited at the North Delta Intakes or the South Delta pumping plants.

This section of Chapter 3 in BDCP states some "salvage density triggers" for Old and Middle River flow adjustments between January 1 and June 15 affecting the South Delta export facilities.[128] At the

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[125] The Real-Time Operations Team would comprise one representative each from the three state and federal fishery agencies and from DWR and the Bureau of Reclamation.

[126] San Luis Reservoir has a "low point" of about 300,000 acre-feet of storage below which the intakes for San Felipe Project contractors (Santa Clara Valley Water District and San Benito County Water District) are unable to withdraw water due to the potential for algal bloom contamination and other water quality concerns, due to the fact that when San Luis Reservoir gets that low, temperature and water quality conditions make it economically infeasible for San Felipe Project contractors to treat the water to an acceptable level for beneficial use.

[127] Bay Delta Conservation Plan, Chapter 3, p. 3.4-26, lines 34-39, and p. 3.4-27, lines 1-4.

[128] *Ibid.*, p. 3.4-28 to 3.4-29, Table 3.4.1-3.

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North Delta Intakes, RTO monitoring will manage bypass flow operations from December through June, but the "exact triggers and responses for RTO at the north Delta diversions are still under development." Generally they are intended to manage north Delta diversion bypass flows:

- within a preset range when juvenile salmonids are emigrating downstream past the intakes.
- within a preset range when adult sturgeon are migrating upstream.
- within a preset range to avoid an increase in frequency and magnitude of reverse flows (and entrainment) at Georgiana Slough compared to baseline (Real-time adjustments to avoid reverse flows are primarily the responsibility of DWR operators with occasional input from RTO team as appropriate.)
- and to manage the distribution of pumping activities among the three north Delta and two south Delta intake facilities to maximize survival of covered fish species in the Delta and water supply.[129]

A clear distinction of real-time operations from adaptive management activities has been submerged between the description of RTOs in the March 2013 administrative draft of BDCP and the November 2013 draft. In March 2013, RTOs were described as providing for "discretionary changes that may be taken for the purpose of providing additional benefits to covered fish species....Real-time operations do not substantially alter the values of water operations criteria, but provide a mechanism to alter those values for periods of a few days or weeks within specified bounds." As performed at other Delta facilities such operational activities "have been found to produce substantial beneficial outcomes for salmonids and smelts—outcomes incremental to those predicted in the BiOps."[130] The purpose of RTOs is to

> increase fish benefits without compromising water supply availability provided under the Plan and its regulatory authorizations. Should the agencies choose to make a real-time operations adjustment to provide a short-term fisheries benefit, the resulting impact on water supply will be calculated. Subsequent real-time operational actions will be taken to restore any water supply impact resulting from the prior decision.[131]

The March 2013 version of the BDCP disclosed that "real-time operational decisions are separate and distinct from the adaptive management process." RTOs are short-term adjustments to operations with subsequent compensations for water cost involved to the state and federal operators, while BDCP's adaptive management process is intended to address adjustments that may be needed, based on best available science, in conservation measures, "including operational criteria," should ongoing monitoring of Plan implementation suggest that changes are needed to improve "the effectiveness of the Plan and advance biological goals and objectives." Adaptive management changes will be based on "best available science."[132]

None of this language from the March 2013 draft BDCP clarifying the differences between RTOs and the adaptive management process is retained in the current November 2013 version of BDCP. And yet there are clearly important and undisclosed relationships between the adaptive management process and RTOs. For example, operation of the Fremont Weir notch's operable gate(s) may have to be the subject of adaptive management research if recommended by the adaptive management team. And yet, BDCP also contemplates that the gate(s) "may be subject to RTOs from November 10 through May 15, when Sacramento River flow is high enough to support the diversion of water into the Yolo Bypass." It is unclear in the November 2013 Draft BDCP where

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[129] *Ibid.*, lines 13-22.

[130] Administrative Draft Bay Delta Conservation Plan, March 2013, p. 3.4-20, lines 32-36.

[131] *Ibid.*, p. 3.4-20, line 43, and p. 3.4-21, lines 1-5.

[132] *Ibid.*, lines 6-14.

RTOs stop and adaptive management begins, and there may be other such gray areas between adaptive management and real-time operations at the other facilities where RTOs will be carried out—and those will have to be coordinated with each other.

Without disclosure of the RTO triggers for the North Delta Intake and other proposed BDCP facilities' RTOs, and without clear delineation between where RTOs stop and adaptive management begins, it is impossible for decision makers to be adequately informed about the promise or problems of real-time operations and how they would be applied. This violates NEPA and CEQA. Moreover, the impossibility of modeling RTOs casts doubt using BDCP modeling as a guide to actual Twin Tunnels and other BDCP CM 1 facilities operations. Given the likely use of RTOs, the expected heavy reliance of BDCP on adaptive management for handling biotic and abiotic uncertainties, and the narrow definition of "foreseeable circumstances" that defines allowable modifications to the Plan (about which more below), ***the fishery agencies are faced with enormous potential for a grand bait-and-switch from the Applicants toward operations in the Delta once incidental take permits are issued. But by then, it will be too late for the fishery agencies to regain much control over real-time operations.***

The recently released "Stipulation Study" experiment in real-time operations intended to benefit Central Valley steelhead smolts' migration routes and survival rates through the Delta provided little support for the potential effectiveness of real-time operations to protect salmonids from entrainment at the South Delta pumping facilities. It raises serious questions about the magnitude and timing of flow signals that would be needed to affect the migration routing of smolts, none of which are accommodated at present in BDCP and Twin Tunnels approaches to real-time operations and adaptive management.[133]

6. Selenium Analysis and Residence Time of Delta Water Under BDCP

BDCP errs in assuming decreasing selenium loads during the term of the incidental take permits.

As noted above in Section III, there is another reason for concern about the likely expansion of the range of the nonnative invasive clam *Potamocorbula* in the Delta eastward into the Delta as sea level rises and with construction and operation of the Twin Tunnels. Not only does this clam filter-feed great volumes of food from the water column and threaten to undermine the productivity of habitat restoration efforts to be sponsored by the Bay Delta Conservation Plan; it turns out that *Potamocorbula* is a highly efficient bio-accumulator of the metalloid selenium. In high tissue concentrations, selenium can be either toxic or lethal. *Corbicula* is also known to bioaccumulate selenium, though not at the same rates as *Potamocorbula*.

The nonnative invasive clams are discussed in detail in Appendices 5.D, *Contaminants*, and 5.F, *Biological Stressors on Covered Fish*, out of sight of the Plan's main chapters. In Section 5.F.6.4, BDCP states that increased selenium uptake in the food chain via invasive clams is *not* an anticipated result of covered activities. This is because, Appendix 5.F states, residence time of Suisun Bay water will not increase from BDCP activities

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[133] California Department of Water Resources, *Stipulation Study: Steelhead Movement and Survival in the South Delta with Adaptive Management of Old and Middle River Flows*, prepared by David Delaney, Paul Bergman, Brad Cavallo, and Jenny Melgo, Cramer Fish Sciences, February 2014, 150 pages. Accessible online 15 April 2014 at http://baydeltaoffice.water.ca.gov/announcement/Final_Stipulation_Study_Report_7Feb2014.pdf.

> and an increase in residence time would be critical for increased uptake of selenium by the clam population. However, there is uncertainty associated with this conclusion because of the complexity of factors that determine selenium biogeochemistry and bioavailability.[134]

Residence time is critical because the longer a parcel of water containing contaminants or other chemical stressors remains in the same general place, the greater potential there is for toxic interactions of those contaminants with organisms co-occurring in that water. Not only is there uncertainty associated with BDCP's conclusion that the clams would not experience increased uptake of selenium, but this conclusion is doubly suspect because Suisun Marsh and West Delta residence times are projected by BDCP to *increase* on a seasonal basis by 2025 under Twin Tunnels operations, as shown in Figure 8 below. How their residence times would increase and Suisun Bay's would not (given its direct hydraulic connection to the Marsh and West Delta) needs explanation from BDCP.

These charts summarize particle tracking studies that model the number of days it takes buoyant particles injected in various sub-regions of the Delta to exit the Delta, either via exports (as in the South Delta) or via Suisun Bay to San Pablo Bay. Each chart compares three scenarios: existing conditions at present, conditions in 2025 upon approximate completion and launch of Twin Tunnels operations, and conditions in 2060 with restoration projects completed and the Twin Tunnels in operation. ***As can be seen in these charts, all areas of the Delta will see dramatically increased residence time of water with completion and operation of the Twin Tunnels (red bars in Figure 8) as compared with blue bars representing existing conditions.*** Between 2025 and 2060 with the Twin Tunnels, the picture gets more complex, according to BDCP. Residence times continue to rise in the South, East, North and West Delta in all seasons and in the average measures every year under BDCP. But BDCP modeling projects that residence times will dramatically decrease by 2060 in both Suisun Marsh and the Cache Slough area.

Consider the Cache Slough and Suisun Marsh charts season by season. In Suisun Marsh, the annual average residence time of water decreases by about one day, but in the fall residence times will increase by about 14 days and winter residence times will increase by about 18-19 days by 2060. Spring and summer residence times are already high now in Suisun Marsh (averaging about 45 and 52 days respectively) presumably due to current irrigation season diversions of inflow directly from the marsh as well as CVP and SWP export operations that force use of the Suisun Marsh Salinity Control Gates to protect water quality there. The early operations of the Twin Tunnels (by 2025 or thereabouts) are projected to maintain residence time at about 45 days before it is projected to decrease by 2060 to 30 days in the spring and from 58 to 35 days in the summer. Would this decrease be due to reoperation of the Suisun Marsh Salinity Control Gates combined with habitat restoration actions? If so, what are the mechanisms (either biotic or abiotic) the Applicants anticipate that would account for such dramatic decreases in residence time in Suisun Marsh under Twin Tunnels operations?

We also note that Suisun Marsh's residence times across each season will become much less variable if BDCP residence time modeling is correct. Under current conditions, this variability in residence time means that there are periods of the year, especially fall and winter, when shorter residence time means that Marsh channels are being flushed out with fresher waters (probably from irrigation return flows as well as early storm water runoff in to the Marsh watershed). What will the loss of that variability mean for water quality in the Marsh, and for longfin smelt, which is often found in Suisun Marsh channels during spring and summer months?

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[134] *Ibid.*, Appendix 5.F, *Biological Stressors on Covered Fishes*, p. 5.F-123, lines 29-34.

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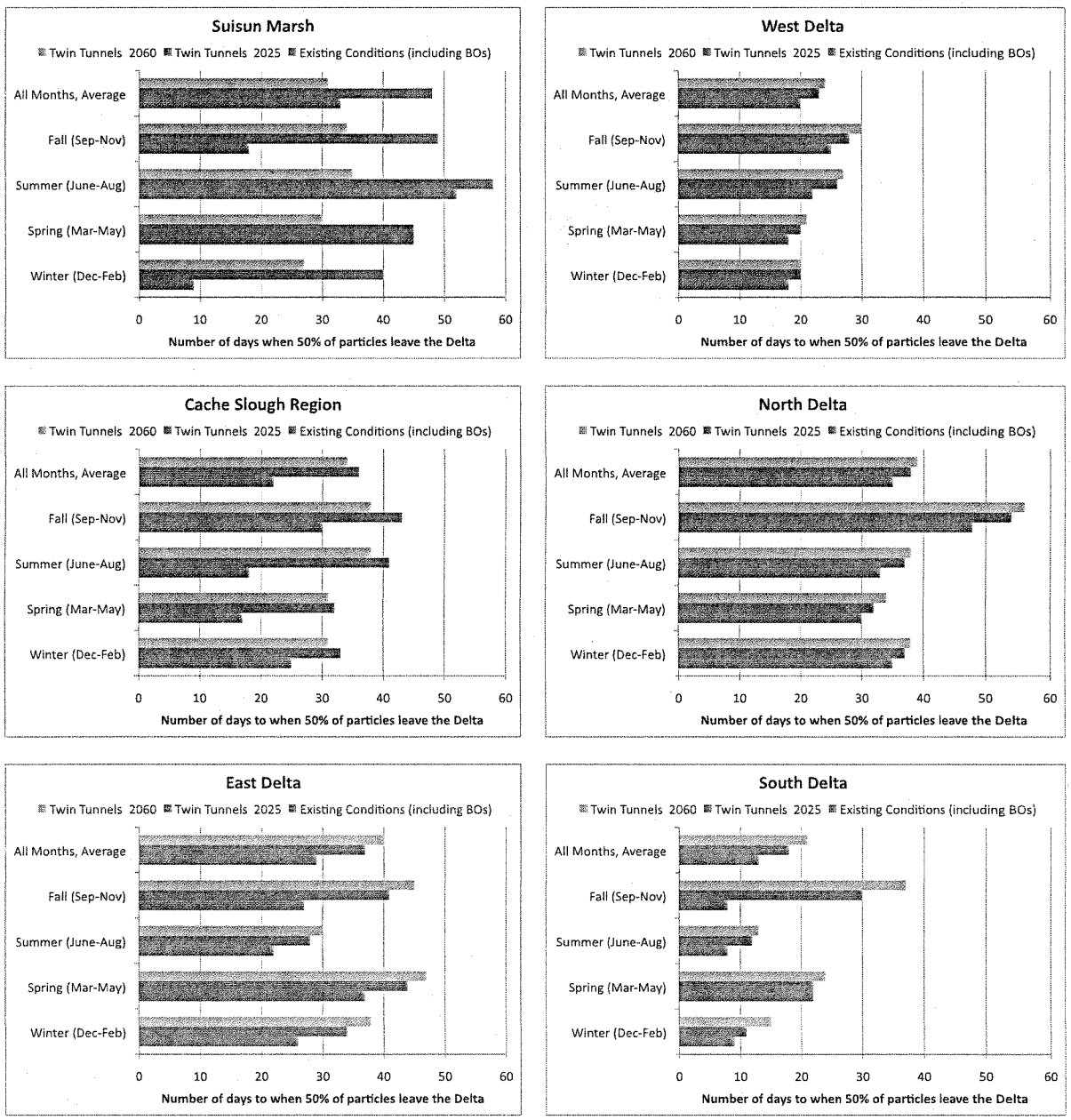
Figure 8
Residence Time of Water in Various Delta Regions



Source: Table 5C.5.4-14, p. 5C.5.4-84, Bay Delta Conservation Plan.

In Cache Slough in all seasons (a potential permanent refuge for Delta smelt, as hoped in BDCP), Twin Tunnels operations would only slightly decrease residence time of water between 2025 and 2060, and Twin Tunnels operations would have significant (i.e., greater than 10 to over 50 percent) *increases* in residence time from current conditions to Twin Tunnels operation by 2025. The Cache Slough area would be positioned at the downstream end of seasonally-inundated floodplain lands in Yolo Bypass, especially during winter and spring, which may account for flows that decrease residence time of water by 2060.

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West Delta residence time is significant here as well since that area is just downstream of Cache Slough outflow and just upstream of Suisun Marsh, so it most closely approximates the residence time of water present in Delta outflow to Suisun Bay. According to BDCP modeling presented in Figure 8 above, Twin Tunnels operations will *increase* residence time in all seasons and in the annual average, and residence time will increase under Twin Tunnels operation between 2025 and 2060. West Delta residence times retain their clear seasonally-increasing trend, where they are lowest in winter, increasing through spring and summer somewhat to fall when residence times are about 25 to 33 percent higher than in winter (e.g., 30 days of residence time in the fall versus 20 days under Twin Tunnels operations by 2060).

But residence time of water is projected to increase, sometimes significantly, throughout the rest of the Delta. Higher residence time means slower flow velocities in channels and open water areas. ***Slower flow velocities provide greater opportunity for dissolved selenium to enter partitioning processes in the water column and become more bioavailable.***

BDCP presents the details of its analysis of the risk of selenium contamination to the Delta in Appendix 5.D using two fish species, largemouth bass and sturgeon (either green or white) to represent predators at the top of distinct food webs found in the Delta. Only one of these foodwebs, however, is based on benthic bivalves like *Potamocorbula* and *Corbicula*, both of which can be consumed by sturgeon. Our comments will focus on BDCP's sturgeon related analysis, and highlight some unresolved issues that contribute to great uncertainties.

BDCP stresses in its analysis that the modeling results for sturgeon are "long-term, worst-case conditions" but do not explain how or why their results represent a worst-case condition.[135] This claim appears to be based on their argument that

> Given the variability of concentrations at the individual level, decreasing concentrations in source waters to the Delta and Suisun Bay expected as described above, and the uncertainties in the water concentration modeling and subsequent bioaccumulation modeling presented above, it is unlikely that the increases in whole body Se [selenium] for sturgeon modeled would be measurable in the environment, and there is also uncertainty about the biological significance of these increases, given the uncertainty of the actual threshold for biological effects in sturgeon.[136]

The analysis in Appendix 5.D then claims that "discharges of selenium to the Delta will continue to decrease in accordance with regulatory requirements, specifically for the North San Francisco Bay Refineries, and agricultural discharges in the San Joaquin Valley."[137] The analysis further assumes that continuing future decreasing concentrations of selenium in source waters are due to the Grassland Bypass Project, an area of the western San Joaquin Valley west of Firebaugh and southwest of Los Banos.

BDCP acknowledges that habitat restoration activity in the Delta could mobilize selenium in the sediments and soils of proposed restoration areas, particularly in the South Delta.[138] Despite what BDCP stated in Appendix 5.F about Suisun Bay residence time, in Appendix 5.D, BDCP states that Suisun Bay "is also of concern" because of *Potamocorbula* densities there. High residence time in this area could lead to "increased selenium bioaccumulation" in sturgeon. This section adds:

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[135] *Ibid.*, p. 5.D-33, line 26.

[136] *Ibid.*, p. 5.D-34, lines 1-4.

[137] *Ibid.*, p. 5.D-33, lines 27-29.

[138] Bay Delta Conservation Plan, Appendix 5.D, *Contaminants*, p. 5.D-35, lines 15-23.

> CalSIM modeling results indicate that *outflow and residence time in Suisun Bay will not change substantially under the BDCP.* Comparison of the monthly mean residence time (averaged over the years 1992 through 2003) indicates that residence time in Suisun Bay may change from a decrease of 13 days to an increase of 5 days.[139]

This description of un-presented CalSIM II results is at best unclear, and conflicts with BDCP's earlier reported claim that residence time *decreases* in Suisun Bay under Twin Tunnels operation. It is followed by this conclusion:

> Given the decrease in loading of selenium to the Delta...and that the selenium would be mobilized into the food chain under a narrow set of conditions, the overall effects within the Plan Area [the Delta] are likely low. The potential is highest for increased mobilization of selenium in and near the San Joaquin River and the South Delta ROAs [restoration opportunity areas], where selenium concentrations in soils are expected to be highest, and potentially in Suisun Bay where filter feeders are the food source for benthic feeding covered fish species.[140]

BDCP and the fishery agencies would err to premise their analysis of selenium toxicity risk to Delta ecosystems on the Grassland Bypass Project resulting in steadily decreasing selenium concentrations in source water from the San Joaquin River to the Delta on into the future. There is evidence that much of the selenium load and concentration reductions that have been achieved so far have come from land retirement in the Grassland and northern Westlands Water District area. Even the State Water Resources Control Board, which has maintained a relatively light regulatory touch, approved a basin plan amendment for Grassland Bypass Project that only goes through 2019 when it must decide whether another extension for the project is warranted.

Grassland Bypass Project attempts to bioconcentrate selenium in salt-tolerant plants and discharge remaining effluent into a segment of the San Luis Drain that ultimately drains into Mud Slough (north), thence to the San Joaquin River. This method is insufficient to reduce the selenium threat to the sloughs tributary to the San Joaquin River. So the Grassland drainers obtained a grant through Panoche Drainage District to attempt a pilot project to treat selenium-contaminated drainage. The facility is estimated to cost $37 million, or about $78,000 per acre-foot of treated drainage water. The efficacy of treating this water has yet to be proven, particularly given the fact that its cost per acre-foot of drainage treated far exceeds most other technologies for recycling water. There are indications that the treatment project will not prove to be cost-effective. Its discontinuance would undermine a key assumption of BDCP's analysis of selenium as a contaminant stressor in the Delta.

Mostly, the reduced selenium loads in the San Joaquin River appear attributable at best to retirement of lands from irrigation service. What drainage is generated in the Grassland area and in the Westlands Water District is largely held on-site as groundwater drainage containing selenium, and selenium in soil and source rock upslope of these lands. The longer irrigation continues on these lands, the more selenium drainage and soil contamination will build up. Flood events can mobilize pulse loads that can be quite large (see "context" discussion above and Table 2), and their toxicity long-lasting in downstream water bodies from Mud Slough all the way to the Delta and Suisun Marsh.

Retirement of the drainage impaired lands of the western San Joaquin Valley has been found time and again to be the most cost-effective solution to the problem of selenium-tainted irrigation

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[139] *Ibid.*, p. 5.D-36, lines 6-9. Emphasis added.

[140] *Ibid.*, p. 5.D-37, lines 11-17.

drainage.[141] Land retirement is the best and cheapest option for slowing the rate at which selenium loads and concentrations reach the Delta, and for sequestering selenium in its source rock and soils longer into the future. Stop applying water exported from the Delta to these lands so that no more seleniferous drainage is intentionally created. The natural reservoir of selenium has been documented to hold up to at least another 300 years' worth of tainted drainage at current rates.[142] The National Research Council's 2012 report on Bay-Delta sustainable water management cited this selenium reservoir as well, stating in part:

> Irrigation drainage, contaminated by selenium from those soils, is also accumulating in western San Joaquin Valley groundwaters. The problem is exacerbated by the recycling of the San Joaquin River when water is exported from the delta. While control of selenium releases has improved, how long those controls will be effective is not clear because of the selenium reservoir in groundwater.
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> ...Other aspects of water management also could affect selenium contamination. For example, infrastructure changes in the delta such as construction of an isolated facility could result in the export of more Sacramento River water to the south, which would allow more selenium-rich San Joaquin River water to enter the bay. The solutions to selenium contamination must be found within the Central Valley and the risks from selenium to the bay are an important consideration in any infrastructure changes that affect how San Joaquin River water gets to the bay.[143]

Of course, ending the imports of Delta waters to the western San Joaquin Valley's to irrigate drainage impaired lands could reduce the need for deliveries to the San Luis Unit of the Central Valley Project by up to a million acre-feet per year. ***This reduction in deliveries through the CVP could provide by itself dramatically improved reliability of other CVP contractors' allocations, without the investment of billions for the Twin Tunnels project and BDCP.***

But in the absence of such adjustments to how drainage impaired lands are managed by local irrigators and the US Bureau of Reclamation, and in the absence of any action by the Bureau to end deliveries to these lands in the San Luis Unit, there appears no end to the vicious cycle of selenium transport to the Delta and Suisun Bay via the San Joaquin River. ***BDCP errs in assuming decreasing selenium loads during the term of the incidental take permits.***

7. Temperature Conditions and Cold Water Pool Management

The Draft EIS/EIR analysis of cold water carryover storage is misleading and inaccurate. The EIS/EIR does not disclose significant impacts to cold water storage and decreased downstream salmon survival as a result of warming rivers.

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[141] "Land retirement is a key strategy to reduce drainage because it can effectively reduce drainage to zero if all drainage-impaired lands are retired." Page 2, USGS Open File Report 2008-1210, Technical Analysis of In-Valley Drainage Management for the Western San Joaquin Valley, California. Accessed at http://pubs.usgs.gov/of/2008/1210/of2008-1210.pdf.

[142] T. Stroshane, *Testimony on Recent Salinity and Selenium Science and Modeling for the Bay-Delta Estuary*, plus appendices, prepared for the California Water Impact Network, August 17, 2012, for Workshop #1, Ecosystem Changes and the Los Salinity Zone, before the State Water Resources Control Board.

[143] National Research Council, Committee on Sustainable Water and Environmental management in the California Bay-Delta, *Sustainable Water and Environmental Management in the California Bay-Delta*, Washington, DC: The National Academies Press, 2012, p. 94. Accessible online 8 May 2014, at http://www.nap.edu/catalog.php?record_id=13394.

Reservoir minimum storage is defined as the amount of water in a reservoir at the end of the water year at the end of September (EOS), also referred to as carryover storage. The purpose is to ensure that there is enough cold water in reservoirs for salmon to have suitable temperatures downstream of dams for holding, spawning, incubating and rearing. Only two of the major CVP reservoirs have minimum storage criteria- Shasta and Trinity. The Sacramento River and the Trinity River both have temperature water quality objectives contained in their respective Water Quality Control Plans (Basin Plans), approved by the Central Valley[144] and North Regional Water Quality Control Boards,[145] the SWRCB and the U.S. Environmental Protection Agency as state and federal clean water act standards. The intent of the Shasta and Trinity minimum storage requirements is to meet the downstream Basin Plan Temperature objectives.

The minimum storage requirements for Shasta and Trinity reservoirs are contained in Biological Opinions by the National Marine Fisheries Service dated 2009[146] and 2000[147], respectively. Lake McClure, owned and operated by the Merced Irrigation District has "minimum pool" requirements in its SWRCB water permits for Bagby, Exchequer (Lake McClure) and Snelling reservoirs. [148]

The Draft EIS/EIR analysis claims that there will be no significant impacts to cold water storage in Shasta and Trinity reservoirs from operation of BDCP. The EIS/EIR claims that long term impacts to cold water reservoir storage in Shasta, and Trinity are a result of climate change and not BDCP operations. However, at the January presentation by Walter Bourez (described elsewhere in Section III), he stated that it was "unrealistic" to model BDCP's High Outflow Scenario by placing all of the high outflow releases onto Oroville operations. The Coordinated Operation Agreement between DWR and USBR would require that this "debt" be repaid to the SWP somehow, but it is not revealed in BDCP modeling.

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[144] See Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Table III-4, page III. 8.0, accessed at http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/index.shtml

[145] See Water Quality Control Plan for the North Coast Region, Table 3-1, page 3-6.00, accessed at http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/basin_plan.shtml

[146] http://www.epa.gov/espp/litstatus/wtc/carbama-biop-4-20-09.pdf

[147] http://www.fws.gov/arcata/fisheries/reports/technical/TREIS_BO_NMFS.pdf

[148] For a description of the Merced Irrigation District's Minimum Pool requirements in their SWRCB water licenses, see page 5 of SWRCB temporary urgency order for licenses 11395 and 11396 (Applications 16186 and 16187), accessed at http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_orders/docs/mid_temp_order_mod052214.pdf

"IV. MID shall maintain the water surface elevation in its reservoirs as high as possible, consistent with operational demands throughout the period April through October each year, and shall maintain minimum pools of the following capacities for operation of the project and maintenance of fish and wildlife:

Bagby Reservoir	30,000 af
Exchequer Reservoir	115,000 af
Snelling Reservoir	20,000 af"

Absent a replacement source of water such as water transfers that was not modeled either, the additional Delta outflows would come from Shasta, Trinity and Folsom, thereby reducing minimum storage, cold water pools and the ability to meet downstream temperature objectives. The Draft EIS/EIR's evaluation of minimum storage and the ability to meet Basin Plan temperature objectives as well as NMFS' target minimum pool objectives for various listed salmonids is therefore inadequate.

In addition, while the EIS/EIR evaluated the impact of climate change on minimum storage and the ability to meet Basin Plan temperature objectives, as we previously discussed, the BDCP climate change models use a "fifth quadrant" that assumes stationarity (see Climate Change discussion above) in climate change. For reasons previously discussed in the EWC comments, this is inadequate to predict the range of future climate conditions, including, but not limited to runoff volume and timing, reservoir inflow temperatures, reservoir heating and in-river heating. Thus the evaluation of climate change on reservoir operations and water temperatures (Appendix 29C) is inadequate and inaccurate.

A September 12, 2012 string of e-mails from the National Marine Fisheries Service[149] obtained through the Freedom of Information Act reveals the conflict between meeting Trinity River Basin Plan temperature objectives and protection of salmonids in the Sacramento River through meeting Shasta storage targets from BDCP. "Combined Scenario 5" (CS-5) is an attempt by the fishery agencies and BDCP proponents to provide adequate Delta outflows while meeting Sacramento River temperature objectives. Unfortunately, as indicated by the e-mail string, changing the timing of Trinity River exports to the Sacramento River causes summer temperature violations on the Trinity River. CS-5 did not resolve the problem and the problem has apparently been ignored by modeling all Trinity operations the same, even though it is highly unlikely that operations will mimic the modeling. Again, the Draft EIS/EIR does not disclose impacts to Shasta and Trinity temperature compliance and reservoir storage requirements.

The BDCP and its EIR/EIS claims that the Applicants are not obligated to show or analyze potential and probable impacts to the Trinity River due to implementation of the project because the modeling utilized assumed incorrectly that there would be no changes in operations of the Trinity River Division of the CVP. However, even under Existing Conditions and No Action Alternatives, as well as all other alternatives, the Trinity River and lower Klamath rivers are at great risk of catastrophic fish kills similar to 2002[150] and 1977[151] from warm water, low flows and crowded conditions for returning adult salmon and steelhead as well as rearing hatchery

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[149] See September 12, 2012 e-mail string between Seth Naman, Michael Tucker, Garwin Yip, Bruce Oppenheim and Ann Garrett, NMFS, accessed at https://www.c-win.org/webfm_send/436

[150] For information on the historic and unprecedented 2002 salmon fish kill in the lower Klamath River, see reports by the US Fish and Wildlife Service, California Department of Fish and Game and the Yurok Tribe respectively at http://www.fws.gov/arcata/fisheries/reports/technical/Klamath_River_Dieoff_Mortality_Report_AFWO_01_03.pdf and http://www.pcffa.org/KlamFishKillFactorsDFGReport.pdf and http://www.yuroktribe.org/departments/fisheries/documents/FINAL2002FISHKILLREPORTYTFP.pdf.

[151] For a description of the loss of 500,000 yearling salmon and 200,000 advanced steelhead fingerlings at the Trinity River Hatchery during the 1977 drought see http://www.c-win.org/webfm_send/406.

juveniles. Things have to change with how the Trinity River is managed; the questions are what is to be done? How will new Trinity River management approaches that address paper water and cold water pool management for the benefit of fish and the Trinity River watershed communities? And finally, how to ensure the Bureau follows the rules?

There is nothing in the BDCP Draft project documentation to assure that the Trinity River and its beneficial uses will be protected for existing or future CVP and SWP operations. To the contrary, BDCP predicts a decline in cold water storage in Trinity Lake due to *"a combination of higher runoff in January and February that cannot be captured due to flood storage limitations, higher releases to meet Fall X2, and lower carryover storage from previous years due to higher releases for Fall X2 in wet and above normal years, and increased system demands by water rights holders, especially in El Dorado, Placer and Sacramento counties."* (DEIS/R, page 5-60) Furthermore, the DEIS/R states that "The frequency of Trinity, Shasta, and Folsom Lakes dropping to dead pool storage would increase by about 10% under the No Action Alternative as compared to Existing Conditions." (DEIS/R, page 5-61) However, despite these risks, BDCP does nothing to mitigate or prevent catastrophic loss of cold water storage and basic flows to keep fish in good condition below Trinity and Lewiston Dams.

Regardless of how the BDCP is modeled, removal of pumping constraints in the Delta will increase the risk to the Trinity and Lower Klamath rivers of losing the cold water stored in Trinity Lake to out of basin export. It is essential to note that Trinity River water provides beneficial uses for Coho and Chinook salmon, as well as steelhead, Pacific Lamprey, green sturgeon and other species important to Tribal, recreational and commercial fishing communities.

The Trinity Record of Decision fishery flows and the 50,000 AF Humboldt County area of origin reservation of water are components of the 1955 Trinity River Division (TRD) federal legislative authorization (PL 84-386) as amended by the 1992 Central Valley Project Improvement Act (PL 102-575, Section 3406(b)(23)).

Trinity River temperature objectives to protect salmon and steelhead have been adopted by the North Coast Regional Water Quality Control Board[152], the State Water Resources Control Board and USEPA[153], but have not been put into water permit requirements for the Bureau of Reclamation. In 1958, the Bureau of Reclamation, pursuant to section 8 of the 1902 Reclamation Act applied to the state for water rights to operate the TRD, but those water rights contain minimum fishery flows of only 120,500 AF. Trinity ROD flows and Humboldt County's 50,000 AF amount to a weighted annual average of 644,000 AF. Modeling for BDCP should include Humboldt County's 50,000 AF, but does not. The complete failure to include variables such as the question of the 50,000 AF due to Humboldt County from original Trinity River contract obligations reveals the absolute inadequacy of the BDCP Draft EIS/R in analyzing potential and probable impacts of the project on the Trinity and Lower Klamath Rivers.

Reclamation has admitted that it does not operate to any specific carryover storage requirement

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[152] "Water Quality Control Plan for the North Coast Region" Footnote 5, Table 3-1, page 3-8.00: Accessed at http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105-bp/04_water_quality_objectives.pdf

Daily Average Not to Exceed	Period	River Reach
60°F	July 1- Sept 15	Lewiston to Douglas City Bridge
56°F	Sept 15-Oct 1	Lewiston to Douglas City Bridge
56°F	Oct 1- Dec 31	Lewiston to North Fork Confluence

[153] See letter from USEPA Region IX Administrator to Chairman of California SWRCB approving Trinity River Basin Plan temperature objectives, March 13, 1992. Accessed at http://www.c-win.org/webfm_send/416

and does not consider water quality objectives[154] contained in the "Water Quality Control Plan for the North Coast Region" (Basin Plan) as water permit terms and conditions.

Reclamation does consider Water Right Order 90-05 (WRO 90-05) to be a permit term and condition. WRO 90-05[155] includes Trinity River North Coast Basin Plan temperature requirements for the September 15- December 31 period but omits the Basin Plan temperature objective for the Trinity River July 1- September 15 period. Additionally, the WRO 90-05 September 15 through December temperature requirement only applies to transfers of Trinity River water to the Sacramento River for temperature control. All other uses of Trinity River water sent to the Sacramento River are not covered by the temperature requirements of WRO 90-05. Reclamation refuses to acknowledge that North Coast Basin Plan requirements are Clean Water Act Section 313 standards that they must comply with because they are not water permit terms and conditions.[156] Thus, comprehensive Trinity River Basin Plan temperature objectives should be included in Reclamation's water permits. Failure to even mention or include analysis of this variable in the BDCP environmental documentation is another serious omission that confirms the inadequacy of the project review in terms of probably and potential impacts on the Trinity River.

The NMFS 2000 Biological Opinion[157] for the Trinity River, is not even mentioned in the BDCP DEIS/ DEIR. It includes a minimum carryover storage on September 30 of 600,000 AF and requires reconsultation if storage falls below that level. However, other analyses have found that a 600,000 AF minimum carryover storage is inadequate. A 2012 report by Reclamation found that September 30 carryover storage requirement of less than 750,000 AF is "*problematic*" in meeting state and federal Trinity River temperature objectives protective of the fishery.[158]

In 1992 Balance Hydrologics found that a minimum carryover storage of 900,000 AF was necessary to meet Basin Plan temperature objectives.[159]

Analyses completed for Trinity County for the Trinity Record of Decision by Kamman Hydrologics indicated that September 30 carryover storage of at least 1.2 million AF on September 30 is necessary at the beginning of a simulated 1928-1934 drought in order to meet Basin Plan temperature objectives.[160] We are now into a third year of drought and Trinity Lake storage is below levels necessary to survive a historic multi-year drought such as 1928-1934. The risk already exists and BDCP does nothing to reduce the risk; in fact it threatens to increase it. Of

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[154] See 2/23/11 letter from Paul Fujitani, Chief of CVP Ops to Brian Person, Chairman Trinity Management Council; accessed at: http://www.c-win.org/webfm_send/141

[155] http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1990/wro90-05.pdf

[156] Ibid http://www.c-win.org/webfm_send/416

[157] National Marine Fisheries Service (2000), Biological Opinion for the Trinity River Record of Decision, accessed at: http://www.fws.gov/arcata/fisheries/reports/technical/TREIS_BO_NMFS.pdf

[158] See Bender MD (2012) Trinity Reservoir Carryover Storage Cold Water Pool Sensitivity Analysis. Technical Memorandum No. 86-68220-12-06, U.S. Bureau of Reclamation, Technical Service Center, Denver, CO. Accessed at http://odp.trrp.net/Data/Documents/Details.aspx?document=1813

[159] See Balance Hydrologics (6/26/1992) "The Need for Standards for Minimum Carryover Storage in Trinity Reservoir" Accessed at http://tcrcd.net/trl-stor.htm

[160] Memorandum from Greg Kamman to Tom Stokely and Mike Deas on Carryover Storage Analysis Simulated (1928-34) Period, 5/22/1998. Accessed at http://www.c-win.org/webfm_send/414

particular relevance for this comment letter, the failure to analyze this risk or consider this variable in the BDCP Draft EIR/S demonstrates again the inadequacy of the project review.

Furthermore, Reclamation's Mid-Pacific office also produced a preliminary technical memorandum on the problem of excessive heating of Trinity Dam releases[161] when they pass through the shallow 7-mile long Lewiston Reservoir. While Trinity Dam releases are normally 43-44°F, summer heating in Lewiston Reservoir can be severe unless approximately 1,800 cfs is being released from Trinity Dam. Given that Trinity River summer base flows are only 450 cfs, water must be diverted to the Sacramento River to keep the Trinity River cold enough to meet Basin Plan temperature objectives. However, during severe drought or under certain operational circumstances, there may not be adequate water to provide base fishery flows and to divert water to the Sacramento River to keep the Trinity River cold. Several structural solutions have been identified in Reclamation's preliminary technical memorandum; however, a full feasibility study and environmental document would need to be prepared to select a solution and no such plans exist at this time.

Therefore, in order for the Trinity River to be protected, BDCP and its EIR/EIS must at a minimum include a recommendation that the SWRCB convene a Trinity-specific water right hearing as directed in SWRCB Water Quality Order 89-18.[162] The water right hearing shall license Reclamation's eight Trinity River water permits as follows:

- Conformance with the instream fishery flows contained in the Trinity River Record of Decision.
- Provision for release of Humboldt County's 50,000 AF in addition to fishery flows per the 1955 Trinity River Act.
- Inclusion of permit terms and conditions to require Reclamation to comply with the Trinity River temperature objectives contained in the Water Quality Control Plan for the North Coast Region (NCRWQCB) for all relevant time periods and for all uses of Trinity water diverted to the Sacramento River.
- A requirement to maintain an adequate supply of cold water in Trinity Reservoir adequate to preserve and propagate all runs of salmon and steelhead in the Trinity River below Lewiston Dam during multi-year drought similar to 1928-1934.
- Eliminate paper water in Reclamation's Trinity River water rights.
- Require Reclamation to solve the temperature issue in Lewiston Reservoir through a feasibility study and environmental document to follow up on the 2012 preliminary technical memorandum by Reclamation.

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[161] See USBR (2012) Lewiston Temperature Management Intermediate Technical Memorandum, Lewiston Reservoir, Trinity County, California. Report by U. S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA. accessed at http://odp.trrp.net/Data/Documents/Details.aspx?document=1814

[162] See SWRCB Water Quality Order 89-18 (pages 18 and 19) at http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/1989/wq1989_18.pdf

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8. Methyl Mercury

The fishery agencies should disapprove the Bay Delta Conservation Plan and deny issuance of incidental take permits because the Plan lacks sufficient ecological assurances that it will mitigate methylmercury production and bioaccumulation resulting from construction and operation of the proposed Twin Tunnels Project and the construction and management of new habitat restoration associated with BDCP conservation measures 2 through 11.

Conservation Measure 12, *Methylmercury Management*, is ***intended*** to mitigate the potential effects of methylmercury (MeHg) mobilization into bioavailability and bioaccumulation resulting from water and habitat development activities of the Bay Delta Conservation Plan. But CM 12 does not pretend that its provisions represent mitigation.

> At this time, there is no proven method to mitigate methylation and mobilization of mercury into the aquatic system resulting from inundation of restoration areas. ***The mitigation measures described below are meant to provide a list of current research that has indicated potential to mitigate mercury methylation.***[163]

This means that CM 12 is itself not a mitigation method at all, but a list of adaptive management issues to be handled later. Again, ***the implied message is "trust us" to build the Twin Tunnels project and BDCP will handle this problem later.*** Sulfur, carbon and acid-rich environments are conducive, in the presence of many different kinds of wetland bacteria, to methylation of elemental mercury into MeHg. These research approaches include:

- Characterize soil mercury concentrations and loads on a project-by-project basis.
- Sequester MeHg using low-intensity chemical dosing techniques using metal-based coagulants like ferric sulfide or poly-aluminum chloride. These floculants bind with dissolved organic carbon and MeHg to flocculate and deposit mercury out of solution.
- Minimize microbial methylation activity in restored wetlands.
- Design restored wetland habitat to enhance photodegradation of MeHg.
- Remediate sulfur-rich sediments with iron to prevent the biogeochemical reactions that methylate mercury.
- Cap mercury-laden sediments (essentially entomb and bury them permanently to keep from mobilizing and methylating mercury).

Little is understood by scientists about how methylation of mercury actually occurs chemically, except that they know that bacteria common to wetlands facilitate the process.[164] The single largest increase in food web MeHg bioaccumulation occurs between its aqueous form taken up by algal cells or phytoplankton. Alpers et al (2008, part of the Delta Regional Ecosystem Restoration Implementation Plan, or "DRERIP") report that this concentration increases typically in the range of 10^5 to 10^6. Consumption of algae and phytoplankton by higher trophic levels of the food web are much less bioaccumulative. ***But the huge concentration increase at the bottom of the food web is sufficient to pass on MeHg in concentrations that can be harmful to higher consumers in the food web such as fish and human beings.***[165]

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[163] Bay Delta Conservation Plan, Chapter 3, Section 3.4.12, *Methlmercury Management*, p. 3.4-260, lines 17-21.

[164] Charles N. Alpers, et al, *Sacramento-San Joaquin Delta Regional Ecosystem Restoration Implementation Plan, Ecosystem Conceptual Model: Mercury*, prepared January 24, 2008, pp. 12-13. Accessible online at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=6413. "The net formation of ...(MeHg) in sediment and/or water is the result of competing microbiological and abiotic reactions..."

[165] *Ibid.*, p. 19.

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Mercury's toxicity depends on the path by which humans, fish, and wildlife are exposed. Methylmercury is highly toxic and can pose a variety of human health risks, according to the DRERIP conceptual model. It can concentrate as high as 95 percent of the total amount of mercury found in fish muscle tissue, though MeHg in fish can be lower and more variable.[166] Illness from MeHg can take the form of loss of sensation in the hands and feet, and in extreme cases loss of gait coordination, slurred speech, blindness, and mental disturbances. For pregnant women, exposure of the fetus and young children can lead to cerebral palsy and/or mental retardation many months after birth, all effects that indicate MeHg's ability to cross the placenta as well as the blood-brain barrier. It can be excreted in breast milk consumed by babies.[167]

There are numerous factors that affect the ecological mobilization and eventual health effects on fish and wildlife of MeHg, as shown in the DRERIP models. Fish can experience altered hormone expression, reduced spawning success and reduced reproductive output, liver necrosis, and altered predator avoidance behavior. More subtle behavioral effects may occur at lower concentrations of MeHg.[168] The greatest concentrations of MeHg in tissue of fish and wildlife (birds and mammals) are derived through dietary exposure—consumption of lower trophic level species that are contaminated with MeHg.

The DRERIP conceptual model of mercury summarized limitations of the state of MeHg research relating to wetland restoration:

> The major limitation regarding effects for fish and wildlife is the lack of species-specific toxicity information on those organisms most at risk in the San Francisco Bay-Delta Estuary. Current threshold levels are all based on species such as loons or mallards which may have different sensitivities (higher or lower) than birds such as Forster's terns, black-necked stilts, least terns, and clapper rails, which have concentrations that may put them at risk to impairment from mercury....Moreover, to our knowledge, there is currently no information related to mercury concentrations in aquatic mammals in the Delta. Our toxicity assessment indicates that species found in the Delta, such as otters, may be sufficiently sensitive to mercury that there is substantial risk of impairment. Finally, it is clear that *there is currently little if any information on effects of methyl mercury on amphibians and reptiles*, and we are aware of little data on exposure of such taxa to methyl mercury in the Delta or possible effects.[169]

The research "measures" BDCP proposes do not include basic toxicological research into mercury's effects on these and other fish and aquatic species found in the Delta.

The CM 12 measures (since they do not "mitigate" for CEQA or NEPA purposes as part of the project's evaluation) are acknowledged by BDCP to have challenges associated with them, as the EIR/EIS concludes concerning NEPA findings:

> Because of the uncertainties associated with site-specific estimates of methylmercury concentrations and the uncertainties in source modeling and tissue modeling, the effectiveness of methylmercury management proposed under CM12 to reduce methylmercury concentrations would need to be evaluated separately for each restoration effort, as part of design and implementation. Because of this uncertainty

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[166] *Ibid.*, p. 26.

[167] *Ibid.*, pp. 27-28.

[168] *Ibid.*, pp. 29-36. General types of effects on fish and wildlife include DNA alteration, tissue and organ damage, abnormal development, reproductive toxicity and endocrine disruption, behavior problems, immune-system effects, and population-level effects.

[169] *Ibid.*, p. 37. Emphasis added.

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> and the known potential for methylmercury creation in the Delta this potential effect of implementing CM2-CM22 is considered adverse.[170]

The idea in CM12 of minimizing microbial methylation activity is especially problematic. The EIR/EIS states that such an approach could defeat the purpose of doing all the habitat restoration BDCP proposes.

> ...[T]his approach could limit the benefit of restoration areas by limiting the amount of carbon supplied by these areas to the Delta as a whole. In some cases, this would run directly counter to the goals and objectives of the BDCP. This approach should not be implemented in such a way that it reduces the benefits to the Delta ecosystem provided by restoration areas.

In other words, taking the step of removing from new wetlands habitat the same bacteria that help recycle other nutrients yet cause methylation of mercury would dramatically reduce the productivity of these same newly inundated wetlands to such an extent that it "would run directly counter to the goals and objectives of the BDCP," as the EIR/EIS states. This approach to managing methylation of mercury would destroy the very habitat producing strategy that is intended by BDCP to help restore food supplies and ecosystem productivity to the Delta. But with it comes the likelihood that the legacy contamination of mercury in the Delta from the Gold Rush era could reignite an epidemic of mercury toxicity in Delta ecosystems if not managed extremely carefully.

Other proposed "mitigations" may have potential for addressing MeHg occurrence, but the apportionment of these engineering parameters (tamping down sulfide with iron; relying more on photodegradation of MeHg, and so on, short of capping and entombing MeHg-laden sediments) could boost productivity, but may limit other wetland design parameters. For instance, nonnative invasive clams like *Potamocorbula* thrive in shallower, saltier conditions, and photodegradation could be best achieved in shallow wetland regimes. ***Suffice it to say that methylmercury contamination in the Delta makes habitat restoration success far from assured for the purposes of BDCP, especially given other uncertainties we have identified in our comments.***

BDCP documents provide little insight into the geographic extent and occurrence of sediment-based MeHg. Figure 8-28 of the EIR/EIS provides largemouth bass tissue mercury concentrations at different locations around the Bay. Fish move around, however. This map, however, provides no insight for decision makers as to where sediment in the Delta carry mercury concentrations. Nearly every BDCP conservation measure involves some amount of construction activity and CMs 4 through 7 involve thousands of acres in the Delta slated for habitat restoration construction and inundation. Construction activity could cause mercury concentrations in water to spike as sediments are disturbed. Once disturbed, mercury can become more bioavailable and thereby sharply increase risk of bioaccumulation into Delta food webs and into human fish consumption.

The BDCP EIR/EIS reveals that mercury concentrations in largemouth bass fish tissue already exceed mercury guidance concentrations recommended by the US Environmental Protection Agency. For each alternative evaluated in the EIR/EIS, mercury in fish tissues is likely to rise by 2060 with or without implementation of the Bay Delta Conservation Plan. BDCP's modeling results show that mercury fish tissue concentrations will worsen with BDCP activity in many parts of the Delta by 2060. Central Delta locations are projected to have higher mercury tissue concentrations than do areas where flows are greater and there is more open water, such as near the mouths of the San Joaquin and Sacramento rivers.

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[170] Bay Delta Conservation Plan Environmental Impact Report/Environmental Impact Statement, Chapter 8, *Water Quality*, p. 8-260, lines 30-35; p. 8-446, lines 39-42, and p. 8-447, lines 1-2. Hereafter "BDCP EIR/EIS" or "EIR/EIS."

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But in all cases, the existing mercury guidance concentration is exceeded by at least 20 percent to as much as twice the level recommended for fish tissue (Figure 9). And at these locations it appears BDCP activity consistently worsens conditions relative to the No Action Alternative.

Figure 9
Mercury Concentrations in Largemouth Bass (355 mm) Tissue Exceed Toxicity Thresholds by 2060 With and Without the Bay Delta Conservation Plan
All Years and Drought Years

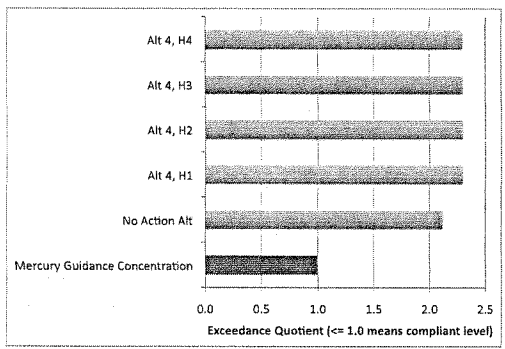
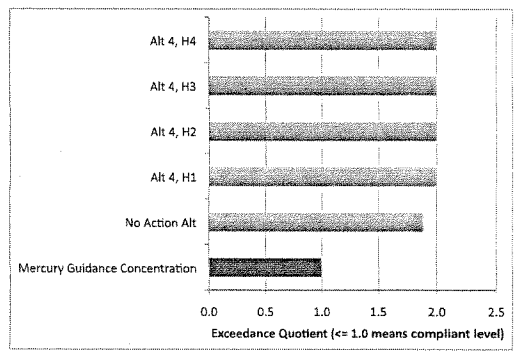
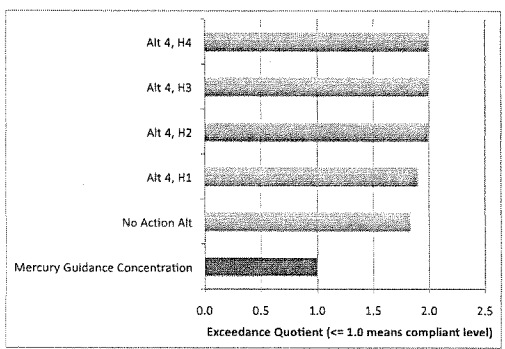
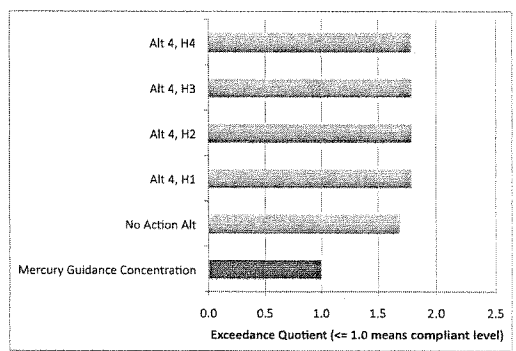
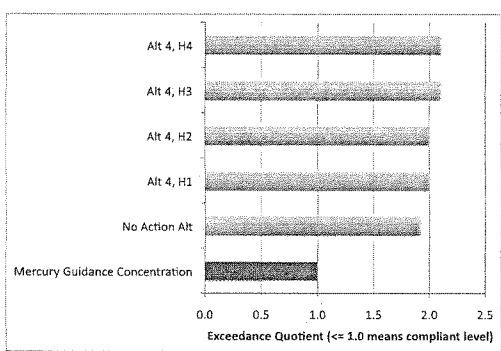
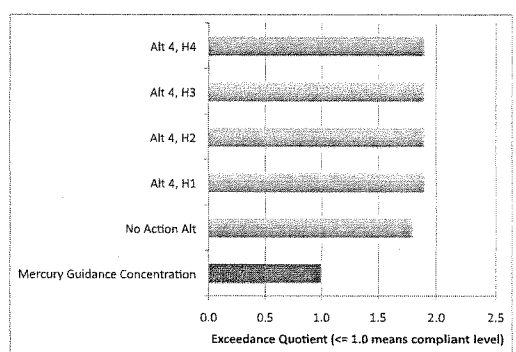
Location	Average of All Years	Average of Drought Years
Mokelumne River (S Fork) at Staten Island		
Franks Tract		
Old River at Rock Slough		

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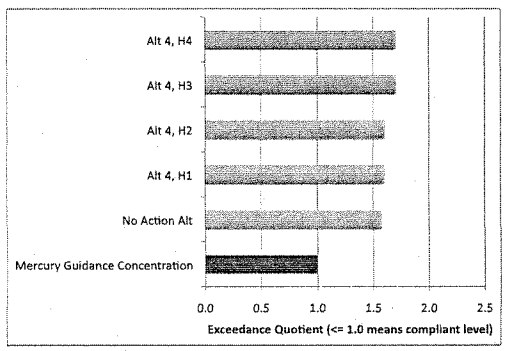
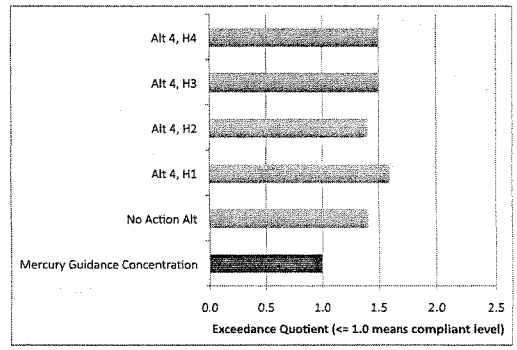
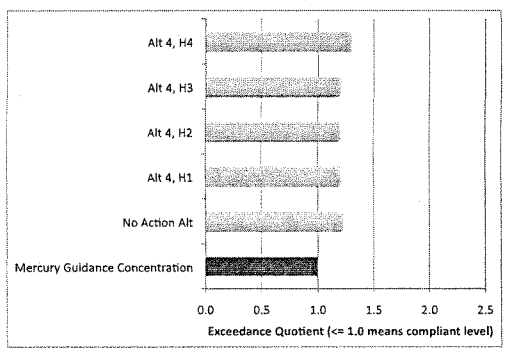
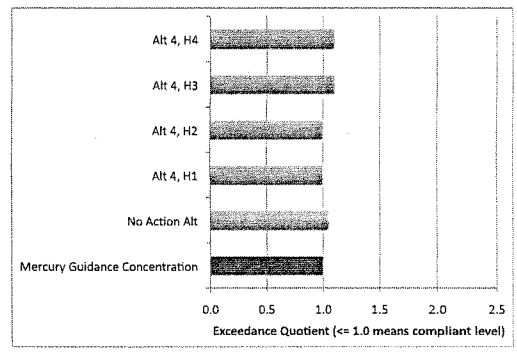
Figure 9
Mercury Concentrations in Largemouth Bass (355 mm) Tissue Exceed Toxicity Thresholds by 2060 With and Without the Bay Delta Conservation Plan
All Years and Drought Years

Location	Average of All Years	Average of Drought Years
San Joaquin River at Antioch		
Sacramento River at Mallard Island		

Notes: "Exceedance Quotient" is the ratio of estimated concentrations of Mercury (mg/kg of wet weight) to the Delta TMDL guidance concentration of 0.24 mg/kg ww of Mercury. In every alternative and existing conditions, "Exceedance Quotients" are greater than zero, meaning that in every case, the guidance concentration recommended by USEPA is violated. All Exceedance Quotients reported here are based on Equation 1 calculations in Appendix 8I of Bay Delta Conservation Plan EIR/EIS. A ratio of 1.0 or less would mean compliance with the mercury guidance concentration.

Source: Bay Delta Conservation Plan, Appendix 8I, *Mercury*, Tables I-7a, I-15Aa, I-11Ba, I-11Ca, I-11Da.

C. No Surprises and Unforeseen Circumstances

If such funding assurances to support permanent selenium sequestration, management and disposal is not forthcoming from the Applicants, the fishery agencies should disapprove the Bay Delta Conservation Plan and deny issuance of incidental take permits because the Plan lacks sufficient ecological assurances that it will not appreciably reduce the likelihood of survival and recovery of listed species covered by the Plan.

Changed circumstances are those events and processes affecting a species or geographic area covered by the BDCP that have been "reasonably anticipated by "the Permittees" and the federal

fishery agencies.[171] Such circumstances are acknowledged within the scope of the Implementing Agreement for BDCP.

Unforeseen circumstances are those events and processes "that could not reasonably have been anticipated by the Permittees" and the fishery agencies at the time of BDCP's negotiation and development, and that "result in a substantial and adverse change in the status of a Covered Species, and in the context of the NCCPA, means changes affecting one or more species, habitat, natural community, or the geographic area covered by a conservation plan that could not have been anticipated at the time of Plan development, and that result in a substantial adverse change in the status of one or more Covered Species."[172]

If unforeseen circumstances arise, states the State's NCCPA law:

> additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources shall not be required without the consent of plan participants for a period of time specified in the implementing agreement, unless [CDFW] determines that the plan is not implemented consistent with substantive terms of the implementing agreement.[173]

Similar language applies in federal regulations implementing the Endangered Species Act.[174] In short, changed circumstances are defined and incorporated in the habitat conservation plan and adaptive management program; unforeseen circumstances are excluded from the plan. Unless the fishery agencies can justify the need for the Applicants to mitigate effects of such circumstances, the BDCP Applicants would be immune to changes in how their BDCP activities could be regulated for the next 50 years—the very definition of "regulatory stability." [175]

The November 2013 Draft Bay Delta Conservation Plan lists the following as the only "changed circumstances" through which modifications to the Plan may be made (that is, these are the foreseeable changed circumstances which may involve modification of the Plan):

- Levee failures
- Flooding
- New species listing
- Drought
- Wildfire
- Toxic or hazardous spills
- Nonnative invasive species or disease
- Climate change beyond certain parameters
- Vandalism[176]

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[171] "The Permittees," according to the Draft July 2013 Implementing Agreement, are "DWR and the SWP/CVP Contractors" according to Section 3.43. Under the Natural Communities Conservation Planning Act, "changed circumstances" are defined as "reasonably foreseeable circumstances that could affect a Covered Species or the Plan Area." *Ibid.*, Section 3.12, p. 7.

[172] *Ibid.*, Section 3.56, p. 12.

[173] California Fish and Game Code Section 2829(f)(2), cited in BDCP, Chapter 6, *Plan Implementation*, p. 6-30, lines 9-13.

[174] 50 CFR Part 17.22(b)(5)(iii).

[175] BDCP refers to application of the No Surprises policy to its actions and activities as "regulatory stability."

[176] *Ibid.*, p. 6-45, lines 23-30.

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The Bay Delta Conservation Plan would exclude from defined "changed circumstances" in its scope features of state and federal water project operations in the Delta watershed that are endemic to current impacts in and upstream of the Delta.

In our view, continuing to irrigate western San Joaquin Valley drainage impaired lands under operation of the Twin Tunnels constitutes a foreseeable circumstance under the Endangered Species Act. Yet it is not a "toxic or hazardous spill" as BDCP interprets this circumstance.[177] It is foreseeable, as well, that the Grassland Bypass Project may not result in decreasing concentrations and loads of selenium to downstream water bodies along and including the San Joaquin River, the Delta, and Suisun Bay and Marsh. A lot can happen in 50 years—the duration of the incidental take permits—to cause increased discharge of selenium loads into the San Joaquin River. Unlike methyl mercury contamination which has its own conservation measure, there is no BDCP conservation measure to address potential selenium contamination. BDCP success is premised, in pertinent part, on selenium concentrations decreasing, despite foreseeable scenarios in which local land values could collapse, federal and state budgets contract (not unlike what happened in 2007 through 2010 nationally and throughout California). Political decisions can be made that delete grant or other funding support for experimental reverse osmosis and other treatment technology. Even a new distillation process[178] that has lower energy costs still yields solid residues that must be disposed of —and selenium residues often exceed allowable concentrations, above which they have been classified as hazardous waste.

At a minimum therefore, selenium contamination must be included in Chapter 6's list of "changed circumstances." The potential cost to the BDCP Applicants (which include Westlands Water District and Kern County Water Agency, whose regions include areas where at a minimum selenium treatment and source control are pressing concerns) of maintaining selenium sequestration in the upper San Joaquin Valley must be accounted for and included in the real costs of BDCP.

There is a clear nexus between prospective operation of the Twin Tunnels and therefore the need for continuing long-term selenium management. Assuming that BDCP moves forward to obtain incidental take permits, via the Twin Tunnels it will continue deliveries to drainage impaired lands of the western San Joaquin Valley. It follows that funding assurances provided by the Applicants to the fishery agencies must include diligent, continuous, and full financing for continuation of the Grassland Bypass Project and other selenium treatment activities under way in the western and southern San Joaquin Valley. Funding assurances should also include provision for sequestering, managing and disposing of selenium hazardous waste streams and other naturally occurring contaminants from the western San Joaquin Valley's drainage impaired lands. This will ensure they are properly managed for the long term. ***If irrigation of these impaired lands is perpetuated by some Applicant agencies benefiting from the Twin Tunnels project, the Applicants must pay their fair share of costs of sequestering, managing, and disposing (that is, from cradle to grave) of the hazardous selenium contaminant waste that is generated from irrigating***

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[177] *Ibid.*, 6-39 to 6-40, Section 6.4.2.2.6, *Toxic or Hazardous Spills.* Such spills are defined to occur only in the Plan Area as "resulting from a BDCP action." The scope of remedial actions would be limited to 4,000 acres of reserve system lands, inclusive of restoration sites. This is a very narrow definition that clearly excludes the foreseeable, if undesirable, circumstance of increased selenium loading via the San Joaquin River to the Plan Area. To BDCP this is "unforeseeable." This means that what is unforeseeable, under the NCCPA and Section 10 of the ESA is in the eye of the beholder, independent of socially knowable possibilities.

[178] Kevin Fagan, "Purifying water by using the sun: Solar desalination system appears to be cost-effective," *San Francisco Chronicle* March 18, 2014, p. A1, A9.

western San Joaquin Valley soils contaminated with selenium and other naturally-occurring contaminants.

D. Undue, Improper and Excessive Reliance on Adaptive Management

The Bay Delta Conservation Plan relies to excess on adaptive management to defer water and fishery management decisions and actions until such time that gaps in scientific conceptual models are filled. The standard for action to protect and recover listed species under the federal ESA is not perfected knowledge and fully discovered mechanisms; rather the standard is for the fishery agencies to act based on the "best available scientific knowledge."

The EWC does not see how adaptive management can be accomplished on behalf of listed species in the Bay Delta Estuary with No Surprises rules applied to their protection and recovery. "Regulatory stability" and "adaptive management" mutually contradict each other.

There are numerous areas where unanswered scientific questions about each of the conservation measures are put off into "adaptive management." ***This is not in the least a "conservation strategy" but a thinly veiled attempt to justify a monstrous water project in a location that is crucial to key life stages of several listed fish species and would likely contribute to their extinction. Having such a large "adaptive management" program is hardly a sign of the Bay Delta Conservation Plan's sophistication and virtue. It is a sign of looming disaster unless it is stopped in its tracks.***

Other areas where adaptive management is invoked include:

- Fish screen technology; flow vectors (approach vs. sweeping velocities) and where Delta smelt and salmon smolt vulnerabilities discounted by BDCP (described above).
- Evaluation of Yolo Bypass fisheries enhancement actions under Conservation Measure 2 (also discussed above).
- Conservation Measure 16's non-physical fish barriers
- Predators usage of restored habitats
- Spring outflow importance for longfin smelt
- Fall X2 and outflow importance for Delta smelt
- Methylmercury "management"

Most fundamentally, however, BDCP is an experiment with real-life (or likely "real extinction") consequences. This is evident in the remarks to the Delta Stewardship Council by Carl Wilcox of the California Department of Fish and Wildlife. In his remarks, Wilcox emphasizes how BDCP grapples with uncertainty about how things would work out through plan implementation.

> "The level of assurances are how the conservation plan is structured to allow for implementation," said Mr. Wilcox, "and that's one of the things that we're wrestling with right now is how to structure that so that there's more certainty. To some degree, what you see in the decision tree, relative to the idea of [whether] habitat really works or other stressor conservation measures, can potentially offset the need for outflow and that kind of thing, and that's a key component of it. ... The concept there is that *there's more certainty in the effects of flow based on what we know over 40 years as opposed to some of the other aspects, and we're going to have to learn about those through the adaptive management process.*"[179]

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[179] Maven's Notebook, "The Bay Delta Conservation Plan's regulatory assurances discussed at the Delta Stewardship Council Meeting," March 12, 2014 coverage of the Council's February 27, 2014, meeting. Accessible online 7 April 2014 at http://mavensnotebook.com/2014/03/12/the-bay-delta-conservation-plans-regulatory-assurances-discussed-at-the-delta-stewardship-council-meeting/. Emphasis added.

If we read this quote correctly, Mr. Wilcox informed the Delta Stewardship Council that the scientific enterprise that is BDCP knows more about the effects of flow than is known about the likely effects of habitat restoration in the Plan Area of BDCP.

It is wise public policy to emphasize use of the known over the unknown in public and environmental affairs. BDCP apparently inhabits a world where it quests into the unknown on behalf of a monstrous water project.

The Delta Stewardship Council's Delta Science Program retained an Independent Review Panel to evaluate the Effects Analysis of the Bay Delta Conservation Plan. That panel summarized its critique of uncertainty and adaptive management in BDCP this way:

> The concept of adaptive management is appropriately described and allocated a prominent role in the implementation structure. However, the commonly acknowledged process of adaptive management is easily misunderstood and misapplied, often resulting in a loss of rigor and commitment in application. Because of the extensive uncertainties surrounding the assumptions and predictions of the BDCP, the Panel strongly emphasizes institutionalizing an exceedingly rigorous adaptive management process. This is critical in order to avoid the high risk associated with ecological surprises that will be difficult or impossible to reverse once they have occurred. BDCP must make a commitment to the fundamental process, and specifically the required monitoring and independent science review, not just the concept of adaptive management.[180]
>
> While the adaptive management plan is considerably more developed in the BDCP..., it remains characterized as a silver bullet but without clear articulation about exactly how key assumptions will be vetted or uncertainties resolved to the point that the BDCP goals and objectives are more assured.[181]
>
> Perhaps the largest challenge to achieving the stated goals and objectives of the BDCP is how many of these critical uncertainties can be addressed by adaptive management given the baseline and the required monitoring? For example, some of the key uncertainties identified in the Effects Analysis [citation], often associated with conservation measures 4, 5, 7, and 11, include:
>
> - The ability of the restored habitat to meet the objectives and expected outcomes, including the time it takes to meet the biological objectives....
> - The risk that the restored habitat will be colonized by invasive species such as nonnative submerged vegetation, nonnative predatory fish, and/or clams. (Hardly uncertain, but controllable?)
> - The change in magnitude of predation mortality on covered fish. (Doesn't this require an existing reliable estimate[] of predation mortality?)
> - Food web responses to habitat restoration actions on both a local and a regional scale.
> - The Risk of adverse effects resulting from unsuitable changes in water quality and exposure to toxic contaminants. (How much can be modeled?)
> - The proportion of the covered species population that actively inhabit restored habitats and the change in growth rate, survival abundance, life-history strategies, and population dynamics. (A very difficult baseline to quantify!)[182]

The fishery agencies are asked to issue incidental take permits that would grant a *carte blanche* to BDCP and the Twin Tunnels project to experiment on a patient (the Bay-Delta Estuary) which is at present on life support, already hammered by waivers of water quality objectives to boost exports

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[180] Delta Science Program, Independent Review Panel, *op. cit.*, note 27 above, p. 9.

[181] *Ibid.*, p. 41.

[182] *Ibid.*, p. 43.

to San Joaquin Valley growers under the guise of protecting "health and safety" during the current drought.

The BDCP Implementing Agreement will be crucial to determining how the BDCP is translated into concrete actions. It is part of the package of documents that comprise the full application for incidental take permits to the fishery agencies. The Agreement is supposed to identify how conflicts between the Applicants and the fishery agencies will be resolved for the 50-year term of the permits. Mr. Wilcox also informed the Council:

> "There are meet and confer provisions within the implementing agreement and allowed for under the Act to remedy this situation short of pulling the permit," said Mr. Wilcox, "and mechanisms, particularly through the adaptive management process, to look at how effective any particular conservation measure may be within the context of the plan and whether or not resources that are associated with that one may be better put towards achieving other objectives."
>
> "I don't know that there's a clear answer," he said. "It's a relatively dynamic process short of just being totally out of compliance and having to reassess the situation in moving forward. Keep in mind that in the context of NCCPA, this is a conservation plan – it's not a mitigation plan so at some point, you may revert to standard permitting processes if all else fails."[183]

We quote Mr. Wilcox at some length here, because he was not very clear in his presentation. A lack of clarity in thinking and speaking signals to those listening that the speaker is himself not very clear on what is at stake with implementing BDCP. What, for example, will be the role in adaptive management in determining whether permits should be revoked or not? What will be the role of adaptive management, if any, for determining whether the biological goals and objectives of BDCP need to be changed, and if so how does the Implementing Agreement handle that? We anticipate taking up these questions in our supplemental comments on the Implementing Agreement in late July 2014.

The complexity of BDCP quickly spirals once one starts to ask such questions. Whatever happened to the "KISS" principle, "keep it simple, stupid"?

The National Research Council's committee on Sustainable Water and Environmental Management of the Bay Delta Estuary suggested using a technique to determine whether adaptive management is an appropriate strategy before it is undertaken. The technique probes three direct criteria:

- the existence of information gaps
- good prospects for learning at an appropriate time scale compared to management decisions, and
- the presence of opportunities for adjustment.[184]

In the case of BDCP, the NRC committee concluded that adaptive management is appropriate for use in BDCP, but further concluded that "BDCP needs to address...difficult problems and integrate

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[183] Maven's Notebook, "The Bay Delta Conservation Plan's regulatory assurances discussed at the Delta Stewardship Council meeting," March 12, 2014. Accessible online at http://mavensnotebook.com/2014/03/12/the-bay-delta-conservation-plans-regulatory-assurances-discussed-at-the-delta-stewardship-council-meeting/.

[184] National Research Council, Panel to Review California's Bay Delta Conservation Plan, *A Review of the Use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan*, Washington, DC: National Academies Press, 2011 p. 39. Accessible online 7 April 2014 at http://www.nap.edu/catalog.php?record_id=13148. Emphasis added.

conservation measures into the adaptive management strategy ***before there can be confidence in the adaptive management program.***" The NRC committee also stressed that it is critical that the results of adaptive management efforts have a mechanism by which the information is incorporated into management decision making.

Alas, there are no guarantees that scientific findings can successfully and meaningfully inform intensely political water decisions by mostly bureaucratic water managers. We are concerned the scientists place too much faith in the water and environmental managers who will govern the Twin Tunnels and implement BDCP. There is no reason, after 40,000 pages of BDCP, to think that the Twin Tunnels will be operated with any more environmental sensitivity than the existing Delta export pumping plants are today when it comes to the public trust values of the Delta, the recovery of listed species, the senior water right holders, and the rate payers of state and federal water contractors on the receiving end of water exported from the Delta by the state and federal water projects, be they farmers or suburbanites.

The alternative is to regulate the Delta on the basis of ***the precautionary principle***: First, do no harm. If you aren't sure what you're doing, you should proceed slowly and carefully, or perhaps not at all. Better safe than sorry.[185] If you must, export water from the Delta responsibly, not profligately.[186]

Please also see Section V.B of these comments for additional comments on the relationship of adaptive management to BDCP's governance structure.

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[185] Peter Montague, "The Uses of Scientific Uncertainty," *Rachel's Environment and Health Weekly* #657, July 1, 1999.

[186] See Environmental Water Caucus, *Responsible Exports Plan*, 2013. Accessible online 14 May 2014 at http://ewccalifornia.org/reports/responsibleexportsplanmay2013.pdf.

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IV. BDCP fails to provide adequate funding assurances.

The Bay Delta Conservation Plan's economic analysis[187] is inadequate to the purpose of providing funding assurances needed to meet the required statutory findings by which the fishery agencies may issue incidental take permits.[188]

The purpose of the Bay Delta Conservation Plan's economic analysis is to demonstrate the Twin Tunnels' financial feasibility for the Applicants (DWR, the Bureau, and the state and federal water contractors, who are the primary source of the Tunnels' investment capital). Such an analysis is required under the federal and state Endangered Species Acts to demonstrate funding assurances required to implement the habitat conservation plan.

BDCP's economic analysis should not be construed as adequate economic and financial justification for the people of California to support the proposed BDCP facilities. BDCP's economic analysis is also aimed to persuade water contractors to commit to funding and receiving water from the proposed Twin Tunnels project.

Such a separate and distinct evaluation differs from whether the facilities are a good enough investment for the people of California given the ecological condition of the Delta and concerns about the long-term sustainability of north state groundwater resources. Such an evaluation demands a public trust balancing, including use of Benefit-Cost Analysis, discussed earlier in these comments.[189]

Congress requires the federal fishery agencies to adhere to a policy of "No Surprises." The fishery agencies are to impose no new mitigation requirements (such as additional money, land, or water) on applicants once an incidental take permit is issued without consent of the BDCP Applicants. The fishery agencies are also authorized under the Endangered Species Act and through statutory criteria of issuance for incidental take permits, to seek and receive assurances of funding from those same applicants that will cover "unforeseen circumstances" and to weigh benefits and costs of alternative courses of action, to ensure that the BDCP will be implemented as agreed.[190]

The BDCP economic analysis focuses exclusively on the benefits and costs that would be experienced by the state and federal water contractors. This assessment is presumed to provide sufficient financial assurances to the fishery agencies.

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[187] The BDCP economic analysis is defined here as those portions of Chapter 8, Chapter 9, and Appendices 9.A and 9.B that address costs, benefits, net benefits, affordability, price and income elasticity of demand for water, and comparison of water supply alternatives.

[188] The federal ESA's incidental take permit process in Section 10 for requiring financial assurances is neither designed nor intended to address *all* concerns that may be associated with a project of such massive scope and complexity as the Twin Tunnels project. The criteria of assurances and practicability mandated for habitat conservation plan (HCP) review under the federal Endangered Species Act are not sufficiently broad to accommodate all of the economic issues raised by the Twin Tunnels project and BDCP.

[189] See ECONorthwest, *Bay-Delta Water: Economics of Choice*, Eugene, OR, January 11, 2013, 34 pages. Accessible online 8 June 2014 at http://www.c-win.org/webfm_send/282.

[190] See footnote 9, above.

Funding Assurances

The most credible assurances of funding from the state and federal water contractors result from an economic benefits analysis...and two primary conclusions of the analysis.

- The costs of CM1 [the Twin Tunnels facilities] and associated mitigation are *affordable* by the ratepayers of the urban and agricultural agencies receiving federal and state water supplies delivered through the Delta.

- *The benefits* of the preferred project to these ratepayers *will exceed the total costs* of CM1 and associated mitigation. Thus, the relevant water contractors have an underlying economic incentive to implement CM1.[191]

Chapter 8 of BDCP asserts that assurances of funding from the state and federal water contractors are anchored in the "direct economic benefits of the BDCP to their customers." Contractors' support for BDCP is "essential" to implementing the plan. Summing up the importance of economic analysis in BDCP's case, Chapter 8 states:

> There is no inducement for water purveyors to participate if costs of the Plan exceed costs without BDCP. *The best assurance of contractor funding for the BDCP proposed action is if there is a business case to be made for it; that is, if the economic benefits of the BDCP are well in excess of the present value of the costs that are assumed to be assigned to the contractors.*[192]

Actually, showing a net positive benefit for BDCP is not the sole criterion by which funding assurances can be meaningfully demonstrated to the fishery agencies. Other key criteria go into making a sound business case for a large infrastructure project. The Environmental Water Caucus identifies four other aspects to making a sound business case that are ignored or poorly handled in BDCP's economic analysis:

- Are assumptions reasonable?
- Are there less costly alternatives to increase water supply reliability?
- Is the project affordable to potential water contractors and customers?
- Who would "step up" to bail out the project if anticipated financial commitments fail?

BDCP Chapter 8 summarizes the implementation costs and sources of funding for the entire conservation strategy.[193] In that chapter, Tables 8-33 through 8-36 present undiscounted and discounted capital and operating/maintenance costs for the entire conservation strategy (i.e., all 22 conservation measures). Table 8-37 shows the costs that the state and federal water contractors appear willing to bear in support of BDCP.[194]

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[191] BDCP, Chapter 8, p. 8-98. Emphasis added.

[192] *Ibid.*, p. 8-102. Emphasis added. Footnote 69 on this page adds, "Other economic costs and benefits beyond those evaluated to date are being assessed by DWR and are expected to be released prior to completion of the BDCP."

[193] "Conservation strategy" refers to all of the Conservation Measures 1 through 22 that are described in Chapter 3 of BDCP.

[194] Bay Delta Conservation Plan, Chapter 8, *Implementation Costs and Funding Sources*, Table 8-37, pp. 8-65 and 8-66.

Ninety-five percent of the water contractors' investment in BDCP is to support the construction and operation of the water facilities described in BDCP's Conservation Measure 1.[195]

Compared with the entire BDCP conservation strategy (including 20 additional conservation measures), the contractors' funding assurances account for 68 percent of all BDCP costs disclosed to date.[196] The state and federal governments supposedly pay for none of the water facilities and operation costs, according to Chapter 8 of BDCP. Their contributions are confined to use of existing funding programs for various aspects of research and restoration. Two new, undrafted and unapproved water bonds are proposed to account for another 15.2 percent of BDCP funding sources, primarily for restoration. These imaginary bonds would account for $3.7 billion of the state's proposed contribution of $4.1 billion to BDCP restoration activities. Federal agencies would contribute another $3.5 billion to these activities.

The BDCP economic analysis assesses the relative benefits of the BDCP proposed action and other take alternatives relative to a pair of existing flow scenarios for the Delta without BDCP. It also provides the contractors with a sensitivity analysis, based on the outcomes of the two "Decision Tree" processes. The "Decision Tree" processes bracket this sensitivity analysis and will determine whether greater outflows benefiting listed fish species will occur in the spring and in the fall.[197]

The BDCP evaluates a total of nine alternatives (including the Applicants' preferred alternative) by comparing direct benefits and costs to the contractors. The direct benefits measured in the study are water supply reliability, water quality, and seismic risk reduction. Costs are estimated only for the capital and operating components of the Twin Tunnels and other water facilities in Conservation Measures 1 and 2. Interest payments on bonds and a contingency factor for cost-overruns are omitted.

A. Unreasonable Baseline Assumptions

There is great instability and uncertainty in the future of water exports from the Delta. Taking account of the range of reasonably foreseeable future of Delta exports shows dramatic effects on the Twin Tunnels' incremental water cost and financial performance. This instability fatally undermines BDCP's capacity to provide credible funding assurances.

In Table 9.A-2 of Appendix 9.A in BDCP (which is taken directly from BDCP), total estimated costs are subtracted from total estimated benefits to arrive at a net benefits estimate for each alternative or scenario. Of the alternatives, the BDCP economic analysis finds that only Alternatives D and E would have negative net benefits (net costs) to the water contractors, due mainly to restricted Tunnels conveyance capacity or restrictive operating rules.

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[195] CM 2 facilities for Yolo Bypass Fisheries Enhancement are just 4.7 percent of combined costs of Conservation Measures 1 and 2. These facilities include: Clifton Court Forebay, Banks Pumping Plant, Skinner Fish Protective Facility, Barker Slough Pumping Plant, North Bay Aqueduct, New State Water Project diversions at the North Delta Intakes (including fish screens), the Twin Tunnels and related conveyance facilities (pumps, surge towers, forebays, afterbays, etc.), and temporary barriers in the Delta. See also Bay Delta Conservation Plan, Chapter 4, *Covered Actions,* Section 4.2.

[196] Bay Delta Conservation Plan, Chapter 8, *Implementation Costs and Funding Sources*, Table 8-37, pp. 8-65 and 8-66.

[197] BDCP calls for two separate outflow decisions in the Decision Tree process, but the economic analysis evaluates only the two outcomes where BDCP either completely "wins" or "loses" because this approach brackets all possible outcomes of the process. "Winning" would result in lower Delta outflow results with higher exports. "Losing" would result in higher Delta outflows and lower exports. Winning one and losing another flow decision is likely between these two poles of the range of outcomes.

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Figure 10

Table 9.A-2. Summary of State and Federal Water Contractor Economic Benefits and Costs ($ millions)

Alternative or Scenario Description			Total Benefits and Costs[a, b]		
Alternative or Scenario	Facility Size (cfs)	Average Annual Water Deliveries (MAF)	Total Benefits[c]	Total Costs[d]	Net Benefits
BDCP Proposed Action High-Outflow Scenario	9,000	4.705	$18,011	$13,472	$4,540
BDCP Proposed Action Low-Outflow Scenario[e]	9,000	5.591	$18,826	$13,487	$5,339
A: W Canal 15,000 cfs	15,000	5.009	$23,187	$11,110	$12,076
B: Tunnels 6,000 cfs	6,000	4.487	$14,445	$12,347	$2,098
C: Tunnels 15,000 cfs	15,000	5.009	$23,187	$15,641	$7,545
D: Tunnels: 3,000 cfs	3,000	4.188	$8,923	$10,240	-$1,317
E: Isolated 15,000 cfs	15,000	3.399	-$8,697	$15,711	-$24,407
F: Through Delta	N/A	4.172	$12,060	$5,233	$6,826
G: Less Tidal Restoration	9,000	4.705	$18,011	$13,432	$4,579
H: More Restoration	9,000	4.705	$18,011	$13,505	$4,506
I: Fixed Spring Outflow	9,000	4.338	$13,417	$13,472	-$55
Existing Conveyance High-Outflow Scenario	N/A	3.446			
Existing Conveyance Low-Outflow Scenario	N/A	3.889			

Notes:

[a] Construction is assumed to begin in 2015. BDCP operations are assumed to begin in 2025.

[b] All values are in 2012 $ (millions), and are discounted to present value using 3% real discount rate.

[c] Benefits are calculated out to year 2075.

[d] Costs are calculated out to year 2075.

[e] Benefits for the BDCP Proposed Action Low-Outflow Scenario are calculated relative to the Existing Conveyance Low-Outflow Scenario, which assumes Scenario 6 operations, no Fall X2, no north Delta diversions.

cfs = cubic feet per second; MAF = million acre-feet

The BDCP economic analysis compares the nine alternatives (identified in Chapter 9) to the BDCP Proposed Action High Outflow Scenario as well as to an "Existing Conditions High Outflow Scenario." The "Existing Conditions" scenarios argue that the Twin Tunnels' benefits lie in supposedly preserving existing export levels. Principal author Professor David Sunding likens this benefit to a homeowner investing in his or her home's foundation to shore up its overall seismic

strength. It may generate no additional usable space of value, but is intended to protect the home's investment value against earthquake damage for the long term.[198]

BDCP Director Jerry Meral also stated to the Water Association of Kern County on July 23, 2013, that "Protecting our 5.5 million acre-feet of exports has got to be our number one priority."[199] His statement indicates that, in the absence of additional storage to create new yield (another issue unto itself), the Twin Tunnels yields very little, if any, "new" water over existing Delta exports. Thus, the cost of *incremental water preserved* is the "baseline" against which the Twin Tunnels' cost is measured in the BDCP economic analysis.

The labeling in Table 9.A-2 of the preservation scenarios as "existing" for future of Delta exports without Twin Tunnels does not match recent experience with Delta export pumping, and misleads readers. Since Water Rights Decision 1641 took effect in 2000 and the biological opinions by NMFS and US Fish and Wildlife Service took effect in 2009, annual south-of-Delta exports have averaged 5.4 million acre-feet. What is going on with the Twin Tunnels' "existing scenarios"?

Unlike Professor Sunding's analogy to replacing the foundation of a house, BDCP's economic analysis describes another rationale for assuming that the future of Delta exports without the Twin Tunnels will be much lower than in the recent past.[200]

A reasonable translation of this explanation is that in the next few years, and in the event that the Twin Tunnels project is not permitted, built and operated, BDCP assumes the fishery agencies and the State Water Resources Control Board will take concrete steps to reduce exports to protect public trust resources in the estuary and shore up recovery of listed species in the Delta watershed. The proponents of BDCP are essentially positing a bet against their ability to prevent estuarine protection flows in order to provide a large increment of "preserved" export levels that could help justify the Twin Tunnels project.

This "bet" is highly speculative. In the event there is no Twin Tunnels project, it is equally, if not more, plausible that in the long-term a "without Twin Tunnels" future entails continuation of export restrictions contained in the Delta smelt and salmonid biological opinions from the US Fish and Wildlife Service and the National Marine Fisheries Service. According to the State Water Resources Control Board, these biological opinions establish export limitations that would keep the long-term average south-of-Delta exports to about 5.1 million acre-feet annually.[201] The BDCP environmental impact report/statement (EIR/S) states that the average annual water cost to Delta exports of the 2009 biological opinions is about 703,000 acre-feet.[202] Subtracting this increment from the Dayflow average south of Delta exports since 2000 yields a biological opinion range of Delta exports of 4.66 to 5.1 million acre-feet for a "without Twin Tunnels" scenario.

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[198] Maven's Notebook, "Dr. Sunding makes his case for the BDCP to Metropolitan's Special Committee on the Bay-Delta," accessed online July 29, 2013, at http://mavensnotebook.com/2013/07/29/dr-sunding-makes-his-case-for-the-bdcp-to-metropolitans-special-committee-on-the-bay-delta/.

[199] Video of Meral's remarks to the Water Association of Kern County on July 23, 2013, were accessible online at http://baydeltaconservationplan.com/News/News/13-07-31/Natural_Resources_Deputy_Secretary_Provides_Update_on_BDCP_to_Water_Association_of_Kern_County.aspx.

[200] *BDCP, op. cit.*, Appendix 9.A, p. 9.A-1, lines 35-40, and p. 9.A-2, lines 1-9.

[201] State Water Resources Control Board, *Comments on the Second Administrative Draft Environmental Impact Report/Environmental Impact Statement for the Bay Delta Conservation Plan*, July 5, 2013, Attachment 2.

[202] Admin Draft *BDCP Environmental Impact Report/Statement,* 2013, Chapter 5, p. 5-52.

What is the most realistic amount of exports that will be preserved in order to measure its value appropriately? Answering this question depends on what future actions will be taken about the Delta's health by the fishery agencies and the State Water Resources Control Board without the Twin Tunnels project in place.[203] This results in tremendous uncertainty about benefits and financial strength of BDCP. It also means great instability in the net benefits to be expected for Applicants and their agricultural and urban customers. ***This instability is fatal to the confidence assignable to BDCP funding assurances.***

Moreover, we suspect BDCP officials foment confusion about Twin Tunnels export activity. As we describe below in Section VII, actual usage of the Tunnels for cross-Delta water transfer market activity would likely increase exports in drier and drought years. The market for cross-Delta transfers doesn't materialize unless contractual allocations go below 50 percent of Table A amounts for State Water Project contractors and 40 percent of contract amounts for CVP contractors. BDCP claims they did not model water transfer behavior, so it appears to us the Delivery volumes in Figure 10 could be understated because water market transfer activity using Twin Tunnels capacity is omitted. They appear to be talking strictly about contractual deliveries.

B. BDCP's Costs Are Higher Than Alternative and More Reliable Supplies

Compared to other sources of potential new water supply in California, the Twin Tunnels project ranges from the high end of these alternative sources to being infeasible altogether, depending on financing assumptions used in the BDCP analysis.

To understand whether BDCP's proposed action is a good investment, its cost must be compared with those of other potential sources of water supply. Such alternatives include the take alternatives in the BDCP economic analysis, as well as alternative forms of supply such as recycling, desalination, storm water recovery, improvement of existing Delta levees, and such. In order to compare apples to apples, incremental cost estimates for each alternative are needed to make such a comparison possible.

EWC's analysis in **Attachment 2** to this comment letter also shows that several moderate and low-export Twin Tunnels project scenarios become infeasible if lower and very plausible estimates of "preserved" export levels are used. If the existing modeled water cost of the biological opinions is subtracted from average south-of-Delta exports the last 15 years or so, the future without Twin Tunnels' exports could average about 4.66 million acre-feet. This "preserves" about 45,000 acre-feet worth of exports. ***At that reduced level of "supply preservation" the incremental cost of Twin Tunnels water skyrockets from $723 to over $20,200 per acre-foot.*** Other scenarios fail to preserve exports and become infeasible as a result (that is, they have negative incremental costs). In **Table A2-1 in Attachment 2**, the low outflow (that is, high average exports of 5.591 million acre-feet per year) without-Twin-Tunnels scenario would have an annualized cost per acre-foot of about $979. This is nearly twice the per unit cost of water from the Twin Tunnels project using BDCP assumptions for future exports.

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[203] Rodney T. Smith, *Hydrowonk Blog*, posted October 9, 2013. Dr. Smith's serial examination of BDCP economics, yield, and finances are essential reading for those interested in these BDCP issues, whether one agrees or not. His blog posts on BDCP commenced July 30, 2013 and continued through October 9, 2013. Regarding these baseline water supply issues, Dr. Smith observed, "None argue that the no tunnel scenario would yield less water than projected by DWR. All argue that there will be significantly more water than projected by DWR. If this proves the case, the annual cost of BDCP water will easily exceed $1,000/AF (inflation adjusted)." Accessible online 11 April 2014 at http://hydrowonk.com/blog/2013/10/09/hydrowonks-take-on-the-bdcp/.

Figure 11

Assessing Southern California Water Strategies

Strategy	2025 Regional Potential (TAF*)	Timeframe (years)	Typical Project Characteristics: Drought-Proof (Reliability)	Risk (Project Aborted)	Enviro Opinion	GHG	Initial Cap. Cost ($millions)	Annual Oper. Cost ($millions)	30-yr cost Treated ($/AF)
Strategies to Replace or Augment Imported Water									
Urban Water Conservation	1,100+	0-2	●	●	●	●	$0	$0.5	$210
Local Stormwater Capture	150+	3-5	●	●	●	●	$40-$63	$1-$3.5	$350+
Recycling	450+	6-10	●	○	●	○	$480	$30	$1,000
Ocean Desalination	150+	6-10	●	○	●	●	$300	$37	$1,000+
Groundwater Desalination	TBD	6-10	●	○	○	○	$24	$0.7	$750-$1,200
Strategies to Increase Imported Water									
Transfers-Ag to Urban	200+	1-5	○	●	○	●	n/a	n/a	$700+
Strategies to Increase Reliability									
Inter-agency Cooperation	**	0-5	●	○	●	●	low	low	n/a
Groundwater Storage	1,500+	3-5	○	○	●	○	$68-$135	$13	$580
Surface Storage	0	10+	●	●	●	○	$2,500+	$7.5-$15.5	$760-$1,400

*TAF-Thousand Acre-Feet
** Improves reliability and efficiency of existing supplies
Source: LAEDC

● Favorable ● Neutral ● Unfavorable

LAEDC Consulting Practice

How do these incremental water costs of the proposed Twin Tunnels project fit in with the cost of other alternative sources of water for California? Figure 11 draws on cost data from recycling and desalination projects in southern California summarized by the Los Angeles Economic Development Corporation (LACEDC).[204] Recycling project costs range between $210 for urban water conservation supplies to $1400 per acre-foot for new surface storage supplies. Twin Tunnels water would fall within this range ($530 to $715 per acre-foot) if BDCP assumptions about future Delta exports are to be believed.

But if future Delta exports without the Twin Tunnels were to follow the status quo, the range of "status quo" Delta exports yields an annualized water cost of $970 to $20,000 per acre-foot for the

[204] Los Angeles County Economic Development Corporation, *Where Will We Get the Water? Assessing Southern California's Future Water Strategies*, 2008. Accessible online 13 August 2013 at http://laedc.org/reports/WhereWillWeGettheWater.pdf.

Twin Tunnels project. This would move Twin Tunnels' relative affordability to the high end of the range of new water supplies, and even well beyond.

C. BDCP's Affordability Analysis Fails to Support Financial Assurances

The BDCP analysis of water affordability from the Twin Tunnels project is deeply flawed and fails to support the demand-side basis of financial assurances needed to make statutory findings for issuance of incidental take permits. The fishery agencies should reject BDCP incidental take application for lack of adequate funding assurances.

The questions "who pays?" and "how affordable is Twin Tunnels water?" are inadequately addressed by the BDCP economic analysis. The poor quality of the analysis undermines the credibility of BDCP's claims for offering adequate funding assurances to the fishery agencies.

Currently, agricultural water contractors pay anywhere from $7 to $112 an acre-foot in the Central Valley Project, according to Bureau cost allocation and repayment data online.[205] The average equivalent unit cost of State Water Project water to San Joaquin Valley water contractors (most of whom are agricultural) is about $52 an acre-foot in 2012. ***The new water from the Twin Tunnels project is on its own terms a very expensive water supply for growers in San Joaquin Valley agricultural water and irrigation districts.***

Many aspects of the financing and governance plans for the Bay Delta Conservation Plan are still in discussion behind the scenes.

The exorbitant cost of the Twin Tunnels in the Bay Delta Conservation Plan must be part of the fishery agencies' analysis of whether BDCP meets the funding assurance criterion of issuance. At this stage, the precise mechanisms by which the Twin Tunnels will be financed are unclear.[206] Chapter 8 states that the state and federal water contractors will be the sole funders of all water facilities and operations (Conservation Measures 1 and 2).[207] For what ensues here, the analysis assumes that the SWP Applicants issue revenue bonds to raise their share of needed capital. Chapter 8 notes too that while the Twin Tunnels project could be financed with general obligation bonds (which relies on the full faith and credit of all taxpayers in a jurisdiction, or statewide, if issued by the state of California) or revenue bonds, the latter are believed to be the more likely form of financing employed to raise capital for constructing the facilities for Conservation Measures 1 and 2 of BDCP. Because they are backed solely by revenues from use of the facilities, they carry a higher interest rate compared with general obligation bonds (which would be backed by the full faith and credit of the State of California). This results in higher aggregate interest costs for the Twin Tunnels investment.

BDCP Chapter 8 asserts the affordability of the Twin Tunnels project to the ratepayers of the urban and agricultural agencies without demonstrating it:

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[205] US Bureau of Reclamation Rate Books, 2013 Schedule A-1. Accessible online 17 July 2013 at http://www.usbr.gov/mp/cvpwaterrates/ratebooks/index.html.

[206] San Diego County Water Authority General Manager Maureen Stapleton wrote to BDCP director Gerald Meral in August 2012 that the project "is anticipated to be financed through project revenues," meaning revenue bonds. Letter of Maureen Stapleton, General Manager, San Diego County Water Authority, to Gerald Meral, Deputy Secretary California Natural Resources Agency, August 28, 2012, p. 3. Letter attached to this memorandum.

[207] BDCP, Chapter 8, Table 8-41, "Summary of Estimated Funding by Entity, Sources, and Plan Component," p. 8-74.

- Total personal income of all counties integrated into the state and federal water systems comes to $1.1 trillion and BDCP annual costs to ratepayers represents about 1/1000th of this total personal income. This, claims Chapter 8, is "far below the cost thresholds typically used for evaluating ability to pay."[208]

- Per capita costs for BDCP water conveyance facilities compare favorably with those of other large-scale water projects in California, at $580 per person (assuming a benefiting population of 25 million).[209]

These rationales are weak at best.

Concerning the first point, total personal income is an aggregated measure of income. It does not take account of the distribution of income amongst the households in a region or jurisdiction, and it fails to take account of the costs those households already face for other goods and services they purchase in the local and regional economy. Using such a rule of thumb of BDCP financing costs (i.e., "1/1000th of total personal income") is woefully inadequate measure of affordability when it comes to a project the scale of the Twin Tunnels and BDCP.

Water affordability analysis must identify and justify criteria for a reasonable cost of a particular good, such as water, and a reasonable portion of a family or household budget in which the cost of water would be thereby recognized as "affordable." (This approach is typically employed in housing affordability analysis.) Chapter 8 analysis provides no such rationale, and does not offer any reasoned analysis as to why "1/1000th of total personal income" represents a reasonable criterion. A proper economic analysis of affordability would identify what people pay now for water in these same counties, evaluate it in relation to their disposable income, and evaluate how a change in the price might affect their demand for water consumption. No such analysis is provided by the Applicants in the BDCP economic analysis.

Household income affects water consumption. Increasing income is often correlated with rising demand for water usage:

> The *intuition* for this relation is that wealthier individuals have a less restrictive budget, which allows them to use water more intensively in each of its uses, and water can be used within the household in new ways [such as installing lawn sprinklers]. As incomes grow, *holding other factors constant*, household water consumption will likely increase.[210]

This idea is the *income elasticity of demand* for water. It is a positive expression: the more wealth one has, the more water one is likely to use. It is also true that if the price of water rises, people usually respond by consuming *less* water, regardless of their income. This idea, the *price elasticity of demand*, indicates that *price* and demand for water are negatively related: the higher the price of water goes, the less of it one is likely to consume, subject to biophysical limits of our need for water.

The BDCP economic analysis acknowledges the price elasticity of demand for water in its discussion of the benefits of the Twin Tunnels' supposed impact on water supply reliability. But it is unclear, even doubtful, that this concept was applied in BDCP's economic analysis. As supplies decrease,

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[208] BDCP, Chapter 8, p. 8-99.

[209] BDCP, Chapter 8, Table 8-53, p. 8-101.

[210] BDCP, Appendix 9.A, page 9.A-16. Emphasis added.

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operating costs of suppliers remain relatively fixed. Water rates would have to rise for the supplier to avoid a fiscal deficit. But as water rates rise, demand decreases, so water agency revenues often decrease, a vicious circle or negative feedback loop for the agency.

The BDCP economic analysis actually provides an entire page listing price elasticities of water demand for urban water agencies in California that may commit to paying for Twin Tunnels water.[211] Three are from the Bay Area (Zone 7, Alameda County Water District, and Santa Clara Valley Water District). Their price elasticities are all under -0.2, meaning that for a unit change in the price of water, demand would fall 20 percent (again, the negative sign means that price and demand are inversely related). Generally, price elasticities are higher among southern California water agencies, ranging from -0.146 in San Marino to -0.324 in the city of Fullerton (Orange County). The diversity of these agencies' price elasticities likely reflects the income diversity of their customer bases: the higher the incomes in different customer bases, the lower their price elasticity of demand (and therefore the more indifferent wealthier communities may be to cost-of-water price signals).

The Environmental Water Caucus would like to know: why are there no analogous price elasticities of demand for the agricultural water agencies' areas (or some other appropriate elasticity of demand with respect to water that is applicable in their regions)? Nothing at all similar for agricultural water agencies is provided in the BDCP economic analysis nor anywhere else in BDCP Chapters 8 and 9, although agricultural price elasticities of demand are surely well studied. These elasticities would be essential for helping the fishery agencies evaluate how demand for water would change among both agricultural and urban water users, given the incremental costs of Twin Tunnels water. This test must be conducted, yet it has not been provided in BDCP economic analysis.

Similarly, the focus on total personal income using a fractional ratio as the basis for judging affordability of Twin Tunnels stands out at best as odd, at worst as highly inadequate for evaluation of financial assurances BDCP hopes to provide to the fishery agencies. It neglects the effects of the price of water on demand in urban and agricultural water use sectors, and is therefore inadequate economic justification and analytical support to the contention by BDCP that Twin Tunnels water would be affordable to Applicants' customer bases. ***The BDCP economic analysis should be rejected by the fishery agencies as a supposed "assurance" of the financial strength of BDCP.***

As noted above, BDCP Chapter 8 also argues that per capita allocation of the capital costs of BDCP is a valid and meaningful approach in comparison with other per capita costs of other major water projects.

There are large problems with such a comparison. First, customers don't just pay for capital costs. They also pay revenues through their water bills to cover operating and maintenance costs and interest on bonded indebtedness to pay off capital projects. (That is an advantage in economic analysis of using an annualized cost that takes account of interest rate, term, and principal, analogous to calculating payments on a mortgage.) Customers also pay more through their water bills when there are capital cost over-runs. At least one of the projects listed in BDCP Chapter 8, a locally-built project called the Coastal Branch of the California Aqueduct to Santa Barbara County, suffered cost overruns and other undisclosed costs. The construction cost overrun was from $270 million to $600 million at completion. The remainder of previously undisclosed costs were interest, operations, maintenance and energy amounting to a final total of $1.6 billion. The costs of these

[211] BDCP, Appendix 9.A, Table 9.A-4, page 9.A-32.

overruns and extra costs are still being paid by Santa Barbara County residents between Santa Maria and Carpinteria.[212]

Second, the comparison of per capita costs of major capital water projects is far too blunt an instrument of analysis to be meaningful. It ignores the reality of how any given project is actually paid for by most consumers of water: through their monthly or bi-monthly water bills. It ignores whether their consumption is metered. It ignores a multitude of factors that figure into how much water households and businesses consume across different regions and how much income each household can put to paying extra for water.

Finally, the per capita cost analysis does not indicate over what time period the repayment of per capita cost would be required.

Thus, BDCP's "business case" to the fishery agencies is poor indeed. ***These are significant reasons to doubt the funding assurances currently provided in BDCP. If they are provided as part of the actual BDCP application for incidental take permits, they should be rejected by the fishery agencies.***

D. Lack of "Step-Up" Provisions in BDCP Financing Plan

The Twin Tunnels financing plan remains highly uncertain and fails to meet the requirements of funding assurances needed to make statutory findings for issuance of incidental take permits.

The final component of evaluating the "business case" supporting BDCP's claim of funding assurances to the fishery agencies is the question of who "steps up" to bail out the Twin Tunnels project if Applicant agencies and their customers decline to participate, or default after it is completed and goes into operation. Answers to this question are crucial for all involved in the decision whether to issue incidental take permits: the Applicants (including the state and federal governments, and the major water contractors supporting BDCP) as well as the fishery agencies responsible for permit issuance.

1. State Water Project Contractors

One approach to funding assurance that addresses the issue of what occurs in the event the Twin Tunnels project fails was provided in a 2012 letter by the San Diego County Water Authority (SDCWA) to then-BDCP director Jerry Meral.[213] SDCWA is the largest customer for imported water from the Metropolitan Water District of Southern California (MWD), which is in turn the largest SWP contractor. SDCWA in 1991 took 95 percent of its water from MWD, but now takes only about 45 percent.

SDCWA argued to Meral that MWD is struggling fiscally. MWD water sales declined 30 percent between 2008 and 2012, and are projected to level off over time. As can be seen from Figure 12, MWD's water rates were in the vicinity of $750 in 2012 and are projected to climb higher in the future.

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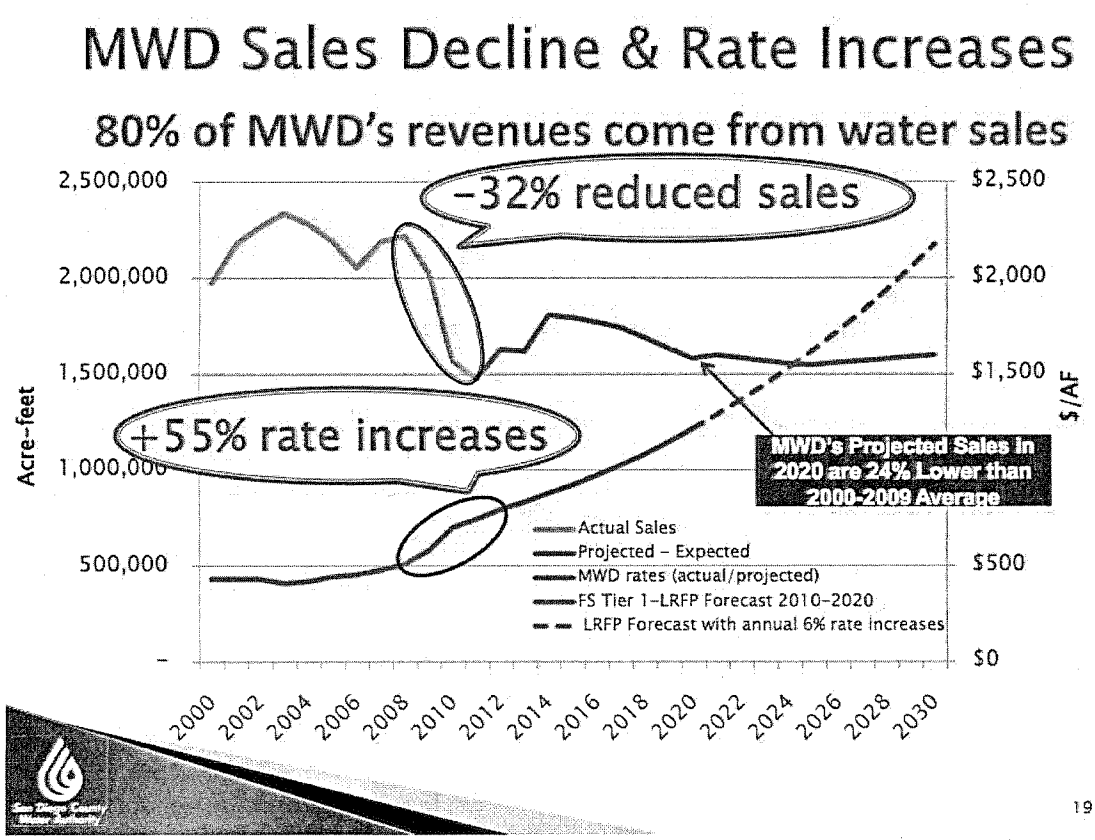
[212] California Water Impact Network, *Why We Cannot Afford the Proposed Peripheral Canal/Tunnel: The Santa Barbara County Experience*, July 26, 2012. Accessible online at https://www.c-win.org/content/c-win-press-release-report-documents-huge-cost-overruns-santa-barbara%E2%80%99s-state-water.html.

[213] Letter of Maureen A. Stapleton, General Manager of San Diego County Water Authority, to Dr. Gerald Meral, Deputy Secretary of the California Natural Resources Agency, August 28, 2012, 8 pages. Hereafter cited as "Stapleton letter."

A 2011 study of the 2010 urban water management plans of MWD's 11 largest member agencies found that by 2035 only three agencies plan to increase the share of their water supply obtained from imports by MWD.[214] Their increased shares of imports would be very small (1 to 5 percent). West Basin Municipal Water District, and the cities of Long Beach and Los Angeles plan reductions in both the share of imported water from MWD and the absolute amounts of those imports as well. Together their absolute reductions are projected to total 141,300 acre-feet per year.[215]

Figure 12



Analysis of Metropolitan Water District water sales and actual and projected rate increases. Source: San Diego County Water Authority, *What We Need in a Bay-Delta Fix: A Perspective From MWD's Largest Customer*, May 11, 2011, slide 19. Accessible online 15 July 2013 at http://www.slideshare.net/waterauthority/baydelta.

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[214] Central Basin Municipal Water District, Three Valleys Municipal Water District, and Eastern Municipal Water District.

[215] Phillips, C. 2013. *Imported vs. Local Water Supplies: The Planning Decisions Facing Southern California Water Agencies,* Goldman School of Public Policy, University of California, Berkeley, August 3, 2011. Central Basin Municipal Water District plans no increase in the absolute amount of its MWD imports. Accessible online 15 July 2013 at http://switchboard.nrdc.org/blogs/bnelson/Local%20vs%20Imported_Final%208-4-11.pdf.

For the eleven largest MWD member agencies, they project demand growth of just 103,775 acre-feet by 2035 an average of under 400 acre-feet per member agency per year.[216]

The City of Santa Monica has vowed to become completely free of imports from MWD by 2020 while simultaneously reducing its current rate of imports from 85 percent in to 33 percent in 2012. In 1995, the City had to close five drinking water wells and replace the supplies with imports from MWD. In 2012, the City completed a water treatment plant that accounts for the recent reduction in its imports.

As a consequence of these and other actions by local water agencies in urban southern California, demand for MWD imports has weakened significantly. MWD imports include water not only from the State Water Project exporting from the Delta but Colorado River Aqueduct imports as well.

The weakening of demand for MWD imports reflects the flexibility and consumer sovereignty that MWD member agencies (including San Diego County Water Authority) exercise and enjoy. This consumer sovereignty enables them to consider and act on developing alternative local supplies rather than import costly water from MWD for which they may prefer not to pay.[217] (Many of these supply alternatives are likely to be more drought-resilient than the Twin Tunnels, which is dependent on snowpack, reservoir storage, and river runoff.)

In this fashion, MWD's high water rates and policy of allowing member agencies to opt out of taking imports are stimulating the very local and regional water self-sufficiency mandated in the Delta Reform Act of 2009.[218]

This same consumer sovereignty will make it difficult for MWD to cobble together adequate financial assurances or guarantees.

SDCWA informed Meral in August 2012 that Metropolitan Water District's member agencies are not required to buy water from MWD because they have not and "will not" sign contracts that require member agencies to make regular fixed purchases from MWD whether or not they take water. (This type of contract is known as "take or pay.") SDCWA draws out the political and financial implications of MWD supporting a project for which it cannot assure repayment of the revenue bonds:

> ...because the project is anticipated to be financed through project revenues, we are informed that bond underwriters are expected to require a 'step up' provision by which each BDCP participant in BDCP-related bonds pledges to assume the obligations of defaulting participants.[ ] [I]t is conceivable that some

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[216] This is worked out as 103,775 acre-feet divided by a 25 year planning horizon divided by 11 member agencies. This yields an average of about 377 acre-feet per member agency per year, rounded up to 400.

[217] Maven's Notebook, Assembly oversight hearing on the funding structure and economic impacts of the Bay Delta Conservation Plan (part 3): San Diego County Water Authority & Contra Costa Water District share their concerns, February 21, 2014. See especially remarks of Dennis Cushman, Assistant General Manager of San Diego County Water Authority.

[218] California Water Code Section 85021, stating: "The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts."

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> of the BDCP participants may default, which would cause remaining participants, including MWD, to assume a greater portion of the debt. It is important that Chapter 8 analyze the possible effects of the 'step up' provisions on MWD and the other participants in the BDCP.[219]

The BDCP economic analysis has so far not provided that analysis. If remaining participants must step up, that means their costs of Twin Tunnels project water will rise in order to meet repayment obligations to bondholders. The lack of such assurances at present means that BDCP underestimates the costs and affordability of its Twin Tunnels project.

In 2011, SDCWA pledged to support BDCP by committing (in a Powerpoint presentation and later in a 2013 media release[220] and in their official comments on BDCP, dated May 30, 2014[221]) to a firm, long-term contract to pay for its share of water and facilities, so long as other MWD member agencies do too.[222] Property taxes have been suggested as "the ultimate security" for BDCP repayment obligations of contractors, but property tax increases would probably require voter approval. SDCWA recommends that Meral include in BDCP "a careful legal analysis of MWD taxing authority...if taxes are contemplated as additional back-up security for project [bonded] debt." SDCWA concluded bluntly that:

> At a minimum, state water contractors that are wholesale water agencies must demonstrate that their customers—the member agencies or units that buy their water and provide their revenues—have take-or-pay contracts or other enforceable commitments to pay the fixed costs of the project commensurate with the term of the BDCP obligation [i.e., 50 years].[223]

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[219] Stapleton letter, *op. cit.*, p. 3.

[220] San Diego County Water Authority, "Water Authority Seeks Right-Sized, Cost-Effective Bay-Delta Plan," July 25, 2013. Accessible online 13 August 2013 at http://www.sdcwa.org/water-authority-seeks-right-sized-cost-effective-bay-delta-plan.

[221] Letter of Maureen A. Stapleton, General Manager, San Diego County Water Authority to Ryan Wulff, National Marine Fisheries Service, *Re: Draft EIR/EIS for the Proposed Bay Delta Conservation Plan, Alameda, Contra Costa, Sacramento, Solano, and Yolo Counties*, May 30, 2014, 19 pages plus attachments. Accessible online 8 June 2014 at http://www.sdcwa.org/sites/default/files/files/news-center/top-issues/05-30-14%20BDCP%20Comment%20Ltr.pdf

[222] San Diego County Water Authority, *What We Need in a Bay-Delta Fix: A Perspective by MWD's Largest Customer*, May 11, 2011, slide 25. Accessible online 15 July 2013 at http://www.slideshare.net/waterauthority/baydelta.

[223] Stapleton, *op. cit.*, note 16, p. 4. Metropolitan Water District has 26 member agencies, 12 of whom serve as wholesalers to another 251 cities and communities in southern California. MWD contracts for about 50 percent of State Water Project's total Table A amount. Kern County Water Agency has 13 "member units" in Kern County region, and contracts with the State Water Project for about 25 percent of the total Table A amount. See also Stapleton's letter of May 30, 2014, op. cit., to BDCP; and SDCWA's News Release, "Water Authority Seeks Clarity About Bay-Delta Financing Plan," June 3, 2014. Accessible online 8 June 2014 at http://www.sdcwa.org/water-authority-seeks-clarity-about-bay-delta-financing-plan where it states: "Since MWD derives more than 80 percent of all its revenues from water sales, a decreasing sales base over the long term would force some MWD member agencies to shoulder more of the cost of Bay-Delta upgrades than expected. The Water Authority has repeatedly called for MWD member agencies to provide firm financial commitments to demonstrate their need for the project and pay their fair share of MWD's fixed costs related to the Bay-Delta, but they have refused to do so."

Without such a "due diligence" analysis of BDCP funding, wrote SDCWA, the plan "faces a potential cascading collapse of funding."

BDCP's current economic analysis continues to be silent on this issue, despite SDCWA's warning 22 months ago. Chapter 8 does include a section on bond financing, but it is merely introductory.[224]

Whether revenue bonds are issued by the state or by highly rated water contractors, the problem of repayment arrangements remains unresolved at least until further releases of information from BDCP are available. How would the state or the bond-issuing entity make state water contractors and their member agencies commit to "take-or-pay" BDCP financing given the project's exorbitant cost and the relative competitiveness of other local supply alternatives?

2. Central Valley Project Contractors

Important questions surround the ability and willingness to pay for the Twin Tunnels project of Central Valley Project water contractors. Agricultural water agencies make up about 90+ percent of both cost allocations and water deliveries within the Central Valley Project. Do CVP contractors currently repay all of the costs of existing CVP facilities? Are they on schedule to do so? If not, how are shortfalls defrayed, and what do they still owe?

Would congressional action be needed to authorize the Bureau of Reclamation to finance its share of BDCP capital costs? What is the existing financial condition of CVP agricultural contractors to afford and support BDCP financing through agricultural water rates? BDCP's economic analysis is silent on these and other such matters.

Presently, CVP water contractors lag on repaying the costs of existing CVP facilities, according to a March 2013 review by the US Department of the Interior, Office of Inspector General (IG).[225] The IG found:

- The current rate-setting process contributes to repayment uncertainty.[226]
- Contract provisions limit repayment of project costs.[227]
- By 2030, when CVP capital facilities are required by Congress to be paid off, repayment could be short by between $330 million to $390 million.[228]

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[224] This section states that the State Water Project is a highly rated financial risk, due in part to the fiscal strength of its water contractors (the largest of whom are Metropolitan Water District and Kern County Water Agency). It provides a highly simplified example of four bond issues that could finance Conservation Measure 1 facilities (i.e., Twin Tunnels).[172] These issues could finance $15.575 billion based on interest rates ranging from 6.132 to 6.135 percent. The example does not provide any estimate of total interest costs per issue (and per acre-foot for that matter) on the financed amount at these rates.[173] ***Total interest cost fully amortized over 40 years given these bond terms would come to about $26.3 billion, bringing BDCP's total costs to $42 billion.***

[225] US Department of the Interior, Office of Inspector General, *Central Valley Project, California: Repayment Status and Payoff*, Report No. WR-EV-BOR-0003-2012, March 2013. Hereafter, DOI, *CVP Repayment Status*. Accessible online 15 July 2013 at http://www.doi.gov/oig/reports/upload/WR-EV-BOR-0003-2012Public.pdf.

[226] DOI, *CVP Repayment Status*, p. 4.

[227] *Ibid.*, p. 5.

[228] *Ibid.*, pp. 6-7.

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- Municipal and industrial contractors face an annual operating and maintenance deficit of about $55 million annually by 2030 as well.[229]
- Power customers "will pay any costs above the irrigation contractors' ability to pay," meaning that when irrigation revenues fail to cover costs (such as when actual deliveries are less than projected deliveries), revenues from power sales within the CVP are used to reduce or eliminate those deficits.[230]

A 2008 study for the Delta Vision Blue Ribbon Task Force found that nearly $1.3 billion is owed by CVP contractors for the capital facilities of the project. Of this amount, San Joaquin Valley and Sacramento contractors have together repaid about 21.5 percent of this cost.

Repayment of CVP costs by the contractors is shifting, however. Just five years ago, San Joaquin Valley irrigation contractors had repaid just 19.4 percent of their allocated costs of $955 million, but within five years, Bureau accounting records indicate that collectively they have now repaid nearly half of their project costs (48.3 percent) even though their allocated capital costs rose to just over $1 billion. The surge in repayments was led by Friant-Kern and Madera Canal-area contractors, neither of whom would benefit directly from Twin Tunnels imports.

By contrast, CVP irrigation contractors on the west side of the San Joaquin Valley—who are among BDCP's Applicants and most ardent supporters—continue to lag on repayment of their existing allocated CVP costs. The irrigators of the Delta-Mendota Canal and Pool units, the San Luis unit (both Fresno and Tracy), and the Cross Valley Canal in Kern County all have repaid less than 27 percent of allocated project costs, though facilities like the Delta Mendota Canal and the San Luis Canal have existed since the 1950s and 1960s. This appears to be the case despite the fact that irrigation contractors with these CVP units by law pay no interest on their contracts (while municipal and industrial contractors do).

Along the San Luis Canal where Westlands Water District is the primary irrigation contractor, just 22.7 percent of the nearly $460 million in allocated capital costs for the Canal unit has been repaid, leaving about 77 percent that must be repaid by 2030 under congressional repayment requirements, now just 16 years away. This amounts to about $20 million per year between now and 2030.[231]

Furthermore, unlike urban water agencies whose landowners can be held financially responsible through taxes and liens in the event of BDCP bond default, agricultural water agency customers will apparently not be held responsible. Westlands Water District's manager has stated:

> The security on the bonds is the [Westlands] district's revenue, *not* the landowner's land. In a worst case,

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[229] *Ibid.*, p. 7

[230] Thus, while M&I contractors provide only a slight subsidy to agricultural contractors, the CVP is structured so that hydroelectric power revenues are used to defray operating deficits in the accounts of each irrigation contractor. *Ibid.*, p. 7; see also Entrix, Inc., *Overview on Central Valley Project Financing, Cost Allocation, and Repayment Issues*, provided to the Delta Vision Blue Ribbon Task Force, September 18, 2008, p. 11. Accessible online 15 July 2013 at http://deltavision.ca.gov/ConsultantReports/CVP_Financing_and_Repayment_Summary_9-18-08.pdf. The power subsidy to irrigation contractors is confirmed on page 11 of this document.

[231] Entrix, Inc., *op. cit.*, note 34, Table 4, p. 17; US Department of Interior, Bureau of Reclamation, Mid-Pacific Region Office, "Schedule of Construction Costs Allocation by Contractor," Schedule A-2Bb, December 2012.

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we file for bankruptcy. That's what the District could do. The landowners' land is not security.[232]

The Plan does not disclose who will be responsible for paying off the revenue bonds if Westlands and other water agencies default on their bonds because they cannot make their payments.

Lack of a financing plan means the Bay Delta Conservation Plan and the project description in its EIR/EIS are incomplete, cannot deliver funding assurances to the fishery agencies, and therefore cannot be legally meet the statutory findings the fishery services must make under Section 10 of the federal Endangered Species Act, and fulfill disclosure requirements of the California Environmental Quality Act and National Environmental Policy Act.

[232] Transcript of January 14, 2014, meeting of Westlands Water District Board of Directors, page 7. Accessible online 8 June 2014 at http://www.c-win.org/webfm_send/434.

V. BDCP fails to provide governance and implementation support for compliance with its long-term funding and ecological assurances.

There are numerous questions raised by BDCP's implementation plan and governance structure. Few of these questions are adequately answered at this time. Some questions have to do with funding of the Twin Tunnels projects and the habitat restoration and other conservation measures included in the Bay Delta Conservation Plan.

Other questions, though, have also to do with basic rules of decision-making and due process that are neglected in Chapters 6 and 7 of the BDCP, and in a July 2013 draft of the Implementing Agreement obtained from the US Fish and Wildlife Service this spring.

Questions bear on whether iron-clad assurances are in place prior to approval of the BDCP and issuance of incidental take permits by the fishery agencies. Other questions bear on the ***how*** of implementing BDCP. There is little about the questions and how they are answered by BDCP at present that inspire confidence and trust. Now is the time for the fishery agencies to insist on more answers from the BDCP Applicants. ***After signing the Implementing Agreement and issuing the incidental take permits, it will be too late.***

A. Ecological assurances are unsupported by governance in the Bay Delta Conservation Plan.

There are many ways in which the BDCP plan for governance and implementation fails to support long-term ecological assurances. First, the Biological Goals and Objectives are severed from compliance with incidental take permit conditions, as we described in Section III. Second, the recovery requirement in the Delta Reform Act (Water Code Section 85320(b)(2)(A) means that the ecological assurances are unsupported and virtually meaningless because the Applicants will be free from being held to account by enforceable constraints on their actions. For reasons described elsewhere in these comments, the Applicants have a poor track record minimizing the ecological effects of exporting water from the Delta.

Incidental take limits have not yet been quantified. Consequently there is no quantified basis on which to issue and enforce incidental take limits, certainly nothing available for the public to evaluate and assess.

Statutory findings cannot be made by the fishery agencies in support of issuing incidental take permits, based on modeling results generated from BDCP's analytic efforts to date.

The Authorized Entity Group (AEG) is given authority to make final decisions over how the conservation measures 2 through 22 are handled (DWR and the US Bureau of Reclamation plan to retain full ownership and management responsibility and control over their respective water project operational activities). AEG's responsibilities include:

- Oversight and management of funding and resources.
- Contracting out for services.
- ***Oversight and administration of all conservation measures.***
- ***Implementation of outreach, compliance monitoring, and reporting requirements.***
- BDCP's Annual Work Plan and Budget.

The Environmental Water Caucus is deeply concerned that the water project operators and their contractors will be responsible for administering all of the non-water project conservation

measures. ***If this means all taxpayer funding for habitat restoration will be controlled by the Implementing Office subject to AEG oversight, we view this as a non-starter.*** BDCP is saying it will depend for much of its habitat restoration and other conservation measure funding on voter-approved bond funds. These funds, should voters approve them, represent over 52 percent of the $7.3 total estimated funds needed for conservation measures 2 through 22.[233] BDCP's Implementation Office and Authorized Entity Group should not be entrusted with direct control over this much in taxpayer funds. ***The contractors claim they would put up just 10 percent of the funds for habitat restoration and other conservation measures, but would apparently exercise full control over how all $7.3 billion in funding for conservation measures 2 through 22 would be managed. We believe this represents an inherent conflict of interest, perhaps even a gift of public funds.*** The same AEG members oversee water project operations closely (if not through formal AEG actions, then through daily interaction over water allocations, deliveries, and many other project-related issues) and yet would be making final decisions about implementation of habitat restoration conservation measures as well. The metaphor of the fox guarding the chicken coop comes all too easily to mind.

We have identical concerns about the Authorized Entity Group having final say over compliance monitoring and reporting requirements. As we have noted elsewhere in these comments, these requirements have been poorly specified. Effectiveness monitoring is left out of this list as well, though it is incorporated into BDCP's appendix concerning research, monitoring and adaptive management. This implies all too loudly that BDCP Applicants likely care little whether habitat restoration projects and projects of other conservation measures effectively or not.

B. It is impossible for a project/plan the scale of BDCP to adhere to both the "No Surprises Rule" and operate an effective adaptive management program.

The problem of the large role given BDCP's adaptive management program comes into greater focus when the governance of the program is described.

As a cadre of professional scientists, the BDCP Adaptive Management Team would be charged with framing hypotheses relevant to BDCP research needs, conducting the research, and presenting results and recommendations to the Implementation Office's Science Manager. (These recommendations may address a change in how a biological goal or objective is achieved, or may even attempt to recommend a change to a biological goal or objective.) The Team is to operate, according to BDCP's governance rules, on a consensus basis.[234] But if the Adaptive Management Team fails to reach consensus on its recommendations, what then?

The Authorized Entity Group and the Permit Oversight Group[235] are given "joint" responsibility for making the final decision on the matter posed by the Adaptive Management Team. This joint responsibility goes undefined in both BDCP and the July 2013 Implementing Agreement.

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[233] BDCP, Chapter 8, *Implementation Costs and Funding Sources*, Table 8-37, p. 8-65 to 8-66.

[234] BDCP, Chapter 7, *Implementation Structure*, Table 7-1.

[235] Membership of the Authorized Entity Group consists of four individuals representing the California Department of Water Resources, the US Bureau of Reclamation, state water contractors, and federal water contractors. Membership of the Permit Oversight Group consists of three individuals representing the US Fish and Wildlife Service ,the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Questions: How will votes be handled when all members of the joint AEG/POG are present? By what quorum rules will they operate? Will decisions arrived at by rule of majority, super-majority, or consensus? Will these groups have alternates representing each agency so that no agency is excluded from making decisions when needed?

We note that this "AEG/POG" joint role crops up a lot (as shown in Table 7-1 of BDCP), when it comes "to deciding the matter" under adaptive management and monitoring. There would be seven members of this "joint" body: Four representing water agencies, three representing fishery agency regulators. ***This is an unacceptable and inequitable allocation of voting power when it comes to achieving the co-equal goals of both BDCP and the Delta Reform Act. It gives greater weight to water project operations and deliveries than to protection and restoration of the Delta ecosystem and recovery of listed species*** as called for in California Water Code Section 85320 (see discussion in Section VI on this law). We recognize, however cynically, that it is consistent with the overall thrust of the Bay Delta Conservation Plan and its likely outcomes. It is also consistent, alas, with "No Surprises" policy.

Moreover, we believe that this allocation of power within BDCP's implementing structure reflects a compelling need for the Applicants (as reflected in the membership of the AEG) to privilege the No Surprises rule over adaptive management. Achieving biological goals and objectives on behalf of the covered and listed species within BDCP will have a lower priority, given this institutional design, consistent with the statement in the Biological Goals and Objectives we cited in Section III.

The No Surprises rule is central to the adaptive management role within BDCP. Nowhere is this clearer than in the May 2014 draft implementing agreement for BDCP. As part of their deliberations, states the agreement, "the Authorized Entity Group and the Permit Oversight Group shall adhere to the following "legal, policy, and regulatory principles":

- The scope and nature of a proposed adaptive response will be considered within the totality of the circumstances, including *the degree to which the change is reasonably expected to offset the impacts of Covered Activities or Associated Federal Actions and Plan implementation or to better achieve the biological objectives.*

- The proposed adaptive management action must be consistent with the legal authority of the entity responsible for effectuating the action.

- The Adaptive Management process will be used to help ensure that Conservation Measures are in conformity with the ESA and NCCPA permit issuance criteria throughout the course of Plan implementation. Changes will be limited to those actions reasonably likely to ensure that (1) the impacts (or levels of impacts) of a Covered Activity or Associated Federal Action on Covered Species that were not previously considered or known are adequately addressed or (2) a Conservation Measure or suite of Conservation Measures that are less than effective, particularly with respect to effectiveness at advancing the biological goals and objectives, are modified, replaced or supplemented to produce the expected biological benefit.

- The strength of the scientific evidence linking the proposed change to a Conservation Measure and to the ability of the Plan to achieve the relevant biological objective or objectives.

- An assessment will be made of a potential adaptive change so that the desired outcome(s) will be achieved with the least resource costs. As long as equal or greater biological benefits can achieved, adaptive responses should favor changes that minimize impacts to water supply or reliability.

- Prior to any decision to change a Conservation Measure in a manner that would potentially result in the modification of water supplies consistent with Section [10.3.7], non-operational

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> alternatives will be considered and, if such alternatives are rejected, the Adaptive Management Team will provide an explanation provided [*sic*] as to why they were not sufficient to address the effects of the Covered Activity, or Associated Federal Action, or achieve the biological objective(s) of the Plan.[236]

Thus, adaptive management to achieve biological goals and objectives will be subservient to the No Surprises rule's protection of "no net loss to exports" (see our discussion of Real-Time Operations, Section III, above) carries into BDCP implementation. ***This conflicts utterly with the Delta Reform Act's vaunted "co-equal goals."*** Their co-equal stature would be honored in the breach by how voting power is allocated within BDCP's implementation structure. ***Once the ink is dry on BDCP's incidental take permits and the implementing agreement, the burden of proof of any BDCP and/or Twin Tunnels project harm to covered species lies with the scientists and the regulators—for the next 50 years.*** Any case regulators and adaptive management team attempts to build on behalf of some change to either biological goals and objectives or to any conservation measure must be compelling, iron-clad, bullet-proof. And, in the context of BDCP governance, the Authorized Entity Group may still veto it.

Put another way, the No Surprises rule reverses the relationship between the Applicants and the fishery agencies, once the incidental take permits are issued: "No Surprises" places the burden of proof on the fishery agencies to conduct scientific research to support changes in BDCP, or suspension or revocation of its permits.

As we have already commented, there are numerous reasons why this habitat conservation plan is a bad deal for the fishery agencies and the people of California and the United States of America. BDCP modeling results indicate its "conservation strategy" will perform poorly when measured against existing environmental, economic, and fiscal conditions and criteria. ***BDCP proposes to stack the deck of its governance in favor of water operations in flagrant violation of the Delta Reform Act's co-equal goals and the state and federal endangered species acts. BDCP's governance program cannot and will not support and sustain the ecological assurances to the fishery agencies that would adaptively manage the conservation strategy as a whole to achieve its biological goals and objectives, and not appreciably reduce the likelihood of the survival and recovery of listed species.***

C. The Bureau of Reclamation's exclusion from BDCP complicates BDCP's ability to provide and sustain ecological and funding assurances.

We note that the No Surprises rule does not apply to federal agencies like the Bureau of Reclamation because federal agencies are ineligible to participate in habitat conservation plans under Section 10 of the federal ESA.[237] The Bureau must instead provide a biological assessment under Section 7 of the ESA as part of consultation with federal fishery agencies. The EIR/EIS is also intended to "inform a biological assessment that Reclamation will submit to the US Fish and Wildlife Service

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[236] *Draft Implementing Agreement for the Bay Delta Conservation Plan*, by and among the US Bureau of Reclamation, US Fish and Wildlife Service, National Marine Fisheries Service, California Department o fWater Resources, California Department of Fish and Wildlife, and State Water Project/Central Valley Project Contractors, Draft, released May 2014, Section 10.3.5.1.2, p. 35. Emphasis added. Hereafter cited as "*Draft 2014 Implementing Agreement.*"

[237] *Draft Implementing Agreement for the Bay Delta Conservation Plan*, by and among the US Bureau of Reclamation, US Fish and Wildlife Service, National Marine Fisheries Service, California Department o fWater Resources, California Department of Fish and Wildlife, and State Water Project/Central Valley Project Contractors, Draft, July 2013, Section 13.3.2, p. 42. Hereafter cited as "*Draft 2013 Implementing Agreement.*"

[USFWS] and the National Marine Fisheries Service [NMFS] to support an ESA Section 7 consultation."[238]

This asymmetry among the water project owners (i.e., DWR can participate in BDCP directly because it is a non-federal agency) poses an implementation challenge to the Applicants. Federal water contractors cannot obtain the same "no surprises" regulatory stability that the state axis of water agencies may enjoy under BDCP and Section 10 of the ESA. Instead, BDCP signatories will include officials of the Department of Water Resources, the California Department of Fish and Wildlife, NMFS and USFWS. The Bureau, according to BDCP officials will execute two new memoranda of understanding (MOUs) that they say will also receive public review, but when these documents will be available, and for how long, has not yet been announced. According to BDCP officials the two MOUs will address the Bureau's "commitment to the BDCP as a whole" to be co-signed by DWR officials at a minimum, and the second will address operation of the Twin Tunnels project and will presumably include wheeling arrangements as BDCP's Chapter 7 anticipates.[239]

Still, without the Bureau staking itself to funding, operational, and ecological management commitments that all other BDCP Applicants sign onto in the Implementing Agreement, overall assurances are structurally weakened, subject to near-term and long-term vagaries and uncertainties of congressional policies (like the Anti-Deficiency Act) and politics.

D. Financial assurances are unsupported in the Bay Delta Conservation Plan.

As noted previously, the funding plan for BDCP is incomplete and poorly specified. This unfinished business also is reflected in the draft July 2013 Implementing Agreement.[240] Preliminary review of the May 30, 2014, draft Implementing Agreement indicates that while the Funding section is now populated with words, the verbiage says little new from what is presented in Chapter 8 of BDCP. However, the new verbiage on on funding contains two disconcerting passages:

> In the event of a shortfall in State or federal funding, a Fish and Wildlife Agency(ies) shall not suspend or revoke the State and/or Federal Permits or invalidate Reclamation';s take statement if the shortfall in funding is determined to be likely to have no more than a minimal effect on the capacity of the Plan to advance the biological goals and objectives.[241] (p. 47)

> "Actions that may be considered to address such shortfalls include adjusting the scope of the Plan in proportion to the public funding shortfall.[242] (p. 48)

This draft continues to provides no insight into ***how*** BDCP will be financed, which water contractors will definitely participate.

The federal Endangered Species Act requires that habitat conservation plans specify that the "applicant will ensure adequate funding for the plan will be provided" for conservation actions that minimize and mitigate impacts on species covered by the plan. At a minimum this means that BDCP:

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[238] BDCP EIR/EIS, Chapter 1, *Introduction*, p. 1-18, lines 3-5.

[239] Personal notes of Tim Stroshane from California Department of Water Resources conference call, May 28, 2014.

[240] *Draft 2013 Implementing Agreement.*, Section 12, *Funding*, pp. 38-40. Placeholders for obligations of the Authorized Entities and the fishery agencies contain no descriptions of funding.

[241] *Draft Implementing Agreement*, released May 30, 2014, p. 47.

[242] *Ibid.*, p. 48.

- Must ensure funding over the lifetime of the permit.
- Cannot rely on federal funding to "ensure" funding of the plan in light of the "Anti-Deficiency Act and the availability of appropriate funds."
- Must provide "remedies for failure to meet funding obligations by signatory measures".
- "Cannot rely on speculative future actions of others" for funding, which would include voter approval of bond funds. And
- Must be backed by a guarantee by the applicant to ensure funding for all plan elements.

BDCP fails to meet any of these criteria as reflected in case law on habitat conservation plan funding assurances.[243]

BDCP's analysis of supply and demand for Twin Tunnels water deliveries is grossly inadequate. Demand has not been demonstrated to exist for continuing imports from the Delta by Metropolitan Water District customers, as noted above. And the junior water rights of the state and federal water projects generally will not be improved in their priority position by obtaining new points of diversion on the lower Sacramento River at this late date. State and federal water supply reliability in the Delta will continue to be poor over the long haul, which will dampen sales and demand, which will in turn reduce the financial strength and capacity of the State Water Project in the long run, which could undermine their ability and willingness to continue funding implementation of the Bay Delta Conservation Plan. As discussed above, the largest CVP contractor already has plans to declare bankruptcy if that district cannot make payments, in order to avoid any liabilities for its landowners. This is an irresponsible exit strategy.

For lack of a financing plan, statutory findings about funding assurances cannot be reasonably made by the fishery agencies in support of issuing incidental take permits.

E. Will the State of California contract away its fiduciary responsibility to enforce the Public Trust Doctrine if one of its public trust agencies, the Department of Fish and Wildlife, signs the Implementing Agreement for BDCP and issues incidental take permits with a term of 50 years?

Local cities and counties are not allowed to contract away their police powers, including in matters of land use and subdivision in regulating new development. The State of California has fiduciary responsibility to protect the public trust.[244] We are concerned that the State of California may tie its hands illegally and unnecessarily when it comes to enforcing the protection of public trust resources in the Delta, some of which are fish and wildlife.

The California Department of Fish and Wildlife is responsible for at least a portion of the state's obligation to protect the public trust. The State Water Resources Control Board is also an agency of the State of California that is charged with protecting the public trust through its regulation of water rights and water quality. We understand that the State Water Board is not to be a signatory to the Bay Delta Conservation Plan Implementing Agreement, but we remain deeply concerned that even one state agency possibly signing away its authority to protect the public trust beyond the confines of BDCP might be signing it away for any and all others with current public trust responsibility. The BDCP and its EIR/EIS should address this matter squarely.

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[243] 16 USC 1539(a)(2)(B(iii); *National Wildlife Federation v. Babbitt*, 128 F.Supp.2d 1274, 1294-95 (E.D. Cal., 2000); *Southwest Center for Biological Diversity v. Bartel*, 470 F.Supp.2d 1118, 1155 (S.D. Cal., 2006); and *HCP Handbook*, pp. 3-33 to 3-34.

[244] *National Audubon Society v. Superior Court of Alpine County*, 658 P.2d 709 (Cal. 1983).

F. The Stakeholder Council as presently proposed excludes representatives of environmental justice communities.

BDCP's governance structure includes a "stakeholder council." This entity "will be formed to provide opportunities for interested parties to consider, discuss, and provide input on matters related to" BDCP implementation.

It appears to our member groups that the stakeholder council is to serve as a forum to help the BDCP implementation office gauge how it is perceived by "interested parties" like local elected and appointed officials, state, federal, and regional agencies (Delta-focused and the Central Valley Flood Protection Board), the counties, three "local government" seats, and the lay public. It also appears to us that the stakeholder council will "develop its own process to consider and provide input regarding the various aspects of BDCP implementation" and an opportunity to get and disseminate information about BDCP activities to their constituencies. It provides three seats for "conservation groups with expertise in fish and wildlife management, and or the management of aquatic habitats and other natural lands."[245]

This structure excludes representatives of environmental justice communities. It should be clear from our comments, and from Attachment 1, that BDCP poses important environmental justice issues for this community, including access to public arenas about water and fish in the Delta (i.e., public participation and information), subsistence fishing and public health, recreating, jobs, agricultural employment, and housing. If BDCP continues, the Stakeholder Council needs to reach out to include EJ communities of the Plan Area.

G. The meetings of both the Authorized Entity Group and the Permit Oversight Group must comply with the Brown Act.

The "current thinking" of BDCP officials appears to us to limit as much as possible public access to the affairs of the Authorized Entity Group and the BDCP Implementation Office. This retrenchment, is reflected in language changes to the draft IAs from July 2013 to May 2014. The July 2013 Draft Implementing Agreement of BDCP states:

> The Authorized Entity Group will meet on a schedule of its own choosing, but at a minimum on a quarterly basis. [It] may also be convened by the Program Manager, as needed, to review issues that arise during the implementation of the Plan, including proposed amendments to the Annual Work Plan and Budget. The Authorized Entity Group will also meet with the Permit Oversight Group..., at least on a quarterly basis to review Plan implementation issues, including those related to the adaptive management and monitoring program and the restoration and preservation of habitat.
>
> The Authorized Entity Group will institute procedures with respect to public notice of and access to its meetings with the Permit Oversight Group. The date, time, and location of the meetings will be posted on the BDCP web site at least 10 days prior to such meeting. The meetings will be held at locations within the City of Sacramento or the legal Delta. All meetings will be open to the public.[246]

The May 2014 draft Implementing Agreement retains the first paragraph in its entirety, but amends the second so that the AEG ***reduces its obligations to the public*** from "All meetings will be open to the public" to merely informing the public via the BDCP web site of what decisions the AEG has made after the fact.:

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[245] *Ibid.*, Section 14.6.2, p. 56.

[246] *Draft Implementing Agreement*, July 2013, Section 14.3.3, p. 52.

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> The Authorized Entity Group shall have the responsibility to inform the public of its deliberations and decisions. As such, the Program Manager will ensure that the public receives notice of upcoming meetings of the Authorized Entity Group, that meeting agendas are posted prior to such meetings, and that any decisions of the Authorized Entity Group are made available through the BDCP web site. *On a periodic basis, the Authorized Entity Group will hold meetings that are open to the public.* The Authorized Entity Group will institute procedures with respect to public notice of and access to these meetings and to any public meetings it holds with the Permit Oversight Group. The date, time, and location of the meetings will be posted on the BDCP website at least ten (10) days prior to such meetings. The meetings will be held at locations within the City of Sacramento or the legal Delta.[247]

This is woefully insufficient for promoting meaningful informed public participation about Delta and BDCP affairs. ***All AEG should be publicly accessible and subject to California's Brown Act, which establishes standards for open meeting practices by all public agencies in California.*** After all, BDCP and its Applicants hope to receive and/or coordinate habitat restoration and other conservation measures with billions of dollars of taxpayer funds that will directly affect the management of water exports from the Delta, a matter affecting nearly every part of California. ***At a minimum, the Implementing Agreement and the BDCP must commit to rigorous compliance with the provisions and practices of open government called for in the Brown Act.***[248]

The Applicants should also commit to having the Implementing Office create and maintain a state-of-the-art web site that facilitates the public's access to information, including real-time data, reports, etc., unlike tight-lipped web sites run by several prospective BDCP applicants. ***Expanding the State Water Project's already domineering and paternalistic presence in the Delta means the Applicants wanting to do so must undertake greater responsibility and responsiveness to the public for its management and accountability, not less.***

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[247] Draft Implementing Agreement, released May 30, 2014, Section 15.3.3, *Meetings of the Authorized Entity Group*, p. 60.

[248] The Brown Act is contained in section 54950 *et seq.* of the Government Code.

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VI. BDCP is contrary to law

BDCP's draft July 2013 Implementing Agreement says (twice) that "all activities undertaken pursuant to this Agreement, the BDCP, or the Permits must be in compliance with all applicable local, state and federal laws and regulations."[249] The May 2014 Implementing Agreement contains this identical provision.[250] This section of EWC's comments describes the many ways that BDCP fails to comply with many other applicable laws and regulations.

The Bay Delta Conservation Plan and its Project Objectives and Purpose and Need for BDCP do not comply with existing state or federal law. The EWC documents these failures to comply with established law in this section and the following section where compliance deficiencies are itemized with respect to the National Environmental Policy Act and the California Environmental Quality Act.

The purposes of the proposed actions are to achieve the following.

1. Consider the applications for incidental take permits[6] for the covered species that authorize take related to the actions listed below.
   a. The operation of existing SWP Delta facilities.
   b. The construction and operation of facilities and/or improvements for the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the southern Delta.
   c. The implementation of any conservation actions that have the potential to result in take of species that are or may become listed under the ESA, pursuant to the ESA at section 10(a)(1)(B) and its implementing regulations and policies.
2. Improve the ecosystem of the Delta by implementing the actions listed below.
   a. Providing for the conservation and management of covered species through actions within the BDCP Planning Area that will contribute to the recovery of the species.
   b. Protecting, restoring, and enhancing certain aquatic, riparian, and associated terrestrial natural communities and ecosystems.
   c. Reducing the adverse effects on certain listed species due to diverting water.
3. Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts held by SWP contractors and certain members of San Luis Delta Mendota Water Authority, and other existing applicable agreements.

The above Purpose Statement reflects the intent to advance the coequal goals set forth in the Sacramento–San Joaquin Delta Reform Act of 2009 of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The above phrase—*restore and protect the ability of the SWP and CVP to deliver up to full contract amounts*—is related to the upper limit of legal CVP and SWP contractual water amounts and delineates an upper bound for development of EIR/EIS alternatives, not a target. It is not intended to imply that increased quantities of water will be delivered under the BDCP. As indicated by the "up to full contract amounts" phrase, alternatives need not be capable of delivering full contract amounts on average in order to meet the project purposes. Alternatives that depict design capacities or operational parameters that would result in deliveries of less than full contract amounts are consistent with this purpose.

[249] *Draft 2013 Implementing Agreement*, Sections 23.6 and 23.22. It will be essential to retain one or both of these clauses in the final version.

[250] *Draft 2014 Implementing Agreement*, Section 24.5, p. 89. Section 24.20, p. 92, also states "This Agreement will be governed by and construed in accordance with the laws of the United States and the State of California."

Source: BDCP Draft Environmental Impact Statement/Report, Chapter 2, *Project Objectives and Purpose and Need,* pp. 2-4 to 2.5.

The CEQA-oriented Purpose Statement is similar.[251]

Our comments in this section focus on many ways in which BDCP violates the Delta Reform Act of 2009, the California Water Code, the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the federal Endangered Species Act, the California Constitution's ban on waste and unreasonable use and unreasonable method of diversion of water, and the Public Trust Doctrine. We make a case for excluding the Bay Delta Conservation Plan from the Delta Plan. The Purpose and Need statement, intended to comply with National Environmental Policy Act requirements, is excerpted here; in Section VII we describe how the omission of the Twin Tunnels' role in expanding California's cross-Delta water transfer market from the EIR/EIS's purpose and need violates both CEQA and NEPA. And we recommend BDCP's Implementation Office come under the Brown Act to ensure public access and well-noticed open meetings, in Section VI.

A. BDCP is contrary to the Delta Reform Act.

BDCP Applicants construe their responsibilities under the Delta Reform Act of 2009 far too narrowly. That analysis focuses almost entirely on Water Code Section 85320, which sets out special findings the California Department of Fish and Wildlife must make, and briefly describes an appeal process to the Delta Stewardship Council.[252] There are numerous other sections with which BDCP must also comply, and which are ignored in the limited policy analysis provided by BDCP in the EIR/EIS and its appendices.

1. BDCP and its environmental impact report and statement fail to properly consider what it will take to recover Delta ecosystems and restore fisheries.

California Water Code Section 85320 lays out a process through which BDCP must go before the California Department of Fish and Wildlife prior to receiving approval of its natural communities conservation plan and incidental take permit application package and issuance of incidental take permits. Section 85320(b)(2) lists among the special findings CDFW must make:

> (A) *A reasonable range of flow criteria, rates of diversion, and other operational criteria* required to satisfy the criteria for approval of a natural community conservation plan as provided in subdivision (a) of Section 2820 of the Fish and Game Code, *and other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions, which will identify the remaining water available for export and other beneficial uses.*[253]

BDCP cannot demonstrate compliance with, and the Department of Fish and Wildlife will be unable to sustain, this required finding without abusing its discretion to interpret this law.

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[251] BDCP Draft Environmental Impact Statement/Report, Chapter 2, *Project Objectives and Purpose and Need,* pp. 2-2, lines 21-35; 2-3, lines 1-38; and 2-4, lines 1-6. Hereafter cited as "EIR/EIS."

[252] This narrow treatment is exemplified in EIR/EIS, Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1,* Table 3A-15, p. 3A-149. It erroneously assumes that hydrologic conditions, flow criteria, diversion rates, and conveyance designs are the universe of appropriate selection criteria for "a reasonable range of alternatives" for BDCP.

[253] Emphasis added.

BDCP modeling results show decreased salmonid survival rates, increased Delta smelt entrainment risk (including at the North Delta intakes), eastward migration of X2, reduced Delta outflow, and longer residence times of water passing through the Delta. The trend of each of these indicators is away from the criterion in Water Code Section 85320(b)(2)(A), which calls for flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions.

The BDCP fails to identify the amount of flow necessary for recovering the Delta ecosystem and restoring fish populations, and *only then* identify the *remaining* amount of water for export and other beneficial uses. For example, if the amount of flow required to recover the Delta ecosystem and restore fisheries corresponds to at least the amount identified in the SWRCB's August 2010 flow criteria report, along with corresponding levels for other areas of the system, then the EIR/EIS must include an alternative that reserves such flows for instream purposes and *then* identifies remaining water for exports and other beneficial uses. (Alternatively, the EIR/EIS could itself analyze the amount of flow that would recover the Delta and restore fish populations through new alternatives that provide additional in-Delta flows over and above what the SWRCB recommended.) Without a single alternative assessing the flows needed to "[recover] the Delta ecosystem and [restore] fisheries" first and foremost, the BDCP fails to meet the requirements of the Delta Reform Act.

Moreover, only *one* alternative, Alternative 8, approximates "other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries." This is the only alternative that gestures toward complying with the additional provision of this section that after "identifying the flows necessary for recovering the Delta ecosystem and restoring fisheries..." then identifies "the remaining water available for export and other beneficial uses." Alternative 8 indicates that once public trust flows needed to recover the Delta and restore fisheries are supplied, there will only be on average about 3.1 million acre-feet of exports available for "export and other beneficial uses." Even so, the EIR/EIS evaluation of Alternative 8 analyzes neither quantitatively nor qualitatively whether the Delta ecosystem will recover and fisheries will be restored to the point of meeting the goal of ecosystem recovery in the Delta. Moreover, it will also construct a Twin Tunnels Project on the scale of Alternative 4 with all the attendant hydrodynamic problems associated with that alternative. In salmonids' case, federal and state statutory abundance doubling goals should be the standard against which Water Code Section 35820(b)(2)(A) should be evaluated, but the EIR/EIS fails to provide that evaluation.[254]

2. BDCP and its environmental impact report and statement fail to properly comply with the Delta Reform Act's co-equal goals.

The Delta Reform Act's "co-equal goals" are defined as:

> the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.[255]

The Bay Delta Conservation Plan fails to protect, restore, and enhance Delta ecosystems through recovery and survival of listed species, as we have described above in our comments in Section III above.

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[254] We refer here to the Central Valley Project Improvement Act of 1992, Section 3406(b)(1), and California Fish and Game Code Section 6902(a).

[255] California Water Code Section 85054.

Thus, the Bay Delta Conservation Plan also fails to "improve the water conveyance system," as required by Water Code Sections 85020(f). This section does not set forth criteria or standards by which improvements to the conveyance system of the Delta are to be judged. But when viewed from the standpoint of the supposedly co-equal goals of the Delta Reform Act, the Twin Tunnels project unbalances the coequal goals. It fails (as do most of CMs 2 through 22) to protect, restore and enhance the Delta ecosystem. Thus, its proposed conveyance system, the Twin Tunnels project, cannot be found to "improve the water conveyance system" over what exists in the Delta now. And its hoped-for water supply reliability may fall short because California's climate is likely to yield fewer wet and above normal years on which Twin Tunnels water supply reliability claims depend.

The BDCP also fails to comply with California Water Code Section 85020(g) which states:

> "The policy of the State of California is to achieve the following objectives that the Legislature declares are inherent in the coequal goals for management of the Delta:
> ...(g) Reduce risks to people, property, and state interests in the Delta by effective emergency preparedness, appropriate land uses, and investments in flood protection."

The BDCP does not comply with WC Section 85020(g) because it does not consider any Delta levee improvements in its project purpose/objectives, nor among the other measures of its conservation strategy. In fact, BDCP's EIR/EIS affirmatively excludes Delta levee improvements in its analysis of cumulative impacts (see Section VII below). It only considers new Delta conveyance as a means of reducing future impacts to water deliveries from sea level rise and seismic or other levee failure. It does not consider Delta levee improvements as a means of reducing flood risk not only to water conveyance , but also to the people, places and infrastructure of the Delta.

The omission of Delta levee improvements flies in the face of the Delta Protection Commission's Economic Sustainability Plan that states that levees can be brought up to the PL 84-99 standard to reduce the probability of catastrophic levee failure for $2 to $4 billion. To be consistent with Water Code Section 85020(g), BDCP would have to include a goal (and implementing conservation measures and funding assurances) to improve critical Delta levees for both ecosystem restoration and water supply reliability.

3. BDCP and its environmental impact report and statement fail to comply with Water Code Section 85021

It is state policy to reduce reliance on diversions from the Delta (Water Code Section 85021[256]). However, the project objectives and purpose call for "full contract deliveries" to CVP and SWP contractors. According to USEPA[257], that volume of water is 7.43 million acre-feet, nearly a million acre-feet more than the maximum amount of water ever diverted from the Delta in a single year. This BDCP outcome would increase, not reduce, reliance on the Delta for imported water. While the federal purpose clarifies that alternatives providing less than full contract deliveries is acceptable, the objective/purpose to work toward meeting full CVP and SWP contract deliveries is clearly an attempt to increase Delta diversions, not reduce them. This is a fundamental flaw in the BDCP EIR/EIS.

Figure 5.B.4-4, cited above, Section III, shows BDCP modeling results that show the state and federal export pumps will increase reliance on the Delta in wet and above normal years. It should also be

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[256] See footnote 217, above.

[257] See June 2010 letter from USEPA to USBR, NMFS and USFWS. Accessed at http://www.c-win.org/webfm_send/150

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noted that in drought years, the Bureau and DWR habitually petition the State Water Resources Control Board to have Delta water quality standards waived on vague grounds of protecting "health and safety" for their contractors. The Board has yet to refuse these requests, in defiance of legal due process, and there is no reason to think that they would if a Twin Tunnels system is constructed and operated in a manner vastly different that what is modeled in BDCP and the EIR/EIS. In any event, BDCP modeling and expected reliance on "real-time operations" will continue and expand reliance on the Delta for exports.

By definition of the project's purpose, need, and design of each of the alternatives, BDCP violates California Water Code Section 85021, which requires reduced reliance on the Delta for future water supplies among those already depending on the Delta. The project's operational goals focus on increasing reliance on the Delta for North Delta Intake diversions during wet and above normal years, while continuing emphasis on South Delta diversions for export in all other water years.[258]

BDCP Applicants fail to demonstrate in BDCP documents what they have done locally and regionally to decrease their reliance on Delta imports/exports and yet still justify each of their needs for the Twin Tunnels project, so there is no analysis provided in the EIR/EIS or in the Bay Delta Conservation Plan that shows actions by the Applicants that would counteract this apparent increase in reliance on Delta exports by BDCP.

BDCP's obsessive focus on full contract deliveries, north Delta diversions to the Twin Tunnels, and extensive habitat restoration come at exclusion of other potential actions. The coequal goals of the 2009 Delta Reform Act can be met by other activities less disruptive to the Delta such as levee improvements, increased Delta outflows and regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts. But no such actions are analyzed in the EIR/EIS by the Applicants.

Finally, as we describe more fully in Section VII, an undisclosed purpose and need for the Twin Tunnels is to expand California's cross-Delta water transfer market. This transfer activity will occur typically in years when State Water Project contractual allocations are 50 percent or lower, and Central Valley Project contractual allocations are 40 percent or lower. As climate change in California unfolds, these transfer market triggers are likely to increase, solidifying increased, not decreased reliance on the Delta. This is contrary to Water Code Section 85021.

4. BDCP and its environmental impact report and statement fail to demonstrate compliance with 85086(c)(1) by eliminating consideration of the Delta flow criteria adopted by the State Water Board in August 2010.

Water Code Section 85086(c)(1) states that *"For the purpose of informing planning decisions for the Delta Plan and the Bay Delta Conservation Plan, the board shall, pursuant to its public trust obligations, develop new flow criteria for the Delta ecosystem necessary to protect public trust resources."* However, the BDCP project objectives/purpose statements do not even mention the SWRCB's 2010 "Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem." While strict compliance with the SWRCB's flow criteria is not required, it is required by the Delta Reform Act that they be used for planning purposes for BDCP, yet it is not analyzed in the EIR/EIS. BDCP only puts forward alternatives that construct habitat and generally decrease Delta outflow. But it does not consider that aquatic ecosystem restoration could be achieved by increased Delta

[258] Bay Delta Conservation Plan EIR/EIS, Chapter 5, Water Supply, Figures 5-22 (wet years) and 5-23 (dry years).

outflows. The Delta Flow Criteria report in fact pointedly states that flow and habitat are both needed to recover the Delta. ***Therefore, the BDCP project objectives and purpose are inconsistent with yet another section of the Delta Reform Act.***

The 2010 Delta Flow Criteria Report[259] was rejected as an alternative by BDCP Applicants on grounds that modeling showed that the State Water Board's flow criteria would allegedly result in widespread dead pools in and depleted deliveries from upstream reservoirs, which would violate BDCP EIR/EIS alternative screening criteria. The Board included DWR's analysis as an appendix to the Draft Delta Flow Criteria report in July 2010. Once out for public review, the modeling results (Appendix B "Water Supply Modeling" of the draft report) were roundly criticized from many quarters, because it exceeded the charge of Water Code Section 85086, had not been included for expert and public review in the informational proceedings, and had not been peer-reviewed prior to its release. In putting the water supply impact appendix forward, DWR tried hard to reframe the agenda of the Delta Flow Criteria process after the proceeding yielded results they did not like. The primary reason reservoirs would go to dead pool in their analysis was that the modeling criteria simultaneously maximized Delta inflows, outflows, and south of Delta deliveries at the expense of prudent carry-over for dry year or drought conditions. CVP and SWP operators made a related point to consulting engineer and modeler Walter Bourez when interviewed about BDCP modeling in 2013 that they would not operate the reservoirs that way; they would definitely try to optimize reservoir releases for meeting Delta water quality objectives, manage cold-water pools, while meeting senior water rights and making releases available for deliveries as best they could.[260] The approved report in August 2010 does not include DWR's suspect modeling appendix.

The point of the Delta flow criteria proceeding was to answer the question of "what flows do fish need?" ***This is needed to determine the public trust instream flow needs for the Delta. Under the public trust doctrine and Water Code Section 85320, only what flows remain after such analysis should be allocated to SWP and CVP contractors. Deletion of the DFC report as a BDCP alternative removed a scientifically informed and reasonable option from consideration, yet another disservice of this EIR/EIS.***[261]

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[259] See footnote 59 above.

[260] Of the assumptions disclosed for the impact analysis in the 2010 modeling effort by DWR, the analysis assumes "full entitlements for CVP and SWP contractors." This was and is still not a reasonable assumption, given the constraints placed on CVP and SWP Delta operations to keep their uses and diversions reasonable under the law. "Full entitlements" is also an ambiguous term; it could be interpreted as full contractual entitlements regardless of water year type, or according to water year type. It could also mean "no net loss to exports," as well. This ambiguity is neither identified nor clarified in DWR's 2010 modeling of impacts in 2010. The California Water Impact Network and the California Sportfishing Protection Alliance pointed out to the State Water Board that it was application of "full entitlements" to Delta exports and water project operations in the Delta that led to the Legislature's passage of Water Code Section 85086 and to preparation of the Delta Flow Criteria Report in the first place. Letter of Carolee Krieger and Bill Jennings to Charles Hoppin, Chair, State Water Resources Control Board, "Comment Letter - Draft Delta Flow Criteria Report," July 28, 2010, 2 pages. Accessible online 12 May 2014 at http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/comments072910/carolee_krieger.pdf.

[261] Appendix 3A, p. 3A-67, lines 40-48 to p. 3A-68, lines 1-14; and Draft Delta Flow Criteria report accessible online 4 May 2014 at http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/.

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5. BDCP and its environmental impact report and statement fail to demonstrate how its Twin Tunnels complies with the Reasonable Use and Public Trust Doctrines, mentioned in Water Code Section 85023, which states that these doctrines are "particularly important and applicable in the Delta."

The EWC has located no analysis in the BDCP documents that evaluate the proposed/preferred alternative from the standpoint of its compliance with Article X, Section 2 of the California Constitution, or of its compliance with the Public Trust doctrine. Evaluation of this action is required by Water Code Section 85023 to demonstrate this compliance.

6. BDCP and its environmental impact report and statement fail to demonstrate compliance with Water Code Section 85031(a), specifically area of origin laws and doctrines that apply to the Delta.

This section of the California Water Code requires that actions contemplated under the Delta Reform Act comply with area of origins water rights statutes. BDCP fails to demonstrate through its modeling results that it complies with Water Code Sections 12200-12205 (the Delta Protection Act of 1959). Delta outflow is reported by BDCP to decrease while residence times of water in the Delta increase. In-Delta salinity levels are projected by BDCP to increase which will reduce the quality of water for in-Delta agricultural uses for irrigation and the beneficial uses enjoyed by environmental justice communities whose members rely on subsistence fishing in the Delta for a significant portion of their diet and nutrition. Reverse flows on the lower Sacramento River will increase, which may injure neighboring water right holders. And subsistence fishers may be harmed by worsening mercury and selenium concentrations contaminating fish tissues in the long term, resulting from BDCP water operations and habitat restoration activity. ***BDCP has conducted no analysis of in-Delta water demand and subsistence fishing patterns represented by these beneficial uses when it conducts its operational studies of the BDCP and the Twin Tunnels project. These uses are protected by the Delta Protection Act of 1959.***

BDCP also fails to demonstrate how the proposed Twin Tunnels project complies with county and area of origin laws.

In addition, BDCP fails to identify the role of the ***Delta common pool*** in shaping the experiences of environmental justice communities and the informal ways in which they make use of Delta habitat, fish, and other resources for their subsistence and recreation. They are beneficial users of water via the common pool and its public trust resources. The California Department of Water Resources recognizes the Delta common pool for purposes of analyzing and regulating water transfers.[262] BDCP must recognize the common pool as it contemplates its development schemes.

The Delta Protection Act of 1959 affirms area of origin water rights in the Delta. It declared that "a general law cannot be made applicable to [the] Delta and that the enactment of this law is necessary for the protection, conservation, development, control and use of the waters in the Delta for the public good."[263]

The Delta Protection Act of 1959 further states that maintenance of an adequate water supply in the Delta and provision of Delta exports to areas of water deficiency "is necessary to the peace, health, safety and welfare of the people of the State" consistent with area of origin rights of all other areas

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[262] California Department of Water Resources, *op. cit.*, footnote 27, above, p. 3.

[263] California Water Code Section 12200.

recognized in the Water Code.[264] This law requires the State Water Project and the Central Valley Project to provide salinity control and "an adequate water supply for the users of water in the Sacramento-San Joaquin Delta."[265] It further prohibits any "person, corporation, or public or private agency or the State or the United States" from diverting water from the Delta "***to which the users within said Delta are entitled.***" Moreover, "in determining the availability of water for export from the Sacramento-San Joaquin Delta ***no water shall be exported which is necessary***" to meet the Delta Protection Act's requirements.

In determining the water available for export from the Delta, the law requires that "no water shall be exported which is necessary to meet" the requirements of the Delta Protection Act.[266] Passage of the Delta Protection Act predates the water rights of the State Water Project in the Delta.

Unfortunately, this law has never been adequately enforced in the Delta because the availability of water has never been determined by the State Water Resources Control Board or its precedent agencies. Moreover, in-Delta demand for various beneficial uses of water has also never been studied, though Appellate Justice John Racanelli directed the State Water Board to do so in 1986 as part of its water quality planning role. The State Water Board has never conducted water availability analysis for its water quality control plans or its implementing water rights decisions, even though required to in the Racanelli Decision.[267]

But the State's persistent inattention to court direction does not mean the common pool protections called for in the Delta Protection Act of 1959 lack authority. The water rights and beneficial uses protected by this law protect the rights of environmental justice community subsistence anglers and community members at play on the shores and in the waters of the Delta. Appellate Justice John Racanelli long ago required the State Water Board that its public trust and Clean Water Act obligations were to protect water rights and all other beneficial uses of water whether they were the subject of water rights claims or not. This means that the beneficial uses of environmental justice communities must also be protected. ***The State has failed to fulfill its obligation to follow water quality and water rights law and now the BDCP Applicants fail to conceive of the regulatory setting and affected environment of the proposed action broadly enough to account for the importance of the Delta common pool for environmental justice communities in the Plan Area.***

7. BDCP and its environmental impact report and statement fail to demonstrate how its proposed new points of diversion for the State Water Project will comply with Water Code Section 1700, *et seq.*

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[264] California Water Code Section 12201.

[265] California Water Code Section 12202.

[266] California Water Code Section 12205.

[267] *United States v. State Water Resources Control Board* (1986) 182 Cal.App.3d 82. Justice Racanelli wrote, "In performing its dual role [of regulating water quality and water rights]...the Board is directed to consider not only the availability of unappropriated water but also *all* competing demands for water in determining what is a reasonable level of water quality protection [citation]. In addition, the Board must consider 'past, present, and probable future beneficial uses of water [citation] as well as '[water] quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area." Water quality protection is achieved in part by the Board's regulation of water rights as an implementation tool.

This section of the California Water Code addresses State Water Board regulation of changes in the point of diversion, place of use, or purpose of use. The BDCP is required by the Delta Reform Act to comply with the California Water Code.[268] The BDCP Applicants provide no analysis in either the BDCP or its EIR/EIS as to whether the proposed Twin Tunnels project and its habitat conservation plan comply with the California Water Code.

The North Delta Intakes for each of the alternatives will represent changes in the point of diversion of the State Water Project. No analysis of whether these proposed changes would potentially injure neighboring water rights holders is provided in either the water supply section or the surface water treatments of the EIS/EIR.

In addition, Conservation Measure 21, *Nonproject Diversions* contemplates actions to minimize entrainment of covered fish in smaller agricultural diversions that are unrelated to the mega-diversions of the state and federal Delta export pumps. These actions include

> consolidating relocating, screening, removing, or otherwise remediating the harmful diversions. Remediation would be achieved via the methods described below, and also through the removal of some diversions in areas where cultivated lands or managed wetlands are converted into natural community types that do not require consumptive use of surface waters....The number and size of the diversions that will be eliminated as a result of restoration of natural community types are not precisely known, because the affected parcels have not yet been identified, and, moreover, some existing diversions may be remediated before restoration actions occur.[269]

The EWC believes this "conservation measure" directly threatens in-Delta water users with loss of their diversions by harassment. "Remedial actions" contemplated by BDCP's Implementation Office would identify landowners who operate diversions identified by the technical team for CM 21 as "a high priority for remediation" who will be "invited to participate in CM21 "subject to funding availability." Such landowners, it appears, would sign "a certificate of compliance committing them to the process and terms of this conservation measure."[270]

The EWC finds this to be the height of hypocrisy for the lead BDCP Applicant, the California Department of Water Resources, to be planning to remediate nonproject diversions when DWR includes in BDCP no plans whatsoever to install fish screens at the Banks Pumping Plant—screens which were planned as part of the CalFED Record of Decision in 2000, but which were scrapped when state and federal water contractors refused to pay for them. The "nonproject diversions" targeted by BDCP are small indeed compared to the horrific salvage operations carried out at the state and federal pumping plants on a daily basis.

Conservation Measure 21 appears to be a thinly veiled program to eliminate water diversions that might otherwise assert water rights in the north Delta that could otherwise be injured by the North Delta Intakes of the Twin Tunnels project. Eliminating these nonproject diversions through a "conservation measure" in advance of obtaining the water rights permits will

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[268] California Water Code § 85031(c), which states, "Nothing in this diversion [meaning Division 35, the Delta Reform Act of 2009] supersedes, limits, or otherwise modifies the applicability of" the provisions of the California Water Code that address changing a point of diversion, a use, place or purpose of use of water, "including petitions related to any new conveyance constructed or operated" as may be approved by the California Department of Fish and Wildlife under Water Code Section 85320.

[269] Bay Delta Conservation Plan, Chapter 3, Section 3.4.21, *Conservation Measure 21 Nonproject Diversions*, p. 3.4-339, lines 20-27.

[270] BDCP, Chapter 3, *Conservation Strategy*, p. 3.4-341, lines 201-23.

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facilitate the State Water Board's ability to make a finding of "no injury" to other water rights holders in the north Delta.

Similarly, conversion of privately-owned agricultural land to restored habitat under the BDCP's other restoration-focused conservation measures would also reduce or eliminate water diversions that might otherwise assert water rights in the north Delta that could otherwise be injured by BDCP's new points of diversion.

B. The Bay Delta Conservation Plan will injure other water right holders in the Delta in violation of California water law.

BDCP fails to identify other water right holders in the Plan Area, and those that would be directly and indirectly affected by North Delta diversions, installation of new flow and fish control structures. Most are right holders senior to SWP and CVP water rights in the Delta. New diversions and facilities do not improve the priority of SWP and CVP water rights.

While in recent years many Delta water rights were challenged, the vast majority were found after extensive investigation by the Delta Water Master to be robust and supported by substantial evidence.[271]

It appears to us that the only consideration of water rights injury that BDCP has undertaken is from Appendix 3A of the EIR/EIS, shown below, in relation to screening of alternatives.

BDCP asks whether alternatives would "result in impairment" (the legal term here ought to be "injury") of existing senior water rights in the Delta's watershed "who are not applicants for incidental take authorization" under BDCP. The first sentence of "results" states that BDCP alternatives "that have been consistent with the three levels of screening criteria" would not "require changes in legal rights". In the event that senior water right holders were injured, it is DWR's rights, and perhaps those of the Bureau's in the Delta, that would "require changes" to their water rights permits. This must be the case because it would have to follow California's law of water rights priorities. Moreover, the last clause of the first sentence adds, "although legal ownership may change due to sale of property."

In Figure 13, we interpret the first sentence to mean "none of the BDCP alternatives would injure legal water right holders because we would compensate them for their property as required by the 5th amendment of the US Constitution," requiring just compensation from the government when taking private property for some public use or benefit.

However, the second part of this answer, relating to why two other alternatives (including the State Water Board's 2010 Delta Flow Criteria alternative) incorrectly states that "these alternatives would result in reductions in water deliveries to Sacramento River water rights holders in order to achieve the flow and water quality objectives in these operations alternatives." ***This explanation is a distortion. It fails to acknowledge that the vast majority of Sacramento River water rights holders are senior to the rights of the Bureau on the Sacramento River. It ignores the State Water Project's even more junior priority on the Feather River and in the Delta. This explanation is only possible when reasonable alternatives are interpreted to reflect the narrow objectives and purposes BDCP (especially the California Department of Water Resources) has improperly construed from the Delta Reform Act of 2009.***

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[271] Craig M. Wilson Delta Watermaster, *Water Right Compliance and Enforcement in the Delta*, A Report to the State Water Resources Control Board and the Delta Stewardship Council, presented February 7, 2012, 9 pages. Accessible online April 28, 2014, at http://www.swrcb.ca.gov/board_info/agendas/2012/feb/020712_9_with%20report.pdf.

Figure 13

Table 3A-17. Determination of Consistency of with Legal Rights of Entities that are Not BDCP Participants

If the answer to this question is "Not Likely" or "Unknown," the alternative would be considered in the EIR/EIS. If the answers to this question are "LIKELY" or "YES," the alternative would not be considered in the EIR/EIS.	
Measures of Consistency	**Results**
Would the potential alternative result in the impairment of existing senior water rights in the Sacramento-San Joaquin Rivers watershed who are not applicants for incidental take authorization through the proposed Bay Delta Conservation Plan?	No for the range of conveyance alternatives that have been consistent with the three levels of screening criteria would not require changes in legal rights although legal ownership may change due to sale of property. However, the answer would be Likely for Second Screening Dual Conveyance Alternative 8A, which includes operations alternatives based on Scenario 7a, and Second Screening Dual Conveyance Alternative 9A, which includes operations alternatives based on the State Water Resources Control Board 2010 Flow Recommendations for Delta Ecosystem. Based upon preliminary model analyses, both of these alternatives would result in reductions in water deliveries to Sacramento River water rights holders in order to achieve the flow and water quality objectives in these operations alternatives.

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In both "results" in Table 3A-17, DWR and BDCP Applicants reveal themselves as the predators —preying on smaller water right holders as part of a conniving water grab—for new water supply that our member groups have long suspected them of being.

C. The Bay Delta Conservation Plan will degrade water quality and harm beneficial uses in the Delta in violation of the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act.

The BDCP and its EIR/EIS acknowledges (even factoring in climate change effects) that residence time of water in the Delta will increase, Delta outflow will decrease, mercury and selenium in fish tissues will increase, raising public health concerns. And salinity levels will increase throughout the Delta, creating water quality havoc for boaters, agricultural irrigators, and sport- and subsistence fishing. We document these findings and concerns in Sections III and VII of this comment letter.

BDCP's stated objectives and purpose for water quality are only in relation to physical and operational improvements to the state and federal water projects in the Delta. In BDCP's view, environmental water quality and human public health are secondary to the quality of water exported by the state and federal water projects. No mention is made of improving water quality for communities whose water supplies are adversely affected.

These impacts would be adverse under NEPA.[272] They would be part and parcel of approving BDCP; to approve BDCP entails acceptance by the fishery agencies that these other significant and unavoidable, adverse effects will occur. In making such approvals, the EWC contends that making such a decision would be arbitrary and capricious of the agencies, and therefore be contrary to law under the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act (see our analysis below Section VII).

D. The Bay Delta Conservation Plan will continue and promote further wasteful and unreasonable uses of water and methods of diversion of water, contrary to Article X, Section 2 of the California Constitution and California Water Code Section 100.

BDCP would be contrary to Article X, Section 2 of the California Constitution and California Water Code Section 100 because it violates:

- Various sections of the Delta Reform Act of 2009 identified here in Section VI.
- State and federal clean water legislation and regulation.
- California Water Code's no injury rule.
- Ecological and funding assurance requirements of the state and federal ESAs and state NCCPA.
- The Delta Protection Act of 1959 - the Delta's area of origin water rights.

E. ESA and NEPA violations are precluding meaningful public review.

The Twin Tunnels would divert enormous quantities of water from the Sacramento River near Clarksburg, California.[273] As a result of this massive diversion, enormous quantities of water that presently flow through the Sacramento River and sloughs to and through the Sacramento-San Joaquin Delta would not reach the Delta, and flows would be reduced in the Sacramento River and sloughs. Also, there would be adverse cumulative effects ranging from rising sea levels and reduced snowpack and runoff due to climate change to changes in upstream reservoir operations and current preservation of flows for fishery purposes all the way upstream to the Shasta, Trinity, Oroville, and Folsom reservoirs. The Twin Tunnels are identified as Alternative 4, the California Department of Water Resources (DWR)' Preferred Alternative.[274]

The Sacramento River Winter Run Chinook Salmon is listed as an endangered species under the ESA. The Central Valley Spring Run Chinook Salmon, Central Valley Steelhead, Southern Distinct Population Segment of North American Green Sturgeon, and Delta Smelt, are listed as threatened species under the ESA. The reaches of the Sacramento River, sloughs, and the Delta that would lose significant quantities of freshwater and freshwater flows through operation of the proposed Twin Tunnels are designated critical habitats for each of these five listed endangered and threatened fish species. Yet in complete disregard of these undisputed facts, no Biological Assessment has been prepared and issued by the federal Bureau of Reclamation with respect to the Twin Tunnels project. Also, no final or even draft Biological Opinion has been prepared by the National Marine Fisheries

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[272] BDCP EIR/EIS, *Executive Summary*, Table ES-9 reports several adverse water quality effects of the proposed action: WQ 11, 13, 14, and 25 We argue that they fail to find adverse effects where they should in WQ-12, and 26..

[273] Comments in this section are drawn from Letter of E. Robert Wright, Senior Counsel, Friends of the River, "Preliminary comments on fundamental BDCP Violations of the ESA," March 6, 2014. Accessible online June 4, 2014, at http://www.friendsoftheriver.org/site/DocServer/Atc_12.pdf?docID=8312.

[274] BDCP Draft EIR/EIS, page 3-3.

Service (NMFS) or U.S. Fish and Wildlife Service (USFWS) with respect to the impacts of the operation of the Twin Tunnels on the five listed species of fish or their critical habitats.

The failure to prepare Biological Assessments and Biological opinions prior to issuing the BDCP draft Plan and EIR/EIS for what in the absence of those documents deliberately causes uninformed public review is astonishing. The Ninth Circuit Court of Appeals has repeatedly held that: "Any possible effect, whether beneficial, benign, adverse or of an undetermined character, triggers the formal consultation requirement."[275] We doubt that even the ardent advocates for the Twin Tunnels who prepared the 40,000 pages of BDCP advocacy documents would contend that taking large quantities of water away from the River, sloughs, and Delta does not have "any possible effect, whether beneficial, benign, adverse or of an undetermined character."

The ESA Regulations (50 C.F.R. § 402.14(a)) require that "Each Federal agency shall review its actions *at the earliest possible time* to determine whether any action may affect listed species or critical habitat. If such a determination is made, formal consultation is required. . . ."[276] The Biological Assessments and Biological Opinions are the written documents that federal agencies must prepare during the ESA consultation process. The NEPA Regulations require that "To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by the. . . Endangered Species Act. . . ."[277]

The Biological Opinion is to determine "whether the action, taken together with cumulative effects, is 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).

Consequently, against this threat of extinction, conducting the draft EIR/EIS public review and comment stage without Biological Opinions or even Biological Assessments and draft Biological Opinions, leaves the public in the dark and violates both the ESA and NEPA. Conducting the NEPA environmental draft process prior to and in a vacuum from the ESA consultation process violates the ESA command to carry out the ESA process "at the earliest possible time" and violates the NEPA command to conduct the NEPA and ESA processes "concurrently" and in an "integrated" manner.

In the absence of answers to basic questions including ESA questions about jeopardy of listed fish species and adverse modifications of designated critical habitats, the draft BDCP EIR/EIS is not sufficient for informed review by the public and the decision-makers. It will be necessary at minimum under the ESA, NEPA and CEQA for the federal and state agencies to prepare, issue, and circulate for public review a ***new draft*** EIR/EIS concurrently with and integrated with Biological Assessments and Biological Opinions.[278] Then, and only then, would the public and the decision-makers have the opportunity to engage in meaningful analysis of a preferred project alternative and informed comparison with other alternatives.

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[275] *Western Watersheds Project v. Kraayenbrink*, 620 F.3d 1187, 1210 (9th Cir. 2010). *Accord, Karuk Tribe of California v. U.S. Forest Service*, 681 F.3d 1006, 1027 (9th Cir. 2012)(en banc), *cert. denied*, 133 S.Ct. 1579 (2013); *Cal. ex rel. Lockyer v. U.S. Dept of Agric.*, 575 F.3d 999, 1018 (9th Cir. 2009).

[276] *Karuk Tribe of California v. U.S. Forest Service*, 681 F.3d 1006, 1020.

[277] 40 C.F.R. § 1502.25(a).

[278] 40 C.F.R. §§ 1502.9(a); 1502.25(a) (NEPA); 14 Code Cal. Regs. §§ 15065(a)(1); 15088.5(a)(CEQA).

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F. The Bay Delta Conservation Plan violates the Public Trust Doctrine.

BDCP would further divert and degrade the Delta common pool thereby violating the rights of environmental justice communities to continue fishing in locations that would be altered and enclosed by BDCP facilities and restoration projects. The presence of this common pool in the Delta makes it subject to regulation under the Public Trust Doctrine. The state of California has a fiduciary responsibility to protect this common pool resource in all its dimensions for the common heritage of the people of California.

The State Water Project and federal Central Valley Project are coordinated water systems. Their operations upstream of the Delta and within the Delta have contributed greatly to the demise of migratory and resident fish, and BDCP documents provide ample evidence of the likelihood that operation of the North Delta Intakes will:

- Degrade water quality by increasing residence time of water and reducing Delta outflow;
- Harm Delta smelt by reducing Delta outflow, pulling X2, the low salinity zone isohaline, further east, placing Delta smelt at greater risk of entrainment and take at the North Delta intakes, in addition to the 60 percent of years (below normal, dry, and critical years) when Delta smelt will still face entrainment risk from the south Delta export pumps.
- Reduce winter-run Chinook and spring-run salmon survival rates through the Delta by introducing the North Delta intakes along the lower Sacramento River, diverting Sacramento River flows upstream into Yolo Bypass for floodplain inundation and seasonal habitat restoration.
- Fail to control biotic and abiotic stressors on listed fish species in the Delta, including invasive nonnative bivalves, submerged aquatic vegetation, methylmercury formation from construction and restoration of habitat, and increased selenium contamination well in excess of recommended toxicity thresholds, despite upstream source control activities.

These and other effects of the Bay Delta Conservation Plan and its proposed Twin Tunnels project (described in Conservation Measure 1) would, if implemented, violate the Public Trust Doctrine.

G. The Bay Delta Conservation Plan must be excluded from the Delta Plan because of these failures.

The Bay Delta Conservation Plan must be excluded from the Delta Plan it fails to comply with:

- Water Code Section 85320 in its entirety.
- Requirements to fulfill numerous ecological and funding assurances as documented above for the Bay Delta Conservation Plan itself.
- The Delta Reform Act of 2009 provisions identified here in Section VI.
- The reasonable use doctrine framed in California's Constitution and Water Code Section 100.
- The Public Trust Doctrine.

The Bay Delta Conservation Plan calls for construction and launch of operation of the Twin Tunnels project prior to the vast majority of habitat restoration activities getting financed and undertaken. This places the cart of water development before the horse of habitat restoration.

When it comes to protecting public trust resources in the Delta, this reversal of priorities (placing water supply reliability development ahead of habitat restoration) places Delta ecosystems at great risk of collapse, not recovery; places Delta listed fish species at great risk of extinction, not restoration to once robust and sustainable populations.