

Central Delta Water Agency and South Delta Water Agency Supplemental Comments on Delta Conveyance Project Alternatives Scoping

Introduction

CDWA and SDWA comments are divided into the following sections which include: the Executive Order N-10-19 (EO), Notice of Preparation (NOP), EIR preparation, and identification of potential project alternative components.

Executive Order N-10-19

The EO defines the requirements and principles for the Water Resiliency Portfolio, which the Delta Conveyance Project is (misrepresented as) part. The comments below on the EO identify mandatory components and principles which must be included in all of the Water Resiliency Portfolio components and provides preliminary comments regarding how the Delta Conveyance Proposed Project fails to comply with or embody. The EO is important to analyze as, 1) it does not authorize the initiation of the Delta Conveyance Project or an EIR, 2) it identifies the objectives for any project under the Water Resiliency Portfolio (most of which the Delta Conveyance Project does not include), and, 3) it provides a set of requirements that must be utilized as screening criteria for the evaluation of any project alternative or alternative component that is part of the EO Water Resiliency Portfolio, i.e. must be applied to the Delta Conveyance Project alternatives screening and development. In this section we provide detailed comments on the failures of the Proposed Project to meet each EO Water Resiliency Portfolio mandate.

Notice of Preparation

The NOP is deficient in its omission of material disclosures and proposes violations of CEQA.

The NOP proposes that Delta Conveyance Project operations would not be defined until after the CEQA process is completed (NOP page 3, paragraph 3). This plan to violate CEQA by not analyzing, disclosing or mitigating operations-related impacts in the EIR fundamentally violates the responsibilities of the CEQA Lead Agency to the point of malfeasance. As a result of this gross abuse of process and privilege by DWR as the Lead Agency, it should be removed as the State lead agency on the Delta Conveyance Project.

The NOP is fundamentally deficient by not disclosing the proposed operations of the project. It is not possible for the public to determine the extent of potential project impact to them without relevant proposed operations information being disclosed. Proposed Project operations description and disclosure must be included in a recirculated NOP and round of public scoping meetings.

EIR Preparation

An EIR is a decision support document for agencies with decision making authority relevant to the project. Many permits required by the project will be evaluated and potentially issued based upon information in the EIR. The EIR impact analyses must include a full evaluation of detailed project operations consistent with those proposed to, and potentially approved by, agencies that may issue permits to the project based on the information in and findings of the EIR. DWR's proposal in the NOP to not analyze final project operations guarantees that not all project impacts would be quantified or mitigated. It also guarantees that the basis upon which other agencies relied upon the EIR would be false and misleading. Given DWR's stated intent to violate CEQA, it is equally likely that DWR would choose to analyze a proposed set of operations in the EIR that resulted in significantly less environmental impacts to reduce mitigation costs and increase water supply yield. In its statement, DWR has declared that the operations it evaluates in the EIR will not be the operations they intend to implement with the project if it is approved. DWR's plan for a deficient EIR from the beginning of the EIR process indicates that DWR should not be allowed to be the Certifying Agency of the EIR.

The Delta Conveyance Project extends the operational lifespan of the SWP Facilities by adapting the project to be viable beyond the date in which the current facilities would become unviable under assumed No Project future sea level rise conditions. The No Project Assumption for the Delta Conveyance includes a 10' increase in sea level. This sea level rise would effectively end the viability of the current (No Project) SWP water supply before or around approximately the year 2050. Therefore, the Delta Conveyance Project EIR impact analysis must include as part of their direct, indirect and cumulative impacts, the on-going impacts of continuing to operate the SWP beyond the time period in which it would have been viable without the project (the No Project). The SWP Water Supply Contract Extension Amendment EIR was legally obligated to disclose, analyze and mitigate this impact, but omitted this impact from its impact scope by incorrectly assuming the contract extension as the No Project condition. Regardless of DWR's incorrect presumption of a water supply contract renewal being a No Project assumption, the sea level rise that is assumed under the No Project condition for the Delta Conveyance Project means the SWP will not be viable at a certain date in the No Project condition. Therefore any on-going and incremental impacts of operations of the project beyond that date of No Project SWP viability are all impacts of the Delta Conveyance Project that must be disclosed, analyzed and mitigated in the EIR. These on-going incremental impacts include, but are not limited to: soil salt accumulation, land use changes, genetic introgression of fisheries biologically distinct units, population growth inducement, etc.

Project Alternatives

Alternative components identified in this submittal are in an effort to identify potentially productive and mutually beneficial project alternatives which accomplish the purpose and objectives of the project and satisfy the mandates of the Executive Order. We believe these alternative components have sufficient merit for further analysis in the project EIR. Although many project alternatives have been evaluated to address other Delta projects that have overlapping and similar project objectives to the Delta Conveyance Project and the Water Resiliency Portfolio in the past, (i.e. CalFed, South Delta Improvement Program, Delta Risk Management Strategy (DRMS), Bay Delta Conservation Plan, California WaterFix, OCAP Biological Opinions, etc.), most of the proposed project alternatives have never been evaluated and certainly never in the synergistic combination proposed in this comment section. Alternative solutions which do not include the very expensive and greatly damaging tunnel or other isolated Delta conveyance facilities should be objectively analyzed.

The project alternatives put forth in these comments do not constitute endorsement of these alternatives as there is the potential for adverse outcomes that are not necessarily foreseeable until a full EIR analyses has been conducted. The alternatives submitted in these comments are intended to be constructive in the search for project alternatives that meet the project objectives, satisfy the mandates of the Water Resiliency Portfolio Executive Order and protect and enhance the Delta. The Delta Reform Act Water Code section 85054 requires protection and enhancement of the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

The analysis provided in these comments on the Executive Order and the NOP Project Objectives provide a series of alternatives development screening criteria. A cumulative scoring assessment of the alternatives and the Proposed Project is set forth in **Table 1. Comparison of Proposed Project Alternative to NOP Objectives and EO N-10-19 Water Resiliency Portfolio Mandates**. The Proposed Project only satisfies 2 of the 21 screening criteria. The identified combined set of project alternatives meets 20 of the 21 screening criteria. The identified set of project alternatives fails to “Support Population Growth” so it does not satisfy one of the screening criteria. All but one of the other screening criteria are satisfied by the identified set of project alternatives multiple times (often in different and synergistic manners).

Executive Order N-10-19 – Analysis and Comments Regarding Mandates for the Delta Conveyance Project

Since this Executive Order (EO) is DWR’s claimed basis of justification for initiating the Delta Conveyance Project, it is important to examine the objectives of the order to ensure the project fulfills those objectives and is compliant with the mandatory criteria defined in it.

Following are selected quotes from the Executive Order which identify mandatory criteria for Water Resiliency Portfolio projects which the Delta Conveyance Project must utilize as project alternatives screening criteria:

- **Page 1, paragraph 2**, *“we face a range of existing water challenges including unsafe drinking water across the state, major flood risks that threaten public safety, severely depleted groundwater aquifers, agricultural communities coping with uncertain water supplies, and native fish populations threatened with extinction.”*
- **Page 1, paragraph 5**, *“future prosperity of our communities and the health of our environment depend on tackling pressing current water challenges while positioning California to meet broad water needs through the 21st century”*
- **Page 1, paragraph 7**, *“...providing clean, dependable water supplies to communities, agriculture, and industry while restoring and maintaining the health of our watersheds is both necessary...”*
- **Page 1, paragraph 8**, *“achieving this goal requires a broad portfolio of collaborative strategies”*

Emphasis added with underlining to identify EO objectives that must be included in the Delta Conveyance Project objectives in order for it to be consistent and compliant with the EO.

The Delta Conveyance Proposed Project Does Not Accomplish the Required Objectives of the EO. Bold text in the following bullet points are objectives and issues to be addressed by projects in the Water Resiliency Portfolio required by the EO.

- **Unsafe Drinking Water:** Millions of Californian’s get drinking water from the Delta, some through the SWP and others directly or from other non-SWP water sources. The WaterFix EIR/S showed that a tunnel project with North Delta intakes, such as the Delta Conveyance Proposed Project, would degrade the water quality for non-SWP sourced Delta drinking

water. Although the Proposed Project when operated could improve drinking water quality for some selected Californian's that happen to live in SWP Water Contractor districts, it comes at the direct expense of the adverse drinking water quality impacts to many other Californian's water supplies that are also sourced from the Delta.

- **Major Flood Risks that Threaten Public Safety:** The Proposed Project's stated purpose is to move SWP intakes to the north Delta so that SWP water quality is protected (this assertion by the project is incorrect as water quality is not protected as discussed in later comments in this document). Moving the intakes to protect only export water supplies is a tacit abandonment of the Delta by the State. This abandonment of the Delta by the State to assumed sea level rise leaves all of the residents, businesses, infrastructure (statewide electrical transmission lines, natural gas pipelines and wells, state highways, railroad lines, fiber optic lines, ports of Stockton and Sacramento, etc.) vulnerable to peak flow events from rain on snow and storm surge events. DWR's SWP abandonment of the Delta to future increased sea level rise created by the Delta Conveyance Project promotes and results in direct violation of the California Department of Water Resources responsibility as a Public Trust Resource management agency. The Proposed Project fails to fulfill the EO objective to protect the public from flood risks. **Depleted Groundwater Aquifers:** Variability in annual SWP contract deliveries is responsible for groundwater depletion within its service areas. The depletion of groundwater resources as a result of variations in water supply quantities delivered in the Central Valley was discussed at length in the Bureau of Reclamation Remand EIS document. SWP Water Contractors and their customers treat average SWP water deliveries as a near certainty in their hardened water supply demand. Any year of less than average SWP water supply contract deliveries is treated by the SWP Water Contractors and their customers as an aberration to be met with a mad scramble for water trades and alternative water supplies. This results in critical groundwater overdrafts occurring within SWP Service Areas at a rate equal to or greater than other similar areas that are not within the SWP service area. The EO defines that hydrologic conditions in the future will make SWP water supply reliability even more variable and lower than today's conditions. The Delta Conveyance project however actually increases SWP Water Contractor reliance upon Delta water supplies which will become even more variable in the future. This increased reliance upon Delta water supplies and increased future water supply variability means the Delta Conveyance Project will predictably result in additional pressure and overdraft of the State's depleted groundwater aquifers. The Delta Conveyance Project is an additional threat to the depletion of groundwater aquifers and is in conflict with the EO requirement to reduce groundwater depletions. The SWP and CVP failed to develop, at water contractor expense or otherwise, the projects which were planned to capture surplus water to support the contractor desires. The delivery of infirm or interim supply with encouragement of water transfers and profiting from sale of project water has resulted in permanent urban and agricultural demand which cannot be met without over drafting groundwater or taking of surface water which is not surplus to the present and future needs of the area from which it is taken.
- **Uncertain Agriculture Water Supplies:** The EO defines that hydrologic conditions in the future will make SWP water supply reliability even lower than today's conditions. The Delta Conveyance project increases SWP Water Contractor reliance upon Delta water supplies which will become even more variable in the future. This increased reliance upon Delta water supplies and increased future water supply variability means the Delta Conveyance Project predictably results in even greater uncertainty in Agricultural Water Supplies. In addition to water supply variability, the Delta Conveyance Project creates water transfer capacity that will

greatly increase the economic conflict and disparity between municipal and agricultural water users. The water transfer capacity created by the Delta Conveyance Project will drive up the cost of agricultural water supplies as they are forced to compete against municipal water demands over a geographic range never previously experienced by the current excess transfer capacity constrained SWP system. The water transfer capacity created by the Delta Conveyance Project increases the uncertainty of agricultural water supplies and therefore is in direct conflict with this objective of the EO.

- **Native Fish Population Threatened with Extinction:** The Delta Conveyance Proposed Project does not protect or even reduce take of threatened and endangered native fish populations from SWP operations. The WaterFix EIR/S determined that there were no benefits to Delta Smelt or Longfin Smelt from north delta intakes and anadromous fish (salmon – all runs and sturgeon) were adversely impacted from north delta intakes. The Proposed Project with its North Delta Intakes will almost certainly have the same adverse affects on these native species threatened with extinction – exactly the opposite of the objective and requirement in the EO.
- **Health of Our Environment:** The Delta Conveyance Project increases reliance upon Delta water supplies and will decrease the amount of water in and passing through the Delta which confer environmental benefits (improved water quality, flows, etc.) to the Delta. The Proposed Project includes no features or functions designed to benefit the environment. With no benefits to the environment and known negative impacts to the environment, the Delta Conveyance Proposed Project is in direct conflict with this requirement of the EO.
- **Provide Clean, Dependable Water Supplies to Communities, Agriculture, and Industry While Restoring and Maintaining the Health of Our Watersheds:** The EO requires protection and restoration of watershed health. The coequal objective of habitat restoration and water supplies as is still legally required by SB-X7. The Proposed Project includes no components, provisions or features which are designed to accomplish or result in protecting or enhancing the health of the Delta watershed. The Proposed Project fails to fulfill this EO mandate. **Broad Portfolio of Collaborative Strategies:** The Proposed Project is a standalone project that does not have identified synergisms with other projects to meet this EO mandate nor is it comprehensive in addressing most of the requisite objectives of the EO.

EO Climate Change and Other Assumptions the Delta Conveyance Project and Other Water Resiliency Portfolio Projects Must Address:

- *“shorter, more intense wet seasons that worsen flooding”*
- *“California continues to grow. with our population projected to grow to 50 million”*

Delta Conveyance Project Implications from EO Assumptions

- The assumption of shorter peak flow wet season hydrology in the future dictates that any project must anticipate this flow regime and incorporate design, engineering and operations consistent with this future hydrology. The implication is that the SWP must adapt to capture these wet season peak flows and anticipate significantly reduced operations in non-peak flow periods. Previously in other water diversion projects, this hydrology and operation has been referred to as a “Sip vs. Gulp” diversion operation. “Gulp” during peak flows when environmental impacts are reduced and “sip” or abstain from diversion operations during reduced and low flows when environmental impacts are much greater. Sip and Gulp SWP water diversion operation strategy requires downstream of delta water storage to store peak

flow diverted water for use during periods of low or no diversion operations. The Delta Conveyance Proposed Project has no feature which allows or facilitates improved capture or storage of these wet period peak flows and fails to propose any operations to address changed future hydrologic patterns. Contradictory to the EO required assumption, the Delta Conveyance Project assumes increased operations in non-peak flow conditions by moving the SWP intakes to a new upstream location.

- The EO growth assumption (and Delta Conveyance Project Purpose) to “restore and protect the reliability of SWP water deliveries” identifies that the Delta Conveyance Project will support increased and long-term hardened demand water supplies from project facilitated population growth. The project supporting increased future population water supplies is a Growth Inducement impact the Delta conveyance Project EIR must disclose; determine the magnitude, location, timing and nature of growth induced; analyze; and mitigate those Growth Inducement impacts.

The Delta Conveyance Project incorrectly assumes the population growth identified in the EO must occur in SWP water contractor districts and that a Delta Conveyance Project must support it. Assuming population growth in Southern California in SWP Water Contractor districts drives project capacity assumptions and design criteria. This assumption of the project to support population growth within SWP service areas drives a commitment of energy, resources and budget where it is not necessary and is by definition wasteful and in conflict with the EO Water Resiliency Portfolio mandate to increase water supply security. This erroneous Delta Conveyance Project assumption drives the construction of a large, complex and vulnerable water conveyance at great cost and environmental impact. The project must include as an alternative to the Delta Conveyance Project that anticipated future population growth would or should occur in areas at the origin or nearer to the water supply. Assuming people move to or future population growth occurs in areas that require less vulnerable and expensive infrastructure with less environmental impacts is a much more reasonable, less expensive, less vulnerable, and less environmentally damaging project alternative than currently proposed by the Delta Conveyance Project.

EO Water Resilience Portfolio Requirements:

“IT IS HEREBY ORDERED THAT:”

2. *“Agencies shall first inventory and assess.”* (emphasis added)
 - f. *“Current planning to modernize conveyance through the Bay Delta with a new single tunnel project.”*
3. *“This water resilience portfolio established by these agencies shall embody the following principles:* (emphasis added)
 - a. *Prioritize multi-benefit approaches that meet multiple needs at once.*
 - b. *Utilize natural infrastructure such as forests and floodplains.*
 - c. *Embrace innovation and new technologies.*
 - d. *Encourage regional approaches among water users sharing watersheds.*
 - e. *Incorporate successful approaches from other parts of the world.”*

Delta Conveyance Project Implications of EO Water Resilience Portfolio Requirements:

- **2 and 2f above orders an inventory and assessment of current planning for modernizing conveyance through the Bay Delta with a single tunnel project.**

This order clearly does not authorize initiation of a project to plan or propose a Delta Conveyance project; it orders an inventory and assessment which is a report, not a CEQA project. 2a-h are orders for inventories and assessments,. None of the other a-h have been interpreted as an authorization for a project. What has been ordered as described in the EO is the equivalent of an Initial Study. The EO requires a study or a report not a project, so the Delta Conveyance Project has no legal basis for initiation. Without the legal basis for project initiation, any funds allocated to or expended by the Delta Conveyance Project are by definition “unauthorized” and illegal. The EO is also clear that the inventory and assessment must be done first which means it must occur before any project that might result from this inventory and assessment can be initiated regardless of other orders, policies or actions. DWR must stop the current Delta Conveyance Project EIR and first conduct the inventory and assessment required by the EO.

- **The Delta Conveyance Proposed Project Fails to Embody the Principles Required in 3 a-e.** 3 a-e require that any component of the Water Resiliency Portfolio, including modernizing Delta water conveyance, must embody these principles.
 - **The Delta Conveyance Proposed Project Does Not Prioritize Multi-benefit Approaches That Meet Multiple Needs at Once.** The Proposed Project includes only the benefit of increased export water supply for some selected Californian’s that live in SWP Water Contractor districts. This single, limited and selected benefit for some Californian’s comes at the expense of water supply reliability and other designated beneficial uses of water for delta residents, businesses and environment (water quality suitability for agriculture, fisheries, water supply). The Proposed Project includes no provisions for other benefits such as protection or enhancement of Delta aquatic habitat or delta water supplies. In fact, the Delta Conveyance Proposed Project does the opposite of the multi-benefit approach by tacitly abandoning the delta to future sea level rise which dooms all of the other benefits and beneficial uses of water in the Delta.
 - **The Delta Conveyance Proposed Project Fails to “Utilize Natural Infrastructure...”** All of the components of the Delta Conveyance Proposed Project are unnatural construction/engineering solutions and do not utilize or harmonize with any natural delta components, structures, features or functions. Improvement of Delta levee systems and continued use of the through Delta conveyance which has functioned for almost eighty years can continue to adequately serve both export and in-Delta needs.
 - **The Delta Conveyance Proposed Project Fails to “Embrace Innovation and New Technologies”.** There is nothing new or innovative about the Delta Conveyance Proposed Project tunnel for delta water conveyance. Isolated conveyance including peripheral canals has been studied for over 50 years. Delta tunnel water conveyance projects and alternatives have been studied and analyzed over the last 12+ years and in each scenario and

iteration the projects failed to reduce impacts to threatened, endangered and listed aquatic species or to deliver incremental water supply or water supply reliability over the No Action/No Project condition. The Delta Conveyance Proposed Project is one tunnel instead of the two previously proposed and with the river intakes at exactly the same locations as WaterFix and the BDCP before it. The Delta Conveyance Proposed Project functions exactly the same as WaterFix so there is nothing new or innovative about 1 tunnel vs. 2.

- **The Delta Conveyance Proposed Project Fails to “Encourage Regional Approaches Among Water Users Sharing Watersheds.”** The Delta Conveyance Project NOP does the opposite of this EO requirement by artificially and capriciously attempting to limit the geographic scope of project alternatives to the Delta. Increasing the reliability of SWP water supplies can be achieved by projects that address other potential weak points in the reliability of the SWP system. Projects to address SWP water supply reliability that are not in the Delta include, but are not limited to: Removing the giant slip fault in Lake Oroville, repairing the “green spot” leak on the face of Oroville Dam, seismic upgrades to the Banks Pumping Plant and California Aqueduct, repairing California Aqueduct leaks, increasing south of Delta water storage, etc. This NOP artificial geographic constraint on only the Delta thwarts the mandate for regional solutions. If Oroville Dam fails, either due to the slip fault or the green spot leak, it does not matter if delta water conveyance is modernized or not, there would be no water to export. Similarly, if the Banks Pumping Plant or the California Aqueduct fail, it does not matter if the delta water conveyance is modernized, there would be no SWP conveyance for water south of the delta. The “inventory and assessment” required by the EO should evaluate the whole of the SWP to determine which parts are the most urgent and high risk to address for public safety and water supply reliability. Instead, the NOP jumps to the completely unsupported and predecisional conclusion that the greatest risk to SWP water supply reliability is conveyance in the delta. The capture of flood waters with diversions in the upper portions of watersheds with reservoirs and groundwater storage should not be precluded from alternative evaluation.

The predecisional components of the NOP (identified in NOP Comments below) reject the principle of cooperation or collaborative approach among users sharing watersheds. All of the aspects and objectives in the Proposed Project are designed to benefit one group, SWP Water Contractors, over other Delta watershed users, e.g. cities and municipalities, farmers, businesses, Reclamation Districts and other non-SWP Water Agencies. **The Delta Conveyance Proposed Project Fails to “Incorporate Successful Approaches From Other Parts of the World.”** There have been many tunnel projects around the US and world. Many tunnel projects in the US and

around the world have experienced construction failures (underground obstructions, tunnel flooding, failed boring machines, boring operation-related levee failures, etc), schedule delays (years or even decades) and extreme cost over-runs (i.e. 5x of original \$ budgets). Common technical, construction, and engineering failures; adjacent infrastructure impacts; missed schedules and huge cost overruns are the hallmark definitions of failed projects and are project models to avoid, not follow, as the Proposed Project does.

EO Comment Summary

The EO does not authorize a Delta Conveyance Project; it only authorizes an inventory and assessment report. If the State, in violation of having a project authorization, continues to advance the Delta Conveyance Project, the alternatives development screening criteria must include all of the objectives requirements and principles required and identified by EO N-10-19. The current Delta Conveyance Proposed Project only partially (and poorly) addresses one of the objectives identified in EO and fails to address all of the other requisite objectives and violates most of the principles and strategies required to be embodied by projects under the Water Supply Resiliency Portfolio as defined by the EO.

Notice of Preparation Comments

- **DWR's NOP notice** (<https://water.ca.gov/Programs/State-Water-Project/Delta-Conveyance/Environmental-Planning>), "*Modernizing Delta conveyance is part of the state's Water Resilience Portfolio, which describes the framework to address California's water challenges and support long-term water resilience and ecosystem health.*" (Emphasis added). The NOP notice informs the public that the project is about water supply resilience and ecosystem health. The NOP Project Purpose conspicuously and deceptively in conflict with the notice, leaves out any reference to "ecosystem health". The word "ecosystem" is not included in the NOP even once, but ecosystem health is represented as a coequal goal in the NOP notice. This is glaringly inconsistent and misleading. Health of the environment and watersheds are specified as objectives of the Water Resilience Portfolio. Neither of these objectives are included in the NOP; "ecosystem health", "environmental health" and "watershed health" must be added to the Delta Conveyance Project objectives so that it is consistent with the NOP Notice and the mandates of EO N-10-19.
- **Introduction, paragraph 2**, "... likely requiring the preparation of an environmental impact statement (EIS)." The project would require 401 and 404 permits from the USACE prior to construction. The project would also require a Biological Assessment and Biological Opinion to potentially support Incidental Take Permits from US Fish and Wildlife and NOAA Fisheries. Both of these sets of permits create a federal nexus that require a NEPA compliant EIS.
- **Introduction, paragraph 2**, "*Federal agencies with roles with respect to the project may include approvals or permits issued by the Bureau of Reclamation (Reclamation)...*" Reclamation does not have any decisions or permits to issue for the project and therefore has no standing in the project unless it opts to become a Delta Conveyance Project Proponent (co-owner).
- **Introduction, paragraph 2**, "*DWR will prepare an EIR that includes relevant NEPA information where appropriate.*" It is at the discretion of the Federal NEPA Lead Agency to determine who will prepare the EIS, not DWR. The NEPA Lead Agency may choose to accept or not accept analysis prepared in coordination with the preparation of a joint EIS/EIR document or it may choose to conduct its own entirely independent EIS, solely at their discretion. DWR claims it will prepare information for the EIS (without agreement from the NEPA Lead Agency), but it has already violated the NEPA requirement for equal level of effort (including information collection and analysis) for all alternatives by initiating an effort to collect additional geologic core samples along its Proposed Project conveyance corridor with no consideration or equal effort applied to alternative conveyance routes or alternative to the tunnel conveyance. If the NEPA Federal Lead Agency agrees to conduct a joint EIS/R document with DWR, after the NEPA Alternatives Scoping and selection process is completed, an equal level of effort in collecting geologic information (and all other information) must be applied to all other alternatives.
- **Introduction, paragraph 2**, "*Once the role of the federal lead agency is established...*" The role and authority of the NEPA Lead Agency are statutorily defined so it is already established and the federal nexus requiring an EIS are clear as identified in the first comment in this section. The federal Lead Agency must be one that has is dependent upon information developed in the EIS to support decision making in issuing permits for the project. In the first comment in this section we identify that Reclamation has no decision making or permits in the process and that there are three federal agencies that would have to issue permits to the project in order for it to potentially proceed. USFWS and NOAA Fisheries both would have one permit to issue and USACE would have 2 or more permits to issue. USFWS and NOAA must prepare a Biological Assessment (BA) as part of their Section 7 ESA authority. They may take EIS information (or not) and will conduct their own analyses of listed species impacts in their Biological Assessment (BA) document. This mandatory Section 7 ESA document makes the information requirements of the USFWS and NOAA Fisheries less critically dependent upon the EIS than the USACE requirements which are entirely dependent upon decision making information provided in the EIS. The BA document is independent of the EIS so it falls upon the USACE as the appropriate NEPA Federal Lead Agency to conduct the EIS to make all EIS preparation decisions relevant to developing information to support their permit decision making needs. DWR does not have any authority to

choose who the Federal NEPA Lead Agency will be in this process. The federal agencies must make the NEPA Federal Lead decision for themselves guided by the agency with the most direct dependency upon decision making information provided in the EIS which in this case is the USACE.

- **Introduction, paragraph 2,** *“...federal lead agency will publish a Notice of Intent to formally initiate the NEPA process.”* The CEQA NOP and NEPA NOI will have different dates for their environmental baselines due to DWR’s lack of federal agency coordination of public notifications for the project. This dis-synchronous environmental baseline will unnecessarily complicate the EIS/R analyses and document. DWR should reissue the NOP at the same time as the NOI so the baselines are compatible to avoid unnecessary over-complication of the EIS/R. Having a coordinated NOI and NOP also avoids having different versions presented to the public of the Proposed Project for the mandatory Alternatives Scoping process that both processes require. DWR reissuing the NOP would allow the opportunity to correct the many deficiencies, errors, ambiguities, undefined terms and omissions in the first NOP that are identified in these comments.
- **Background information,** *“Executive Order N-10-19, directing several agencies to (among other things), “inventory and assess... [c]urrent planning to modernize conveyance through the Bay Delta with a new single tunnel project.”* The Governor’s announcement and Executive Order led to DWR’s withdrawal of all approvals and environmental compliance documentation associated with California WaterFix. The CEQA process identified in this notice for the proposed Delta Conveyance Project will, as appropriate, utilize relevant information from the past environmental planning process for California WaterFix but the proposed project will undergo a new stand-alone environmental analysis leading to issuance of a new EIR.” The EO authorizes a report to “first inventory and assess “current planning” to modernize conveyance through the delta. The EO does not authorize a project to design and build a conveyance, it specifies that first an inventory and assessment on current planning must be conducted. DWR has mistakenly initiated “new planning” by undertaking this Delta Conveyance Project EIR. An EIR is a planning process so a new EIR is new planning, not current planning. See previous comments on the EO regarding the Delta Conveyance Project and funding not being authorized.
- **Purpose and Project Objectives, paragraph 1,** *“Under CEQA, “[a] clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives...”* Correct, CEQA requires a clearly written statement of objectives. Unfortunately what this NOP provides is a poorly written conflation of “Purpose” and “Objectives” which confounds the CEQA requirement for clarity in defining project objectives to use to develop a reasonable range of alternatives. To support discussion of our following comments regarding how this NOP section fails to meet the requirement for clearly written project objectives, here are the definitions of “Objective” vs. “Purpose”. “Objective” definition: “something that one’s efforts or actions are intended to attain or accomplish”. “Purpose” definition: “the reason for which something exists or is done, made, used, etc.” The word “reason” is the key here. Anything that is not a reason for doing a project does not belong in the Purpose Statement. Anything that is a reason does not belong in the section describing the Project Objective. These are essential to clarify as they are the basis for the project alternatives screening criteria. This section of the NOP must be rewritten to comply with the CEQA legal requirement for clarity which it currently fails to do.
- **Purpose and Project Objectives, paragraph 1,** *“The statement of objectives should include the underlying purpose of the project and may discuss the project benefits” (State CEQA Guidelines Section 15124[b]).* Yes, but the objectives and purpose should not be intermixed such that the objectives are not written clearly per CEQA.
- **Purpose and Project Objectives, paragraph 2,** *“DWR’s underlying, or fundamental, purpose in proposing the project...”* Which is it, underlying (laying beneath) or fundamental (basic)? This is not clearly written as CEQA requires.
- **Purpose and Project Objectives, paragraph 2,** *“...purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of State Water Project (SWP) water deliveries...”* Again, this is poorly written, not clear, and conflates purpose and objective which must remain clearly defined to support development of

alternatives per CEQA requirements. The first part, “develop new diversion and conveyance facilities” is an objective. The second part, “to restore and protect the reliability of SWP water deliveries” is a purpose (reason) for the project. It is important to separate the two concepts distinctly as the objective is how the project proponent conceives achieving a project purpose. Alternatives are other methods to reasonably accomplish the same purposes. The NOP conflation of the difference and importance of objective vs. purpose violates the CEQA requirement for clarity and will confound a clear and consistently evaluated alternatives development and screening process.

- **“Restore... SWP water deliveries” (NOP page 2, paragraph 2) as a Project Purpose declares the intent to increase reliance upon delta water supplies, which is in direct violation of the legal requirement of SB-X7.** Alternatives and alternative components identified in these comments are compliant with SB-X7. The term “restore” is not defined and therefore is not meaningful as a definition of a project purpose. Restore the water supply to what quantity or what period? Does this mean restore water supplies to unimpaired flows from current hydrology 1921-present (the “hydrologic record”), pre-SWP development, pre-D1641, to D1641 standards, pre-Wanger or post-Wanger rulings, Oroville FERC Relicensing pre- or post-, yesterday? If the term “restore” is kept as part of the project purpose it must be defined or alternative concepts cannot be reasonably evaluated for how well they meet this project purpose. Restoring water supply means quantities of water will change which have environmental impacts which must be evaluated, disclosed and mitigated. How much quantity of water change “restoration” requires is directly proportional to the magnitude of the environmental impacts the project will precipitate. The term “restore” must be quantified and defined in order to complete anything other than a programmatic EIR. Once the restored water supply objective is quantified, it must be disclosed in a revised NOP as it is fundamental to understanding the scope of the project and potential impacts that are important to the public.
- **Purpose and Project Objectives, paragraph 2, “DWR’s...purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of... potentially, Central Valley Project (CVP) water deliveries south of the Delta...”** The stated purpose now also, potentially, is to restore and protect the water supply of a Federal Agency that has to this date not indicated an interest in participating in the project. It is not a CEQA project purpose (reason) for a state to propose a project for a federal agency. This project objective must be withdrawn from the NOP as it is not a viable objective for the state and must not be utilized as any component of a screening criteria for alternatives development.
- **Purpose and Project Objectives, paragraph 2, “...consistent with the State’s Water Resilience Portfolio.”** Yes, if the project is authorized by EO N-10-19 (it isn’t – see EO Comments), then it must be consistent with it. The CEQA Project Purpose as stated in this paragraph is not consistent with EO N-10-19. The words “restore and protect the reliability of SWP water deliveries” or even combinations of those words is not anywhere in the EO. DWR’s proposed “project purpose” is made up, whole cloth, and is not from or consistent with the EO. An essential part of consistency with the EO’s Water Resilience Portfolio is the project must include all of the objectives, requirements and principles required and identified by EO N-10-19. The Delta Conveyance Project as proposed in this NOP does not include or meet the objectives and mandates of the EO – see EO Comments.
- **Purpose and Project Objectives, paragraph 3, “The above stated purpose, in turn, gives rise to several project objectives.”** DWR has this exactly backwards here. In the statement above DWR refers mostly to the objective (see previous comments), “to develop a new diversion and conveyance in the Delta”. “Objective” definition: “something that one’s efforts or actions are intended to attain or accomplish”. In other words the objective is, “we want to build something that does this, that and the other thing”.

"Purpose" definition: "the reason for which something exists or is done, made, used, etc." The word "reason" is the key here. Anything that is not a reason does not belong in the purpose statement. The project objectives drive the purpose, not the other way around. DWR's NOP would not be so confused if the Project Purpose was clearly written as CEQA requires.

All 4 bullets in the NOP that follow are all "reasons" (purpose) for a project, not objectives. Any alternative that reasonably satisfies accomplishes these reasons for a project must be included in the EIR analysis as viable alternatives.

- **Purpose and Project Objectives, paragraph 3, "In proposing to make physical improvements to the SWP Delta conveyance system, the project objectives are:"** This is a good example of how DWR has gotten purpose and objectives backwards. Their objective is to build a project. Their stated reasons (purpose) for the proposed project is to accomplish their following bullet points. Again, this is important to correct as alternatives to the project must not be evaluated against what DWR has proposed as their project, but against the ability of a proposed alternative to satisfy the purpose (reason) for the project. If DWR does not straighten out this fundamental flaw and CEQA requirement failure, the screening criteria for alternatives development will be equally flawed and the evaluation of alternatives incorrect and indefensible.
- **Purpose and Project Objectives, paragraph 3, first bullet, "To address anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events."** This is a potential reason for a project therefore it is a purpose, not an objective as confusingly and incorrectly claimed in the NOP. The NOP misidentifying project purpose as project objectives does not meet the CEQA requirement for clearly written project objectives.

The State has adopted climate change assumption standards that all new projects must adhere to. Although we do not agree with these climate change assumptions or standards, it was imperative for the NOP to disclose the standard that this project purpose sets in order for the public to understand the project proposed as well as potential alternatives to the project. The sea level rise assumption in the Delta Conveyance Project is reportedly 10 feet, but it is not disclosed in the NOP. This is a wildly alarming assumption that has far reaching implications to the communities in the Delta and other non-SWP water supply customers that get their water from the Delta. All water supply diversions in the Delta are vulnerable to a sea level rise of 10 feet, but the Delta Conveyance Project only proposes to protect those Californians that are served by the SWP. By withholding the sea level rise assumption of 10 feet from the public in the NOP, the public has been denied their opportunity to understand the scope, implications and potential alternatives of and to the project. The NOP must be reissued to include this fundamental assumption and criteria for the purported purpose of the project. The scope and expectations of the project must be revised to address the needs and threats to water supplies of all Californians, not just SWP customers.

Climate change is a global problem and cited as the primary driver for the need to "restore and protect SWP water supplies". This defines the project as a response to a problem which is global in scope and yet the project attempts to (incorrectly) limit the range of appropriate project alternatives to those implemented only in the "Delta". If climate change is a global problem, the delta consists of only 0.0005% of the surface area of it. Surely the SWP's water supply reliability "and restoration" cannot be solely dependent upon the Delta 0.0005% geographic area as the sole solution. In the face of reality of climate change impacts to water supplies all over the world, why would it be a reasonable proposition for the project to "restore water supplies" to some unspecified earlier unaffected date and time when everyone else in the world is being forced to adapt to new climate and precipitation patterns.

- **Purpose and Project Objectives, paragraph 3, second bullet, "To minimize the potential for public health and safety impacts from reduced quantity and quality of SWP water deliveries, and potentially CVP water deliveries, south of the Delta resulting from a major earthquake that causes**

breaching of Delta levees and the inundation of brackish water into the areas in which the existing SWP and CVP pumping plants operate in the southern Delta.” By DWR’s statement here in the NOP, SWP Water Contractor district Californian’s get preferential treatment to other Californian’s as this project does nothing to protect Californian’s that get their water supply from the Delta that are not part of the SWP. . The very first and presumably most important statement in the EO is that “water is a human right”. The Delta Conveyance Project not only ignores the human rights for water for non-SWP customers as they do not benefit at all from the project, but the project proposes to improve protections of water supplies for SWP customers at the expense to the quality and reliability of water supplies of non-SWP customers. Making one group’s water rights and supply security superior to and at the expense of another group’s is antithetical to the first precept of the EO. A project and alternatives to a project must comply with this fundamental principle of the EO and the current Delta Conveyance Project Proposed Project does not.

- **Purpose and Project Objectives, paragraph 3, third bullet,** *“To protect the ability of the SWP, and potentially the CVP, to deliver water when hydrologic conditions result in the availability of sufficient amounts, consistent with the requirements of state and federal law, including the California and federal Endangered Species Acts and Delta Reform Act, as well as the terms and conditions of water delivery contracts and other existing applicable agreements.”* This statement is so poorly worded as to be unsuitable for use as alternatives scoping screening criteria. “Protecting” a Federal Project is not a viable objective for a State Project so that cannot be a screening criteria. “Sufficient amounts” is subjective and undefined and therefore cannot be utilized as an alternatives screening criteria. A project being consistent with state and federal law is a mandatory screening criteria for all projects as a project cannot plan to break the law. It should be noted that current SWP operations fail to comply with water quality standards on a routine basis and therefore violate the law routinely. Given that the SWP current operations violate the law and this fundamental project alternative screening criteria, the project may not assume that continuation of existing operations and standards of the SWP will not result in violations of the law.
- **Purpose and Project Objectives, paragraph 3, fourth bullet,** *“To provide operational flexibility to improve aquatic conditions in the Delta and better manage risks of further regulatory constraints on project operations.”* “Aquatic conditions” is too vague a term to be useful in evaluating if a project alternative meets this objective or not. The project alternative scoping screening criteria for this objective must be changed to “protect delta water quality and habitat values for delta residents, water users and wildlife” so that it is consistent with the EO and SB-X7 legal requirements.
- **Page 3, paragraph 3,** *“DWR would operate the proposed north Delta facilities and the existing south Delta facilities in compliance with all state and federal regulatory requirements and would not reduce DWR’s current ability to meet standards in the Delta to protect biological resources and water quality for beneficial uses.”* SWP operations routinely violate water quality standards in the Delta. DWR is saying here that it is planning to build a facility that is intended to violate the law at the same frequency as the current facility. The new facility and operations must plan to be compliant with the law to protect water quality and wildlife habitat or it cannot be permitted. The Proposed Project has no defined operations so there is nothing to be analyzed in the EIR to determine the frequency, magnitude or geographic extent of water quality violations the project may cause. The new facility objective, if it is built at all, must be to ensure that all water quality criteria are met under all conditions, at all times, and at all locations.
- **Page 3, paragraph 3,** *“Although initial operating criteria of the proposed project would be formulated during the preparation of the upcoming Draft EIR in order to assess potential environmental impacts and mitigation, final project operations would be determined after completion of the CEQA process...”* (emphasis added) In this statement, DWR has declared its intent to violate CEQA law. CEQA requires that all environmental impacts of a project be disclosed, analyzed and mitigated and that agencies that rely upon the EIR for decisions based upon the EIR for permit issuance will be inaccurately and misinformed. By DWR either ignoring operations-related impacts or by assuming a set of operations to evaluate in the EIR analysis that

it will not conform to in the event that the project is approved and implemented, it ensures that the true impacts of the project will not be disclosed or mitigated. This statement of intent to violate CEQA is so serious that we request all staff or contractors involved in this proposed decision to violate CEQA law and mislead agencies which rely upon this document be immediately removed from the project and reprimanded in the case of DWR staff or terminated in the case of contractors. This DWR plan to violate CEQA by not analyzing, disclosing or mitigating the true operations-related impacts in the EIR fundamentally violates the responsibilities of the CEQA Lead Agency to the point of malfeasance. As a result of this gross abuse of process and privilege by DWR as the Lead Agency, it should be removed as the State lead agency on the Delta Conveyance Project.

If, after the CEQA process is completed, proposed operations of the Delta Conveyance are modified in any way from those analyzed, disclosed and mitigated in the EIR, a supplemental EIR must be conducted prior to any consideration of issuance of construction- or operations-related permits by any agency. This supplemental EIR must have its own NOP, Public Scoping, Public Draft EIR, mitigations, etc, prior to any agency issuing permits for the project. DWR must not certify an EIR in which operations and operations-related impacts and mitigations are known to be subject to subsequent change.

The NOP is fundamentally deficient by not disclosing the proposed operations of the project. It is not possible for the public to determine the extent of potential project impact to them without relevant proposed operations information being disclosed. By omitting the operations information from the NOP, DWR has denied the public their right to information to evaluate the relevance of a project and its potential impacts to them. This public information disclosure is the fundamental requirement and purpose of an NOP and this NOP is deficient due to these and other (e.g. sea level rise future condition assumption) material omissions. Proposed Project operations description and disclosure must be included in a recirculated NOP and round of public scoping meetings.

- **Page 3, paragraph 3,** *“Construction and commissioning of the overall conveyance project, if approved, would take approximately 13 years, but the duration of construction at most locations would vary...”* The NOP fails to identify specific areas of construction disruption and disruption duration. This vague description is inadequate to inform the public if the project may have an impact upon their quality of life, property or ability to earn their livelihoods. The NOP must be revised and republished along with new Public Scoping Meetings to disclose this essential information to the public.
- **Page 3, paragraph 4,** *“Reclamation is considering the potential option to involve the CVP in the Delta Conveyance Project. Because of this possibility, the connection to the existing Jones Pumping Plant in the south Delta is included in the proposed facility descriptions below. The proposed project may include a portion of the overall capacity dedicated for CVP use, or it may accommodate CVP use of available capacity (when not used by SWP participants). If Reclamation determines that there could be a role for the CVP in the Delta Conveyance Project, this role would be identified in a separate NEPA Notice of Intent issued by Reclamation.”* Since a CVP component is not part of the current Delta Conveyance project and is entirely speculative in its language at this time, if BOR elects to participate in the Project at some future date, it will require either a separate EIS or a reissuance of the NOP (and NOI) for a joint document as there would be material design or operations (not defined at this time anyway) changes to the project not disclosed to the public in the original scoping of the Delta Conveyance EIR. The NOP

proposed accommodations of the CVP under the Delta Conveyance Project would have profound water operations, water supply, and water quality impacts that must be analyzed, disclosed and mitigated in the EIR. If BOR does join the project, the NOP is materially deficient and misleading in terms of its project description and operations (missing anyway).

- **Page 4, map** – The map depicts Intakes and North Tunnels in Stone Lakes National Wildlife Refuge and partially east of I-5. If that is not an accurate portrayal of the Proposed Project then this map is materially misleading and inaccurate and must be republished in a revised NOP. The scale of the map, approximately 400,000:1 is completely inadequate for meaningful or useful disclosure to the public for them to determine the location of the project relative to their location and livelihoods. The BDCP and WaterFix published Map Books with appropriate scale maps (1:24,000) and background detail for the public to understand the location of the proposed project. The scale of this NOP map (17x smaller than the BDP/WaterFix maps) and lack of orienting detail included in it are materially deficient and a new NOP and round of Public Scoping Meetings must be conducted to correct this material deficiency.
- **Page 5, paragraph 1**, “*The proposed intake facilities would be located along the Sacramento River between Freepoint and the confluence with Sutter Slough, as shown in Figure 1.*” “This description and the map are inconsistent so one of them is misleading to the public regarding the nature and location of the project. Sutter Slough/Sacramento River confluence is downstream of Courtland. The intake highlighted area on the map stops 3 miles upstream of the Sutter Slough confluence. The highlighted intake area on the map stops where Randall Island Slough and Snodgrass Slough confluence would be with the Sacramento River. The north end of the intake area is also in conflict between the map and description. The map and description in the NOP are inconsistent and misleading to the public. A revised map and description must be published in a revised NOP. With the current and inaccurately represented locations, the EIR, at best, would be at a programmatic level which cannot be the basis for issuance of construction-related permits.
- **Page 5, paragraph 1**, “*The size of each intake location could range from 75 to 150 acres, depending upon fish screen selection, along the Sacramento River and include a state-of-the-art fish screen, sedimentation basins, tunnel shaft, and ancillary facilities. An additional 40 to 60 acres at each intake location would be temporarily disturbed for staging of construction facilities, materials storage, and a concrete batch plant, if needed.*” The map figure does not show proposed locations of the intakes. The map shades a large and poorly defined reach of the river as the potential intake locations. With the proposed intake locations ambiguous and the size of the facilities varying as much as 100% it is not possible for the public to determine if they will be potentially affected by the project or not and supports only a programmatic level of impact analysis not sufficient to support construction-related permitting. A revised NOP must be issued that determines the type and design (e.g. over or through levee construction) of fish screen. Proposed, specific intake locations and project footprints that do not have an order of magnitude vary in specificity.
- **Page 5, paragraph 3**, “*The proposed single main tunnel and connecting tunnel reaches would be constructed underground with the bottom of the tunnel at approximately 190 feet below the ground surface.*” The BDCP and WaterFix projects designed their tunnel for 80 feet below the ground surface. 190 feet deep is more expensive and generates more tunnel muck which creates additional increments of environmental impacts which must be analyzed. **Page 5, paragraph 3**, “*Construction for the tunnel would require a series of launch shafts and retrieval shafts. Each launch and retrieval shaft site would require a permanent area of about four acres. Launch sites would involve temporary use of up to about 400 acres for construction staging and material storage.*” The map figure and description fail to disclose the proposed locations for these actions. These areas will require land seizures that displace property rights and use, people and

livelihoods, as well as special status species populations; but are not disclosed in the NOP. As a result of this material information withheld from the NOP, the affected public remain ignorant and uninformed. A revised NOP must be issued that discloses this material information relevant to the location of these land seizures as well as specificity that allows the analysis of impacts to special species status populations.

- **Page 5, paragraph 3,** “...this reusable tunnel material could be reused for embankments or other purposes in the Delta or stored near the launch shaft locations.” The reusability or suitability of tunnel muck has not been determined. The time and area required for drying must be disclosed and analyzed. It is extremely unlikely that this material will have suitable characteristics to be useful for “embankments” intended to hold back water. The difference in environmental, land use and traffic impacts between reuse of tunnel muck on site or transportation to a disposal site is significant. The proposed project must specifically identify the location and describe and define where and how tunnel muck will be dried, used or disposed of in a revised NOP or the EIR may only be conducted at a programmatic level which will require subsequent environmental analysis, documentation and public participation prior to any project action.
- **Page 5, paragraph 4,** “Intermediate Forebay would provide potential operational benefits and would be located along the tunnel corridor between the intakes and the pumping plant.” The location of this proposed large and environmentally disrupting facility is not disclosed in the description or map figure. The Intermediate Forebay will have a big impact that results in land seizures which have not been disclosed in this deficient NOP that fails to adequately inform the public and that must be revised and republished.
- **Page 5, paragraph 4,** “The embankments would be approximately 30 feet above the existing ground surface.” The Intermediate and Southern Forebays are functionally flow reregulating reservoirs. As such, the Forebay impoundments will always hold back water which is the definition of a “Dam” according to USACE regulations. The NOP use of the term embankment is misleading and grossly technically inaccurate. A “dam” is something that holds back water most of the time, a “levee” holds back water only some of the time and an “embankment” is a meaningless term in this context that is not appropriate or relevant to the description of Forebay facilities. The Intermediate and Southern Forebays are dams and the engineering and construction specifications must be consistent with those requirements and evaluated in the EIR impact analysis. The construction materials type, methods, labor, equipment, materials volumes and schedules for constructing a dam are radically different in environmental impact that just piling up some dirt in an “embankment” as implied by the inaccurate and misleading NOP description.
- **Page 6, Contract Amendment for Delta Conveyance,** “...the Delta Conveyance Project EIR will assess, as part of the proposed project, potential environmental impacts associated with reasonably foreseeable potential contract modifications.” This means that the impacts of all water transfers resulting from new excess capacity created by the Delta Conveyance Project must be completely evaluated in the Delta Conveyance Project EIR as they are proposed to not be included in the impact analysis of the SWP Water Supply Contract Amendment for the Delta Conveyance EIR. How, when, where and how much water transfer volume must be defined to a project level specificity in order to meet this project level impact analysis to cover this other project impact analysis.
- **Page 6, Project Area, “Upstream of the Delta Region”** “Upstream” must include SWP facilities that operations are changed in any way due to Delta Conveyance Project operations. This includes all SWP reservoir operations timing and magnitude of water releases and tributaries flow and temperatures downstream from those facilities. These analyses to downstream tributaries

below SWP reservoirs are required to assess impacts to fish habitat temperature suitability, spawning habitat suitability (depth, flow velocity and temperatures) and to assess anadromous fish straying and introgression impacts from altered tributary attraction flows and temperatures. Streams upstream of SWP reservoirs are affected by exposure of sediment wedges in the reservoir which affect seasonal fish movement and spawning in the upstream tributaries up to the next impassible fish barrier. All of these areas upstream of the Delta affected by operations of the Delta Conveyance Project must be included in the geographic and impacts scope of the project. This, among many reasons, is why the project must define, disclose evaluate and mitigate the true operations impacts of the project. If the EIR does not analyze the real and fully developed and detailed project operations, the EIR will be a programmatic document that cannot be the basis for construction-related permits.

- **Page 6, Project Area, “Statutory Delta (California Water Code Section 12220)”** Proposed Project flow impacts alter the timing, magnitude and water quality of delta outflows such that the San Francisco Bay complex, Suisun Marsh, Napa River and Pacific Ocean resources are affected. The BDCP and WaterFix impact areas, with exactly the same types of general locations of proposed facilities as the Delta Conveyance Project, were required to also include the Napa River, Suisun Marsh, San Francisco Bay and the Pacific Ocean in their project impact analysis area. DWR was the Lead Agency for those previous documents. If DWR is to depart from the analytical standards and methods of these previous documents, it must present a strong, defensible and compelling logic for the departure from these previous plans, policies, procedures and precedents.
- **Page 6, Project Area, “South-of-Delta SWP Service Areas and, potentially, South-of-Delta CVP Service Areas)”** The project impact assessment area must also include drainages that are downstream of the SWP and CVP service areas as water deliveries from the project affect the timing, quality and magnitude of flows and resources in these tributaries and drainages. SWP service areas drain all the way back to the Delta, Salton Sea or Pacific Ocean depending on which service area and or if the CVP is included in the project.
- **Page 9, Alternatives, “An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.”** CEQA alternatives must include those which reasonably meet the project purpose and objectives so the language in the NOP is incorrect and misleading. The NOP excludes many of the project objectives and purposes as defined by EO N10-19. These criteria and mandates as identified in our comments on the EO must be included in the project alternative screening criteria. Based on the EO requirements, the Proposed Project does not perform very well and sets a low bar for evaluating other alternatives which do meet these EO criteria as well or better than the Proposed Project. Screening criteria must be rational, defensible and consistently applied in the evaluation of alternatives and alternatives components. The Alternatives Scoping Document, to be released for public review and comment, must demonstrate the criteria and rational for proposed alternatives either being included or excluded from full analysis in the EIR.
- **Page 9, Alternatives, paragraph 2, “The scoping process will inform preliminary locations, corridors, capacities and operations of new conveyance facilities to be evaluated in the EIR.”** The NOP and Public Scoping Meeting materials and presentations were non-specific regarding the location of facilities and devoid of any water operations description other than theoretical range of flow capacity of the tunnel. The scoping process failed to inform the public on any intake operation tributary flow bypass standards, intake diversion operations daily intertidal variations in screen intake sweeping and approach velocities, reservoir operations changes to facilitate the project operations, the type of fish screens proposed, water supply delivery quantities that constitute the stated NOP objective to “restore water supply deliveries”, excess transfer capacity created by the Project and many other material omissions to inform the public and decision makers for the alternatives scoping process. In every possible aspect of project description (location, size, type, function, design, artistic renderings, site design plans, operations), DWR

either omitted critical information or was so non-specific as to be non-functional as a project-level disclosure in the NOP and public scoping meetings. The NOP and Public Scoping Meetings did not meet the CEQA requirements as stated in this quote from the NOP. The NOP and Public Scoping Meetings were deficient in their omission of project-level description and must be revised and redone in a subsequent NOP and public scoping process.

- **Page 9, Alternatives, paragraph 2,** *“DWR will make its final choice of potentially feasible alternatives to include in the Draft EIR after receipt of scoping comments.”* DWR must consider and evaluate the alternatives identified in the scoping comments, not just make a final decision after receiving them. This DWR statement is a declaration of the intent to ignore the input from the alternatives scoping process. A Scoping Report that discloses the alternatives assessment methods and rationale and the final selection process must be issued for public disclosure and comment. This precedent has been set by numerous DWR EIR projects including the BDCP. Only after public disclosure and comment on the alternatives development process in the Scoping Report Document can DWR make choices regarding feasible alternatives to include in the EIR. DWR’s BDCP project, among other DWR EIR processes, has established the precedent and DWR standard of procedure in EIRs to release and receive comments on the Scoping Report. If DWR is to deviate from these established agency plans, procedures and precedents, it must provide strong, compelling and defensible rationale for this departure from DWR standard agency practices and precedents.
- **Page 9, Potential Environmental Effects,** *“DWR as the lead agency will describe and analyze the significant environmental effects of the proposed project.”* CEQA requires that DWR must describe, disclose and analyze all environmental effects (not just the “significant ones”) of the project and then determine which are significant.
- **Page 9, Potential Environmental Effects,** *“Water Supply: changes in water deliveries.”* These assessments must include impacts to non-SWP and CVP water users including, but not limited to: changes in water surface elevation for diversion access, water diversion facility fouling from changes in aquatic weeds from alteration of water circulation patterns and duration of nutrient accumulation before flushing flows, changes in the rate and location of toxic algae and methylation of mercury, water supply suitability for designated beneficial uses, growth inducing impacts, etc.
- **Page 9, Potential Environmental Effects,** *“Surface Water: changes in river flows in the Delta.”* There will be upstream and downstream of delta flow changes from the project that must be assessed. Construction dewatering discharge flow impacts must also be quantified, specified in location and timing and evaluated in the EIR.
- **Page 9, Potential Environmental Effects,** *“Groundwater: potential effects to groundwater levels during operation.”* There are groundwater impacts from construction dewatering and from on-going variability in SWP water supply deliveries which must be quantified and assessed in the EIR.
- **Page 9, Potential Environmental Effects,** *“Water Quality: changes to water quality constituents and/or concentrations from operation of facilities.”* The BDCP and WaterFix EIR/S failed to conduct scientifically defensible best available science analysis of impacts to water quality including dissolved oxygen and salinity. Construction dewatering discharge water quality affects must also be evaluated, especially with respect to point discharge water quality requirements.
- **Page 9, Potential Environmental Effects,** *“Geology and Seismicity: changes in risk of settlement during construction.”* The EIR must include impacts to collapse of aquifer structure from construction dewatering; risk to levee integrity from construction vibration, settlement and fracturing; risk to levee integrity from tunnel or intake structural failures, risk to levee integrity from failure of Forebay impoundment dams, etc.
- **Page 9, Potential Environmental Effects,** *“Soils: changes in topsoil associated with construction of the water conveyance facilities.”* The EIR must also assess impacts of ongoing and incremental salt accumulation in soils on productivity and land use suitability from continued operation and increased water deliveries from the SWP, impacts from the storage, drying and transport of tunnel material – please see previous related comments.

- **Page 9, Potential Environmental Effects** – “Air Quality and Greenhouse Gas...” Air quality impact assessments require construction location, timing, duration, equipment used, etc. Greenhouse gas impacts require analysis of changes in reservoir operations and SWP system-wide water quality as they affect and contribute to CO₂ greenhouse gas emissions. This later impact contribution requires detailed project water operations information which the NOP has declared the project will not provide until after the completion of the EIR process.
- **Page 9, Potential Environmental Effects - All** of the impacts types described in this section of the NOP by the DWR EIR Team demonstrate limited understanding of the SWP system and operations, the complexity and functions of the Delta, and previous and closely related SWP/CVP EIR/S analyses or those analyses conducted under the almost identical projects of the BDCP or California WaterFix EIR/S. The NOP (flawed) copying of the CEQA checklist with little professional knowledge or judgment relevant to the California water system or the Delta Conveyance Project does not convey an expectation of a competently executed draft EIR to come. There are huge amounts of materials available to the Delta Conveyance Project EIR team on other EIRs conducted on similar projects, but it is clear they have not utilized them or are not mindful or respectful of the previous agency legal precedents and standards set by them. Due to the extreme similarity of the Delta Conveyance Project and the BDCP and California WaterFix projects, previously submitted scoping, draft EIR/S, and final EIR/S comments by CDWA and SDWA on those projects are hereby incorporated as scoping comments herein for DWR’s required consideration. CDWA and SDWA as agencies have invested enormous amounts of limited resources in contributing comments to the EIR process in these previous and so closely related projects. DWR, in the preparation of alternatives scoping and the draft EIR of the Delta Conveyance Project, must look closely to these previously submitted comments and address the multitude of inadequacies and deficiencies in these previous EIR documents as well as the alternatives identified within those comments.
- **Page 12, paragraph 2**, “...each responsible and trustee agency is required to provide the lead agency with specific detail about the scope, significant environmental issues, reasonable alternatives, and mitigation measures related to the responsible or trustee agency’s area of statutory responsibility that will need to be explored in the EIR. In the response, responsible and trustee agencies should indicate their respective level of responsibility for the project.” It is requested that DWR post the lead and responsible agency responses on the project website as part of the public record and include them in the Scoping Report when it is made available to the public so that the public can be informed and comment upon identified agency needs and requirements from the Delta Conveyance Project.

NOP Comment Summary

The NOP is deficient as it omits material information regarding Proposed Project operations required by CEQA for a project-level EIR. The NOP is in violation of CEQA as it proposes to complete the EIR process prior to determination or analysis of final project operations or analysis or mitigation of those final operations impacts.

The NOP Project Purpose and Objectives incorrectly only selectively include 2 the 15 mandates of Executive Order N10-19 and specifically exclude the required “special status species”, “ecosystem health” and “watershed health” from the EO. The DWR Proposed Project meets NONE of the Project Objectives identified in the NOP, see **Table 1** and this preceding NOP comment and analysis section.

The NOP Project Purpose and Objectives are not legally compliant with SB-X7 (Delta Reform Act) as they do not include the coequal goals of water supply reliability and habitat conservation or reduced reliance upon Delta water supplies.

The NOP geographic scope for Alternatives is arbitrarily and capriciously limited to the Delta which does not address the SWP water supply delivery reliability as a whole and is in direct conflict with the mandate from Executive Order N-10-19 for regional solutions.

The NOP proposed impact analysis geographic scope is incorrect as it must include drainages downstream of SWP service areas and areas upstream of SWP reservoirs which will or may have altered operations as a result of the project operations (as yet deficiently unspecified).

The NOP Proposed Project intakes are located in intertidal zones under current conditions (much more so under assumed future project conditions) and are not compatible with the 10' Sea Level Rise assumption and the water supply reliability Project Objective. The Proposed Project presumes the State is abandoning the Delta, its population, and wildlife in response to projected Sea Level Rise which is in direct violation of DWR's mission statement and responsibilities as a Public Trust Resource Agency for all of California, not just the SWP resource agency as this project is oriented.

The Delta Conveyance Project proposes to "Restore Water Supply" but fails to functionally or quantitatively define this objective.

The NOP incorrectly presumes the current SWP operations result in Water Quality Standard Compliance.

NEPA Compliance is required to secure Federal Permits required by the Project, including those from the USACE for 401, 404 and 408 permits. As the federal agency issuing permits for the project, the USACE, not USBR, must logically be the NEPA Lead.

EIR Preparation Comments

Introduction

The BDCP and WaterFix projects are extremely closely related to the proposed Delta Conveyance Project. From the level of detail disclosed (lack thereof) in the NOP and Public Scoping Meetings, the Delta Conveyance Project has no discernible differences from these two DWR predecessor projects other than one tunnel or two. As such, these projects set DWR Agency standards, practices and protocols for these types of analyses which the Delta Conveyance Project must utilize as the minimum standard bar of performance. Given the close similarities of the proposed Delta Conveyance and the BDCP and WaterFix projects the EIR team may draw heavily against those previous works. That said, the BDCP and WaterFix EIRs included a long-list of deficiencies, internal inconsistencies, factual and analytical errors, flaws in logic and execution, data mishandling, conclusions that directly conflicted with presented supporting analysis and blatant omissions of mandatory information which the Delta Conveyance Project EIR must not repeat.

CDWA and SDWA invested significant time and limited resources in developing thoughtful, constructive and thorough comments on the BDCP and WaterFix EIR/S documents. The Delta Conveyance Project would serve themselves well to review and analyze these comments to develop the best available science methodologies and tools, appropriate data treatment (aggregation/disaggregation), direct and indirect effects analytical processes, rationale and methodical impact synthesis, consistent and defensible significance criteria, impact calls that are consistent with the supporting analysis, a full suite of reasonable and practicable mitigation measures and a thorough cumulative impacts analysis. To convey a sense of the level of deficiencies in the BDCP and WaterFix projects, in total, CDWA and SDWA submitted over 1,000 pages of detailed and substantive comments. Because of their direct relevance to the Alternatives scoping and EIR preparation of the Delta Conveyance EIR, CDWA and SDWA's previously submitted comments to DWR on the BDCP and WaterFix Public Scoping Comments and draft and final EIR/S are herein incorporated by reference as part of our scoping comments for the Delta Conveyance project Scoping Comments.

Following are some specific areas of concern for the Delta Conveyance Project EIR preparation.

1) Use of Best Available Science in EIR Analysis

CEQA requires use of best available science. The BDCP and WaterFix EIRs eschewed use of some commonly used and accepted modeling and analytical tools to avoid disclosure and quantification of a number of key environmental impacts of those projects. The Delta Conveyance Project EIR must not repeat these same deficiencies in the use of best available science. These models and analyses which must be used to the CEQA best available science standard include:

- a) **CalSim 3** – This latest generation tool for analyzing for SWP system-wide mass balance flows has higher temporal resolution and accuracy than the previous outdated CalSim versions. This best available science model data is critical to the accuracy and completeness of all hydrologic and water quality impact analysis as CalSim feeds critical information to drive SWP operations models which are also required for impact analysis of the project. The BDCP and WaterFix EIRs declined to use this best available science tool which must not be repeated by the Delta Conveyance Project EIR.
- b) **Operations Models for the Delta Conveyance Project.** These operations models respond to CalSim input with their own respective operations that fulfill demands as defined in the CalSim 3. The respective SWP operations models define a set of operations which fulfill the CalSim water

supply demands while the operations models comply with water flow and quality requirements. The CALSIM and operations models are run iteratively until a water operations solution is achieved which optimizes meeting water supply demand while complying with water quality and quantity operational and environmental legal requirements. All SWP facility components have operations models including Oroville Reservoir, Thermalito Afterbay, Banks Pumping Plant, the California Aqueduct, San Luis Reservoir and all other SWP pumping plants and reservoirs. The BDCP and WaterFix projects never defined operations for their facilities for operation of water intakes, reregulating reservoirs, pumps, etc. so impact assessments of those operations were never conducted in those EIRs. Without those facilities operations impact analyses in the EIR, the project cannot be permitted as impacts from them have not been disclosed, evaluated or mitigated. Most critical and missing from the BDCP and WaterFix facilities operations models was the intertidal operations of the north delta intakes to comply with fisheries requirements for maximum approach velocity, minimum sweeping velocity and maximum duration of exposure of listed fish species to the proposed intake fish screens. Accurate modeling of 3D velocities at the fish screens requires high resolution bathymetry at the intake selected site and design characteristics of the intakes. These are all required for a project-level analysis of impacts which would be required to secure construction-related permits. The Delta Conveyance Project does not define exactly where water diversion structures would be placed so the required analysis of fish screen fish criteria compliance is not possible for this EIR making it deficient for potential consideration of Incidental Take Permits (ITPs).

- c) **Delta Salinity Water Quality Models** - DSM2 has a Salinity analysis module that the BDCP and WaterFix EIR analysis did not utilize to the level of best available science. The out of date and not utilized available bathymetry data utilized in the BDCP and WaterFix DSM2 modeling caused those analyses and impact evaluations to mischaracterize and under-estimate project impacts. The magnitude of the gap in the old bathymetry characterization vs. current reality and available data results in such a disparity that the self-cancelling error of the model utilized in a comparative analysis manner no longer functions usefully or defensibly. CEQA's best available science requires that available updated data be integrated into the data set to be used for analysis in the Delta Conveyance Project EIR.

The DSM2 salinity module has been used on other Delta water projects that included updated bathymetry data collection. Significant portions of the delta have updated bathymetry data collected and available from these recent projects. This data must be integrated with the rest of the available bathymetry data for the EIR. SDWA can provide information regarding sources for these more recent data sets. Current and accurate bathymetry data is essential to conducting the most accurate and representative salinity modeling for impacts analysis and development of proposed operations to avoid and minimize salinity impacts as well as identify and evaluate potential mitigations as CEQA best available science requires.

The Delta Conveyance Project has already set the precedent that it will collect new field data to further the design and analysis for the project with its current and on-going program to collect additional geologic core samples along the proposed tunnel conveyance route. With DWR's precedent for new field data collection established for this project, the Delta Conveyance Project should put equal emphasis, investment and time in collecting important supplemental information to support accurate environmental impacts analysis. Supplemental selected area bathymetry data must be collected as needed to compliment other available data to represent current Delta channel conditions to ensure that a useful and meaningful modeling analysis of salinity impacts is conducted by the Delta Conveyance Project EIR.

- d) **Dissolved Oxygen Water Quality Models** - DSM2 has a Dissolved Oxygen (DO) analysis module that the BDCP and WaterFix did not utilize. Many other existing, generally accepted and suitable DO models are applicable to the DO impact analysis for the Delta Conveyance Project. The BDCP and WaterFix shamefully used no quantitative analysis on this critical project impact. Instead the BDCP and WaterFix EIR/S relied upon an unsupported, subjective, rationally inconsistent, qualitative assessment, professional judgment call for the only content addressing this pivotal impact. All of the relevant information regarding reduced flows and water turnover as well as nutrient load increase combined with increased water temperatures was ignored in favor of finding of no significant impact from DO that was supported by no collaborating documentation or analysis. The Delta Conveyance Project does not have to use DSM2 for the DO analysis, but it cannot fail to do no quantitative analysis as its DWR predecessor EIR projects have done.
- e) **Inappropriate Temporal Aggregation of Data for Analysis and Impact Calls** – The BDCP and WaterFix project EIRs aggregated data to obscure peak events which were relevant to disclosing, analyzing and mitigating project impacts. Temporal aggregation of data sets hides the range of conditions and extremes of conditions and impact as relevant information is lost due to it being averaged into other dissimilar data. Rolling two week averaged data used for an impact analysis or evaluation of project compliance with water quality requirements hides peak events and impacts. As an example, data can have low values most of the time but have extreme outliers (i.e. 4 plus standard deviation events) that are completely masked in the temporal averaging data treatment. In the case a rolling two week data averaging, if water temperatures are suitable for a fish to survive for 13 out of the 14 days but very unsuitable on one day; on average the water temperature is fine and no impact is determined, but in reality all of the fish are still dead from that one day. The same goes for salt load in irrigation water. On a 2 week average the amount of salt may be below that a crop can theoretically tolerate, but the one salty irrigation during that period killed the crop and poisoned the soil which is not disclosed by inappropriate data averaging and temporal aggregation. The Delta Conveyance Project EIR must not utilize temporally aggregated data sets for impact analysis or utilize significance criteria which rely upon temporally aggregated data sets.
- 2) **The Delta Conveyance Project Extends the Operational Lifespan of the SWP** - The No Project Assumption of the Delta Conveyance Project EIR includes a 10' increase in sea level. This sea level rise would effectively end the viability of the SWP water supply approximately by or around the year 2050. Therefore, the Delta Conveyance Project must include as part of their direct, indirect and cumulative impacts assessments in the EIR, the on-going impacts and incremental impacts of continued operations of the SWP beyond the time period in which it would have been viable without the project (the No Project). The SWP Water Supply Contract Extension Amendment EIR was legally obligated to disclose, analyze and mitigate this impact, but omitted this impact from its impact scope by incorrectly assuming the contract extension as the No Project condition. With the Sea Level rise assumption of the Delta Conveyance EIR, the EIR may not avoid including assessment of these on-going and incremental impacts of continued operations of the SWP.
- 3) **Delta Conveyance Project Water Transfer Impact Analysis** - The SWP Water Supply Contract Delta Conveyance Amendment deferred its impact analysis of water transfers to the impact analysis to be conducted under the Delta Conveyance Project EIR. The impact analysis of water transfers requires a detailed analysis of available water transfer capacity opportunity created by the Delta Conveyance Project. In order to conduct this water transfer capacity analysis at a project-level of impact (and construction-related permitting), a detailed hourly set of operations of the water intake structures must be defined. This is a set of operations that the BDCP and WaterFix never defined, disclosed or analyzed. The hourly operations of these intakes are required to determine what flows can be diverted based of flow velocity variations that occur within the intertidal conditions at the intake

specific intake locations (as yet to be) proposed. This analysis of potential intake diversion operations that comply with intake local conditions for fish criteria compliant operations against baseline SWP project operations demands determines what the potential excess capacity is for water transfers. The NOP does not define proposed operations or specific project-level locations for the intakes so this required level of analysis is not possible in this EIR.

Long-term water transfers result in hardening of base water supply demand and is growth inducing so use of the facilities excess water transfer capacity must be parsed into short-term vs. long-term transfer impact analyses. The specificity in the NOP is also deficient in the level of detail of project description and operations required to assess, disclose and mitigate for these project-level impacts.

- 4) **Agricultural Resources** – The BDCP and WaterFix EIR/S agricultural resource analysis ignored impacts of saltwater intrusion into the delta on agricultural water supply quality and shallow groundwater recharge salinity impacts to delta island, tract and district soils. These analyses similarly ignore salt accumulation impacts from the project in SWP service areas. With the viable lifespan extension, the Delta Conveyance Project provides the SWP system with extension of viability beyond those currently feasible with Sea Level Rise, all subsequent soil salt accumulation in the SWP Service Areas are impacts of the Delta Conveyance Project. The Delta Conveyance Project EIR should use (at a minimum) the methodology and impact analysis approach from the USBR Remand EIS to assess the project impacts on these agricultural resources.
- 5) **Growth Inducing Impacts** - The growth assumption (and stated project objective to “restore water supplies” and “support population growth”) indicates an objective of the project to provide increased long-term water supplies creating hardened demand from project induced population growth. Therefore the project must disclose the magnitude, location and nature of growth induced; and analyze and mitigate those Growth Inducement impacts. The BDCP and WaterFix projects claimed the project would “create no new water” (which was false), so they did not conduct growth inducement-related impact analyses. The Delta Conveyance Project clearly states it will induce growth so all impacts related to this objective must be analyzed, disclosed and mitigated in the EIR.

EIR Preparation Comment Summary

The BDCP and WaterFix EIR documents prepared by DWR included many deficiencies, errors, omissions, false science and contrived conclusions to avoid disclosing or mitigating significant impacts which must not be repeated in the Delta Conveyance Project EIR. CDWA and SDWA submitted over a thousand pages of detailed comments on these documents chronicling the failures of these documents and their deficiencies. The BDCP and WaterFix EIRs process was conducted from beginning to end with a predecisional process and procedural flaws. The Alternatives Scoping process was conducted with arbitrary, capricious, inconsistently applied screening criteria and unsupported evaluation rationale designed to foreclose potential project alternatives that otherwise in an unbiased process may have led to more favorable, lower impact project alternatives. The EIR screened out alternatives that were rationally viable based on criteria that were inconsistently applied. The EIR analysis included many fundamental deficiencies, errors in fact and analysis, false information synthesis, irrational and unsupported conclusions and impact calls, omitted impact analyses and impact mitigations, utilized professional opinions instead of use of available and accepted analytical tools, relied upon impact synthesis that was in direct contradiction to the supporting analysis; impact calls that were inconsistent, arbitrary and unsupported by the analysis or facts; and many significant impacts of the project which were not mitigated which were practical and feasible to mitigate. Again, the flawed predecisional process, analytical and disclosure deficiencies, lack of use of best available science and omitted science, unsupported impact calls, and unmitigated impacts must not be repeated in the Delta Conveyance

Project EIR.

Project Alternatives and Alternative Components

Introduction

In the spirit of open minded exploration and identification of project alternatives that reasonably meet the Project Objectives of the Delta Conveyance (and more importantly satisfy the mandates in EO N-10-19), the alternatives and alternative components set forth below merit objective consideration and evaluation in the EIR. The submittal does not reflect endorsement of all submitted alternatives as the result of objective evaluation should help guide such decision. Of the concepts listed below, only one aspect has been evaluated previously in any significant manner, the Through Delta Armored Levee Conveyance. The agencies strongly support the improvement of the Delta levee systems and the continuation of the through Delta conveyance of water for export which maintains the “Delta common pool” for both export and in Delta use and the common interest in maintenance of Delta water supply and quality as required by Water Code Sections 12200-12205.

The following alternatives are much greater in scope and effectiveness in meeting the Water Resiliency Portfolio mandates than the Delta Conveyance Proposed Project. The greater geographic scope of these alternatives is supported by Executive Order N-10-19 for regional solutions. The only aspect of water supply resiliency the Proposed Project addresses is the unquantifiable risk of levee failure in the Delta. A more comprehensive assessment of risks to SWP water supply reliability must address risks throughout the SWP system. If any link in the chain of SWP facilities is broken, from water origin to water destination, the whole system fails. Therefore the whole of the system must be included in the scope of the project to address water supply reliability. A number of SWP system risks present a higher risk of failure than the current through Delta SWP water conveyance. Consideration of a multilayered strategy to dramatically reduce through Delta SWP water conveyance risks that works with the natural Delta features and creates and enhances habitat values and water quality should be included within the project scoping. Another distinct difference of these project alternatives to the Proposed Project is that they significantly reduce flood risks in the Delta and do not abandon the Delta to future sea level rise. The Proposed Project does not reduce flood risks and does nothing to protect the Delta from sea level rise. The project must evaluate alternatives in which the Delta is not abandoned by the State to an assumed future sea level rise.

NOP Project Purpose and Objectives for Comparison to Proposed Alternatives

To put the alternative consideration into perspective it is essential to examine the NOP Project Objectives as they are part of the basis for screening and evaluating alternatives. Here is an excerpt from the NOP regarding Project Purpose and Objectives.

“Here, as the CEQA lead agency, DWR’s underlying, or fundamental, purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of State Water Project (SWP) water deliveries and, potentially, Central Valley Project (CVP) water deliveries south of the Delta, consistent with the State’s Water Resilience Portfolio.

The above stated purpose, in turn, gives rise to several project objectives. In proposing to make physical improvements to the SWP Delta conveyance system, the project objectives are:

- To address anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events.
- To minimize the potential for public health and safety impacts from reduced quantity and quality of SWP water deliveries, and potentially CVP water deliveries, south of the Delta resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the existing SWP and CVP pumping plants operate in the southern Delta.

- To protect the ability of the SWP, and potentially the CVP, to deliver water when hydrologic conditions result in the availability of sufficient amounts, consistent with the requirements of state and federal law, including the California and federal Endangered Species Acts and Delta Reform Act, as well as the terms and conditions of water delivery contracts and other existing applicable agreements.
- To provide operational flexibility to improve aquatic conditions in the Delta and better manage risks of further regulatory constraints on project operations”

EO N-10-19 Water Resiliency Portfolio Mandates for Comparison to Proposed Alternatives

To evaluate the suitability of project alternatives, it is essential to examine the mandates from EO N-10-19 as they are part of the basis for screening and evaluating alternatives. We have previously analyzed and discussed these in our comments on pages 4-10. Rather than repeat them here, please review those pages as reference in the evaluation of the ability of these project alternatives to reasonably meet these alternatives screening and development criteria.

In the description and discussion of project alternatives to the Delta Conveyance Proposed Project below, the alternatives proposed in these comments appear to meet most or all of the Delta Conveyance Project Purpose and Objectives and the EO mandates and fulfills them more reliably and reasonably than the Proposed Project.

Overview and Synthesis of Proposed Alternative and Proposed Project Evaluation and Screening

Screening and evaluation criteria were identified through analysis of the Delta Conveyance NOP Project Purpose and Objectives and by mandates required for Water Resiliency Portfolio projects from EO N-1-19. In the table below, the components of the project alternative proposed in these comments are on each row colored in light green. The last row of light green is the total of the combined project alternative components. The next row below that in an olive color is the Proposed Project. The vertical columns are alternatives screening criteria taken from the NOP Project Purpose and Objectives (olive color) and EO N-10-19 for the mandates of projects under the Water Resiliency Portfolio (light blue color). Detailed discussion of these identified alternatives screening and evaluation criteria can be found in our comment pages 12 (last paragraph) through 15 (third paragraph) and pages 4-10 respectively.

Each Alternative component is evaluated based on its ability to reasonably meet each alternative evaluation and screening criteria. If an alternative component (or alternative in the case of the Proposed Project) likely will satisfy the criteria, it is scored a +1 and is color coded green. If the alternative or component is uncertain or indeterminate from available information, the score is 0 and is color coded grey. If an alternative or component does not address or reasonably satisfy a screening and evaluation criteria it is scored a -1 and color coded red.

You will see in the table that many of the alternatives components satisfy many (but not all – represented by white spaces) of the screening criteria. With this presentation it is easy to see which alternative components complement each other to meet the project objectives and EO mandates. If for any reason one of the alternatives components was determined to be infeasible, the proposed alternative would still be viable and more fully meet the project purpose and EO mandates than the Proposed Project.

There are many benefits to combining these project alternative components into a single project alternative. First, in their combination, all but one criteria are met. Second, each of the alternative components satisfies each criteria in a different manner such that there is complimentary synergism in the effectiveness and reliability of the alternative as a whole in satisfying the criteria. Third, it allows the benefits of the alternative to be considered as a whole whereas the individual component may not be viable. A good example of increased overall project viability through the combination of alternatives components is the San Luis Grande south of the Delta water storage reservoir project alternative component. This south of Delta SWP water supply storage would do so much to add resiliency to the SWP in allowing greater water diversions during high flow periods and greater water supply reserves in the event of some SWP operations problem in or above that location within the SWP system. Considered as a standalone project, San Luis Grande failed its environmental review and permitting process due to impacts from the loss of wetland habitat. By combining this alternative component with the other alternative components into a single project alternative, the impacts would be considered as a whole. The wetland habitat loss from San Luis Grande would still occur with the reservoir footprint, but it would be more than offset by the increased wetland habitat quantity and quality created by the combined alternative component that reconnects the Delta Distributary Channels. The alternative components can be mixed and matched as needed to make the most viable project, but in general they are better together than they are individually.

The total score for the Project Alternative is summed in the last row with the corresponding score for each evaluation and screening criteria. The row below that is the scoring for the Proposed Project. The total score for the Project Alternative is 233 and is -11 for the Proposed Project. The Proposed Project performs poorly because the project proposed only obliquely addresses even the NOPs Project Objectives and largely ignored the mandates included in the Water Resiliency Portfolio Executive Order N-10-19.

Table 1. Comparison of Proposed Project and Project Alternative to NOP Objectives and EO N-10-19 Water Resiliency Portfolio Mandates

Proposed Alternative Components	Delta Conveyance NOP Objectives							EO N-10-19 Water Resiliency Portfolio Mandates													
	"Restore" SWP Water Supply & Protect Reliability	Consistent with State's Water Resiliency Portfolio	Address Sea Level Rise	Address extreme weather	Reduce risk from seismic failure	Operational flexibility to improve aquatic conditions	Drinking Water Safety	Public Safety from Major Flood Risks	Depleted Groundwater	Addresses Uncertain Agriculture Water Supplies	Native Fish Populations	Health of Our Environment	Water Supplies to Communities, Agriculture, Restoring and Maintaining the Health of Watersheds	Broad Portfolio of Collaborative Strategies	Addresses Hydrologic Pattern Change for Shorter More Intense Wet Season	Supports Population Growth	Prioritize Multi-benefit	Use Natural Infrastructure	Embrace innovation	Approaches from Other Parts of the World	
Reconnect Delta Distributary Channels																					
Through Delta Conveyance																					
South and West Delta Distributed Intakes																					
Delta Water Intake Interties																					
Clifton Court Fish Screens																					
Carquinez Strait Structure																					
SDWSC in-Delta Storage																					
San Luis II or SL Grande																					
Increased Fast Response Levee Breach Resources																					
Siphon Failure Mitigation																					
<3% SWP Conveyance Loss																					
Banks Plant Seismic Upgrade																					
CA Aqueduct Seismic Upgrade																					
Lake Oroville Slip Fault Fix																					
Oroville Dam Leak Fix																					
SWP POD Desalination																					
Combined Alternative to Proposed Project	16	16	10	12	15	9	14	9	1	11	9	11	15	10	16	7	1	16	9	14	13
Delta Conveyance Proposed Project	0	-1	0	1	0	0	1	-1	-1	-1	-1	-1	0	-1	-1	-1	1	-1	-1	-1	0

Color Key	Relative Score
Fully Achieves Mandate	1
May or May Not Achieve	0
Does not Meet Mandate	-1

Total Score	
Combined Alternative to Proposed Project	233
Delta Conveyance Proposed Project	-11.5

Table 1 Summary Comments: Every one of these project alternative components more fully meets the NOP project objectives and EO Water Resilience Portfolio Mandates more completely than the Proposed Project. Together or in any combination, these project alternative components may potentially make a better and more reliable (and probably cheaper) project than the Proposed Project. These project alternative components must be evaluated in the EIR. Once a preliminary analysis is completed on each alternative component, the combination of those components that best meet the project needs can be analyzed as a full alternative in the EIR. Several different alternatives can be developed by mixing and matching different combinations of these alternatives components.

Project Alternatives and Alternative Components Description and Discussion

Reconnect Delta Distributary Channels

This is an important project alternative component that has significant synergisms with other project alternative components. This alternative has never been evaluated in modeling or in an environmental analysis. It has merits and functions never considered before as a method to address Delta flow, habitat, water quality issues and SWP water supply reliability and resiliency.

First we will describe what a "Distributary" channel is and why they are important to restore. Tributaries are when flows come together, distributaries are when flows branch apart. The Delta was formed by

sediment laden water slowing in velocity and dropping its sediment load. Channels become clogged with the dropped sediment and water flows branch off from the main stem channel to find new routes. These branching off flow channels are distributaries and they are the geomorphic function that form and define the Delta.

When the Delta formed, Distributary channels (sloughs) were actively connected to the Sacramento River. Fish habitat and fish behavior were based on the flows that naturally occurred from these distributary channels. Over the years, almost all of the Distributary channels have had their flows cut off at their head end connection with the Sacramento River. Sutter, Steamboat and Georgiana sloughs are the only Distributary channels left connected to the Sacramento River at their head end. By reconnecting these other historical Distributary channels we restore more natural flows to the delta which in turn creates more habitat value and water supply efficiency than the current through delta conveyance configuration.

Reconnecting northern delta distributary channels will allow better water quality from the Sacramento River to push and be drawn across the West, Central and East parts of the delta to the south and much more efficiently freshen water quality than the current and unnatural choked delta channel flow configuration. This means that likely less carriage water would be required to maintain water quality in large parts of the delta. The flows in these distributaries would function for habitat, water quality, carriage water and as water supply deliveries for the south delta SWP pumps.

The reconnected head ends of these tributaries would need to be fish screened and have operable gates (like the Delta Cross Channel). These are projects with lower cost and much smaller footprint than the Proposed Project intake screens. Operable gates would be required to avoid redirected flood flows which the USACE would not allow in 404 permitting. The benefit of the operable gates of course is reduced flood risk as compared to the existing condition or the Proposed Project so that is a clear win for the Delta and a satisfaction of this criteria from the Water Resiliency Portfolio mandate. The fish screen would keep the Sacramento system fish in the main channel for reduced straying and increased juvenile emigration survival. The flows are small so approach, sweeping velocity and duration of fish exposure criteria for fish screen compliance would easily be met.

These reconnected tributary flows contribute to SWP water supply reliability in that in the event of a levee failure, the salt water intrusion into the delta could be purged from the Delta more quickly and efficiently by controlling where and how much cross flow occurs to flush the saline water out.

The flows through these currently dead end sloughs create substantial new and productive fish habitat and fish food generation. The habitat improvement benefits of these reconnections and activated habitat could provide justification for issuance of the ITPs the project would need and provide a basis for credit to offset other potential project impacts from the small, but required construction footprints. The habitat improvement and fish food generation make this project alternative component a clear win for Delta fish, habitat and water quality. It performs this function at the same time as increasing water supply reliability by providing a dynamic mechanism to control flows across sections of the delta that currently have little to no flows during large parts of the year.

Following are descriptions of the Distributary channel reconnection opportunities. Not all of these need to be selected in order for this alternative component to valuably contribute to the function of the project alternative.

- *Fremont Weir to Tule Ditch in the Yolo Bypass* – This flow would turn this Slough into functioning habitat for fish food production. Flows (100-200cfs) would come from the operation of the fish ladder that is already planned to be installed at Fremont Weir. The west bank of the Tule Ditch slough could be laid back to create shallow water habitat. The spoils from laying back the levee can be used to increase channel complexity creating habitat quality variations in water velocities and depths to create habitat values at a wide range of low and high flows. This channel is prime Sacramento splittail habitat (listed species) and would function for salmonid rearing and emigration habitat at low bypass flows. About 20 miles of shallow water and riparian habitat could be created at low cost, low footprint and low disruption. Water quality at the Lisbon Weir diversion would be significantly improved. The positive flow (as opposed to the current negative flow) will push good water quality down into the Cache Slough and Barker Slough complex which will improve water quality at Solano County diversion at Barker Slough. A very small amount of water would freshen a large section of the intertidal wedge that occurs in the Cache Slough complex. This has significant fish and water quality benefits.
- *Sacramento Deep Water Channel (SDWSC) locks at the port* – Re-engineer the locks to regulate flow and install fish screens between the port and the Sacramento River. The flows (100-200cfs) from the Sacramento River will improve water quality for the Sacramento Deep Water Ship Channel, Liberty Island, and lower Cache Slough complex. This will improve water quality at the RD999 diversion and help with water quality at Barker Slough for Solano County's diversion there. The SDWSC and Liberty Island are considered prime delta smelt habitat so the water quality improvement in this geographic area is important to protecting this species. The positive flows (as opposed to the current negative flows) from the Fremont Weir and SDWSC will push out the large tidal wedge in the SDWSC, Liberty Island and Cache Slough complex that currently just sloshes back and forth resulting in water quality getting worse and worse in between infrequent flushing that occurs from Yolo Bypass operation. Improving water quality here is not only significantly beneficial to fish but should have far reaching water quality benefits into the Central and West Delta.
- *Railroad Cut* – Rather than reconnecting this tributary to the river directly, this might be pumped into from the Sacramento River by reversing the Morrison Creek discharge below Freeport and Morrison Creek being redirected into this canal. Flows would probably be limited to 100-200cfs. This would activate fish habitat and fish food production for a 10+ mile stretch and improve water quality at Stone Lakes National Wildlife Refuge. This flow would improve water quality, habitat and food production in the Meadows by Locke and contribute flows to the North and South Forks of the Mokelumne. More flows and better water quality in the branches of the Mokelumne improve water quality in the east and central delta. Similar to the refreshing flows to the dead tidal wedge in the Cache Slough complex, this would improve water quality in an area much larger than just this canal and the Meadows. This and the Snodgrass Slough reconnection should reduce or eliminate the Dissolve Oxygen (DO) crashes and toxic algal blooms that have been occurring in the Central Delta. The area of improved water quality and fish habitat condition is located in ESA designated critical fish habitat for several listed species (delta smelt, longfin smelt, steelhead, winter- and spring-run Chinook salmon and sturgeon). DO crashes are a significant problem in the delta for fish and water quality. This alternative component is VERY important to solving critical problems in the Delta and deserves a full modeling evaluation to see how much of this problem this alternative component can solve.
- *Snodgrass Slough* – This would have a similar function and affect as the Railroad Cut reconnection. This would be directly connected to the Sacramento River and have a head control structure and fish screens. This reconnected channel could have a capacity of 200-500 cfs.
- *Elk Slough* – Reconnection here would activate a dozen miles of high quality fish habitat and food production for the delta and improve water quality at the RD999 diversion. If a gate is installed at the tail end of the slough at the confluence with Sutter Slough, flood risk for Merritt Island would be reduced (by approximately 60%) and RD999 (by around 20%). Reducing flood risk increases SWP water supply reliability.
- *Delta Cross Channel (DCC)* - The gates could have boat passable fish screen added to allow extended seasonal operation of DCC which is a prime location for flows to keep the Central Delta

water quality up. The screens would keep emigrating salmonids in the main Sacramento channel which has much higher survival rates.

- *Georgiana Slough* - Boat passable fish screens can be installed to keep Sacramento River emigrating juvenile salmonids out of the Central Delta where survival rates are very low. Flow rates through the channel could be manipulated to more quickly clear saltwater intrusion from the delta in the event of a levee breach thus increasing SWP water supply reliability and system resiliency.

Through Delta Armored Levee Conveyance

This alternative component has been studied by CalFed and others so we will not go into great detail here other than to identify several learnings since the last time this project was evaluated and discuss the synergisms of this alternative component with other alternative components.

There have been several innovations of this alternative component since the last time this project was evaluated. These include:

- Levee construction of toe berms on the land side of the levees protect against potential levee liquefaction in the event of an earthquake that occurs when river stage elevations are high and levees are saturated with water.
- Operable cutoff gates at confluences with other tributaries that protect from saltwater intrusion in the event of a levee failure.

The combination of this alternative component with reconnection of Delta distributaries and with East and Central Delta Intakes makes the function of the Through Delta Armored Levee Conveyance alternative component much more robust and function differently and more resiliently than any previous analysis of this alternative component. Combination of this alternative component with improvement of existing delta levee systems to minimum adequate engineering standards and higher standards along the conveyance corridors, increased modernized levee monitoring and maintenance and fast response resources for levee breaches also improve the character, performance and reliability of this alternative component to levels never previously evaluated. Given these improvements and synergisms with other project alternative components, this alternative component deserves a serious and detailed evaluation.

South and West Delta Distributed Intakes

The current SWP through delta configuration pulls all of the water for the SWP from Clifton Court Forebay which is from Old River. This creates reverse flows on Old River which pull fish into the unscreened intake to Clifton Court. This alternative component proposes to add intakes in the south and west delta so that SWP intake flows can reduce the impact on fish and add capacity and flexibility for diversion during high flow periods.

These connections could be fish screened or not. The supplemental flow source configuration would allow flexible SWP operation to avoid ESA fish populations when present at different locations and avoid water quality violations while still maintaining some intake flows. Intakes at multiple locations make the SWP less vulnerable to water quality issues in the event of a delta levee breach.

An intake at the south end of Victoria Canal could provide screened flow into Clifton Court while allowing Old River flow to move downstream past a closed Clifton Court gate. Contra Costa Water District has a screened intake on Victoria Canal, a screened intake on Old River downstream of Clifton Court, an intake on Rock Slough, East contra Costa Water District Has an intake off of Indian Slough and there is an intake at Mallard Slough. Interconnection of these intakes with the Contra Costa Canal and pipelines and

a connection to Clifton Court and or the enlarged Los Vaqueros Reservoir could address the export need without the expenditure of 10s of billions of dollars.

. A number of locations and combinations are feasible and should be evaluated. The capacity of these distributed intakes could be limited in size in the range of a few hundred cfs and easily screened.

The distributed intakes could improve water quality in areas of the delta with chronic water quality problems that currently impair designated critical fish habitat for several listed species. The distributed intakes also increase water supply reliability for the SWP in the event of an island flooding event. It also provides operational flexibility to avoid water quality violations and impacts to endangered fish from SWP operations

Delta Water Diversion Intake Interties

Throughout the SWP, interties with other water systems have been considered a good strategy to reduce failure risks and mutually improve water supply reliability. This project alternative component as described above proposes to connect a number of south and west Delta municipal water intakes together with the SWP. This intake intertie creates more water supply reliability for the SWP and for the non-SWP water users from the Delta.

Carquinez Straight Tidal Flow and Storm Surge Management

This alternative component was originally proposed in the 1920s and examined again in a 1977 UC Davis California Water Resource Center paper, "The Sacramento-San Joaquin Delta The Evolution and Implementation of Water Policy", by W Turrentine Jackson and Alan M Patterson. Their assessment of a Carquinez Straight Flow Control structure was very positive and can be found starting at page 63 in such document. This paper is incorporated by reference into our comments. If the Delta Conveyance Project has any problem finding this paper, please ask and we will send you a copy.

Without describing the facility in detail, think of this alternative component as an operable flow constrictor at the Carquinez Straight. Ships and fish pass without impediment, but peak tide or storm surge events are moderated in their ability to push salt water and water volume into the delta. As they say, "you can't hold back the ocean forever", but in this case, the objective of this alternative component is only to temporarily reduce peak tides and storm surges. Peak tides and storm surges compound the affects of sea level rise on flood risks, water quality problems and water supply reliability in the Delta. By this proposed facility taking the peaks off of storm and tidal surges it effectively reduces the combined effect of sea level rise that would otherwise occur and that the Proposed Project completely fails to address.

There are many potential design options for this facility – that is a set of engineering questions to resolve in preliminary (less than 5%) design that can be completed if this alternative concept is determined to have merit for development into a full alternative component. This alternative component is very important to evaluate as it is the only option identified so far which directly addresses and partially mitigates the impacts of sea level rise on the delta and on SWP water supply reliability.

The location of the Proposed Project north delta intakes will not protect the SWP water supply water quality or reliability from the magnitude of sea level rise the project has assumed. We know this because the old salinity water monitoring station on Randall Island is less than a mile from one of the Proposed Project intake locations. The salinity monitoring station was there because under historical flows, salt water quality problems could manifest themselves this far upstream in the Sacramento River in this intertidal zone. Modeling results of the north delta intakes under future sea level rise conditions will

validate the failure of the proposed north delta intake locations to protect against sea level rise impacts on SWP water supply reliability and system resiliency. Given this reality, the Proposed Project fails to address or satisfy the screening criteria for improved water supply reliability under increased future sea levels.

A Carquinez Straight Flow Control Structure would reduce salt water intrusion into the delta which improves Delta water quality which in turn protects SWP water supplies and increases SWP resiliency. Reduced saltwater intrusion into the delta will likely result in reduced carriage water requirements to maintain water quality so water supply efficiency may also be enhanced in this alternative component.

Water Storage Project Alternative Components

Increased water storage allows increase in flexibility and response of the SWP to water quality problems and increased carriage water efficiency.

- **Sacramento Deep Water Ship Channel as in-Delta Water Storage**

If locks are installed at the bottom end of SDWSC north of the levee breach at Liberty Island, the channel can be adapted to also function as in-Delta water storage. The channel is 23 miles long and would have a storage freeboard of at least 5 feet with no impacts to the port (other than ships having to traverse the locks sometimes) or other infrastructure or habitat. The purpose of the in-Delta storage is to provide a volume of water in the delta to quickly respond to water quality violations from SWP south delta operations. Depending on tidal conditions, water released from the bottom end of the SDWSC near Cache Slough would have beneficial flushing flow effects in just a few hours. The volume of water stored could be in the range of 3,000 Acre Feet. When operated it would freshen water quality for the Cache Slough complex and the Sacramento River from there to the San Joaquin confluence and downstream to the salinity interface. This volume of water would push salts back from the confluence of the Sacramento and San Joaquin Rivers which is where many SWP water quality violations originate.

The current SWP/CVP short term water quality problem response tool is to release water from Folsom Reservoir which takes about 24 hours to reach the delta. This water quality response mechanism is slow and inefficient in delivering water where it is needed as some Folsom released flows are dissipated into other channels that do not result in a focused flow of water to the problem area. This storage significantly increases SWP/CVP water quality management capability, responsiveness and effectiveness. Not treating Folsom like a on/off fire hose in response to delta water quality problems as the SWP/CVP operations currently do, improves SWP/CVP water supply efficiency and improves lower American River fish habitat quality.

The potential, but readily overcomable, downsides of this project alternative component are that the Port of Sacramento will not like the locks, the congressional authorization of the SDWSC does not include “water storage”, and some perceived (although poorly validated) potential delta smelt habitat would be intermittently cut off from free fish movement. All of these potential issues are overcomable if the benefits of improved water quality and water supply efficiency from in-delta water storage are sufficient.

- **San Luis II or San Luis Grande**

When the San Luis Reservoir site was selected, an adjacent canyon was deemed to be an equally favorable construction site. Constructing a second San Luis Reservoir or joining it with the current reservoir (San Luis Grande) would allow greater SWP diversions and storage during the winter high flows when the diversions do the least environmental harm. The increased water diversions during wet periods reduces Delta diversion demands in summer which is when most SWP water quality violations and SWP environmental impacts occur.

This project alternative component is to expand or construct new water storage downstream of the Delta to facilitate diversion of water from the Delta during periods of high flows which would significantly reduce SWP Delta water diversion impacts as compared to the Existing and No Project conditions. This project component was previously attempted as a standalone project, but was not approved as the No Project alternative was determined to be the Least Environmentally Damaging Project Alternative (LEDPA) by the USACE due to wetlands-related plant species impacts. If this project component is combined with the project alternative component "Reconnect Historical North Delta Distributary Channels", the project would result in a net increase in the quantity and quality of wetland and aquatic habitat which would overcome the previous LEDPA failure of the San Luis Grande project.

Increased Levee Monitoring and Fast Response Resources for Levee Breaches

This alternative component is aimed at reducing flood risk and increasing SWP water supply reliability by reducing the risk of or severity of a levee breach. The first objective of this alternative component is to prevent levee failures through better monitoring and maintenance. There are at least 4 monitoring and assessment tools which are underutilized and not methodically implemented which can provide information to substantially reduce the risk of levee failure.

LIDAR and thermal remote sensing surveys of the delta levees should be conducted annually. LIDAR maps land surface elevations to an accuracy of just a centimeter at every square foot of surface so any changes in levee height due to subsidence or levee shape deformation from slumping or toe failure would be detected and remediated long before these early warning signs developed into levee failure events. Thermal imaging detects surface temperatures. Detectable changes in temperature are caused by water saturation and moving water, even below the soil surface. This technology provides detection of seeps and boils at early stages so these risks to levee integrity can also be proactively addressed prior to levee failure. Side scan sonar surveys of the underwater parts of the levee can be used to detect and map levee toe failures and channel scour holes that could lead to levee failure if unaddressed. These levee integrity threats detected by the side scan sonar can again be proactively addressed long before an actual levee failure occurs. Ground penetrating radar can be used to inventory and assess levee construction integrity. Voids, saturations and flaws in materials used in original levee construction can be detected and mapped with this technology. Identified sections of weak or poorly constructed levees identified with ground penetrating radar can be replaced (i.e. set back levees) or repaired (i.e. slurry walls) prior to failure. Methodical use of these technologies to early detect potential problems with levees that could lead to levee failure and proactive use of that information to address these vulnerabilities will greatly reduce the risks of levee failures to flood impacts and SWP water supply reliability. The Delta Conveyance Project should not fall to claim these monitoring programs are already occurring, because they are not at the scale and frequency proposed here. The one or two LIDAR surveys of the Delta that have been conducted are useful as baselines to start comparisons to detect problems but this tool is not being utilized to its full potential with regular and regimented monitoring. Similarly, ground penetrating radar has been used in some levee assessments, but it has not been applied to all delta levees nor have

the current surveys been comprehensive, methodical or repeated as a monitoring tool. The same can be said of the level of use of thermal imaging and side scan sonar survey technologies.

The second objective of this alternative component is to change how levee breaches are addressed. Currently, once a levee is breached the island or tract is allowed to completely flood, come to equilibrium with the tributary and later the levee breach is repaired and the inundated land pumped out. In the current “sit back and watch until it stops” response to levee failures, all of the damage from the levee breach is done before repair or management actions are implemented. This results in the maximum salt water intrusion as all of the flow into the beached island or tract happens very quickly. All of the infrastructure and assets on the island or tract are flooded. Potentially lives are lost.

This alternative component is intended to provide resources and level of response preparation that allow a levee breach to be more immediately addressed to slow or stop the rate of water inundation. This alternative component is not expensive to implement compared to the cost of a levee failure that results in complete inundation. This alternative component includes: larger and more strategically placed rock stockpiles in helicopter and crane ready packages, dedicated heavy lift helicopters on standby with National Guard or contractor, crane barges on standby and strategically distributed in the delta for rapid response, and sinkable barges strategically distributed in the delta for rapid response. Scenarios and analysis should be conducted to determine the number and locations of these resources to be effective to respond to any hypothetical levee breach in 30 minutes or less. The objective is to stage these resources to seal or at least significantly slow levee breaches while more permanent fixes are constructed, etc. This alternative component results in increased water supply reliability for SWP by reducing frequency and severity of island flooding events and the reducing the frequency and magnitude of potential salt water intrusion events.

SWP Conveyance South of Delta Achieves Less than 3% System-Wide Leakage Loss

The California Aqueduct leaks perhaps as much or more than 15% of the water supply that flows through it. We are not aware of any published audited water loss analysis of the SWP or California Aqueduct. Water diverted into the SWP lost to conveyance leakage is water that causes environmental impacts to the delta that could be avoided and minimized by reducing SWP conveyance leakage losses. DWR promotes water conservation across the state in many programs, but has not (to our knowledge) disclosed what water savings they in turn have achieved from SWP leakage loss mitigation.

DWR's Leak Loss Detection Guidebook, “The California Department of Water Resources estimates that about 250,000 acre-feet of water leaks from municipal systems in California each year. DWR's experience in working with 60 local water agencies, whose water audits reveal leak detection projects to be cost effective, indicates that leaking water can be controlled at a cost averaging less than \$50 per acre-foot, a cost usually less than what a water agency pays for the water.”

(<https://water.ca.gov/LegacyFiles/wateruseefficiency/publications/doc/%201992%20DWR%20Leak%20Detection%20Guidebook.pdf>) There are leak loss reports on SWP Contractor conveyance systems at <http://wuedata.water.ca.gov/>.

Finding and quantifying the conveyance losses in each reach of the California Aqueduct is technically feasible using well proven and affordable technology. Acoustic Doppler current profilers (https://en.wikipedia.org/wiki/Acoustic_Doppler_current_profiler) can be calibrated and periodically measure flows in the aqueduct at stations upstream and downstream of each diversion. Evaporative losses for each reach can easily be calculated using existing models. Reaches that exceed the target

leakage loss tolerance can be prioritized for more intensive investigation to identify the leak locations and efforts initiated to recapture those conveyance water losses.

An example of the California Aqueduct leakage is demonstrated by a thermal image of a section of the aqueduct at mile point 9.9 south of the South Delta pumps (image available upon request although DWR should have a copy of the report and this image in its project archives). The only section of the canal in the image that is not leaking is the section at the lower left. The canal (in blue – cool temperatures) in most areas in the image transitions to larger areas of oranges and reds which identify the location, size and orientation of the leaks. The image is from a project for DWR in 1990. DWR believed the surveyed area to have 3 leaks. The survey identified those three large leaks as well as over 200 smaller ones. The current available technology to detect, locate and characterize aqueduct leaks is now vastly superior to this example.

Long-term leaks of the aqueduct carry soil away with the leak flow. These create voids under the aqueduct which are prone to catastrophic failure. Reduced leakage loss of the SWP aqueduct not only improves water supply efficiency and reduces environmental impacts of water supplies diverted in the Delta, but repair of leaks likely prevents potential catastrophic aqueduct structural failures which threaten SWP operational reliability. This alternative component reduces SWP water diversion environmental impacts on the delta and reduces risks to water supply reliability failures.

Seismic Risk Mitigation in SWP Storage and Conveyance

There are many parts of the SWP system potentially vulnerable to seismic failure, not just the Delta component of SWP conveyance as the Proposed Project targets. This project alternative component is much more comprehensive in its scope to address SWP water supply reliability and resilience from potential seismic or structural failure events.

- **Seismic Upgrade of Banks Pumping Plant and California Aqueduct**

This project alternative component addresses seismic risks to SWP conveyance and storage downstream of the Delta for water supply reliability and resiliency. The SWP was designed prior to and constructed in 1960 to the standards of the day. Since 1960 our understanding of earthquake infrastructure design risks and resulting construction codes have greatly evolved and become much more stringent. Additionally, the sophistication of earthquake fault detection and seismic event modeling has also greatly increased in sophistication since 1960. Many of the fault lines in California have been discovered since 1960 and the earthquake magnitude risk of these faults is constantly being revised, mostly up, in terms of potential severity. As an example of California's adaptation to seismic risk, all of the highway bridges in California have been or are in the process of being upgraded to address our increased understanding of seismic risk and engineering standard requirements. Conspicuously absent from this infrastructure seismic upgrade, modernization and risk management are the SWP pumping plants and California Aqueduct conveyance.

The risk to SWP infrastructure reliability and resiliency from seismic events is not evenly distributed. There are several forms of energy released by an earthquake and geologic settings and proximity to faults play an important part in assessing infrastructure risk. The principle energy forms most discussed in seismic events are P and S waves. P waves travel through all materials, but are less destructive to infrastructure. S waves lose their energy over distance and do not transmit well through unconsolidated material or liquids such as occur in the delta. S waves are shear waves that typically cause most of the damage to infrastructure and which most severely occur on consolidated materials and bedrock such as the materials the California Aqueduct are constructed upon south of Tracy all the way down to the Tehachapi's. As an example of the difference in S and P waves in different geologic settings, the Loma Prieta earthquake affects in the Delta were slow rolling P waves, not the jolting shear of S waves. In the

Bay Area this same earthquake very badly damaged infrastructure based on consolidated materials and bedrock, mostly by the S seismic waves.

Delta levees are based on unconsolidated alluvium and liquids. In the event of an earthquake in the Coast Range Mountains which represent the closest potentially active faults to the Delta, the P waves would have less potential to affect levee stability. S wave seismic energy is dissipated by soft materials and distance so Delta levees would be less affected by this type of earthquake energy release. In contrast, the California Aqueduct is built upon hard consolidated and bedrock materials and is close in proximity to these faults so it is much more vulnerable to S wave seismic failure than the Delta levees. The California Aqueduct is even more vulnerable to seismic failure due to the construction that alternates from cuts across hills of solid bedrock to transition across soft fill construction between hills. The aqueduct construction alternating from hard to soft base material is where shear forces of S waves will be most manifested to cause lining and containment failures as these materials and base will move at different frequency and magnitude. Up to date and best available science modeling of seismic risk of the Aqueduct will confirm these assertions. Up to date and best available science modeling of earthquake vulnerabilities of the California Aqueduct are part of this proposed project alternative component. Once evaluated, the most vulnerable sections can be earthquake retrofitted just like almost all other existing infrastructure has already done in the State.

The Proposed Project incorrectly focuses on the relatively lower potential risks to the Delta SWP components of conveyance for potential seismic failure. This Proposed Project constrained scope fails to address the larger SWP water supply seismic vulnerabilities in the rest of the SWP. This proposed project alternative component has a much broader and risk factor appropriate scope to address water supply reliability vulnerabilities of the California Aqueduct and the south Delta pumping plant. If the Aqueduct fails in an earthquake, it would not really matter to SWP reliability if the Delta levees did or did not fail at the same time, the result would still be a catastrophic SWP water supply failure. It is likely however that it would be the Aqueduct and or pumping plant that would fail rather than delta levees.

Aspects of this alternative component can be determined after an inventory, risk assessment and preliminary engineering design fixes.

It does not make sense in the context of protecting SWP water supply reliability to ignore this SWP water supply reliability risk yet the Proposed Project focuses on earthquake risks from through Delta conveyance and ignores other SWP infrastructure that is arguably at greater risk of failure from earthquakes.

- **Oroville Reservoir Slip Fault**

The largest volume documented slip fault in California (as of about 12 years ago or so) is located inside Oroville Reservoir. In a pers. comm. from a DWR Hydrogeologist, "If we had known about the slip fault before Oroville was constructed, it would never have been built". The Hydrogeologist said that if the slip fault let go and slid into Lake Oroville (picture in your mind half of a mountain sliding into the reservoir) the modeling they had done predicted a 60' tsunami that could potentially take out the Oroville dam. The modeling the Hydrogeologist referred to has not been publicly released, but was part of the Oroville relicensing submittal to FERC and presumably (although perhaps not given the inaction to address this problem) the Division of Safety of Dams. DWR is well aware of this potential failure point of the SWP, but to date as failed to take action to protect SWP water supply reliability or public safety from this risk. Not to diverge from this topic, but DWR was also aware at the time of Oroville FERC Relicensing of the risks of failure of the dam from use of the emergency spillway, but also failed to address those risks to SWP water supply reliability and public safety from the resulting flood risk. Our project alternative component addresses and is designed to mitigate this not insignificant risk water supply reliability risk. If Oroville Dam fails, so does the entire SWP.

Slip faults can be activated in at least three ways relevant to the Oroville Reservoir catastrophic failure risk. Precipitation can saturate the boundary layers of the slip fault and reduce coefficient of friction causing failure and catastrophic landslide into the reservoir. Slip faults can be activated to failure by saturated soils from reservoir levels that are drawn down too quickly to let the saturated soils drain. The risk here is that the heavy reservoir water saturated soils at the bottom of the slip fault pull the rest of the slip fault down with it. Slip faults can also be activated by seismic events. If an earthquake occurs when either of the first two failure scenarios are in play then this is a combinative effect and risk of failure, e.g. the slip fault is saturated from heavy rains and an earthquake occurs. Under this easily foreseeable and not unlikely scenario there would be no warning, just catastrophic failure. Given the magnitude of this risk to human life (150,000+), catastrophic flooding (the Sutter Buttes look like the Hawaiian Islands in the inundation map in the event of an Oroville Dam failure) and complete shutdown of the SWP water supply system to 23 million Californians and millions of acres of irrigated agricultural land; THIS RISK TO THE SWP MUST BE ADDRESSED. The Proposed Project fails to address any of these aspects of risk to SWP water supply reliability or flood risk to Californian's as the Water Resiliency Portfolio EO mandates.

Oroville Reservoir operations must be evaluated for their potential to contribute to the risk of triggering the slip fault. If any portion of the slip fault can potentially be saturated by any possible stage elevation of Oroville reservoir, then reservoir drawdown speed limits must be established and implemented in operations rules until the slip fault risk is mitigated. This prudent mitigation to SWP precipitated risk will have negative consequences on SWP water supply availability until this SWP flaw and risk are addressed.

There other portions of the SWP system which already have drawdown speed limits, e.g. San Luis Reservoir, to avoid or minimize dam structural failure to slumping so this SWP risk mitigation is not without well established precedent. There are also SWP/CVP operating rules regarding how fast tributary flows can be drawn down to avoid damage to levees from slumping from drawing down flows too quickly. A risk analysis of the Oroville Slip Fault to failure from drawing down the reservoir too quickly has not, to our knowledge, been conducted. The Proposed Project has not disclosed its operations and has indicated its intent to (in conflict with CEQA law) not to do so in the EIR. The operations of the Proposed Project that are implied by the project configuration and assumed changes in future hydrologic patterns would result in faster reservoir draw downs in the future which means the proposed Project would exacerbate the current SWP operations caused catastrophic failure risks to Oroville Dam and SWP water supply reliability.

If the Delta Conveyance Project wants the SWP water supply to be more resilient to climate change and earthquakes, the Project must fix or remove the slip fault in Lake Oroville.

- **Oroville Dam “Green spot” Leak**

The leak in the face of Oroville Dam is readily visible in the summer and is symptomatic of uneven settling of the earthen dam from the incorrectly designed asymmetrical dam abutments. Earthen dams are designed to settle. If the dam abutments are symmetrical then the settling is even and no horizontal stress is generated on the earthen dam fragile structure. In the case of Oroville Dam, the asymmetrical abutments cause a horizontal shear force that fractures the dam as it settles. The green spot is an indicator of a leak that could lead to catastrophic failure, which would be much worse for the reliability of SWP water supplies south of the delta than a levee failure in the delta. Flushing of salt water intrusion from the Delta from a levee failure (reduced risk of failure and reduced time to flush salt water intrusion is a benefit of the proposed project alternative) might take weeks or months whereas rebuilding and refilling Lake Oroville would take a decade if it was even technically feasible at all given the damage to the critical dam abutments and downstream infrastructure, i.e. the Feather River Fish Barrier Dam, Oroville Power Plant, Thermalito Afterbay, Afterbay Power Plant and Afterbay outlet structure which would all be obliterated in the event of an Oroville Dam failure.

Clifton Court Criteria Compliant Fish Screens

The Proposed Project does not address ESA fish take from south delta pumps or offer any feature or function which benefits fish species or habitat as mandated by the Water Resiliency Portfolio Executive Order. The Proposed Project fails to address necessary environmental and ESA impacts created by operations of the SWP. It is these impacts which are one of the greatest threats to SWP water supply reliability and the Proposed Project missed it entirely in its scope and proposal. Recall in the BDCP WaterFix EIR/Ss that the north delta intakes were determined not to be beneficial to protection of fish even as compared to the existing unscreened (louvers are not screens) south delta intakes.

It is technically feasible and reasonable to include fish criteria compliant intake screens at Clifton Court Forebay. Fish criteria compliance intake screens in this alternative component would potentially support justification for Incidental Take Permits that would be required for the Delta Conveyance Project.

Here are the basic elements to this Clifton Court criteria compliant fish screen project alternative component: widen the Clifton Court operable gates, install trash racks outside the operable gates, install a course large fish exclusion screen between the trash racks and operable gates, construct a conveyance channel in Clifton Court Forebay from the operable gates to the western side of Clifton Court Forebay, install criteria compliant fish screens in the conveyance channel, reengineer the current fish salvage facilities, and (potentially) plumb the CVP intake into the fish free north side of Clifton Court via a short tunnel. Following is a more detailed description of each of these elements.

Widen the Clifton Court Forebay operable gates to the north from their existing location. The width of the new operable gates needs to be sufficient to create a channel cross section of about 15,000 square feet. Dredge and reinforce channels as most economical and reliable from an engineering standpoint. As an example, dredge the approach and channel at the operable gates to a tidal working channel depth of 30' for a total operable gate width of 500'. The new gates should be set back into Clifton Court sufficiently to allow installation of trash racks and course large fish exclusion screens in front of them without reducing the existing channel cross section outside of Clifton Court. The Clifton Court Forebay Gates and tidal operations/storage can continue to function as they do under the existing conditions and No Action/Project so there are no operational impacts from this alternative component on tidal operations of Clifton Court Forebay.

Install trash racks outside Clifton Court Forebay outside of the widened Clifton Court operable gate. The trash racks will intercept debris coming in with the diversion water and serve as a behavioral deterrent to the fish to stay in the main channel as much as possible.

Behind the trash racks and just in front of the operable gates would be a course fish screen designed to keep out only larger "predator" size fish that have much higher swimming performance capability from entering Clifton Court Forebay. With the new 15,000 square foot cross section of the operable gates and surface area of the course fish screens, at full capacity CVP/SWP diversions the approach velocity at the course fish screens would be one foot per second. Predator sized fish would easily out swim this approach velocity, but smelt and juvenile salmonid would be pulled through and past the course large fish exclusion screen. There would be some predation at the trash racks and course fish screens but this can be managed and reduced with predator removal actions and fish traps. The level of predation at the trash racks and course fish screens would be the same as the predation rates that occur at the current SWP trash racks and fish louvers under the No Action. This course fish screen outside of Clifton Court Forebay is designed to pass smelt and juvenile salmonids without risk of impingement, e.g. 15 - 25mm wide screen inlets. This screen would significantly reduce the exposure of juvenile salmonids and delta smelt

to predation as larger predators would be excluded from within Clifton Court Forebay where a large amount of current predation is documented to occur.

A conveyance channel would be created in Clifton Court Forebay by segmenting the northern and southern parts of the Forebay with a new sheet pile partition that would draw water from the Clifton Court Forebay operable gates channel directly toward the existing SWP intakes on the southwestern side of the Forebay. The conveyance channel would start at the east side of the Forebay at the north and south ends of the widened operable gates channel. The partition would then quickly (but maintaining orderly water flow vectors) narrow from 500' wide to a width of approximately 250' wide and deepen from the initial 30' channel depth at the operable gates to a conveyance channel depth of 60 feet deep. The rest of the length of the conveyance channel would be dredged to a 60 feet deep with the channel partitions reinforced as necessary for stability. The channel depth is to accommodate the large surface area of fish screens and to increase the channel cross section to reduce water velocities. The channel would speed the transit of the fish across the Forebay (as compared to the No Action) and keep them from straying out into the Forebay so that they would have a significantly reduced duration of exposure to predation. Fish predation studies of the current Forebay operations have shown that a large portion of the juvenile salmonid and delta smelt population that enter the Forebay do not make it to the salvage facilities due to predation. By excluding predator size fish from entering Clifton Court, not allowing the smelt and juvenile salmonid fish to stray into the larger part of the Forebay and by shortening the duration and distance of their transit across the Forebay prior to capture and salvage; predation rates on juvenile salmonids and delta smelt would be significantly reduced with the Clifton Court criteria compliant fish screen alternative as compared to the existing condition, No Action/No Project or in comparison to any of the other alternative which retain dual operations without south delta intake screens that are criteria compliant.

Install criteria compliant fish screens in the conveyance channel in Clifton Court Forebay. Orient the screens in the conveyance channel in a "deep V" (10 to 15 degree angle) across the Clifton Court Conveyance Channel with the bottom of the V in the middle of the new conveyance channel approximately 1/4 mile from the west side of Clifton Court Forebay. The fish screens would be oriented vertically on the sides of the V. The top of the V is on the east side of Clifton Court Forebay and is attached to the sides of the conveyance channel partitions where the channel comes to approximately 250 feet wide. Each side of the V fish screen would be approximately 6850 feet long with a depth of 60 feet for a total working surface area in their vertical orientation of 822,000 square feet. If greater surface area is desired, alternative designs where the screens are sloped in towards the middle of the conveyance channel at the bottom can be evaluated for cost, operational flexibility and fish protection performance. The deep V shape of the screen orientation in the conveyance channel creates a shallow angle of approach of water to the screens and creates a sufficient surface area to reduce approach velocities and to have the draw of the export pumps create sweeping velocity across the screens.

As an example, water approaching a screen at a 15 degree oblique angle has an approach velocity that is 3.5% of the sweeping velocity. With the conveyance channel at 250 foot wide and 60 feet deep, at maximum CVP/SWP diversion volumes of 15,000cfs the water column velocity in the conveyance channel would be one foot per second. With a water column velocity of 1 foot per second, a 15 degree angled V screen would result in a sweeping velocity of 0.965 feet per second and an approach velocity of 0.035 feet per second. These velocities more than satisfy fish screen operating criteria for smelt and salmonids.

The total surface area of vertically oriented deep V fish screen configuration is 822,000 square feet with the above assumptions. (As previously mentioned, sloped screen designs could have even larger

surface areas if desired.) At the maximum combined CVP/SWP volume of 15,000 cfs the approach velocity to screens with this large surface area is just over 0.018 feet per second. 0.2 foot per second screen approach velocity is the compliance criteria for delta smelt so the fish screens as described would be only be 10% of the maximum approach velocity for smelt at the maximum CVP/SWP intake volume operations. If this screen configuration is considered over-designed with the 10% of the allowed approach velocity criteria and is excessively protective, and a more relaxed (but still compliant) approach velocity is deemed by the fisheries agencies to be adequately protective, the channel depth could be reduced along with the fish screen height and a narrower channel with a shorter length fish screen could be applied and still easily meet the fish screen criteria requirements. As an example a fish screen only 30 feet deep and half as long would still result in approach velocities that were half as fast as are delta smelt criteria compliant.

Let's compare this criteria compliant fish screen configuration at Clifton Court to the characteristics of the Proposed Project north delta intakes. Assuming the same compliance of maximum approach velocities of the two different screens and constant maximum diversion operations, the fish exposure duration while passing the screens would be about the same. One of the problems with the north delta intakes is that they are located in an intertidal zone so some fish would be exposed to the same intake more than one time due to reverse flows that occur in these north delta diversion reaches. Because the north delta fish screen intakes cannot be continuously operated due to the twice daily slack tides and lack of compliant sweeping velocities, the other portion of the time the north delta intakes would have to be operated at a higher diversion rate to make up for lost time. In order to do higher volumes some of the time and still maintain the maximum approach velocity, the north delta intakes would have to have a larger total surface area than the south delta intake screens that can run at a constant fish criteria compliant rate. As a result, the total fish exposure to fish screens on the north delta intakes would be longer duration than the proposed Clifton Court criteria compliant fish screens. All of the northern central valley salmonid runs (e.g. Sacramento, American and Feather Rivers) have to pass the north delta intakes whereas only a small fraction of that population are exposed to south delta fish screens. Population exposure of vulnerable species life stages to the screens is dramatically different on at least a factor of 10 or more for the north delta intake screens as compared to the Clifton Court criteria compliant fish screens.

As stated above, another advantage of the Clifton Court criteria compliant fish screens over the north delta intake fish screens is that the north delta fish screens cannot be operated at or near the slack tide periods as they would no longer have any sweeping velocity. This is another reason why the Delta Conveyance Project decision to not define or analyze final water operations in the EIR is an egregious violation of CEQA as this type of intake fisheries impact assessment cannot be conducted without operations information. The north delta intake reliance on tributary flow velocities to create sweeping velocities mean that there are several hours twice a day that these intakes may not be operated and be in compliance with sweeping velocity criteria. The Clifton Court criteria compliant fish screens are not vulnerable to tidal conditions as the export pumps themselves make the flow draw across the angled fish screens to create its own sweeping velocity and therefore they can be continuously operated.

The fish capture/salvage facility for the Clifton Court criteria compliant fish screen starts at the very bottom end of the fish screen deep V (western side). There is a separation of the "water intake" portion of the screens on the sides of the V for a "fish intake" opening (slot) at the very bottom end of the V that is 4" to 6" wide. A shade structure should be built from the bottom of the V out to at least 50 feet to the east up the V so the intake slot is in deep shade so that fish do not attempt to evade the fish intake. The fish salvage pumps draw water into the fish intake slot at an approach velocity of 3 feet per second. The higher approach velocity of the fish intake slot is so the fish are quickly drawn in and do not swim away.

The top 25 feet and the bottom 5 feet of the conveyance channel at the end of the water intake screen would have this fish intake slot. The top and bottom fish intake slots are to reflect the fish distribution in the water column. The juvenile salmonids and smelt will generally be concentrated in this top 25 feet of water column and the juvenile sturgeon at or near the bottom of the water column. With a 30 foot long total intake slot height, 6 inch width and 3 foot per second approach velocity, the fish salvage pumps would need to intake a maximum of 45 cubic feet per second to bring the fish into the fish collection facility. The current collection facility will need to be redesigned and enlarged to support fish/water separation of fish into transport tanks with this larger than current fish capture water flow. The same principles of the current fish salvage facility still apply, but will have improved handling of fish directly into holding tanks with reduced holding times prior to transport and active predator removal with nets (for the few that get through the large fish exclusion course fish screens). Other fish salvage facilities, handling, storage, transportation and release protocols can be developed and integrated with this Clifton Court criteria compliant fish screen project alternative component.

This uniformity of flow vectors in the conveyance channel along the entire length of the Clifton Court criteria compliant fish screen is another advantage of this fish screen configuration over the Proposed Project north delta intake screens. The north delta intake screens are on hydraulically complex and dynamic conditions on or near bends in the river with changing flows, eddies, shifting thalweg, back currents/reverse flows, swirls, etc. This flow vector variability causes areas of the fish screens to perform poorly and they create predator refuges that increase the resulting take associated with the north delta intakes. Even worse, this elevated rate of predation from the north delta intakes predator refuges occur if the intakes are being operated or not. The Project Alternative components of Clifton Court criteria compliant fish screens suffer none of these shortcomings.

None of the project features described in this Isolated Clifton Court Criteria Fish Screen alternative require new technology and all features described have built out project examples to rely upon for their engineering design, construction methods and for expectations regarding as-built real world performance characteristics. There is nothing speculative regarding the engineering design feasibility of this proposed project alternative component.

Clifton Court criteria compliant fish screen described above would take place almost entirely on lands currently owned by the state so private lands confiscation would be minimal.

This alternative component with criteria fish screens in Clifton Court operations is complimented by combination with downstream storage, e.g. San Luis Reservoir II/San Luis Grande. The addition of downstream storage would allow additional SWP operational flexibility to divert water at times of the year in which the listed fish species would be least affected by SWP water operations.

DWR has in the past utilized a "Fisheries Facilities Technical Team" to review, refine and more fully develop fisheries-related engineering structure concepts into a fully formed and project-level project description that is suitable for full analysis in an EIR. This group is well qualified to adapt the preceding description as needed to optimize its function, performance and cost effectiveness. They can adapt the dimensions of the channels and cross sections to manipulate channel velocities under different tidal and operational scenarios. They can adapt screen size, depth, length, angles and configurations to optimize fish protection, costs, maintenance, etc. As the preceding description and analysis proves, building a criteria compliant fish screen in Clifton Court is technically feasible.

This criteria compliant Clifton Court Fish Screen is a win-win alternative. Fish are protected, water supply delivery capacity is restored, and delta water quality is protected - all above the No Action/No Project

levels and all better than in the Proposed Project alternative. In addition to more fully and reasonably meeting the purpose and need and objectives of the project, the Clifton Court criteria compliant fish screens have a number of significant advantages over the proposed project.

The cost of the Clifton Court fish screens would be approximately the same construction costs as one of the proposed north delta intake screens. The Clifton Court fish screens do not require the conveyance tunnels so this major cost of the Proposed Project do not occur in the Clifton Court Fish Screen project alternative component. The Clifton Court fish screen construction and staging can all be done on land that is already owned by DWR so there is little or no land condemnation required like the Proposed Project. The footprint of the Clifton Court fish screens is much smaller and is all sub tidal habitat so the compensatory mitigation of converted habitat is minimal for this alternative compared to the Proposed Project.

From the USACE's mandatory 404 process guidelines, this alternative component would inevitably become their LEDPA as compared to the Proposed Project due to less wetland and aquatic habitat disturbance and conversion. Continued pulling of water across the delta to the south delta intakes protects central and south delta water quality to exactly the same level as the No Action. This protection of water quality from future degradation as compared to the No Action means that this alternative does not adversely modify designated critical habitat for listed fish species like the Proposed Project. The Clifton Court criteria compliant fish screen is therefore compliant with the ESA and is 404 permissible by the USACE and EPA.

The Clifton Court criteria compliant fish screen does not require land condemnation which saves several years for the schedule to complete the project as compared to the Proposed Project which will require condemnation of 300 plus parcels which will take years of time. All of the Clifton Court fish screen construction is done in one area, so construction logistics are much simpler and cheaper, e.g. one cement batch plant instead of a half dozen for the Proposed Project.

If the Clifton Court criteria compliant fish screen alternative component restoration of water supply delivery quantities is not considered adequate to reasonably meet the intent of the purpose and need and project objective of increased water supply reliability, it can be combined with other project components that would, by any judgment, make it reasonably meet this alternative screening and selection criteria. The Clifton Court fish screen alternative component could also be combined with additional downstream storage as a different strategy on achieving additional water supply reliability. It could also be combined with additional levee armoring to reduce in-delta earthquake risks to conveyance reliability or include earthquake upgrades to the existing south of delta facilities and conveyance canals to improve water supply reliability.

Desalination at SWP Contractor Point of Delivery

As a part of SWP operations resiliency and water quality suitability for designated beneficial uses, a component of alternatives to be considered should include water treatment at the point of delivery to SWP contractors. This option allows users to balance their own water quality to beneficial uses and costs of water treatment for SWP water supplies. The on-site water treatment means they can improve not only SWP water supply quality, but also alternative and supplemental water supplies they are legally mandated to develop to reduce their reliance upon delta water supplies. This option also allows for water quality degradation that occurs due to evaporation during conveyance and downstream of delta storage to be rectified at the point of receipt by the water contractors. These could be either as part of a combined project alternative or as separate projects under the Water Resiliency Portfolio.

Alternatives Assessment Conclusions

These comments and assessments of the Proposed Project and alternatives are thoughtfully and earnestly submitted. These comments thoroughly document the deficiencies of the Proposed Project to meet the NOP Project Purpose and Objectives as well as failure to satisfy mandates specified in the Water Resiliency Portfolio Executive Order N-10-19. Individual conclusions and assertions of the analysis of the proposed Project Alternatives and components are legitimately debatable and should be in the Delta Conveyance Alternatives Scoping Report to be released to the public for review and comment. However the details are potentially revised (a few points moved from the plus or minus columns to the other column), viewed in its totality, the superiority of the proposed project alternative is overwhelmingly positive especially as compared to the lack of satisfaction of screening criteria represented in the Proposed Project.

In conclusion, when considered together, these alternatives components result in:

- Restoration of more natural historical flow patterns in the delta;
- Activation and enhancement of over a thousand acres of aquatic habitat and fish food production;
- Restoration and protection of fish habitat quality in designated critical habitat for each of the listed species in the Delta;
- Increased rate of freshening flows across a large part of the delta which:
 - Improve municipal water supply water quality, ag water supply quality and fish habitat water quality,
 - Reduced frequency, severity and geographic extent of dissolved oxygen crashes and toxic algal blooms.
- Increased SWP operational reliability from climate change precipitation pattern, sea level rise, seismic events and levee failures; and,
- Increased SWP operational flexibility to avoid water quality violations and maintain water supply.