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REGIONALSAN
TAKING THE WASTE OUT OF WATER
Sacramento Regional County Sanitation District

Main Office
10060 Goethe Road
Sacramento, CA 95827-3553
Tel: 916.876.6000
Fax: 916.876.6160

Treatment Plant
8521 Laguna Station Road
Elk Grove, CA 95758-9550
Tel: 916.875.9000
Fax: 916.875.9068

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California Department of Water Resources
US Bureau of Reclamation
PO Box 1919
Sacramento, CA 95812

Submitted via email: BDCPComments@icfi.com

Subject: Regional San Comments on BDCP/CA WaterFix's Recirculated Draft EIR/Supplemental Draft EIS

The Sacramento Regional County Sanitation District (Regional San) appreciates the opportunity to comment on the Bay Delta Conservation Plan (BDCP)/California (CA) WaterFix Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS). Regional San provides wastewater collection, conveyance and treatment for over 1.4 million people in the Sacramento region. On average, we safely treat and discharge 140 million gallons of wastewater per day in accordance with our National Pollutant Discharge Elimination System (NPDES) permit. We take our mission very seriously to protect public health and the environment.

Many of our NPDES permit requirements are tied to the conditions in the Sacramento River and the Delta ecosystem. Changes in those conditions can affect Regional San adversely by leading to modifications of its NPDES permit or its facilities that in turn can impose costs to our rate payers that would not otherwise occur. Significant environmental effects will result from the construction and operation of new or modified facilities as proposed by the CA WaterFix (Project). Accordingly, Regional San is concerned with the Project's large-scale changes and impacts to the Sacramento River and the Delta, which also has the potential to impact our operations, our NPDES permit and ultimately the interests of our region.

Regional San previously submitted numerous comments on early versions of BDCP and the 2013 Draft EIR/EIS (DEIR/DEIS) that focused on: the need for using the best-available, sound science; the point that all project related impacts on Regional San need full mitigation; and, the need for creation of a robust and inclusive governance structure. Unfortunately, not only does RDEIR/SDEIS not address Regional San's fundamental concerns, but it also lacks any response to the more than 12,000 public comments previously provided on the DEIR/DEIS and BDCP. By deferring responses to these previous major comments until the Final EIR/EIS for the Project is completed, is very problematic and perpetuates mistrust among the public. In essence, it allows the lead agencies to avoid addressing large issues and precludes them from proposing modifications to the Project to mitigate significant impacts prior to the final documents being issued.

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Because no significant changes were made to the Project or RDEIR/SDEIS that would address these concerns, the previous comments Regional San submitted on July 29, 2014 on the BDCP and DEIR/DEIS still apply to the RDEIR/SDEIS.

In addition, Regional San is also providing the following additional comments on the RDEIR/SDEIS documents. Our overarching concerns are highlighted below and our comments are expanded upon in more detail in this letter and in Attachment 1. In summary, Regional San's major concerns include that the RDEIR/SDEIS:

- Lacks clear information and is misleading about the scope and impact of the Project;
- Omits or buries essential information, violating CEQA and NEPA requirements;
- Insufficiently models the river for assessing impacts of reverse flows, temperature and fish passage;
- Inadequately identifies and mitigates the Project's impacts;
- Fails to use best available and sound science;
- Fails to comply with the Delta Reform Act and lacks proper Adaptive Management;
- Does not consider the State Water Resources Control Board's Delta Flow Objectives;
- Inadequately analyzes federal antidegradation requirements;
- Does not fully acknowledge Delta ecosystem impacts; and
- Establishes an inappropriate governance structure.

The RDEIR/SDEIS Documents Lack Transparency, Creating Distrust and Preventing a Clear Understanding of the Project Impacts

The RDEIR/SDEIS lacks transparency by not responding to over 12,000 public comments and concerns. The lack in transparency regarding the comments received on the first version of the BDCP and DEIR/DEIS serves as a case example of a "hide the ball" mentality surrounding the CA WaterFix RDEIR/SDEIS effort. The purpose of an EIR is not only to protect the environment, but to also demonstrate to the public that it is being protected. (*County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.) Just one example of how the RDEIR/SDEIS does not satisfy these purposes is its failure to address significant comments on the DEIR/DEIS regarding the methodology and scope of modeling used to assess Project impacts to water quality, water supply and fish. Regional San has commented multiple times since the release of the Notice of Preparation in 2010, and again in our July 29, 2014 comments on the DEIR/DEIS, regarding the need to evaluate the impacts of Project-induced reverse flow conditions in the Sacramento River on Regional San's operations. These comments remain unaddressed in the RDEIR/SDEIS. Asking the public to review the revised RDEIR/SDEIS without being able to see comments and responses on the major criticisms and questions of the first documents adds to the lack of clarity, confusion and distrust surrounding the BDCP, the CA WaterFix and the CA EcoRestore and prevents a clear understanding of the Project's impacts.

The Size and Structure of the RDEIR/SDEIS Omits or Buries Essential Information and Violates CEQA and NEPA Requirements that It Actually Inform the Reader

Like the 2013 DEIR/DEIS, the RDEIR/SDEIS fails to summarize and convey information essential to the understanding of project impacts in a reasonable manner to inform the readers and decision-makers, which is in violation of the National Environmental Protection Act (NEPA's) readability

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requirement and the California Environmental Quality Act (CEQA). Regional San and others, including the Delta Independent Science Board (ISB), objected to the difficulty that the 2013 DEIR/DEIS document's size and structure created in understanding essential information about the Project's effects. These problems are compounded with the RDEIR/SDEIS.

CEQA requires that EIRs should be organized and written in a manner that makes them "meaningful and useful to decision-makers and to the public." (Pub. Resources Code, § 21003(b).) As stated by a leading treatise on CEQA, "The legal adequacy of an EIR depends on whether it addresses significant environmental issues and the quality of its analysis on those issues, not the quantity of information it provides." (CEB *Practice Under the California Environmental Quality Act*, 2nd Ed., §11.20, p. 545 (2/09.) Thus an EIR should be written in a way that readers are not forced "to sift through obscure minutiae or appendices" to find important components of the analysis. (*San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 659; *California Oak Foundation v. City of Santa Clarita* (2005) 133 Cal.App.4th 1219, 1239.) "Documents that are confusing in their presentation are incomprehensible to the very people they are meant to inform." (*San Franciscans for Reasonable Growth v. City & County of San Francisco* (1987) 193 Cal.App.3d 1544, 1548.)

NEPA incorporates a similar "readability" requirement. NEPA's implementing regulations require an EIS to "be written in plain language … so that decision-makers and the public can readily understand them." (40 C.F.R. § 1502.8. This regulation requires that an EIS be "organized and written so as to be readily understandable by governmental decision-makers and by interested non-professional laypersons likely to be affected by actions taken under the EIS." (*Oregon Envtl. Council v. Kuzman* (9th Cir. 1987) 817 F.2d 484, 494.) An agency may not avoid its obligation to provide a clear assessment of a project's environmental impacts simply by placing complicated information or analyses in an appendix. (*Id.* at p. 494.)

The Delta ISB found the RDEIR/SDEIS "sufficiently incomplete and opaque to deter its evaluation and use by decision-makers, resource managers, scientists and the broader public." (September 30, 2015 correspondence to R. Fiorini et al from Delta Independent Science Board Re. Review of environmental documents for BDCP/CA WaterFix). The ISB cited fundamental flaws in the RDEIR/SDEIS including, but not limited to, "overall incompleteness through deferral of content to the Final EIR/EIS…; specific incompleteness in treatment of adaptive management, habitat restoration, levees and long-term effects; and inadequacies in presentation." As a result of these overwhelming structural, organizational and content flaws, the ISB concluded that the RDEIR/SDEIS "fails to adequately inform weighty decisions about public policy." Regional San concurs with this assessment.

From a structural perspective, the RDEIR/SDEIS fails to fulfill its essential purpose as an informational document due to its confusing mix of new, old and partially edited impact sections; its lack of clear and concise summary tables; its omission of blocks of text from the revised impact chapters (without any strikeout to inform the reader which sections were deleted from the prior draft); its failure to integrate figures into text; its reliance on multiple appendices and exhibits to appendices; and its cross references to old (DEIR/DEIS and BDCP) and new (RDEIR/SDEIS) documents. All of the deficiencies force the reader to toggle back and forth between multiple documents to attempt to piece together all the information the RDEIR/SDEIS is relying on to support its impact assessments and determinations.

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The RDEIR/SDEIS documents amount to nearly 8,000 pages that refer back to portions of the previous 40,000 page BDCP and DEIR/DEIS documents. Some portions of the BDCP and DEIR/DEIS that are referenced in the RDEIR/SDEIS were not revised and updated so that they would be relevant to the changes in the new CA WaterFix alternatives. Instead of providing one clearly written and organized EIR/EIS, the public is required to muddle through four main confusing documents (BDCP, DEIR/DEIS, RDEIR/SDEIS: Appendix A Revisions, RDEIR/SDEIS: New Alternatives) with puzzling reference to each other as well as a large number of cross references to multiple tables, figures and appendices that are scattered throughout the numerous documents that collectively comprise the environmental documents of the Project.

In addition to these problems with the document's format and organization, information is also not presented clearly and in some instances the omissions of clear and concise summaries of the key elements of the project appear designed to mislead the public about the Project's true scope. The following are some examples illustrating the lack of clarity in the documents:

- The Project intends to divert water from Sacramento River through intake facilities. The most obvious piece of information that should be described in the RDEIR/SDEIS is the amount of water being diverted across all seasons, by month, and water year type. However, the RDEIR/SDEIS lacks a clear description of, and amount of, water diversion, and instead confuses and misleads readers by constantly referencing other documents. Simple tables and graphs should be included up front with the Project description, showing the exact amount of proposed water diversion alongside the existing flows in the Sacramento River for each season, month, and water year type. Instead, this important information is hidden and not easy to find. The only table that gives some clue about the flow at different times of the year and different water year type is Table B.7-28 (Appendix B). This table shows Sacramento River flows downstream of the proposed intake will be substantially reduced because of the Project's diversions, but this important information is not mentioned in the Executive Summary nor in the Alternative Descriptions. This reduction of flow compared to the existing condition should be clearly shown for all 12 months of the year and for every year type in graphs and other tables.

  Even the most essential components of the project, such as river flow volumes into the Delta under Scenario H3 and Scenario H4 during different water years are difficult to locate and understand in the RDEIR/SDEIS. Despite all the revisions and improvement the new documents claim to have accomplished in this recirculation, finding information is even more complicated, or inadequate.

- The RDEIR/SDEIS does not clearly describe whether the water intakes will operate by gravity or pumping. In all the sections where new alternatives are described (including the Executive Summary), the method of conveyance between the "Intermediate Forebay" and Clifton Court Forebay is clearly described as gravity. However, the method of the diversion at the intakes and conveyance through the "single-bore" twin tunnels to the Intermediate Forebay is not identified.

- CEQA dictates that the "existing conditions" should normally be the baseline for the impact analysis. Under NEPA guidelines, there is no requirement to use a baseline other than the existing conditions. The RDEIR/SDEIS is making assumptions for the purposes of analysis and "Physical Modeling" that are very confusing and unclear. The RDEIR/SDEIS does not provide a simple clear basis for the No Action Alternative (NAA), the Early Long-Term (ELT), and the Late Long-Term (LLT). It describes some mandated work of improvement and restoration as "considered

part of the NAA" which actually is part of Alternative 4 but not part of the new preferred Alternative 4A. The RDEIR/SDEIS does not clarify which assumptions were taken into consideration for modeling. Relying on work that is not part of Alternative 4A or NAA is very misleading. Because of these unclear assumptions and lack of a clear baseline throughout the document, it is very difficult for the public to analyze the true impact of the Project.

- In general, flow downstream of the intakes is described as bypass flow, but in terms of overall amount of water left in the river and when describing the impacts due to reduced flow, it is mostly described as Delta outflow. Most tables and graphs show the overall Delta outflow vs. exports, which tend to mislead readers that there is no change in the river flow. This confuses the reader regarding the reduction in flow downstream of the intakes, which, in fact, are significant. In the absence of a clear presentation of proposed diversions and bypass flows over different monthly and water year conditions, it is very difficult for the public to understand or assess the impact of reduced flow downstream of the intakes.

Overall, the BDCP/CA WaterFix and RDEIR/SDEIS documents contain serious gaps and insufficiencies that are very confusing and misleading. Piecing together the information to determine environmental impacts is extremely difficult. Like the DEIR/DEIS, the RDEIR/SDEIS is both overly long and complex and yet is lacking in substance or meaningful analysis the information on key issues of importance to affected entities and individuals, including Regional San. The DEIR/DEIS and RDEIR/SDEIS thus violate both NEPA's "readability" requirement and CEQA's mandate that an EIR clearly communicate meaningful information in a way that adequately informs decision-makers and the general public.

Fundamental Insufficiency in the Modeling that Form the Basis for the Impact Analyses

Three BDCP/CA WaterFix-related changes to the Sacramento River and Delta that could adversely impact Regional San and its operations are Sacramento River flows, temperature and fish passage. As to these parameters, there are critical omissions in the modeling that formed the basis for the RDEIR/SDEIS's impact analysis. The lead agencies for the BDCP/CA WaterFix have only performed CALSIM II modeling, based on monthly average flow, and not the DSM2 model, based on hourly flow. The insufficiency in modeling completely bypasses the tidal influence and reverse flow and other important water quality impacts in the Sacramento River that can only be fully analyzed through hourly or sub-hourly modeling. In addition, if the Delta ecosystem is further impaired by water project operations, regulatory pressures could increase on other entities. Therefore, safe fish passage is an important element to ensure the Project will not make conditions in the Delta worse.

The effect of these omissions is that the RDEIR/SDEIS does not rely on substantial evidence to support its impact determinations in numerous areas, such as:

- Reverse flow;
- Water quality; and
- Fish passage.

The modeling and analytical omissions must be corrected, and the RDEIR/SDEIS impact analyses that depend on these models must be revised.

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Flow-Related Impacts:

Two to 12 miles upstream of the proposed new water intakes, Regional San currently discharges secondary treated effluent into the Sacramento River at Freeport. Because there is a lack of information regarding new alternatives related to river flow changes, it is difficult to assess the potential impacts the Project will have on Regional San's operations, and our ability to meet future water quality standards and/or NPDES permit obligations. Reverse flows as a result of tidal influence are observed near our outfall. Regional San's wastewater treatment plant is required to maintain a minimum of 14:1 ratio between the Sacramento River flow at Freeport and Regional San's treated effluent discharge rate. When river flow rates drop such that the 14:1 ratio cannot be maintained, Regional San must divert the treated effluent to on-site emergency storage basins (ESBs), with a capacity of 302 million gallons, until river flow rates return to levels that allow the treated effluent to be discharged. We are concerned that BDCP/CA WaterFix related changes to flows in the Sacramento River could cause Regional San to divert effluent to the ESBs more often, or even necessitate expansion/upgrades of the ESBs to handle higher volumes of diverted effluent. Either of these consequences could adversely affect Regional San and its operations, and were not evaluated in the RDEIR/SEIS, despite repeated requests.

As far back as June 16, 2010, Regional San submitted a comment letter to BDCP (Subject: Evaluation of Proposed Bay Delta Conservation Plan North Delta Diversions on Sacramento River Flow at Freeport) raising concern about reverse flow impacts and related effects on Regional San's operations. At that time, key BDCP staff and management met with Regional San and provided assurances that tidal influence and reverse flow impacts would be mitigated by the amount of tidal habitat restoration and that future documents and models would illustrate this point. This concept was further bolstered at the 2014 Delta Science Conference by ICF and CH2MHILL's poster presentation number 90 titled "Habitat Restoration and Water Diversion Effects of the Proposed BDCP on the Hydrodynamics of a Key River Junction within the Sacramento-San Joaquin Delta, California."

In the 2013 version of BDCP and associated DEIR/DEIS, a DSM2 hourly model was performed. Flow Science, Inc., recognized experts in hydrodynamic modeling, evaluated the 2013 BDCP flow-related impacts on Regional San, including Alt4H3 and Alt4H4, which are modified to a certain degree, but are still part of the Alternative 4A. Flow Science used BDCP model data to determine how the proposed BDCP alternatives would impact Regional San's ability to discharge effluent, and if the discharge disruptions would require upgrades to our ESBs. Flow Science's 2014 technical memorandum was submitted to BDCP as an attachment to Regional San's July 2014 comment letter. This work was based on simulated Sacramento River hourly flow rates (at Freeport) from BDCP DSM2 modeling obtained from the California Department of Water Resources (DWR). When Regional San requested this information to evaluate the same question in the context of the RDEIR/SDEIS, DWR informed Regional San that DSM2 modeling was not performed for the new alternative 4A and thus only CALSIM II monthly average flow data were provided. It is concerning that Project proponents would not utilize hourly flow rates in the RDEIR/RDEIS for understanding the Project's impacts, rather than monthly average flow rates, which would tend to mask the potential impacts of the Project.

In 2014, Flow Science concluded that the assumptions included in the BDCP model regarding future effects of sea level rise and extensive BDCP habitat restoration seemed to conceal the effects that the new export facilities would have on Sacramento River flows and the Regional San ESBs. However, BDCP/CA WaterFix includes only limited habitat restoration (only that which mitigates construction impacts), and no appropriate time step modeling data with RDEIR/SDEIS have been provided.

Despite our extensive and numerous comments on this issue, the RDEIR/SDEIS and new alternatives do not address reverse flow impacts to Regional San's operations, impacts to Delta water quality or impacts to the Delta ecosystem. Instead, Alternative 4A amplifies Regional San's original concerns due to the removal of the 65,000 acres of habitat restoration work included in the previous preferred Alternative 4. To help Regional San evaluate the potential effect on its operations, Flow Science was again retained by Regional San to conduct a comparison and analysis between the new preferred Alternative 4A, Scenarios H3 and H4, and the Alternative 4 (Attachment 2- 2015 Flow Science Tech Memo). Based on the limited monthly average flow modeling and data provided by the lead agencies, Flow Science determined that, statistically, the flow scenarios of Alternative 4A are indistinguishable from those of Alternative 4. Therefore, it is reasonable to assume that the impacts of Alternative 4A would be similar to those of Alternative 4 or even worse because of Alternative 4A's removal of thousands of acres of habitat restoration that tended to reduce the effect of the new North Delta Diversions (NDD) on flows and Regional San's operations. Unfortunately, the lead agencies have not conducted and released sufficient modeling to determine the impacts with any certainty. The potential for more reverse flow events cannot be adequately analyzed using a model based on monthly average flow, as was done in the RDEIR/SDEIS. In order to properly evaluate this potential impact, new modeling using appropriate methodology must be performed and the issue must be addressed clearly in a revised DEIR/DEIS.

Sacramento River Temperature Impacts:

Another potentially adverse effect of the BDCP/CA WaterFix on Regional San is a change in ambient river water temperature. Regional San currently operates under NPDES permit requirements that allow it to discharge treated effluent based on a temperature schedule approved by the Central Valley Regional Water Quality Control Board. The temperature schedule is based on river and effluent temperatures, and any changes to either could affect Regional San's ability to comply with the thermal discharge requirements in its NPDES permit. If the changes in river temperature cause Regional San to be noncompliant with thermal requirements applicable to the discharge, or lead to modification of permit requirements, there is a possibility that Regional San would be required to build cooling towers to cool its effluent before it is discharged to the Sacramento River. The capital cost of cooling towers is expected to be tens of millions of dollars. The construction and operation of the cooling towers would also have associated environmental impacts that are not considered in the RDEIR/SDEIS. Regional San specifically commented on this concern in the July 2014 comment letter along with a modeling expert's opinion. The RDEIR/SDEIS did not specifically evaluate the potential temperature impacts to Regional San's operations, and our concern remains.

In addition, although tidal influence and reverse flow generally contribute to an increase in the river temperature, the RDEIR/SDEIS impact analysis of the new alternatives includes no section attributed to Project impacts on river temperature. Since proper modeling has not been performed to assess the impacts of reverse flow, temperature impacts have also not been adequately addressed. A clear example of lack of temperature analysis can be seen in section 4.3.4 (Water Quality) under the Impact WQ-32: Effects on *Microcystis* Bloom Formation Resulting from Facilities Operation and Maintenance. In this section, it is stated that Alternative 4A could result in an increase of residence time and temperature, but that it is uncertain. The document then goes on to conclude, without the support of substantial evidence or analysis, that the Project will not have any impact on *Microcystis*. The impacts of the current drought on river temperature has provided clear proof that increases in temperature and residence time contributes to *Microcystis* growth. The RDEIR/SDEIS's failure to perform any hourly modeling undermines its ability to accurately analyze temperature impacts in the river.

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Fish Passage Impacts

To provide delta smelt protection while traveling past the screened intakes, the approach velocity must never be greater than the river's sweeping velocity at the face of the screen. The July 2011 BDCP Fish Facilities Technical Team Technical Memorandum described the river velocities (sweeping speed) necessary to provide adequate protection for delta smelt traveling past the North Delta Diversion screens. When the velocity of diverted water (approach velocity) exceeds the river's sweeping speed, small fish have a high risk of becoming impinged on the screens, which can result in injury, increased predation risk, and mortality.

When the Sacramento River's outflow is low, tidal influences can cause the river's velocity to temporarily slow down, stop, and even reverse in direction. When the river's sweeping speed is reduced, the approach velocity also needs to be reduced to maintain the experimentally determined 1:1 water diversion ratio, which is protective for delta smelt and other small fish. This means that during tidal reversal periods, no water should be exported at the northern water diversions. Tidal reversals can occur twice a day and last for many hours.

The diversion of water at the northern intake is also likely to cause increased periods of flow reversals near the intake screens. Therefore hourly flow rates should be modeled and discussed in a revised Project description as well as revised fisheries impact analysis. It is possible that most water diversions will still occur at the southern pumping facilities during dry years to achieve water quality requirements in the Delta, which might limit North Delta Diversion water exports to periods when reverse flows will not occur. Additional modeling to address this issue and determine the proportion of time that water can safely be exported at the Northern Delta versions must be performed.

Impacts to Regional San Must be Fully Mitigated

The CA Water Fix creates significant impacts on tidal influence and reverse flow in the Sacramento River near Freeport that can greatly impact Regional San's operation. First, the CA Water Fix has taken out all of the previously proposed 65,000 acres of tidal habitat restoration. That amount of habitat restoration work was still not enough to mitigate impacts to Regional San, as stated in the Regional San's July 2014 comment letter and supported by associated modeling work submitted along with Regional San's comments. Second, the RDEIR/SDEIS has not addressed the issue or modeled the impacts of Project-induced reverse flows in the North Delta, as discussed above. The only references to reverse flows in the RDEIR/SDEIS are to those in Old and Middle River. BDCP/CA WaterFix RDEIR/SDEIS must conduct complete analysis on the tidal influence and reverse flows, and any impacts to Regional San's operations must be fully mitigated.

The 2014 Regional San comment letter included detailed expert analysis prepared by Flow Science, which provided a review and findings of errors and omissions on BDCP's temperature impacts on the river. Despite these comments, the BDCP/CA WaterFix RDEIR/SEIS fails to evaluate potential impacts to Regional San's operations and discharge requirements in regards to river temperature. The Project may have a significant impact to Regional San's operations and NPDES permit compliance by requiring construction of cooling towers, new or expanded emergency storage basins, and/or other facility enhancements as a result of Project-related river temperature and flow changes. The RDEIR/SDEIS does not provide or describe specific and effective mitigation to avoid or substantially lessen such impacts. Any impacts identified to Regional San's facilities or operations as a result of BDCP/CA Water Fix must be assessed, disclosed, be subject to public review and comment, and be fully mitigated.

BDCP/CA WaterFix Does Not Meet the Requirements of the Delta Reform Act

The BDCP/CA WaterFix does not meet the requirements of the Delta Reform Act. In particular, the Delta Reform Act requires attainment of co-equal goals, one of which includes ecosystem restoration. With the elimination of 65,000 acres of wetlands restoration from the Project, the possibility of attaining the co-equal restoration goal is also essentially eliminated. The Project appears to rely on assumptions regarding differential improvement in fish losses as a result of Project operation, (i.e. less severe fish losses due to diminished reliance on South Delta pumps). However, no analysis is provided to demonstrate that the significant fish losses that will continue to occur in the South Delta and the new losses that would occur in the North Delta will not continue to severely impact fish populations. As a covered action under the Delta Plan, the Delta Reform Act requires that the BDCP/CA WaterFix demonstrate consistency with the plan and the coequal goals. The RDEIR/SDEIS fails to adequately address the Act's requirements in the following major areas:

- The Act requires the guidelines for an EIR/EIS to specifically call for an adaptive-management plan. The RDEIR/SDEIS does not adequately take into consideration the steps going forward for adaptive-management. The Delta ISB review clearly calls out this inadequacy of the RDEIR/SDEIS.

- The Act requires a comprehensive analysis of a reasonable range of flow criteria, rates of diversion, and other operational criteria to identify the remaining water available for export and other beneficial uses. The RDEIR/SDEIS fails to include this analysis or an evaluation of the range of the flows necessary to recover the Delta and restore fisheries under a reasonable range of hydrologic conditions.

- The Act requires that construction of a new Delta conveyance facility shall not be initiated until arrangements have been made to pay for the cost of mitigation required for construction, operation and maintenance of any new Delta conveyance facility. However, the RDEIR/SDEIS does not clearly specify the mitigation measures needed nor does it plainly identify the linkages to impacts of the Project so that the financial obligations are apparent.

- The Delta Reform Act also requires that the EIR/EIS provide special attention to water quality impacts. Not only is the water quality impact analysis inadequate due in part to the omissions in the project description and flaws in modeling, but a number of water quality impacts identified in the RDEIR/SDEIS are deemed to be significant and unavoidable.

Overall, the RDEIR/SDEIS, by omission and by lack of specificity, does not address these major requirements of the Delta Reform Act. In addition, the failure to propose and commit to implement definitive mitigation measures that would clearly offset the BDCP/CA WaterFix's numerous adverse impacts is a significant flaw in the RDEIR/SDEIS and contradicts the Legislature's mandate under the Delta Reform Act. Overall the Project cannot demonstrate consistency with the Delta Reform Act or the coequal goals.

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BDCP/CA WaterFix and Associated Environmental Documents Ignore the State Water Resources Control Board's Delta Flow Objectives

The flow tables and operational scenarios in the RDEIR/SDEIS do not mention the August 2010 Delta flows report that was issued by the State Water Board in specific response to a mandate under the Delta Reform Act of 2009. The RDEIR/SDEIS also does not mention the multiple workshops that have been held by the State Water Board and Delta Science Program to develop scientific information that will be used in the final adoption of Delta flow requirements or the schedule for adoption of Delta flow standards by the State Water Board.

In a July 2013 letter by Delta Stewardship Council (Council) staff and consultants, the requirements in the Delta Reform Act of 2009 to address Delta flow requirements in the DEIR/DEIS were re-emphasized, having been previously raised in letters submitted in April 2012 and June 2010. The Council's letter states that the Delta Reform Act requires that the DEIR/DEIS include a comprehensive analysis of a reasonable range of flow criteria, rates of diversion, and other operational parameters. The 2013 letter also reiterated that the DEIR/DEIS must take into account the State Water Board's August 2010 "Development of Flow Criteria for the Sacramento/San Joaquin Delta Ecosystem." The Delta Reform Act intended that the results of the 2010 State Water Board study would be used to inform planning decisions for the BDCP. The Council's 2013 letter asked that the State Water Board's 2010 flow criteria be addressed directly in the DEIR/DEIS.

Review of the DEIR/DEIS indicated that the SWRCB 2010 Delta flow criteria were mentioned in Section 3 and that one alternative (Alternative 8) considered a "version" of the recommendations that the State Water Board made in its report. However, it is not clear that the evaluation of Alternative 8 was adequate to meet the requirements of the Delta Reform Act. Moreover, the criteria were not clearly considered in the development or analysis of the new alternatives in RDEIR/SDEIS. Regardless of whether the CA WaterFix Project intends to be a NCCP, the importance of flow, and the extensive body of work developed by the State Water Board and Council relating to Delta flow objectives, are an essential element of an adequate environmental analysis of the proposal to shift the diversions north and potentially increase (either in volume or frequency, or both) fresh water diversions from the Delta.

In February 2014 the Delta Science Program held a workshop to identify the best available science to inform the State Water Board's decisions regarding Delta outflow requirements included in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan). In May 2014 the Delta Science Program released a Delta Outflow and Other Stressor report to the State Water Board that was written by an expert panel with the charge of:

> "...reviewing and assessing the provided written materials and oral presentations in order to identify the best available science to inform the State Water Board's decisions on Bay-Delta Plan requirements related to Delta outflow and related factors (Delta outflow requirements)."

A similar report was released in 2014 on Delta Inflow and Other Related Stressors. The CA WaterFix must be revised to address the most current best available science into the CA WaterFix and RDEIR/SDEIS related to the State Water Board flow objectives.

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BDCP/CA WaterFix and the RDEIR/SDEIS Fail to Properly Consider the Federal Antidegradation Policy

The BDCP/CA WaterFix and the RDEIR/SDEIS fail to properly consider the antidegradation requirements of the federal Clean Water Act, in general. Under the federal antidegradation policy, "major federal actions" that affect water quality (pursuant to NEPA and the Endangered Species Act) trigger the application of the federal antidegradation policy and requirements. Those requirements prohibit actions that would lower water quality in areas where existing water quality objectives are not attained (e.g. Tier I waters) [USEPA, Region 9, 1987, Guidance on Implementing the Antidegradation Provisions of 40 CFR 131.12, June 3). The RDEIR/SDEIS does not adequately articulate or address the Project's inconsistency with those requirements, which are an important element of water quality standards. Specifically, the document fails to address the significant degradation of 303(d) listed waters that would result from the Project, (e.g. significantly increased occurrence of violations of EC standards at various locations in the Delta). Such degradation is not allowed under the Clean Water Act. The surface water quality impact assessment must be revised to adequately address the requirements of the federal antidegradation policy, which places significant constraints on the Project in terms of required mitigation. As noted in the USEPA letter on the DEIR/DEIS dated August 26, 2014, alternatives must be offered which would, at minimum, not contribute to an increase in the magnitude or frequency of exceedance of water quality objectives in the Delta. Without such changes to the proposed Project, USEPA indicated that it would result in violation of Clean Water Act requirements. The RDEIR/SDEIS fails to address this serious deficiency, and instead confirms that the proposed Project will further degrade ambient EC levels in the Delta, resulting in increased violations of EC water quality objectives in a 303(d)-listed water body. Such action is prohibited under the antidegradation provisions of the Clean Water Act.

The BDCP/CA WaterFix and RDEIR/SDEIS Can Impair the Delta Ecosystem

The BDCP/CA WaterFix documents fail to adequately address the impacts of water project operations on the Delta fishery, including past and future impacts of entrainment and the loss of hundreds of millions of larval, juvenile and adult fish as a result of the Project. Most problematic, the Project and associated CEQA/NEPA documents fail to ensure that the Delta fishery will be restored or even that it will not continue to be in crisis or get worse as a result of the Project. The BDCP/CA WaterFix and RDEIR/SDEIS are fundamentally flawed due to their failure to provide an adequate assessment of the current CVP and SWP operations on the Delta ecosystem.

The BDCP/CA WaterFix and RDEIR/SDEIS fail to address the effects of the Project in comparison to nutrient impacts from other sources. For instance, the Project documents assert that nutrients from future wetlands are beneficial, whereas nutrients from municipal and other sources are detrimental. The BDCP/CA WaterFix and RDEIR/SDEIS fail to provide a mass balance of nutrients in the Delta that would allow for the fair assessment of various sources.

The BDCP/CA WaterFix and RDEIR/SDEIS fails to adequately consider the effects of residence time and temperature changes associated with the Project. While the RDEIR/SDEIS evaluates *Microcystis* and other harmful aquatic species, the document does not acknowledge that the Project will likely make such conditions significantly worse in the South Delta and may create new areas of impact by creating low flow conditions and increased residence times in the Lower Sacramento River on a regular basis.

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Lack of freshwater inflow is considered to be one of the greatest stressors on Delta ecosystem health (State of Estuary Report 2015). Even if the total amount of water exported by the Project remains unchanged, the amount of water entering into the Delta below the North Delta Diversion (NDD) will be reduced when they are operating. Insufficient analysis is provided to predict the likely impact of the additional 3-30% reduction in freshwater inflow due to water diversion at the NDD's. Low Delta inflow can effect cyanobacteria blooms, fish reproduction, water temperatures and many other important ecological parameters. A specific analysis of how the reduced inflow due to Project operations would affect the ecosystem needs to be considered when establishing bypass flow criteria at the NDD.

The BDCP/CA WaterFix and RDEIR/SDEIS documents provide inadequate consideration of the cumulative effect of historic SWP/CVP water operations and the Project on the Delta food web, a low productivity estuarine system. Mass transport of phytoplankton and nutrients in the exports is not accounted for in the analysis of the Delta ecosystem. Additionally, the impact of invasive species (clams, macrophytes) on the food web and the effect of the Project on the proliferation of those invasive species are not addressed. To ensure water quality and ecosystem health is not impacted and to support adaptive management and real time decision making, the BDCP/CA WaterFix must contribute funding and resources to the Delta Regional Monitoring Program and future associated modeling efforts.

Overall, the BDCP/CA WaterFix, with the habitat restoration elements removed from the original proposed project, represents a "piece meal" approach to satisfying the Delta Reform Act requirements for new water facilities in the Delta. The original proposal took credit for poorly defined restoration projects occurring late in a 50-year project period. Issues pertaining to the restoration projects included concerns regarding mercury bioaccumulation, invasive clam proliferation, loss of Delta agricultural lands, etc. It appears that the Project proponents determined that these issues were too difficult to tackle, leaving the proposal to be a water conveyance project, with no clear ecosystem benefits. The Project proponents point to the likely benefits of the EcoRestore project, to be done by others, in an effort to gain some form of ecosystem restoration credit. Without addressing that project directly, this appears, from a public perspective, to be some form of "shell game" that fails to demonstrate consistency with the co-equal goals.

BDCP/CA WaterFix Proposes Large-scale Changes to Existing Governance Structures with Inadequate Local Representation

The governance of BDCP/CA WaterFix is important because all of the decisions that could have significant impacts on local entities will be made under the governance framework proposed by BDCP/CA WaterFix (e.g., adaptive management, facility design and construction, research, public outreach, land acquisition, etc.). With a plan as far-reaching and consequential as BDCP/CA WaterFix, it is important that governance be representative. Unfortunately, the BDCP/CA WaterFix proposed governance structure gives great authority to water exporter interests, but does not provide local entities (such as local government and special districts such as Regional San) any official voice in future BDCP/CA WaterFix actions or adaptive management decisions.

As described in Appendix D, section 3.4.1.4.5 of the RDEIR/SDEIS, the Real Time Operations Team is dominated by water supply interests and does not consist of a single local representative. Also, in the BDCP Chapter 7, key decisions associated with implementation of the BDCP are deferred to the Implementation Office, which will be led by a Program Manager to be selected by, and report to, the

Authorized Entity Group. The Authorized Entity Group will be established to provide program oversight and general guidance to the Program Manager regarding implementation of the Plan. The Authorized Entity Group will consist of the Director of DWR, Regional Director for Reclamation, and a representative from both the State Water Contractors and Federal Water Contractors. Clearly, this is not configured to include local stakeholder interests, as virtually all of the governance and implementation authority remains in the control of water supply interests. The RDEIR/SDEIS does not propose any significant changes to the governance structure laid out in the original BDCP, despite extensive public comments and concern.

Regional San continues to be troubled that the BDCP/CA WaterFix governance structure lacks any meaningful role for local stakeholders. Although there is a Stakeholder Council, which allows many stakeholders, including local counties and agencies, to convene and hold meetings on BDCP/CA WaterFix-related issues, this group has no authority in decision-making matters for BDCP/WaterFix—even for issues that directly affect local counties, communities, or special districts. As currently structured, disputed matters will be raised to the Authorized Entity Group and the Permit Oversight group. However, there is a lack of balance between the two groups that could lead to an inherent bias towards water exporter interests. This imbalance must be corrected and could possibly be solved by adding local county representation on the Authorized Entity Group, thus making both groups have four members each.

In summary, the governance structure of BDCP/CA WaterFix gives decision-making and dispute resolution authority to water exporter interests. There must be a more balanced approach to governance that does not exclude local government or stakeholders. There needs to be a mechanism to allow these stakeholders an effective role in representing their interests in the decision-making process.

BDCP/CA WaterFix and the RDEIR/SDEIS Fails to Use Sound Science

The lack of proper hourly and sub-hourly modeling for flow and water quality in the Sacramento River is clear evidence of insufficiency of basic sound science in the BDCP/CA WaterFix and RDEIR/SDEIS, as discussed previously. In our previous comment letter we referenced a list of major concerns from the Delta ISB review, dated May 15, 2014, explaining how the science in the BDCP effort falls short of what the project requires. Many of these concerns remain with the current version of the RDEIR/SDEIS, as described below:

- Although the planned amount of habitat restoration has been reduced, many of the impact assessments hinge on overly optimistic expectations about the feasibility, effectiveness, or timing of the proposed conservation actions, especially habitat restoration. As an example, the planned channel margin habitat restoration is intended to provide juvenile salmon new nursery habitats, including increased food supply, hydraulic refuge, and predator refuge. However, rather than specifying a total acreage of habitat to be restored or ensuring that the restored habitat will benefit juvenile salmon, rather than predatory fishes, clams, or harmful algae production, the project specifies that 5.5 miles of habitat restoration will occur – which is not a large area. (Section 4.1.3.3, page. 4.1-27, line 3).

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- The Project has many uncertainties that are considered inconsistently and incompletely, with modeling not used effectively to bracket a range of uncertainties or to explore how uncertainties may spread. This is especially true regarding the potential impacts of increased reversed flows in the Sacramento River downstream of the NDD (Section 3.6.1.1, page 3-29, line 13).

- The analyses still neglect important downstream effects on San Francisco Bay. As an example, the plan should recognize that while *Microcystis* cannot grow in the San Francisco Estuary, *Microcystis* grown in the Delta can travel downstream and enter the Estuary where the cells will die and release their harmful toxins (Section 4.2.7, page 4.2-46, line 17)

- Many details of how adaptive management will be implemented are left to a future management team without explicit prior consideration of potential alternative management actions that could be enacted or the specific thresholds for implementing actions. The funding for enacting projects identified through adaptive management is also uncertain, because the adaptive management project funds can also be used to purchase water for the Environmental Flow Program. California Water Fix should provide independent and guaranteed funding for both of these programs (Section 3.4.22.5, page D.3-86, line 15).

Furthermore, Section 4 of the current document continues the pattern of a lack of sound science. For example, the criterion of protection of delta smelt by having an impact on less than 5% of the population may be inadequate, given the extremely low density of delta smelt currently thought to be present in the Delta. Population size is so poorly understood as to make this metric impractical, and may be so low that it is equal to or less than the effective population size necessary to preserve genetic diversity and prevent a genetic bottleneck of the population as it (hopefully) recovers. In such an instance, every individual is likely to matter. (Section 4.2.10, page 4.2-51, line 8)

In addition, the document states that there could be a 2% decrease in longfin smelt spawning flows, "relative to Existing Conditions when climate change effects are accounted for under No Action Alternative (ELT) conditions, but not to an adverse level". However, the level which would constitute an adverse level is not defined or well understood. This level needs to be defined, in order for the reader to be able to assess the relative impact of a 2% decrease, and to be able to compare this to other potential impacts to spawning habitat. Similarly, "a small–to-moderate impact from summer water flows and temperatures" is anticipated, but the level of effect is not properly quantified or justified, so it is not possible for the reader to assess this impact in the context of other potential habitat alterations. (Section 4.2.10, page 4.2-53, lines 22-25).

The 2015 Delta ISB review of the RDEIR/SDEIS, also retains the majority of the May 15, 2014, criticisms, as listed below.

- "[The Current Draft remains deficient in due regard for several aspects of habitat restoration: landscape scale, timing, long-term monitoring, and the strategy of avoiding damage to existing wetlands."

- "We commented previously that modeling was not used effectively enough in bracketing uncertainties or exploring how they may propagate or be addressed. In the Current Draft, uncertainties and their consequences remain inadequately addressed, improvements notwithstanding."

- "We did not find examples of how adaptive management would be applied to assessing—and finding ways to reduce—the environmental impacts of project construction and operations."

- "...the Current Draft retains unwarranted optimism, as on page 4.3.25-10: "By reducing stressors on the Delta ecosystem through predator control at the north Delta intakes and Clifton Court Forebay and installation of a nonphysical fish barrier at Georgiana Slough, Alternative 4A will contribute to the health of the ecosystem and of individual species populations making them stronger and more resilient to the potential variability and extremes caused by climate change. The scientific basis for this statement is lacking, and an adaptive or risk-based management framework is not offered for the likely event that such optimism is unfulfilled."

The Delta Plan requires that all covered actions "document use of best available science." (2013 Delta Plan Policy GP 1, p. 53.) Regional San's 2014 comments, along with those submitted on the RDEIR/SDEIS, including the expert reports from Flow Science and others who commented on the DEIR/DEIS and/or the RDEIR/RDEIS, demonstrate that the Project and its environmental review documents do not document the use of best available science. In this critical respect, the CA WaterFix and its EIR/EIS are inconsistent with both the language and intent of the Delta Reform Act and Delta Plan.

Another example of failing to use best available science is "The Important Regional Action" in the BDCP, which appears to be retained since it was not recirculated as strikeout. It incorrectly characterizes the role of ammonia in the estuary. Regional San has previously commented on the "Important Regional Actions" section of BDCP, including a comment letter to Secretary Laird and Ms. Olson on September 6, 2013, attached to Regional San's 2014 comments. We take exception to the fact that our suggested changes to the Important Regional Action section were not incorporated in this version of the 2013 BDCP, or CA Water Fix and the RDEIR/SDEIS since it was not recirculated as strikeout. Inaccurate scientific information in the BDCP document can be misused in future documents and is another reason for removing this section.

Section 3.5.1 of the BDCP lists ammonia load reduction as an Important Regional Action that must occur if BDCP intends to achieve its fish recovery targets. As described in our July 2014 detailed comments, there are a number of serious problems with this section: ammonia load reductions at Regional San are not among the activities that BDCP applicants plan to undertake in order to obtain their incidental take permits; an incomplete scientific literature set is used; disputed scientific claims are used without regard to their merit; and claims regarding an increase in productivity are unsubstantiated.

Its inclusion is not insignificant to Regional San. The mis-characterization of scientific "facts" in Section 3.5.1 is not a fair representation of the current understanding of ammonia's role in the Delta and Suisun Bay and is another example of best available science not being employed. As described in detail in our 2014 comment letter, this section of the BDCP overstates the magnitude and certainty of the effects of reduced ammonia loadings by including only a portion of the scientific literature on this topic. One of the most comprehensive scientific reviews of ammonia's role in the estuary, completed by the San Francisco Estuary Institute, was not even included as a reference in this section. See http://www.sfei.org/sites/default/files/SuisunSynthesisI_Final_March2014_0.pdf

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The section also relies on, and presents as fact, information that has not been peer reviewed and contains grossly deficient methods descriptions, and makes bold, unsubstantiated claims about increases in productivity due to ammonia load reductions. Accordingly, the Ammonia Load Reduction portion of the Important Regional Action section should be deleted because: it provides no useful benefit; it perpetuates disputes that are now moot since Regional San is spending approximately 1.7 billion dollars to upgrade its treatment plant, of which nearly a billion dollars is to significantly reduce ammonia and nitrate in its treated effluent.

BDCP/CA WaterFix further confuses the role of nutrients in the estuary by describing BDCP/CA WaterFix-related nutrients as beneficial while also claiming that nutrients from Regional San (and other sources) are harmful. It is disingenuous and paradoxical for Project proponents to argue that Regional San must remove nutrients from its discharge while simultaneously claiming that BDCP/CA WaterFix conservation measures/environmental commitments will improve the Delta ecosystem by adding nutrients.

Conclusion

In summary, while appreciating the complexity and challenges associated with conducting proper analysis, Regional San believes that the BDCP/CA WaterFix and RDEIR/SDEIS have very fundamental deficiencies that must be addressed. Due to the substantive changes in the Project since publication of the DEIR/DEIS, the considerable changes needed to the underlying technical studies and analyses, and the extensive comment and criticism of these documents, further edits and revisions or partial recirculation of the current DEIR/DEIS or RDEIR/SDEIS will not satisfy CEQA and NEPA's informational mandate. The state and federal lead agencies must start over and prepare a new draft EIR/EIS that addresses the concerns raised in comments on the DEIR/DEIS and RDEIR/SDEIS.

If you have any questions about our comments, please contact me at (916) 876-6092 or mitchellT@sacsewer.com or Linda Dorn at (916) 876-6030 or dornL@sacsewer.com.

Sincerely,

Terrie L. Mitchell

Terrie Mitchell
Manager Legislative and Regulatory Affairs

cc: Prabhakar Somavarapu, District Engineer, Regional San
Christoph Dobson, Director of Policy & Planning, Regional San
Delta Stewardship Council Members
SWRCB Members and Executive Officer
CVRWQCB Members and Executive Officer
Regional San State and Federal Legislative Delegation

Attachment 1: Regional San Detailed Comments on BDCP/CA WaterFix and RDEIR/SDEIS
Attachment 2: October 16, 2015 Flow Science Technical Memorandum on Alternative 4A

ATTACHMENT 1

Regional San Detailed Comments on BDCP/CA WaterFix and Associated RDEIR/SDEIS

Regional San Detailed Comments on BDCP/CA WaterFix and Associated RDEIR/SDEIS

Comments listed by sections, page numbers, and line numbers

Section 4.1.2.2 Water Conveyance Facility Operations

- Page 4.1-5, line 17 and 4.1-6, line 37

  An adaptive management program alone will not ensure the ongoing welfare of native species. Adaptive management is excellent in principal, but there have been very few successfully implemented examples of adaptive management in the Delta thus far, so it is an environmentally dangerous stretch to count on this process working effectively and adequately for these aims in the future.

- Page 4.1-6, line 30

  BDCP should not purchase water to supply the spring outflow criteria, it should come from a reduction in water available for export.

- Page 4.1-7, Table 4.1-2

  The table describes the intakes operation with "Low-Level pumping", but it has been described in numerous BDCP Public Meetings that the intakes are completely operated through gravity. Subsequent text does not make the method clear either. Notice in all the areas where Alternative 4A is described (including Executive Summary), the method of conveyance between the "Intermediate Forebay" and Clifton Court Forebay is clearly described as gravity, whereas method of conveyance through the intakes and the single-bore tunnels to the Intermediate Forebay is not identified.

  The table refers to "Table 3-16 in the Draft EIR/EIS" and "Section 3.6.4 of the Draft EIR/EIS" numerous times to further define the operation of Alternative 4A. Table 3-16 and Section 3.6.4 of the DEIR/DEIS has not been updated and revised in the RDEIR/SDEIS. Table 3-16 describes operation as "constant low level pumping" in numerous places.

  Table 4.1-2, Executive Summary, Appendix B, Section 4.3.1 (Water Supply), Section 4.3.2 (Surface Water), and additional sections of RDEIR/SDEIS lack a clear picture of how much water is being diverted by the proposed Alternative 4A. Table 4.1-2 refers to other sections and tables that are not updated and do not reflect accurate information. This information needs to be presented graphically, as plots of river flow and diversion flow over time for a year, for each water year type. Tables 5-4 through 5-6 do not show the amount of water at Freeport and below. Tables 6-2 through 6-9 only show flows for January-March of Wet Years. Tables B.2-1, B.2-2, and B.2-3 only show flows for January-March of Wet Years as well.

- Page 4.1-13, line 16

  Reverse flow in the Sacramento River is somehow completely left out of operation sequences. The Real-Time Operation Decision-Making Process does not mention reverse flow in the river and what precautions and operations are in place to monitor and operate for it.

Section 4.1.2.4 Water Conveyance Facility Operations Collaborative Science and Adaptive Management Program

- Page 4.1-18, line 36 and 4.1-20, line 21

  Collaborative science should allow the opportunity for scientific input from all informed organizations, not just those included in the CAMT. This could be done by allowing public comments at the end of CAMT meetings, and by providing an annual public review of the Collaborative Science and Adaptive Management Program (AMMP), with written responses to submitted questions.

- Page 4.1-19, line 10

  The Delta Science Program may coordinate a peer review, but does not conduct peer review with their own staff. This should be made clear in the text.

- Page 4.1-20, line 47

  Collaborative science and monitoring conducted to support the proposed project should be fully supported by project funding, and receive sufficient funding to allow comprehensive and determinate studies.

Section 4.1.3.3. Environmental Commitments

- Page 4.1-27, line 3

  The channel margin restoration projects need to provide sufficient shallow-water and riparian habitat to provide salmonids with the envisioned benefits. If river margins are going to provide trees to create woody debris, vegetation to feed invertebrates, and fish rearing habitat, it will need sufficient near-shore area to produce a variety of tidal depths (at low slopes) and function as a connection between the terrestrial environment and the river. Adding a couple feet of submerged bench at the waterward side of a rip-rapped levee would not be likely to provide the plan's described benefits (such as foraging opportunities, rearing habitat, resting spots, and refuge). It is more likely that set-back levees would need to be constructed to allow a natural transition between the river and landscape that will produce an effective channel margin enhancement. Therefore 5.5 levee miles of channel margin restoration should be designed to maximize marginal habitat width (surface area), as well as meeting the total required distance.

Section 4.1.6 Assumptions for the Purposed of Analysis

- Page 4.1-42 to 43, General Comment

  The Assumption for the Purposes of Analysis and Physical Modeling sections are very confusing and unclear. They do not provide a simple clear basis for No Action Alternative, Early Long-Term, and Late Long-Term. It describes some mandated work of improvement and restoration as "considered part of the NAA" which was part of Alternative 4 but not part of 4A, but then does not clarify if those assumptions were taken into consideration for modeling NAA. It is very misleading to rely on work that's not part of Alternative 4A or NAA. Because of this assumption and un-clarity throughout the document, it is difficult to analyze the true impact of the project (Alternative 4A) because of a lack of clear baseline conditions.

- Page 4.1-43, Physical Modeling

  The modeling work described in this section along with the associated detail of modeling provided in the Appendix B (Supplemental Modeling Results for New Alternatives) are inadequate. The modeling work performed for the new alternatives is only CALSIM II monthly average and not DSM2 hourly. This even does not meet BDCP's 2013 modeling standard when DSM2 hourly modeling was performed to analyze the impact. No significant results and conclusion can be obtained from the very limited modeling that has been performed for the new alternatives.

Section 4.2.7. Water Quality Impacts (NAA)

- Page 4.2-19, line 6

  The confusion created by lack of clarity in section 4.1.6 and the lack of sufficient amount of modeling work lead to this "uncertainty in the results" and misleads readers. It is very difficult to analyze and comprehend impacts because of this uncertainty in results.

- Page 4.2-19, lines 15-42

  The text correctly states that the ongoing upgrades to the Sacramento Regional Wastewater Treatment Plant (SRWTP) will decrease the concentration of ammonia in the Sacramento River downstream of the SRWTP relative to Existing Conditions, that the Delta environment is not CWA Section 303(d) listed for ammonia, and that no ammonia-related impairments currently exist. However, the text goes on to state that a decrease in ammonia concentrations would be anticipated "for all areas that are influenced by Sacramento River water" and includes "various locations in the Delta and at Jones and Banks Pumping Plants where Delta water is exported to the SWP/CVP Export Service Areas". This statement should be clarified because according to Kudela, the majority of the ammonia currently discharged by SRWTP is taken up by phytoplankton and/or converted to nitrate well upstream of the current Delta water export facilities. [Kudela (USCS) final report to Regional San]. As such, the upgrades to the SRWTP are expected

to decrease ammonia concentrations in locations along the Sacramento River where SRWTP-derived ammonia currently occurs, given particular seasonal and flow conditions, but ammonia concentrations are currently already lowered substantially by the time that any Sacramento River water is routed to the South Delta.

- Page 4.2-33, lines 38-45

  The text correctly states that the ongoing upgrades to the SRWTP will include processes for nitrification and partial denitrification. However, the text goes on to state that "actual nitrate concentrations would likely be higher than the modeling results indicate at certain locations under the No Action Alternative (ELT)"... "because the mass balance modeling does not account for contributions from the SRWTP". This statement should be clarified because the majority of the ammonia currently discharged by SRWTP is taken up by phytoplankton and/or converted to nitrate by the time the water has passed downstream of Rio Vista [Kudela (USCS) final report to Regional San]. As such, the upgrades to the SRWTP are expected to increase nitrate concentrations only in locations along the Sacramento River where SRWTP-derived ammonia currently occurs, because in the future the ammonia will already have been converted to nitrate prior to discharge to the river.

- Page 4.2-34, lines 14-18

  The text states that "in the Delta region, nitrate concentrations would be higher than indicated in the modeling results for areas receiving Sacramento River water, including Banks and Jones pumping plants". This statement should be clarified because the majority of the ammonia currently discharged by SRWTP is taken up by phytoplankton and/or converted to nitrate well upstream of the current Delta water export facilities, by the time the water has passed downstream of Rio Vista [Kudela (USCS) final report to Regional San]. As such, the upgrades to the SRWTP are expected to increase nitrate concentrations only in locations along the Sacramento River where SRWTP-derived ammonia currently occurs, because in the future the ammonia will already have been converted to nitrate prior to discharge to the river.

- Page 4.2-44 – 4.2-46, lines 17-20

  The text correctly states that "Adverse changes in Microcystis levels that could occur in the Delta would not cause adverse Microcystis blooms in the Bay, because Microcystis are intolerant of the Bay's high salinity and thus have not been detected downstream of Suisun Bay." However, should an alternative result in increased Microcystis levels in the Delta, this could result in increased concentration of the microcystin toxin in the Bay, as Microcystis cells float downstream toward the Bay, enter water of increased salinity, lyse, and release the microcystin toxin.

- Page 4.2-46, line 17 (next page)

Microcystis grown in the Delta can be advected downstream into SF Bay, where the cells will lyse and release microcystin. In this manner, microsystem may pose a risk to wildlife in the bay, even though Microcystis will not grow in the salty water.

- Page 4.2-46, line 20

  It is interesting to see that the reduction in total nitrogen load (associated with the SRWTP improvements) are expected to have minimal effect on water quality degradation, primary productivity, or phytoplankton community composition in the SF Bay. What is the basis for this conclusion and would a similar lack of effect be expected in the Delta?

Section 4.2.10 Fish and Aquatic Resources

- Page 4.2-51, line 8

  The criterion of protection of Delta smelt by having an impact on less than 5% of the population may be inadequate, given the extremely low density of Delta smelt currently thought to be present in the Delta. Population size may be so low that it is equal to or less than the effective population size necessary to preserve genetic diversity and prevent a genetic bottleneck of the population as it (hopefully) recovers. In such an instance, every individual is likely to matter.

- Page 4.2-51, line 21

  The specific studies noted as "on-going studies" designed to improve water export and fish salvage operations, as related to longfin smelt, should be referenced. If the studies are incomplete, the study proposals and/or Scopes of Work should be referenced. Without references it is impossible for a reader to make an informed decision as to whether these studies are likely to be adequate to achieve the results anticipated by the authors.

- Page 4.2-53, lines 22-25

  The text states that there could be a 2% decrease in longfin smelt spawning flows, "relative to Existing Conditions when climate change effects are accounted for under No Action Alternative (ELT) conditions, but not to an adverse level". However, the level which would constitute an adverse level is not defined. This level needs to be defined, in order for the reader to be able to assess the relative impact of a 2% decrease, and to be able to compare this to other potential impacts to spawning habitat. Similarly, in the following sentence, "a small–to-moderate impact from summer water flows and temperatures" is anticipated, but the level of effect is not quantified, so it is not possible for the reader to assess this impact in the context of other potential habitat alterations.

Section 4.2.24. Public Health, NAA

- Page 4.2-67 – 4.2-68, lines 39-6 (next page)

Decreased flows (increased hydraulic residence time) due to habitat restoration in the Delta, and increased water temperatures due to climate change may increase the likelihood of cyanobacteria blooms, including Microcystis. Water operations should be managed to limit cyanobacteria bloom potential, especially in warm water years, by providing sufficient bypass flows at the North Delta Diversion (NDD).

Section 4.3.2. Surface Water

- General Comment

  The Surface Water impact section completely lacks taking into account tidal influence and reverse flow in Sacramento River near the proposed intakes.

- Page 4.3.2-2, line 28

  Stating that Sacramento River flow at Freeport will only decrease by 1% of the 110,000 cfs channel capacity under Alternative 4A compared to NAA is very misleading and irrelevant to measuring any impact. The channel rarely flows at the capacity, therefore, stating 1% reduction from capacity seems to downplay the true impact of the flow reduction.

- Page 4.3.2-3, line 16

  Stating that Sacramento River flow at locations upstream of Walnut Grove will only decrease by 9% of the 110,000 cfs channel capacity under Alternative 4A compared to NAA is very misleading and irrelevant to measuring any impact. The channel rarely flows at the capacity, therefore, stating 9% reduction from capacity seems to downplay the true impact of the flow reduction. 9,000 cfs of diversion at a more realistic river flow of 20,000 cfs will cause a reduction of 45%. During the summer of a dry year like 2015, the river flow is more in the 7,000 cfs range. Showing numbers like 45% reduction, and 7,000 cfs flow, would be more realistic and transparent. It is impossible to determine impacts due to flow reduction when unrealistic numbers and scenarios are presented.

Section 4.3.4 Water Quality Impacts (also Appendix 8H - Electrical Conductivity)

- Page 4.3.4-23, lines 28-33

  This text is one of numerous locations in the RDEIR/SDEIS where the suggestion is made that modeling results may show exceedances when, in reality, such exceedances would not occur. The statement is made that sensitivity analyses were performed to assess this question. Attachment 1 to Appendix 8H contains a discussion of this additional analysis. Review of Attachment 1 indicates that the sensitivity analysis did not change the finding that the proposed alternative would cause increased exceedances of EC standards at numerous locations in the Delta, particularly in comparison to existing conditions, which is the basis for current impaired waters listings for EC. The conclusion

is that the language which poses uncertainty regarding possible "false positive" exceedances should be dismissed with regard to the larger point that the proposed alternative will significantly degrade EC levels in the Delta. This conclusion is based on the information presented in the BDCP EIR/EIS and the RDEIR/SDEIS.

- Page 4.3.4-3, line 3

  Why is it assumed that there will be a minor increase in ammonia under Alternative 4A, compared to the No Action Alternative (ELT)? The water intake is downstream of SRWTP's discharge, so ammonia concentrations should receive the same level of dilution with the new project in place.

- Page 4.3.4-25, line 35, (also Appendix 8H, page 8H-2, lines 18 and 19)

  The statement is made that "DWR and USBR have every intention of operating SWP and CVP facilities by fine tuning reservoir storage and exports in real time to meet D-1641 standards…". In fact, no guarantee or certainty is provided that real time management of the SWP/CVP will eliminate the adverse degradation of EC levels in the Delta. Additionally, some of the areas of degradation are not at D-1641 compliance points. Further, there are far too many constraints on system operation to allow for promised mitigation of EC violations to consistently occur, especially during drought conditions when the impacts are most severe (see Tables EC-15A through EC-15D in Appendix 8H).

Section 4.3.7. Fish and Aquatic Resources

- Page 4.3.7-24, line 7

  Excluding fish with screened intakes does not guarantee their safe passage by water diversions. The diversion can also kill fish that contact the screen and become injured or stuck to the screen's surface. It is important to provide proper diversion flows (>0.2ft/s) and sweeping flows (≥ the diversion flow rate) to provide delta smelt the best chance at passing by the intakes.

- Page 4.3.7-24, line 10

  Although few delta smelt are likely to occur in the vicinity of the NDD, predation losses should be evaluated and water operations should be managed, to limit delta smelt predation risk.

- Page 4.3.7-25, line 18

  It seems likely that water temperature south of the NDD would increase, due to reduced flow and increased residence time. The effects of this potential temperature increase should be considered for delta smelt.

- Page 4.3.7-29, line 13

  While it is beneficial to reintroduce sediment collected at the north Delta intakes into tidal restoration projects, which could assist local accretion or increase the system's total suspended sediments, the transferred sediments should be tested for contaminants before application, and cleaned as necessary.

- Page 4.3.7-31, line 1

  Delta smelt are able to bioaccumulate contaminants. The majority of delta smelt only live for 1 year, and therefore the total amount of contaminants they bioaccumulate is likely to be lower than the amount found in fishes that have lived for greater than one year.

- Page 4.3.7-31, line 18

  Tidal habitat restoration could have negative impacts on delta smelt if they are colonized by the wrong organisms, therefore it is important to adaptively manage these habitats to go beyond intending to provide benefits and actually do provide recognizable benefits for delta smelt.

- Page 4.3.7-41, line 3

  Fish abundances and entrainment losses should not be averaged across water year types in the analysis. Greater amounts of water will be removed from the Delta during critically dry years compared to current operations. During these years, water would also continue to be extracted from the southern pumps. Planned operations should be careful to consider fish entrainment during critically dry years when population abundances are reduced. A large reduction in entrainment during wet years does not reduce the critical risk that increased entrainment during dry years would pose to protected fishes, when these fish are also most impacted by other stressors. Most delta smelt live for a single year, therefore requiring the greatest protection during the most stressful environmental conditions, or the species may not persist to benefit from improved conditions in wetter years.

- Page 4.3.7-41, line 41

  How will the amount of outflow required to prevent a reduction in longfin smelt abundance be determined for Mitigation Measure AQUA-22d?

- Page 4.3.7-47, line 31

  To understand the current effects of entrainment, the proportion of juvenile winter-run Chinook Salmon entering the Delta should be compared to the number of juvenile winter-run Chinook Salmon entrained, because entrainment into the pumps can only affect those fish that have made it to the Delta.

- Page 4.3.7-49, line 9

  Why does the bioenergetics model expect that each striped bass would only eat 7.3 juvenile winter-run Chinook salmon per year? Striped bass could easily eat many more salmon. It is more likely that the predator-prey encounter rates will control bass predation rates. Reducing the number of striped bass near the diversions could reduce the encounter rates in the project area, but new predators will quickly enter the area if it is a favorable feeding location. It might be more effective to research methods that would deter predatory fish from occupying the project area than continuously removing them.

- Page 4.3.7-65, line 42

  If a 5% predation loss occurs at each intake, 5% of the original population would be lost in the first intake, 4.8% would be lost at the second (due to the reduced number of fish passing the diversion) and 4.5% would be lost at the 3rd. Therefore the cumulative estimated predation loss for juvenile salmonids reaching the north Delta would be 14.3%, and should not be reported as 12%.

- Page 4.3.7-65, line 34

  There should be a greater discussion of how bypass flows will be managed to protect juvenile salmonids. Management providing adequate fish protection may limit the amount of water available for export under some low-flow conditions and should be further investigated.

Section 4.3.21. Public Health, Alternative 4A

- Page 4.3.21-10, lines 3-12

  The use of qualitative estimates of the change in Delta water residence time under Alternative 4A is inadequate (in any case, there should be a reference to the source of the qualitative estimation). While there may be uncertainty regarding the hydrodynamic impacts of the environmental commitments on long-term average residence times in the Delta for Alternative 4A, there should be much less uncertainty regarding the effects of operation of the water conveyance facilities and these effects should have been modeled quantitatively. In addition, the use of a long-term average residence time is inadequate, given the very high variability of flows under California hydrological conditions, within a given year (winter storms, spring freshet, low summer baseline), and across the range of wet to critically dry years. Knowing the impact of the operation of the conveyance

structures on Delta water flows and hydraulic residence time on shorter time scales is critical, particularly for diversions during low-flow summer periods when water temperatures are likely to be high, increasing the probability of Microcystis blooms, and the probability of stressful high water temperatures for temperature-sensitive fish species.

Section 4.3.25 Climate Change Impacts

- Page 4.3.25-9, lines 14-35

  Conveyance structures are described as methods to increase adaptability of water management downstream of conveyance, in response to climate change. The text needs to be expanded to discuss the potential negative impacts of having substantially less flow downstream of conveyance, and also the potential negative effect on freshwater and brackish zooplankton and fish species regarding potential changes in the X2 location, due to diversions occurring at the conveyance.

Section 4.4.4. Water Quality, Alternative 2D

- Page 4.4.4-57, line 1 through 4.4.4-62, line 33

  The revised BDCP document would have been much more informative if it had provided side-by-side comparisons of Alt. 4A vs. Alt. 4, NAA, 2D, and 5A. For example, the likely effects of alternative 2D are difficult to assess because, for several potential impacts, comparisons are made to Existing Conditions, Alt.4, and Alt. NAA, but not to the preferred Alt. 4A. Furthermore, the water modeling was only done qualitatively (in contrast to Alternative 4).

Section 4.4.21. Public Health, Alternative 2D

- Page 4.4.21-10, line 10 to 4.4.21-12, line 4

  The use of qualitative estimates of the change in Delta water residence time under Alternative 2D is inadequate, as was noted in more detail in comments on the Public Health section for Alternative 4A.

Section 4.5.4. Water Quality, Alternative 5A

- Page 4.5.3-56, line 33 through 4.5.3-62, line 19

  The use of qualitative estimates of the change in Delta water residence time under Alternative 5A is inadequate, as was noted in more detail in comments on the Public Health section for Alternative 4A.

Section 4.5.21 Public Health, Alternative 5A

- Page 4.5.21-10, line 3 through 4.5.21-11, line 42

  The use of qualitative estimates of the change in Delta water residence time under Alternative 5A is inadequate, as was noted in more detail in comments on the Public Health section for Alternative 4A.

Appendix A - Chapter 3: Description of Alternatives

- Page 3-29, line 13

  To provide delta smelt protection while traveling past the screened intake, the approach velocity must never be greater than the river's sweeping velocity at the face of the screen. The BDCP Fish Facilities Technical Team Technical Memorandum in July 2011 described the water velocities necessary to provide adequate protection for delta smelt traveling past the north delta diversion screens. "Required sweeping velocities for the diversions should be measured adjacent (within twelve inches) to the screen face and should be equal to or greater than the approach velocity criterion (i.e., 0.2 fps or greater when operating at an approach velocity of 0.2 fps, and 0.33 fps or greater when operating at an approach velocity of 0.33 fps)".

  The current description in Chapter 3 states that "… fish screens would be designed to meet delta smelt criteria, which require 5 square feet/cfs and result in approach velocity less than or equal to 0.2 feet/s. When coupled with equal or less sweeping velocities, delta smelt impingement and screen contact is minimized (Swanson et al. 2005; White et al. 2010)". This statement is incorrect. To protect delta smelt and juvenile salmon swimming near the screens, the water approach velocity should never exceed the river's sweeping velocity. When the diversion's approach velocity exceeds the river's sweeping velocity small fish have a high risk of becoming impinged on the screens, which can result in injury, increased predation risk, and mortality.

  When Sacramento River's outflow is low, tidal influences can cause the river's velocity (sweeping speed) to temporarily slow down, stop, and even reverse in direction. When the river's sweeping speed is reduced, the velocity of diverted water (approach velocity) also needs to be reduced to maintain the experimentally determined 1:1 water diversion ratio, which is protective for delta smelt and other small fish. This means that during tidal reversal periods, no water should be exported at the northern water diversions. Tidal reversals can occur twice a day and last for many hours.

  The diversion of water at the northern intake is also likely to cause increased periods of flow reversals near the intake screens. Therefore hourly flow rates should be modeled and discussed in the revised project description. Water export should only be modeled to occur at the northern diversions during periods when the sweeping velocity is greater than or equal to 0.20 fps. During low flow conditions, it is important to consider how

much water can be exported at 0.2 fps during the less than half-day period of time when sweeping river flows are greater than 0.2 fps.

- Page 3-29, line 33

  As discussed in the Fish Facilities Technical Team (FFTT) 2011 report, solid panels should also be installed at the base of the water diversion screens, so that the screen's intakes are located three to five feet off the existing river bottom. This would help to minimize sediment and bed load impacts, and would help benthic-oriented fishes pass the water diversion safely. This feature is likely to be especially important in reducing the number of juvenile green sturgeon that become impinged (stuck) on the screens.

- Page 3-30, line 3

  More research studies are needed to optimize the planned fish refugia within the NDD structures, so that they will provide the theorized benefits. Additional research is needed to understand the appropriate light levels and interior flow (approach) velocities that will behaviorally direct fish into entering refugia. In general, juvenile salmon are more likely to enter a structure when there is a low-inflow velocity and there is moderate light levels. Juvenile salmonids will also tend to avoid entering darkened structures. Therefore additional lighting and a slow approach velocities may need to be added within the refugia to encourage small fish to use them.

  If the predator restriction bars at the refugia's inlet are too deep and prevent fish from observing the refugia's interior, then bars may also deter fish from using the refugia.

  Fish refugia will need to be monitored and flushed occasionally, because small predatory fish are likely to enter refugia, grow larger, and consume small fish as they enter the refugia (including the species that the refugia were installed to protect).

- Page 3-92, line 8

  It would be more appropriate to rescue and salvage all of the capturable fish that become stranded during the construction activities, rather than to salvage only the covered fish species.

- Page 3-92, line 11

  The floating fish guidance structure is an idea worth testing to a further extent, but it needs one major revision in design. The panels should reach the bottom of the riverbed to effectively guide fish, or many fish will simply swim beneath it. This could be done by having a screen that sits on the river bottom and comes 2/3 of the way to the surface connected to a sliding screen that floats at the surface and projects 2/3 of the way to the bottom of the river. The screens would then overlap and provide a single barrier at all water column depths, which should help increase the number of juvenile salmon into entering into preferred channels at river junctions (and could potentially be more effective than the BAFF).

Appendix A - Chapter 8: Water Quality

- Page 8-83, Table 8-60a

  As shown in the table, residence times during the summer and fall will be significantly increased at numerous locations in the Delta under Alternative 4 H3 in comparison to Existing Conditions and also the No Action Alternative. Significant increases in average residence time are predicted to occur in Cache Slough, East Delta and South Delta. It is well established that temperature and residence time are prime factors driving Microcyctis blooms in the Delta. Given the predicted increases in Delta water temperatures which are predicted through climate change modeling, the increased residence times associated with the proposed alternative will lead to increased occurrence, spatial distribution and magnitude of Microcystis blooms in the Delta. (See pages 8-82, 8-103 and also the Cyanobacteria white paper prepared for Central Valley Regional Water Board-led science effort on Delta water quality problems).

Appendix A - Chapter 11: Fish and Aquatic Resources

- Page 11-112, lines 6-8

  Juvenile covered fish species and juvenile striped bass may benefit from the Fall X2 action, and the greater abundance of adult striped bass may increase predation on juveniles of covered species and negate the benefits from increased habitat, therefore the overall effect is uncertain without additional studies.

- Page 11-106, lines 37-44

  Impact AQUA-NAA4 (spawning and egg incubation habitat for covered fish species): NAA will result in changes to flows that will have significant effects on green and white sturgeon spawning in the Feather River, and significant effects on fall-run Chinook salmon and steelhead spawning in the American River. These effects should be further evaluated, and fully mitigated.

- Page 11-107, lines 37-39

  Impact AQUA-NAA5 (rearing habitat for covered fish species): NAA will result in changes in flows that are expected to affect rearing conditions for all salmonids and sturgeon somewhere in the system. These effects should be further evaluated, and fully mitigated.

- Page 11-109, lines 1-3

  Impact AQUA-NAA6 (migration habitat for covered fish species): NAA in drier water year types, will result in mean monthly flows at Rio Vista up to 28% lower than under Existing Conditions. These effects should be further evaluated, and fully mitigated.

- Page 11-109, lines 13-15

  Impact AQUA-NAA6: NAA could have a significant effect on salmonids and sturgeon through degradation of upstream conditions due to reduced flows and increased

temperatures that may affect migration. These effects should be further evaluated, and fully mitigated.

- Page 11-111, lines 30-33

  Impact AQUA-NAA12 (spawning and egg incubation habitat for non-covered species): NAA may affect downstream spawning conditions for some non-covered fish species, when climate change effects are accounted for (due to changes in water storage volumes upstream of the Delta to meet Fall X2 targets. These effects should be further evaluated, and fully mitigated.

Appendix A – Appendix 8H: Electric Conductivity

- Page 8H-6, Table EC-4

  Compared to existing conditions, which are the basis for current 303(d) listings for EC in the Delta, the proposed Alternative will significantly increase violations of water quality objectives for EC at (1) Sacramento River at Emmaton, (b) San Joaquin River at San Andreas, (3) Old River at Tracy Bridge, and (4) San Joaquin River at Prisoners Point. This proposed degradation of EC conditions in impaired waters is not allowed under the federal antidegradation provisions of the Clean Water Act.

Appendix B – Supplemental Modeling Results for New Alternatives

- Page B-357, Table B.7-28-Differences (Percent Differences) between Pairs of Model Scenarios for the Sacramento River Downstream of the North Delta Diversion Facility, Year-Round

  Table B.7-28 is the only table that gives some clue about the flow at different times of the year and different water year type; this table is not mentioned in the Executive Summary and Alternative Descriptions. This table shows Sacramento River flows downstream of the proposed intake will be substantially reduced because of the Project diversions. This reduction of flow compared to the existing condition should be clearly shown for all 12 months of the year and for every year type in graphs and other tables. The other limited amount of tabulated flow information provided in the document show peak seasonal flow and wet years, which is not a clear representation of the project. This information should be plainly stated and shown in the documents, not just buried in Appendix B.

Appendix D – Substantive BDCP Revisions

- Page D.3-11, line 32

  Reverse flow occurrence is likely to increase in the Sacramento River downstream of the NDD including in the river reaches near Georgiana Slough and the Delta Cross Channel, due to the reduction of tidal wetland restoration in the revised plan. It is unlikely that

water operations will be able to prevent increased reverse flows at these junctions without limiting NDD to high outflow conditions. Therefore water diversion at the NDD intakes may pose an increased risk to juvenile salmon. The simplest method to avoid increasing reverse flows south of the NDD is to cease NDD water export when Sacramento River flows are low.

- Page D.3-64, line 3

  Predator removal programs need to be careful not to only target large-sized predatory fishes. Reductions of larger-sized predatory fish can allow for a greater density of smaller-sized predatory fish to inhabit an area, which are still of sufficient size to consume juvenile covered fish species. Increased numbers of smaller-sized predatory fish are likely to increase the predator encounter rates for juvenile covered fish species, potentially resulting in greater total numbers of fish consumed. Therefore if predatory fish are going to be removed during the feasibility assessment study or fishing tournaments, it is important to remove all predatory fish of sufficient size to consume juvenile fish (not just the largest individuals captured). This would help to control one of the potential unexpected foodweb responses due to predatory fish removal.

- Page D.3-86, line 3

  The funding to implement adaptive management changes should not need to compete with funding to support the Environmental Flow Program. These activities support separate needs, and need to be funded separately. Implementation of necessary adaptive management projects should not limit Environmental Flow Program funding and vice-versa.

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ATTACHMENT 2

October 16, 2015 Flow Science Technical Memorandum on Alternative 4A

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Flow Science Incorporated
48 S. Chester Ave., Ste. 200, Pasadena, CA 91106
(626) 304-1134 · FAX (626) 304-9427

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October 16, 2015

Samsor Safi
Regional San
10060 Goethe Road
Sacramento, CA 95827

Re: Evaluation of 2015 BDCP RDEIR/SDEIS New Preferred Alternative 4A
FSI 098116

Dear Mr. Safi,

Regional San's NPDES Permit allows it to discharge treated effluent to the Sacramento River through its diffuser at Freeport only when the ratio of River flow rate to effluent flow rate exceeds 14:1. When river flow rates drop such that the 14:1 ratio cannot be maintained, Regional San must divert effluent to on-site Emergency Storage Basins (ESBs) until river flow rates return to levels that allow effluent discharge. Once Regional San discharge resumes after a diversion event, effluent discharge includes both effluent from Regional San's regular treatment stream and effluent from the ESBs. Regional San's current total ESB capacity is 302 MG, though this capacity is currently being expanded.

This letter report summarizes Flow Science Incorporated's (Flow Science's) evaluation of modeling data associated with the new preferred BDCP Alternative—"Alternative 4A" or the "California Water Fix." This alternative is described in the recently issued Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS). The aim of Flow Science's work was to try to assess the impact of the proposed alternative on the ability of Regional San to discharge to the Sacramento River, and on the required number, frequency, and volume of diversions to Regional San ESBs, relative to the old preferred BDCP alternative—"Alternative 4."

SUMMARY OF CONCLUSIONS

Based on a statistical analysis of CALSIM II modeling results provided by the California Department of Water Resources (DWR), the main conclusion of this report is that the mean monthly Sacramento River flow rates at Freeport under Alternative 4A are statistically indistinguishable from those under Alternative 4. Thus, it seems mean monthly Sacramento River flow rates would not change in a statistically significant way under the new preferred Alternative 4A.

However, despite these results of the statistical analysis, available modeling data for Alternative 4A were insufficient to justify any conclusions regarding the likely effect of Alternative 4A on the number, frequency, and volume of Regional San ESB diversions. In particular, the fact that DSM2 modeling of Alternative 4A was not performed by the

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BDCP team meant that there were no available hourly Sacramento River flow rates associated with Alternative 4A, and thus that a detailed evaluation of Regional San operations under Alternative 4A was impossible. Diversion of Regional San effluent to ESBs is sensitive to changes in Sacramento River flow rate on an hourly and sub-hourly basis. The available mean monthly flow rates (i.e., CALSIM II output data) at Freeport yield no information about flow rate fluctuations on these short time-scales. For example, the fact that Alternative 4A seems to exhibit monthly low-flows that are not statistically different on average than those under Alternative 4 is not evidence that a similar number of ESB diversions would be required under Alternative 4A relative to Alternative 4. Indeed, it could still be that Alternative 4A would generate hourly flow rates during key periods requiring a different number of diversions to ESBs and different diverted volumes.

Thus, without hourly flow rate information at Freeport (e.g., DSM2 model output), it is not possible to draw determinate conclusions about the specific effect of Alternative 4A on Regional San operations. The fact that the RDEIR/SDEIR modeling of Alternative 4A did not include DSM2 modeling with hourly output is a substantial shortcoming of the RDEIR/SDEIR insofar as the impacts of Alternative 4A cannot be properly evaluated. The lack of hourly DSM2 output available for Alternative 4A stands in contrast with the hourly DSM2 output data that were available for Alternative 4, in connection with the previous Draft EIR/EIS. In that previous case, Flow Science concluded that, under some of the proposed operating conditions (e.g., "H3"), substantially more ESB storage and diversion would be required by Regional San under Alternative 4 than under existing conditions (Flow Science 2014).

One major difference between Alternative 4 and Alternative 4A is that the latter includes significantly less habitat restoration than the former. Although no modeling analysis of Alternative 4A could be conducted (for the reasons stated above), Flow Science's prior modeling analysis (2014) suggested that the scale and location of habitat restoration in BDCP alternatives can have a significant effect on flow rates at Freeport, and thus on Regional San operations. In particular, prior analysis suggested that a BDCP alternative without habitat restoration (i.e., something like Alternative 4A) could make reverse flow events at Freeport more severe, and thus may have greater potential to affect Regional San operations than an alternative with habitat restoration (Flow Science 2014, p. 17). However, this conclusion should be understood as tentative since even in Flow Science's prior analysis the effect of habitat restoration on Regional San operations could not be completely isolated.

BACKGROUND

In December 2013, a group of Federal and California state agencies published a Draft EIR/EIS for the proposed BDCP. The preferred alternative in that document was called "Alternative 4," which included a range of plumbing and habitat restoration changes to the configuration of the Delta. Modeling of Alternative 4 in the Draft EIR/EIS work included a range of sub-alternatives that simulated different operational strategies. For example, the "H3" sub-alternative incorporated what was called "Evaluated Starting

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Operations," while the "H4" sub-alternative incorporated an operational condition called "High Outflow."

In 2014 Flow Science evaluated the previously preferred "Alternative 4," and its sub-alternatives "H3" and "H4"[1] (Flow Science, 2014). Analysis was performed using hourly Sacramento River flow rate output data (at Freeport) from DSM2 modeling associated with the Draft EIR/EIS. Results of that analysis showed that Alt4H3 would require a maximum ESB volume of 147 million gallons (MG) and would require 2,829 diversions to the ESBs (6.30% of the time) during the 16-year BDCP modeling period (Water Years 1976-1991). Similarly, Alt4H4 would require a maximum ESB volume of 65.8 MG and would require 2,769 diversions to the ESBs (6.01% of the time) during the same 16-year modeling period.

In response to public comments on the Draft EIR/EIS, the recent RDEIR/SDEIS put forth a different preferred alternative called "Alternative 4A," or the "California WaterFix." One major difference between Alternative 4 and Alternative 4A is that the latter includes significantly less habitat restoration than the former. (The majority of habitat restoration activities have been separated into a different program called "California EcoRestore," which will undergo separate environmental review.) As for the modeling of Alternative 4, modeling of Alternative 4A included comparable sub-alternatives H3 and H4. The actual operational conditions of the new Alternative 4A are proposed to be between the conditions of H3 and H4. The RDEIR/SDEIS provided limited monthly modeling results for Alternative 4A under H3 and H4 conditions to serve as "bookends" on the Alternative 4A operational conditions.[2]

METHODOLOGY

At Regional San's direction, Flow Science undertook to evaluate the potential impact of Alternative 4A on Regional San operations. Flow Science's methodology in this evaluation was severely limited compared to past efforts due to a dearth of modeling data available from DWR. In the past, Flow Science was able to obtain output data from DSM2 Delta modeling simulations of the proposed BDCP scenarios (Flow Science, 2014). These output data included records of projected hourly flow rates for the Sacramento River at Freeport. Flow Science used these DSM2 output data as input to a specialized code that evaluates the effect of relevant BDCP alternatives on the required frequency, duration, and volume of diversions to the Regional San ESBs. However, in the latest round of BDCP modeling associated with the RDEIR/SDEIS, no DSM2 modeling data were available since Alternative 4A was not modeled using DSM2. DWR confirmed this fact when contacted by Regional San.

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[1] To be referred to as "Alt4H3" and "Alt4H4," hereafter.

[2] It is important to note that the RDEIR/SDEIS is quite non-committal regarding the proposed operating conditions of Alternative 4A. Although the RDEIR/SDEIS states that operations will be somewhere between H3 and H4 (Appendix B, pp. B-1, B-2), it also states that operations will be adaptive based on the results of ongoing scientific review of operations (p. 4.1-5, 4.1-18). Thus, the RDEIR/SDEIS seems to leave the door open to Alternative 4A operating conditions that fall outside the "bookends" of H3 and H4.

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Thus, instead, Flow Science used CALSIM II output data, which were available for Alternative 4A. CALSIM II is a model used by DWR and the U.S. Bureau of Reclamation (USBR) to simulate the operations of the system of reservoirs and rivers that feed into the Sacramento-San Joaquin River Delta. CALSIM II is typically used to generate the boundary conditions for DSM2, which simulates flow and transport in the Delta itself. Unlike DSM2, CALSIM II operates on a monthly timestep. Thus, although CALSIM II generates flow rate data for the Sacramento River at Freeport, it does so only on a monthly basis. Since Regional San diversions to ESBs are sensitive to flow rate changes in the Sacramento River on an hourly and sub-hourly basis, monthly CALSIM II output data were inadequate for a detailed modeling evaluation of Regional San operations. Therefore, Flow Science employed simple statistical methods to the CALSIM II data in order to evaluate Alternative 4A.

Specifically, Flow Science conducted a statistical analysis of monthy CALSIM II data for Alternative 4A, Sub-alternative H3 (Alt4AH3) relative to the corresponding data for Alt4H3. Flow Science used a Student's t-test to determine whether the calculated mean monthly flow rates at Freeport for Alt4H3 were statistically different from the calculated mean monthly flow rates for the corresponding proposed "CA Water Fix" alternative, Alt4AH3.

A Student's t-test is a statistical analysis that can be used to determine whether two datasets satisfy the "null hypothesis", i.e., to test whether the two datasets have mean values that are statistically identical or not. To run the test, a t-distribution value is calculated from the expected values of the two datasets, the number of samples in each dataset, and the calculated standard deviation of the two datasets combined. This t-distribution value is then compared to a 95%-confidence critical value that depends on the number of data in the dataset. If the t-value is lower than the critical value, then the null hypothesis is satisfied, i.e., the two datasets likely do not have statistically different mean values. If the t-value is higher than the critical value, then the null hypothesis is not satisfied, i.e., the two datasets likely have statistically distinct mean values.

A similar analysis was made for Alternative 4A, Sub-alternative H4 (Alt4AH4): a Student's t-test was used to determine whether the calculated mean monthly flow rates at Freeport for Alt4H4 were statistically different from the calculated mean monthly flow rates for Alt4AH4. Note that Alternative 4 in the recent RDEIR/SDEIS is different from the original Alternative 4 presented in the Draft EIR/EIS. Since only early long-term (ELT) scenarios were modeled for Alternative 4A, ELT results for Alternative 4 were used.

Flow Science also used the Student's t-test method to compare low-flow sub-sets of the CALSIM II output for Alternative 4A and Alternative 4. Impacts on River flow rates during low flow periods are most important to Regional San operations since it is during such periods that a reduction in River flow could force increased diversions to ESBs. Flow Science used a threshold of 9,000 cfs to distinguish low flow periods from regular and high flow periods. This threshold value was chosen since it is roughly equivalent to 14 times the maximum discharge capacity of the Regional San diffuser (410 MGD, or

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634 cfs). Below this threshold it becomes increasingly likely that Regional San effluent discharge must be restricted (and ESB diversions initiated) in order to comply with the 14:1 discharge requirement.

RESULTS

Tables 1 and 2 show the results of Flow Science's statistical analysis of Alt4AH3 and Alt4AH4, for the entire 82-year CALSIM II modeling period (October 1921 through September 2003). Results suggest that the modeled mean monthly flow rate in the Sacramento River at Freeport for Alt4AH3 is statistically indistinguishable from that for Alt4H3. Similarly, results suggest that the modeled mean monthly flow rate for Alt4AH4 is statistically indistinguishable from that for Alt4H4.

Table 1 – Results of statistical analysis of Alt4AH3 for complete 82-year CALSIM II output data record (October 1921 through September 2003).

Parameter	Alt4H3	Alt4AH3
Mean monthly flow rate, Sac. R. at Freeport (cfs)	21,061	21,606
Std. deviation of flow rate, Sac. R. at Freeport (cfs)	15,500	16,028
Student's t-distribution value relative to Alt4AH3	0.77	N/A
Critical value for t-distribution (α = 0.05, 95% confidence-level)	1.960	N/A
Is mean flow rate statistically different from Alt4AH3?	No	N/A

Table 2 – Results of statistical analysis of Alt4AH4 for complete 82-year CALSIM II output data record (October 1921 through September 2003).

Parameter	Alt4H4	Alt4AH4
Mean monthly flow rate, Sac. R. at Freeport (cfs)	20,971	21,237
Std. deviation of flow rate, Sac. R. at Freeport (cfs)	15,684	16,208
Student's t-distribution value relative to Alt4AH4	0.37	N/A
Critical value for t-distribution (α = 0.05, 95% confidence-level)	1.960	N/A
Is mean flow rate statistically different from Alt4AH4?	No	N/A

Tables 3 and 4 show the results of Flow Science's statistical analysis of CALSIM II monthly flow rate output data for Alt4AH3 and Alt4AH4 under low-flow conditions only (i.e., Sacramento River flow at Freeport < 9,000 cfs). Results suggest that the mean monthly low-flow rate in the Sacramento River at Freeport for Alt4AH3 is statistically indistinguishable from the mean monthly low-flow rate for Alt4H3. Results in **Table 4** are similar for Alt4AH4.

Table 3 – Results of statistical analysis of Alt4AH3 for low-flows only (i.e., CALSIM II output flow rate at Freeport < 9,000 cfs).

Parameter	Alt4H3	Alt4AH3
Mean monthly low-flow rate, Sac. R. at Freeport (cfs)	7,879	7,842
Std. deviation of low-flow rate, Sac. R. at Freeport (cfs)	888	900
Student's t-distribution value relative to Alt4AH3	0.29	N/A
Critical value for t-distribution (α = 0.05, 95% confidence-level)	1.984	N/A
Is mean flow rate statistically different from Alt4AH3?	No	N/A

Table 4 – Results of statistical analysis of Alt4AH4 for low-flows only (i.e., CALSIM II output flow rate at Freeport < 9,000 cfs).

Parameter	Alt4H4	Alt4AH4
Mean monthly low-flow rate, Sac. R. at Freeport (cfs)	7,970	7,994
Std. deviation of low-flow rate, Sac. R. at Freeport (cfs)	813	786
Student's t-distribution value relative to Alt4AH4	0.22	N/A
Critical value for t-distribution (α = 0.05, 95% confidence-level)	1.960	N/A
Is mean flow rate statistically different from Alt4AH4?	No	N/A

We appreciate the opportunity to conduct this analysis on behalf of Regional San. Please do not hesitate to contact us if you have any questions about the analysis or its conclusions.

Sincerely,

Aaron Mead

Aaron Mead, P.E.
Principal Engineer

REFERENCES

California Department of Water Resources/U.S. Bureau of Reclamation/U.S. Fish and Wildlife Service/National Marine Fisheries Service (CADWR/USBR/USFWS/ NMFS), 2013. Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) on the proposed BDCP. December.

RECIRC 2575

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CADWR/USBR/USFWS/NMFS, 2015. Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS). April.

Flow Science (2014). Analysis of SRWTP emergency storage basin and re-treatment requirements under BDCP scenarios. Revised Draft Technical Memorandum. April 18. FSI 098116.

RECIRC 2279

From: Dorn. Linda (SDA) <dornl@sacsewer.com>
Sent: Friday, October 30, 2015 3:35 PM
To: BDCPcomments
Subject: Sacramento Regional San Comments on BDCP/CA WaterFix Recirculated Draft EIR/Supplemental Draft EIS
Attachments: Regional San Comment BDCP-CAWF LTR FINAL_2015-10-30.pdf

Hello,

Regional San's comments on the BDCP/CA WaterFix Recirculated Draft EIR/Supplemental Draft EIS are attached. If you have any questions please contact me or Terrie Mitchell, mitcellt@sacseer.com, 916-876-6092.

Take care,

Linda Dorn | Environmental Program Manager | ph: 916-876-6030 fax: 916-876-6158 | dornl@sacsewer.com | Sacramento Regional County Sanitation District | Sacramento Area Sewer District | 10060 Goethe Road, Sacramento, CA 95827

REGIONALSAN

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