From: Jim Peifer <JPeifer@cityofsacramento.org>
Sent: Tuesday, July 22, 2014 4:25 PM
To: 'BDCP.comments@noaa.gov'
Cc: Bill Busath; Jamille Moens; Elissa Callman; Sherill Huun; Robert Armijo; Tom Buford; Scott Johnson; 'Bonny Starr (bstarr@usamedia.tv)'; 'brianl@lwa.com'; Joe Robinson; M Lennihan; 'Kris Deutschman'; Michael Malone; Dan Sherry; Brett Ewart; Terrance Davis; Linda Tucker; Jessica Hess; John F. Shirey; Dave Brent; Patti Bisharat; Randi Knott; Daniel Conway; Angelique Ashby; Steve Cohn; Darrell Fong; Mayor Johnson; Steve Hansen; Kevin McCarty; Allen Warren; Jay Schenirer
Subject: City of Sacramento BDCP Comment Letters
Attachments: Mayor and Mayor Pro Tem BDCP Cmt Lttr Jul 22 2014.pdf; Sacramento City Manager BDCP Cmt Lttr Jul 22 2014.pdf

Greetings,

Attached are two comment letters on the Bay Delta Conservation Plan (BDCP) and BDCP DEIR/DEIS:

1. A letter from Mayor Kevin Johnson and Mayor Pro Tem Angelique Ashby
2. A letter from City Manager John Shirey.

Thank you,

Jim Peifer
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BDCP 1527

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July 22, 2014

BDCP Comments
Ryan Wulff
National Marine Fisheries Service
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814

Submitted via U. S. Mail and Email: BDCP.Comments@noaa.gov

Subject: City of Sacramento Comments on the Bay Delta Conservation Plan (BDCP) Draft DEIR/EIS and the BDCP

Dear Mr. Wulff:

The City of Sacramento (City) appreciates the opportunity to provide these comments on the Bay Delta Conservation Plan (BDCP) Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS), and the BDCP (December 13, 2013 Public Review Draft).

The City provides a potable water supply primarily from surface waters tributary to the Delta that serves more than 136,000 customer accounts, and approximately 486,000 residents. The City's diversions of surface water are made pursuant to pre-1914 rights, five water right permits, and a permanent water right settlement contract with the U.S. Bureau of Reclamation. In addition, the City provides the following critical services that benefit City residents and businesses as well as the Delta:

- Municipal separate stormwater sewer system (MS4) services that include a management program, compliance with the National Pollutant Discharge Elimination System permit (NPDES No. CAS082597, Order No. R5-2008-0142), and participation in the Sacramento Stormwater Quality Partnership (SSQP). The SSQP is a multi-jurisdictional program made up of Sacramento County and the incorporated cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova, to provide education and outreach to reduce pollution and to standardize pollution best management practices for development projects across the region. These programs have supported water quality improvements in local creeks and rivers for more than 25 years. The Stormwater Quality Program includes construction, industrial, illicit discharge, new development, municipal, and public outreach elements that are designed to improve water quality.

- A combined sewer system (NPDES No. CA0079111, Order No. R5-2010-0004) that treats more than 99.5% of stormwater drainage and wastewater from an 11.3 square mile area in the City's Downtown, East Sacramento, and Land Park areas.

The City values environmental resources and is committed to the protection of our waterways, biological species and habitat, and other environmental resources. Preservation of these environmental resources and maintenance of their quality is not only beneficial to current residents but is crucial to the sustainability of future generations. The City has been a major participant in the Sacramento Area Water Forum, in support of regional water supply reliability and protection of the Lower American River environmental values. The City supports the co-equal goals of restoring the ecological health of the Delta and creating a reliable water supply for all of California.

The City is also participating with the North State Water Alliance and the American River Water Agencies in preparing and submitting comments on the BDCP and BDCP DEIR/DEIS. The comments by these two groups largely focus on the deficiencies in both BDCP documents relative to water supply and hydrologic and fisheries analysis, and the City incorporates those comment letters by reference into this comment letter.

The Sacramento Stormwater Quality Partnership also is submitting comments on the BDCP and DEIR/EIS, and the City supports the comments made by the SSQP.

Sacramento County submitted comments on the BDCP and BDCP DEIR/EIS, which were endorsed by the Sacramento County Board of Supervisors on May 28, 2014. The City also supports the comments submitted by Sacramento County.

COMMENTS ON DEIR/EIS

The City has reviewed the water quality analysis included in the DEIR/EIS and found numerous deficiencies. The most significant deficiencies are generally discussed in this letter, which is supported by the specific comments provided in Attachment 1, which is included and incorporated in our comments:

1. Insufficient Scope of Reasonable Alternatives
2. Inadequate Assessment of Impacts to Conservation Measure 1 if Conservation Measures 2 through 22 Not Fully Implemented
3. Insufficient Incorporation of Other Major Programs, Plans, and Projects
4. Insufficient Water Quality Analysis to Support Characterization of Water Quality Impacts
5. Insufficient Mitigation of Adverse and Significant Impacts
6. Insufficient Evaluation of Fiscal Burden on Local Agencies
7. Inconsistent and Inadequate Definition of the Areas of Additional Analysis in Plan Area
8. Technical Errors and Omissions in Evaluation of Impacts

COMMENT 1 – INSUFFICIENT SCOPE OF REASONABLE ALTERNATIVES

The BDCP analysis must include an evaluation of the Portfolio-Based Conceptual Alternative for BDCP, as detailed in the letter dated January 16, 2013 from NRDC, et al. (Attachment 2.)

The DEIR/EIS indicates that the project alternatives selected were based on the Delta Reform Act requirements; however, the scope of alternatives in a DEIR/EIS also must be developed in compliance with CEQA and National Environmental Policy Act (NEPA) requirements. The environmental review process must evaluate reasonable alternatives that avoid or minimize the environmental and economic impacts of the proposed project. Although it is not necessary to consider every conceivable alternative, the analysis must include "a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation."[1] Moreover, the analysis in an EIR should focus on alternatives that can avoid or substantially reduce significant impacts even if they would impede attainment of the project objectives to some degree or be more costly.[2] The range of alternatives considered under NEPA must foster rather than constrain the options available to decision makers.[3]

The alternatives provided in the DEIR/EIS do not meet these standards; therefore, the analysis is incomplete and insufficient.

A reasonable range of alternatives would consider storage alternatives and regional independence to minimize or modify exports from the Delta. This evaluation should include other water supply strategies including increased desalination, recycled water use, conservation and conjunctive use. Evaluating only different sizes and configurations of North Delta intakes and conveyance does not provide a reasonable or sufficient assessment of impacts for Conservation Measure 1 (CM1).

The scope of alternatives must be expanded. Attachment 1 provides additional specific comments on the DEIR/EIS related to the sufficiency of the scope of reasonable alternatives to CM1.

COMMENT 2 - INADEQUATE ASSESSMENT OF IMPACTS TO CONSERVATION MEASURE 1 IF CONSERVATION MEASURES 2 THROUGH 22 NOT FULLY IMPLEMENTED

The Delta Reform Act, in California Water Code Section 85320(b), states that the BDCP will not be incorporated into the Delta Plan if it does not meet the Delta Reform Act's requirements. The Delta Reform 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. (Water Code Section 85089.) Accordingly, the mitigation measures need to be clearly specified, and linkages to impacts of the proposed project should be plainly identified so that the financial obligations are apparent. The Draft DEIR/EIS fails to address this, as well as other major requirements of the Delta Reform Act. Therefore, the BDCP cannot be incorporated into the Delta Plan unless these flaws are remedied.

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[1] State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3) § 15126.6(a). The California Supreme Court has described the analysis of alternatives and mitigation as "the core of an EIR." *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.

[2] State CEQA Guidelines § 15126.6(b).

[3] *See, e.g., State Of California v. Block* (9th Cir. 1992) 690 F.2d 753.

The DEIR/EIS must specifically identify the minimum and expected levels of implementation, the benefits of these levels of implementation, and CM1 operational limitations based on the level of implementation for CM2 through CM22.

The DEIR/EIS is a project level analysis for CM1 and refers to the environmental commitments and other BDCP conservation measures (CM2-22) intended to reduce, avoid, or minimize environmental effects of the BDCP and CM1 (page 1-13, lines 3-9). In contrast to CM1, which is the new diversion and delivery facilities themselves[4], these other BDCP conservation measures are only evaluated at a program level of review. The DEIR/EIS further acknowledges that these commitments and conservation measures will require additional environmental documentation. Also, the BDCP proposes to fund many of the conservation measures by State bonds that will need to be approved by the public. There is no current guarantee of full or even partial implementation (permitting and funding) of CM2 through CM22.

The DEIR/EIS analysis assumes completion of all of these items and does not account for lack of implementation or partial implementation of any of these commitments or conservation measures. There is no analysis included to address impacts to CM1 if any or all of the other supporting CMs are not implemented and how the design, construction, and operation of CM1 may need to be modified accordingly. The Adaptive Monitoring program of the BDCP should include a process for verifying the completion of supporting conservation measures and the necessity of revising analyses conducted, if necessary, to modify CM1.

Under CEQA, mitigation measures must be enforceable and legally binding, so there is adequate assurance that the measures actually will be implemented.[5] The environmental commitments and other BDCP conservation measures proposed as mitigation for the environmental effects of the BDCP and CM1 do not meet this test.

The 2013 Delta Plan (Chapter 6, Page 230) includes recommendation WQ R2 that "Covered actions should identify any significant impacts to water quality." All conservation measures and combinations of their cumulative effects should therefore be evaluated for all impacts. A reasonable evaluation of the implementation schedule for conservation measures, identification of the most critical conservation measures, and an overall assessment of water quality impacts should be performed and clearly presented to meet the Delta Plan recommendations as well as CEQA/NEPA requirements.

The DEIR/EIS must provide an assessment of impacts to and by CM1 if CM2 through CM 22 are not fully implemented. Attachment 1 provides specific comments related to the assessment of non-implementation of supporting conservation measures. The Adaptive Monitoring program must include a process for verification of completion of supporting conservation measures and a plan for revising analysis if modifications to CM1 are necessary.

COMMENT 3 – INSUFFICIENT INCORPORATION OF OTHER MAJOR PROGRAMS, PLANS, AND PROJECTS

The DEIR/EIS asserts that it has addressed cumulative impacts on the environment as a result of implementation of the BDCP and its conservation measures in combination with other past, present, and reasonably foreseeable projects. However, this analysis is incomplete. Exclusion of some projects inaccurately alters the impact analyses and relative significance of the BDCP. California is working

[4] It is not apparent that the new water diversion and delivery facilities are legitimately a conservation measure.

[5] State CEQA Guidelines § 15126.4(a)(2); *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1261.

aggressively to plan adaptation and mitigation strategies to address impacts of climate change, and these various activities should be acknowledged and accounted for in the evaluation (page 6-43, lines 3-15).

The Department of Water Resources (DWR) System Reoperation Program was authorized under State Bill X2 1 in 2008 and includes development of a revised plan of operations for the coordinated State Water Project (SWP)/Central Valley Project (CVP) in order to address flood control, water supply, and ecosystem concerns. The DWR System Reoperation Program includes strategies to address climate change mitigation and adaptation. This program was erroneously omitted from the DEIR/EIS. The No Action Alternative, action alternatives, and the cumulative impact analyses are incomplete and the System Reoperation Program should be described and included as a reasonably foreseeable program.

The DEIR/EIS includes the Folsom Dam Safety and Flood Damage Reduction Project in the No Action Alternative and Cumulative Impacts analyses in name only (Attachment 3D-A, page 3D-99), and does not provide any adjustment in operations of Folsom Lake under the new spillway and Water Control Manual operations in the CALSIM II modeling. This project will be operational in 2015 and should have been considered more thoroughly in revised reservoir operations in the modeling analysis. The analysis is incomplete and should be revised to include the current projected revisions to operations.

The North Bay Aqueduct Alternative Intake Project is described in the DEIR/EIS as part of Mitigation Measure WQ-5 and an environmental commitment that the project proponents may support. However the design and construction of this facility are specifically excluded from this DEIR/EIS. DWR issued a Notice of Preparation for this project in 2009, but its status is uncertain. It appears that the proposed long-term operation of such an intake was not included in the evaluations and analyses conducted as part of this DEIR/EIS, since Attachment 3D-A on page 3D-52 indicates that it was not included in the No Action Alternative nor the Cumulative Analysis. If the operation of the intake is intended to be included in this DEIR/EIS, then the flow and quality analyses and evaluations are incomplete and must be expanded.

The DWR System Reoperation Program, Folsom Dam Safety and Flood Damage Reduction Project, and the North Bay Aqueduct Alternative Intake Project must be included in the impacts assessment in a manner the adequately characterizes the cumulative impacts and the accounts for simultaneous operation of all project components. Attachment 1 provides specific comments related to the sufficiency of incorporation of related programs, plans, and projects.

COMMENT 4 – INSUFFICIENT WATER QUALITY ANALYSIS TO SUPPORT CHARACTERIZATION OF WATER QUALITY IMPACTS

The DEIR/EIS asserts that is has conducted a comprehensive review and analysis of the effects of the proposed Delta conveyance alternatives on water quality (BDCP DEIR/EIS Highlights, page 5); however, it is incomplete. There are numerous errors and omissions in the evaluation. The focus of the study was largely limited to select locations and did not sufficiently assess the impacts to water quality below the major reservoirs and upstream of the Delta, as well as the areas in the vicinity of the CM1 intakes and CM2 diversion. The water quality impacts described in Chapter 8 of the DEIR/EIS have the following inadequacies:

- Insufficient characterization of water quality impacts in the Lower Sacramento River from Veterans Bridge to Emmaton.
- Insufficient use of available computational models to assess impacts on constituent concentrations rather than just hydrodynamics.

- Insufficient characterization of several key constituents.
- Inadequate summaries of water quality impact findings for all alternatives.

Adequate water quality assessments must be performed to correct these insufficiencies and inadequacies so that the impacts can be correctly understood, which is fundamental to determining whether the proposed mitigation is adequate to minimize impacts to water quality. Attachment 1 provides specific comments related to the sufficiency of the water quality analysis and supporting evaluations.

Sample Locations and Analysis of Impacts

The evaluation in Chapter 8 needs to be expanded to provide an accurate and more complete assessment. Chapter 8 primarily bases water quality impact conclusions on a limited number of sample locations and does not perform a detailed analysis of impacts in the area around the proposed North Delta intake on the Sacramento River, specifically between Emmaton and Veterans Bridge.

Computational Models and Water Quality Evaluation

The DEIR/EIS states (page 8-130, lines 28-30) that the analysis is quantitative only where "modeling tools were developed and were available, and qualitatively assesses effects where appropriate modeling tools were unavailable". Many such computational models exist for many of the constituents and river reaches not evaluated in the DEIR/EIS. A project of this scope and potential impact has the resources to develop and utilize these tools necessary for adequate analyses.

The water quality evaluation presented in Chapter 8 of the DEIR/EIS, and supported by numerous appendices, was insufficient in several ways:

- Inadequate definition of constituents of interest and collection of inadequate data (36 constituents with drinking water standards were not included in the Screening Analysis),
- Inadequate assessment of contributions from various sources in the watersheds,
- Insufficient representation of all areas impacted by BDCP operations (specifically the areas upstream of the Delta and on the Sacramento River up to all major water intakes), and
- Inadequate consideration of impacts of reservoir operations, specifically storage volume, on downstream water quality (related to metals and turbidity).

In addition, the water quality analysis methodology utilized inappropriate data evaluation procedures, and the supporting water supply modeling was flawed in numerous assumptions, such as not including the hydrodynamic impacts of CM2 on the water quality of the Lower Sacramento River.

Inadequate Summaries of Water Quality Impact Findings for Baselines and Alternatives

DEIR/EIS Section 8.1.6 refers to two different baselines (the CEQA and NEPA baselines), and the evaluation of water quality impacts in 2060 yields information that is extremely difficult to understand or verify. A simple analysis of near term water quality changes from existing ambient water quality is needed to provide the public with understandable information, to provide context/grounding for the long term impacts that are presented, and to allow a proper assessment of compliance with state and federal antidegradation policies.

The BDCP Chapter 5 Effects Analysis and its appendices are difficult to review due to organization problems, inconsistencies, and inadequate cross-referencing. For example, Chapter 5 includes many

cross-references to other large documents without specific page numbers and sections. It is then a significant effort to review thousands of pages of appendices to try to find the referenced information with little assurance that it is the correct reference. The chapter makes the interpretation of net effects of BDCP implementation difficult at best. The Independent Panel charged with review of the Effects Analysis has stated that it "universally believes that by itself, Chapter 5... inadequately conveys the fully integrated assessment that is needed to draw conclusions about the Plan…" [Delta Science Program Independent Review Panel Report (DSP-IRP Report), BDCP Effects Analysis Review, Phase 3, March 2014, page 5]

Selected Constituents with Insufficient or Erroneous Assessments in BDCP DEIR/EIS

The specific technical issues with the findings for the preferred alternative (Number 4) impact assessment on water quality (Chapter 8) for nine constituents, or classes of constituents, is discussed below.

Pesticides and Herbicides

Assessment Type	CEQA Assessment Finding for Alternative 4	
Qualitative	CM1 (WQ-21)	Less than significant
	CM13 (WQ-22)	Significant and Unavoidable

Technical Issues with Finding

Insufficient analysis of sources affecting Delta aquatic life

Page 8-83 lists a number of sources to the Delta, but it does not evaluate the relative contribution from these sources and the fate and transport of pesticides and herbicides in the Delta. The Weston, *et. al.* research cited in the DEIR/EIS primarily examines urban tributaries and locations near urban runoff outfalls and POTW effluent. Data collected by the City with the SSQP show significant concentration decreases of pyrethroids from the source to the Delta, such that river concentrations are lower than known effect levels. This is also consistent with the Department of Pesticide Regulation (DPR) findings in similar work.[6]

Inaccurate time period characterization

In several instances (page 8-83 line 40, Table 8-23, Table 8-24, Table 8-25, page 8-86 lines 12-19, page 8-164 lines 8-11), organophosphate (OP) pesticides data used for analysis are from samples collected prior to the 2005 California use ban. The use of this data can lead to inaccurate characterization of current concentrations, and more recent data (i.e., 2005-2014) should be used to provide accurate representation of existing conditions. It is not sufficient to state that pyrethroid pesticides will affect aquatic species in the same way as OP pesticides, since it is known that their environmental toxicity, half-life, and transport modes are different.

Inaccurate and insufficient characterization of available data

[6] http://www.cdpr.ca.gov/docs/emon/surfwtr/presentations/ensminger_2014_jan_13_pyrethroid_trends.pdf

Page 8-85 states that "Limited data and studies are available for characterizing the existing conditions of pesticide concentrations in the study area," which is misleading and inaccurate. This statement is repeated elsewhere and is not substantiated nor investigated further (page 8-163, lines 35-37, page 8-165 lines 8-9). Data gaps should be clearly stated and prioritized such that they can be addressed through better research or collected as part of the BDCP Adaptive Management.

This inaccurate and insufficient characterization is reinforced by the readily available data from a number of public sources. For example, the City collects Sacramento River data through the Coordinated Monitoring Program, USGS has an active Delta pesticide monitoring program[7], DPR also has active monitoring programs and available data in and around the Delta[8], and areas upstream of the Delta are monitored through the Regional Water Quality Control Board's Irrigated Lands Regulatory Program[9].

Failure to recognize the role of the California Department of Pesticide Regulation and EPA in regulating pesticide usage

Page 8-84 lines 23-33 describe DPR activities, but do not recognize that DPR and EPA approve pesticides for usage that local agencies have no legal authority to restrict.

State of knowledge regarding pesticide effects on the Pelagic Organism Decline (POD)

The DEIR/EIS summary of the Johnson, et. al. report (2010) omitted a key finding regarding contaminants and the Pelagic Organism Decline (POD):

> *Consequently, the results of the six comparisons for chemistry, toxicity, and histological data were placed into a weight of evidence context. The conclusion that is drawn from the analyses is that while contaminants are unlikely to be a major cause of the POD, they cannot be eliminated as a possible contributor to the decline.* [10]

While this conclusion is not specific to pesticides, pesticides were the focus of the evaluation and predominate the robust dataset. Furthermore, it is inaccurate to characterize the state of knowledge on pesticides as insufficient for the purposes of the DEIR/EIS. Certainly, there are adequate data and information to make meaningful and quantitative assessments. Even the "dynamic state of the pesticide market" (page 8-164, line 23) can be well-quantified with detailed use, sales, and application rates that are reported every year.

Inaccurate and insufficient assessment of impact of SWP and CVP on pesticide use

Any changes in the available water for agriculture will change the timing and extent of pesticide application. Moreover, Impact WQ-21 (page 8-275 lines 26-29, page 8-463 lines 11-23, etc.) is considered a non-adverse impact though there is no evaluation of how decreases in flow (see Appendix 8L, Table 2) in the upstream areas may concentrate pesticides.

Insufficient assessment of additive toxicity

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[7] http://ca.water.usgs.gov/projects/PFRG/CurrentProjects.html

[8] http://www.cdpr.ca.gov/docs/emon/surfwtr/surfcont.html

[9] http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/water_quality_monitoring/index.shtml

[10] http://www.waterboards.ca.gov/rwqcb5/water_issues/delta_water_quality/comprehensive_monitoring_program/contaminant_synthesis_report.pdf

The assessment also does not evaluate the additive toxicity component of pesticides that is included in current and proposed Total Maximum Daily Loads (TMDLs) and Basin Plan Amendments affecting the Plan and Study areas.[11,12]

Insufficient assessment of MUN beneficial use impacts from pesticides

Historically, there have been impacts to drinking water supplies from upstream pesticide use in the upper watershed, and these have been successfully addressed through management programs. Reductions of upstream flows may impact source water quality with respect to pesticide detections and concentrations; this may impact drinking water treatment and quality and should be evaluated. The BDCP asserts that drinking water treatment would prevent impacts of source water increases of pesticide levels (page 25-114, lines 20-25 and page 25-189, lines 38-45). This is not an accurate statement or assumption; conventional filtration is not a best available technology for organic constituents, and increased costs may be required to provide additional treatment.

The aforementioned omissions and inaccuracies must be addressed and the DEIR/EIS must include a quantitative assessment of changes in pesticide concentrations for the baseline and BDCP alternatives. A reasonable range of known pesticides should be considered in the context of additive toxicity as described in the Sacramento River Basin and San Joaquin River Basin Plan (page IV-34.00). More specific comments are presented in Attachment 1.

Methylmercury (WQ-13)

Assessment Type	CEQA Assessment Finding for Alternative 4	
Quantitative (limited to the Delta)	CM1	Less than significant

Technical Issues with Finding

Insufficient assessment of the effect of reservoir level on methylmercury and mercury concentration Page 8-443, lines 9-15, states that there were not strong correlations between methylmercury concentrations and flow; however, an equally or more relevant relationship is with reservoir stage and/or inputs and operations of wetlands or wetland-like facilities. Since detailed modeling was not performed on the sources, sinks, and fate and transport of methylmercury, a broader range of analysis is required to assess the impacts of the BDCP operations of CM1 as well as other conservation measures.

Insufficient assessment of compliance with Delta Methylmercury TMDL

The DEIR/EIS does not address how CM1 would meet the requirements of the TMDL to decrease methylmercury concentrations in the Delta.

Impact WQ-13 must be reevaluated based on other operational relationships (e.g., reservoir stage, turbidity, pH, etc.). Consistency with the TMDL should also be evaluated. More specific comments are presented in Attachment 1.

[11] http://www.waterboards.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/central_valley_pesticides/20140103_cv_dc_bpa_stfrpt.pdf

[12] http://www.waterboards.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/central_valley_pesticides/pyrethroid_tmdl_bpa/index.shtml

Methylmercury (WQ-14)

Assessment Type	CEQA Assessment Finding for Alternative 4	
Quantitative (limited to the Delta)	CM2-CM22	Significant and unavoidable

Technical Issues with Finding

Insufficient assessment of mitigation measures

While several possible control approaches are discussed (page 8-446, lines 24-38), they are not evaluated in sufficient detail to assess the potential benefits or possible other consequences (e.g., reduced flow, discharge of secondary constituents due to chemical dosing, etc.).

Insufficient assessment of compliance with Delta Methylmercury TMDL

The DEIR/EIS does not address how CMs 2 through 22 would meet the requirements of the TMDL to decrease methylmercury concentrations in the Delta or meet subarea wasteload allocations.

Additional assessments of mitigation measures must be performed as part of the DEIR/EIS water quality evaluation. Consistency with the TMDL should also be evaluated. More specific comments are presented in Attachment 1.

Pathogens (WQ-19 and WQ-20)

Assessment Type	CEQA Assessment Finding for Alternative 4	
Qualitative	CM1	Less than significant
	CM2-CM22	Less than significant

Technical Issues with Finding

Insufficient analysis of the effect of temperature increases on pathogen and surrogate concentrations and growth

Temperature modeling identified increases in several areas, including the upstream reservoirs and rivers; however, impacts to drinking water intakes were not specifically evaluated. This is a significant omission.

Inaccurate and incomplete general statements regarding pathogen decay rates

In multiple cases (page 8-208, lines 9-14), it is stated that pathogens may not be historically detected because of rapid "die-off" - while this may be true for some bacteria, this broad statement does not adequately recognize the significantly lower decay rates of protozoa, such as *Giardia* and *Cryptosporidium*.

Insufficient analysis of the impact of restoration areas on pathogen concentrations

Restoration areas are potential sources of pathogens from wildlife that are not considered and could pose an impact to beneficial uses. The Central Valley Drinking Water Policy (July 2013 Basin Plan Amendment) concluded that current conditions were supportive of the MUN beneficial use; however, the trigger values in the Policy could be exceeded with only small increases in observed intake concentrations from the proposed restoration areas.

Incomplete analysis of the impact of CM2 on pathogen concentrations

CM2 will impact the hydrologic conditions in the Lower Sacramento River and, thus, may impact the concentration of pathogens and surrogates in that area.

Additional assessment of pathogens and surrogates related to restoration area impacts, decay rates, the effect of temperature, and the effect of CM2 must be performed as part of the DEIR/EIS water quality evaluation. More specific comments are presented in Attachment 1.

Dissolved Organic Carbon (WQ-17 and WQ-18)

Assessment Type	CEQA Assessment Finding for Alternative 4	
Quantitative (limited to the Delta)	CM1	Less than significant
	CM4-CM7 and CM10 (with Mitigation Measure WQ-18)	Significant and unavoidable impacts

Technical Issues with Finding

Insufficient assessment of CM1 effects on TOC based on reservoir operation

The DEIR/EIS assumes that the lack of correlation of flows with organic carbon concentrations is a basis to conclude that CM1 will not change organic carbon concentrations (page 8-452, lines 8-14). However, if this correlation approach is used, a broader range of factors and more detailed examinations should be performed in critical areas. In the larger system, certain factors may offset each other, and the timing of effects over the larger system can also make these correlation evaluations less powerful.

Insufficient scope of quantitative assessment

The quantitative assessment of organic carbon was limited to the Delta and does not provide any meaningful evaluation of impacts to other areas adjacent to the Delta, such as the Lower Sacramento River, that may be significantly impacted by CM1 and CM2.

Insufficient assessment of impacts to MUN beneficial use

The DEIR/EIS projects increases in organic carbon at water intakes (<0.5 mg/L) for the various scenarios (page 8-452, lines 3-8 and 32-34), which increases the frequency of exceeding the various benchmark concentrations of 2.0 mg/L, 3.0 mg/L, and 4.0 mg/L. These increases are significant and may cause impacts to the MUN beneficial use, especially when considered cumulatively with bromide concentrations and temperature increases.

Mitigation measure WQ-17 is insufficient and vague

The proposed mitigation measure (page 8-458, lines 8-38) suggests means to reduce export of organic carbon from restoration areas and then concludes that this may be in conflict with the stated goals of the BDCP. While the BDCP provides limited environmental commitments to upgrade selected water treatment facilities located in the Delta, the assessment should be broader and provide a method to more specifically identify which treatment plants will require upgrades, as well as how this approach is consistent with the Basin Plan and water quality regulations. The Central Valley Drinking Water Policy Workgroup prepared a detailed computational model of organic carbon in the Central Valley and Delta, which may assist with the needed evaluations.

Incomplete analysis of the impact of CM2 on organic carbon concentrations

CM2 will impact the hydrologic conditions in the Lower Sacramento River and, thus, may impact the concentration of organic carbon in that area.

The DEIR/EIS must provide additional assessments of the effects of reservoir operations on organic carbon in localized areas as well as an expansion of the quantitative assessment area.

The cumulative effects from CMs1-22 should be evaluated for impacts to MUN beneficial uses. The Central Valley Drinking Water Policy Workgroup developed models of the organic carbon system that should be used as examples of an adequate approach for assessment. That group also evaluated the drinking water treatment requirements based on changes in source water that should be used for assessment of beneficial uses.[13]

More specific comments are presented in Attachment 1.

EC, Chloride, and Bromide (WQ-5, WQ-6, WQ-7, WQ-8, WQ-11, and WQ-12)

Assessment Type	CEQA Assessment Finding for Alternative 4
Quantitative (limited to the Delta)	Varies by constituent and CM Less than significant to Significant and Unavoidable with Mitigation Measures

Technical Issues with Finding

Inappropriate application of long-term averages for these constituents

EC, chloride, and bromide are not detectable at high levels in the Sacramento River or its tributaries. These sources have relatively consistent levels of these constituents; however, if reverse flow occurs in the lower reaches of the river, then there could be very episodic and significant increases in these constituents due to saline intrusion. Disinfection by-products in the treated water would be impacted by these increases, and compliance is calculated quarterly; therefore, long-term averages are not representative of the potential impacts to the MUN beneficial use.

Inaccurate assessment of climate change impacts

The BDCP asserts (page 8-184, lines 9-12, page 8-187, lines 19-22, and page 8-194, lines 40-43) that the concentration of these constituents in the Sacramento River would not be impacted by climate change in the No Action Alternative. This is incorrect as EC, chloride, and bromide could all increase in the Sacramento River in the event of sea level rise, increased tidal amplitude, or increased reverse flow events.

Chloride, EC and bromide assessments must be revised with shorter-term averaging and account for the potential impacts caused by climate change. More specific comments are presented in Attachment 1.

Temperature

Assessment Type	CEQA Assessment Finding for Alternative 4
Quantitative	Not considered in Chapter 8 water quality impacts

[13] http://www.waterboards.ca.gov/centralvalley/water_issues/drinking_water_policy/dwp_trtmnt_eval_rpt.pdf, Chapter 5

Technical Issues with Finding

Inaccurate assessment of temperature impacts

Table 8-5 should indicate that temperature increases can impact drinking water treatment, including increased source water pathogen and algal concentrations, treatability and chemical rates of reaction, and treated water quality (page 8-28).

Insufficient assessment of temperature changes on drinking water treatment

The analysis focuses on effects to aquatic life and does not include temperature as part of the water quality impact assessment for other beneficial uses, such as MUN (page 8-129, lines 17-20).

The DEIR/EIS must address the insufficient assessment of temperature effects on MUN beneficial uses. More specific comments are presented in Attachment 1.

Metals (WQ-27 and WQ-28)

Assessment Type	CEQA Assessment Finding for Alternative 4	
Qualitative	CM1	Less than significant
	CM2-CM22	Less than significant

Technical Issues with Finding

Insufficient assessment of total metals impact on drinking water intakes

Drinking water standards for metals constituents are based on the total fraction, including both dissolved and particulate metals. It is inappropriate to apply the standard to only a portion of the total regulated constituent; therefore, the standard is not accurately applied to a dissolved fraction. The metals analysis needs to be revised to look at impacts to total metals levels because all amounts of metals will be treated; increased metals levels in source water may result in additional treatment requirements and increased treatment and residual management costs to municipal water suppliers.

Insufficient assessment of the effect of reservoir level on metals concentrations

Page 8-219, lines 34-42, state that there were no strong correlations of dissolved metals concentrations and river flow; however, an equally or more relevant relationship is between the reservoir stage and dissolved metals. This was not adequately evaluated.

Metals water quality impacts must be reevaluated to consider total metals relative to impacts on the MUN beneficial use. The DEIR/EIS must evaluate metals concentrations and correlations with other operational parameters, such as reservoir stage, to fully evaluate impacts. More specific comments are presented in Attachment 1.

Aluminum

Assessment Type	CEQA Assessment Finding for Alternative 4
None	Not evaluated

Technical Issues with Finding

Insufficient assessment of aluminum impacts to beneficial uses

Aluminum was not included in the analysis and can sometimes exceed relevant aquatic life and drinking water objectives. This constituent is especially important to drinking water treatment since it is a primary coagulant used to remove solids and changes in source water concentrations can impact treatability. Any projects disturbing soil, increasing turbidity, or using coagulants have the potential to increase aluminum concentrations and potentially impact beneficial uses.

Aluminum must be evaluated for impacts through available modeling of the BDCP and alternatives. More specific comments are presented in Attachment 1.

Selenium (WQ-25 and WQ-26)

Assessment Type	CEQA Assessment Finding for Alternative 4	
Quantitative (limited to the Delta)	CM1	Less than significant
	CM2-CM22	Less than significant

Technical Issues with Finding

Insufficient analysis of unknowns and potential increases in selenium

The CM2 through CM22 analysis concludes that selenium biotic uptake may be increased by the increased residence time in the restoration areas (8-286 lines 1-3) and then suggests that the restoration areas should be designed and operated as flow-through to minimize impacts. However, such operation may be inconsistent with the wetlands needs and in some cases could result in the increased discharge of methylmercury and organic carbon while minimizing the habitat benefits of the restoration areas.

The analyses of CM2 through CM22 in the DEIR/EIS must consider the cumulative impacts on affected constituents and constraints for restoration area operation. More specific comments are presented in Attachment 1.

COMMENT 5 – INSUFFICIENT MITIGATION OF ADVERSE AND SIGNIFICANT IMPACTS

There are a number of water quality constituents for which significant adverse impacts were determined. There are several additional constituents, as described above, where the lack of certainty or lack of assimilative capacity should require meaningful mitigation measures. When impacts are significant or cannot be reliably quantified, the mitigation measures should provide meaningful and legally assured actions or programs that will ensure that impacts will not occur, or otherwise the impact should be found unavoidable. There are a number of instances in the DEIR/EIS where impacts are identified but deferred to future evaluation or uncertain mitigation efforts. Moreover, impacts in the key areas near to and upstream of the proposed intakes are not adequately evaluated or mitigated.

An EIR must describe feasible mitigation measures that can minimize each significant environmental effect of a project. [14] As noted above, these mitigation measures must be enforceable and legally binding, so there is adequate assurance that the measures actually will be implemented. Many of the mitigation measure proposed in the DEIR/EIS do not meet this test.

[14] State CEQA Guidelines § 15121(a), 15126.4(a). *See Environmental Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018, 1039 ("A gloomy forecast of environmental degradation is of little or no value without pragmatic, concrete means to minimize the impacts ....")

For example, for Alternative Number 4, the DEIR/EIS (page 8-447, line 17-22) determined that: "Although the BDCP will implement CM12 with the goal to reduce this potential effect, the uncertainties related to site specific restoration conditions and the potential for increases in methylmercury concentrations in the Delta result in this potential impact being considered significant. No mitigation measures would be available until specific restoration actions are proposed. Therefore, this programmatic impact is considered significant and unavoidable." In this way, the DEIR/EIS acknowledges significant impacts and the availability of mitigation measures, but fails to provide specifics on the mitigation measures and the potential water quality outcomes. Lack of site-specific information is not sufficient reason for deferring the evaluation of mitigation measures. The DEIR/EIS does not identify or commit to follow-up actions in cases where mitigation measures are not effective or water quality conditions degrade further and cause impacts to beneficial uses.

The DEIR/EIS must evaluate a broader range of available mitigation measures and reasonably quantify their performance and ability to prevent methylmercury and other constituents with findings of significant impacts from entering the Delta. The DEIR/EIS should provide follow-up actions if mitigation measures are not effective or water quality conditions degrade further and impact beneficial uses.

Attachment 1 provides additional comments related to the sufficiency of mitigation.

COMMENT 6 –INSUFFICIENT EVALUATION OF FISCAL BURDEN ON LOCAL AGENCIES

Implementation of the conservation measures to meet the Plan's goals will undoubtedly result in increased costs to local agencies to monitor and assess the effectiveness of the water quality improvement related activities. Local agencies' ability to generate funding to conduct these additional activities is subject to potentially significant limitations, including Proposition 218 and Proposition 26. For example, the operation, maintenance, and improvement of MS4s typically is funded by storm drainage rates, and under Proposition 218, a local agency can only increase storm drainage rates after (1) conducting a notice and protest process with a protest rate below 50%, and (2) obtaining voter approval for the increase from a majority of the ratepayers subject to the rate or from two-thirds of the electorate.

Additional costs imposed on local agencies by CM19 may have potentially significant impacts that should be evaluated as part of the DEIR/EIS water quality assessment (Chapter 8). For example, to the extent that the proposed CM19 places a significant fiscal burden on local agencies, those agencies may be forced to defer or forego other improvements or programs designed to improve water quality or protect the environment.

The DEIR/EIS must include evaluation of the potential significant fiscal limitations and burdens that may be imposed on local agencies.

COMMENT 7 – INCONSISTENT AND INADEQUATE DEFINITION OF THE AREAS OF ADDITIONAL ANALYSIS IN PLAN AREA

The DEIR/EIS states that the Plan Area includes the statutory Delta as well as Areas of Additional Analysis, where CMs1 -22 would be implemented outside the statutory Delta. The Areas of Additional Analysis specifically include the Yolo Bypass and Suisun Marsh. However, two of the conservation measures (CM2 – Yolo Bypass Fisheries Enhancement and CM19 – Urban Stormwater Treatment) are apparently located outside of the statutory Delta yet were not included in the Areas of Additional

Analysis. The DEIR/EIS analysis is incomplete by omitting an evaluation of the impacts to this additional area.

The analysis must clearly define the physical area for the Plan Area and the Study Area and perform the assessment on these defined areas. Attachment 1 provides specific comments related to the definition of the areas of additional analysis.

COMMENT 8 – TECHNICAL ERRORS AND OMISSIONS IN EVALUATION OF IMPACTS

The DEIR/EIS has numerous technical errors and omissions in its evaluation of the impacts of the BDCP related to water quality. These errors and omissions are related to the following general topics, with specific comments and references provided in Attachment 1.

Incorrect summarization of the drinking water regulatory requirements in California

- Incorrect drinking water standards,
- Incorrect application of metals drinking water standards to only the dissolved fraction,
- Incorrect determination of compliance with drinking water standards, and
- Incorrect information and discussion of the regulatory requirements and enforceability of secondary drinking water standards for drinking water agencies.

Incorrect technical assumptions on the treatability of various water sources by conventional filtration

- Incorrect assumption that temperature is not significant to drinking water treatment,
- Incorrect assumption that conventional filtration is not impacted by increased loads of constituents, and
- Incorrect use of long-term averages for determination of significance of impact.

Inadequate representation of ambient water quality

- Insufficient process for selection of pesticides of interest,
- Incorrect information and discussion of summarized information on pathogens from outside sources,
- Insufficient data query for constituents of interest outside of the Delta, and
- Insufficient number of data points to make determination of significance.

These errors and omissions, as well as all those presented in Attachment 1 must be corrected.

COMMENTS ON BDCP

The City and the Delta would be profoundly affected by the BDCP. The high quality of the American and Sacramento Rivers are the primary reason why the proposed BDCP intakes are located in the Sacramento River downstream from and adjacent to the City. Protection of these water resources is a local and statewide responsibility.

While we recognize that a project of this size is complex and resource intensive, we have identified a variety of presumptions, assertions, and conclusions within the BDCP document that are inaccurate or insufficiently supported. These issues will have significant effects on the City and our water quality management programs. The following key comment topics are discussed in this letter and are supported and expanded upon in Attachment 3, which is included and incorporated in our comments:

1. Insufficient Evaluation of Take Alternatives
2. Lack of Meaningful Role for Local Agencies in BDCP Governance
3. Insufficient Commitments for Adaptive Management and Monitoring Programs to Protect Upstream and Delta Water Quality
4. Insufficient Justification for Conservation Measure 19
5. Insufficient Evaluation of Water Quality Impacts
6. Inadequate Flow Evaluation in the Sacramento River for Conservation Measures 1 and 2
7. Insufficient Incorporation of Climate Change Effects
8. Technical Errors and Omissions

COMMENT 1 - INSUFFICIENT EVALUATION OF TAKE ALTERNATIVES

The BDCP includes a Proposed Action as well as "take" alternatives A through I. However, these alternatives are only variations of the Proposed Action, rather than being true alternatives "to reduce or avoid the take of the covered species."[15] The BDCP has not provided sufficient alternatives and evaluation to reduce or avoid take of the covered species.

The BDCP states that temperature impacts on covered fish species will be significant in the future and that climate change impacts will enhance that impact.[16] The lack of an alternative that includes seasonally limited export flows to allow increased upstream reservoir storage or Delta outflow is inherently flawed given the purpose of alternatives. One potential way to reduce or mitigate the temperature impacts is to change the operational parameters for upstream reservoirs to allow increased carryover storage. By allowing increased carryover storage, the cold water pool storage will increase, which could lessen projected temperature impacts during the fall period.[17] One way that the carryover storage can be increased is to seasonally optimize the export flows. This action should be evaluated to reduce or avoid the take of covered species.

Also, in order to maximize water supply availability for all demands, consideration should have been made for balancing water storage throughout the State, including contemplation of existing volumes of surface water storage in Southern California prior to determining the volume of Delta export. Once water is exported from the Delta, there is a reduced ability to meet local water demands in Northern

[15] BDCP, Highlights, page 98, sidebar 1

[16] BDCP Chapter 2, 2.3.2.1.5, page 2-18, lines 18-26 and 2.3.3.2, page 2-24, lines 36-43 and page 2-25, lines 1-31

[17] BDCP, Appendix 5A, 5.A.2.5.4, page 5A.2-72, lines 30-375

California or Delta outflow requirements. In addition to demonstrating the deficiency of the alternatives, these impacts require identification and evaluation in the BDCP documents.

The scope of take alternatives must be expanded to consider additional actions to address temperature and water supply availability impacts.

COMMENT 2 - LACK OF MEANINGFUL ROLE FOR LOCAL AGENCIES IN BDCP GOVERNANCE

The City recognizes and supports the proposal to include a Stakeholder Council for municipal agencies, non-governmental organizations, and the general public (page 7-1, lines 37-39), as this provides outreach and opportunities to respond to decisions by the Program Manager, Adaptive Management Team, and Permit Oversight Group. The City and the rate payers it represents, as well as other north-of-Delta agencies, have a significant financial and natural resource stake in the outcomes of the BDCP. Therefore, local Northern California agencies need to be afforded a more significant role in BDCP implementation and assessments. As noted in the BDCP (page 7-26, lines 5-9), the California Natural Resources Agency is working with counties to develop a program with more significant county involvement in BDCP implementation. The local municipalities have a similar stake as counties in water supply, land use, NPDES regulation, and water quality issues and should be included in discussions regarding this implementation role.

For example, the BDCP describes the implementation of CM19 for urban runoff treatment through NPDES permits (page 3.4-327, lines 17-24), which include comprehensive stormwater management and pollutant reduction programs. However, the BDCP does not provide technical development of a baseline for urban runoff effects on the covered species or a description of how future assessments of effectiveness would be made by the Adaptive Management Team (e.g., quantitative benchmarks, modeling tools, etc.). The far-reaching assertion of "implementation of CM19 through the NPDES permits" suggests an active role in permitting by the Implementation Office and direct tie-ins between the BDCP and MS4 permits. In this scenario, local agencies input of their scientific assessments is limited to their respective NPDES permit renewals, which is potentially well after the Adaptive Management Team has published its effectiveness assessments.

Local government must be given a more significant role in management of the BDCP to the extent that the BDCP will impact local water supply, water quality, and land use planning. The role should allow local agencies representation on the adaptive management issues that impact them.

COMMENT 3 - INSUFFICIENT COMMITMENTS FOR ADAPTIVE MANAGEMENT AND MONITORING PROGRAMS TO PROTECT UPSTREAM AND DELTA WATER QUALITY

The BDCP will be one of the most divisive and resource intensive public policy and infrastructure projects in recent California history. Already, hundreds of millions of dollars have been spent on planning, engineering, and technical assessments. However, the City believes that the BDCP and BDCP DEIR/EIS do not adequately commit, in level of detail or resources, to an ongoing assessment program that will provide quantitative assessments of effectiveness and evaluate the identified uncertainties of the BDCP. The Effects Analysis conducted as part of the BDCP does not compute the baseline effect of the pollutant stressors on covered species that the conservation measures are based on; therefore, how will the Adaptive Management Team evaluate future effects and effectiveness of the conservation measures, especially CM19?

The BDCP admits that the Plan and its conservation measures (CMs) have considerable uncertainty with regard to ecosystem benefits and likely outcomes.[18] Adaptive management is implemented to allow CM flexibility, and the focus is defined as assessing achievement in meeting the biological goals and objectives. There will be opportunity for revising CMs and biological objectives.[19] This places a critical and powerful need for adequate monitoring and assessment of the system. Much of the monitoring and modeling in the BDCP, however, is relegated to a research action; these critical components of adaptive management should instead be discussed explicitly within the Effects Analysis with a mandated schedule. The adaptive management approach should have a transparent and comprehensive monitoring, modeling, and assessment program that can adequately quantify biological and water quality changes due to changes in flows, climate change, contaminant sources, physical changes, and reasonably anticipated beneficial use impacts. This should include verification of the effects analysis and an evaluation of the identified uncertainties. This assessment framework is not provided, even for the evaluation of current conditions, and there is no monetary commitment to provide such tools, data, and resources for the Stakeholder Council. The Science Program should allow bottom-up participation from local agencies; this is important so that joint solutions can be evaluated and implemented, as well as to avoid "serial engineering" by which one 'solution' causes another ecological or public policy problem. Local agencies should have a clear and significant role in BDCP decisions if modifications are considered to the CMs that will impact local agencies.

The BDCP must include a clear, expanded description of the Adaptive Management program framework and the monitoring components and tools that will be used to make assessments, address uncertainties, identify unintended consequences of the BDCP, and propose changes to system operations. For example, a decision tree should be developed for interpreting scientific information relative to the management action and evaluating the certainty of the relationships, the benefit to covered species, and information needs and priorities. Within this decision tree, local agencies should have the ability to provide input and make management decisions when the outcomes affect them.

There has not been a clear prioritization of management actions (conservation measures) to optimize available resources and mitigate effects to the covered species or other aquatic life impairments. It also is not clear from the BDCP whether CM1 can proceed with or without the other conservation measures, if they are not completed or fully funded.

Additional information must be provided regarding the minimum number of conservation measures that are required to be implemented in order for CM1 to be operated, the course of action if funding is not secured for all the conservation measures, and whether CM1 exports can or will be restricted if other conservation measures are not successfully implemented.

The existing Interagency Ecological Program (IEP) structure is not thoroughly justified in the BDCP. Other BDCP cited documents[20] have suggested formation of a Joint Powers Authority (JPA) that includes local agencies to develop the appropriate Delta science and assessments. For example, page 3.4-329, line 13 states that "The Adaptive Management Team will use results of effectiveness monitoring to determine if reducing stormwater pollution loads results in measurable benefits to covered fish species or their habitat and to identify adjustments to funding levels, control methods, or other related aspects of the program that will improve the biological effectiveness of the program." The form

[18] BDCP, Chapter 3, 3.4.23, page 3.4-354, lines 8-12

[19] BDCP, Chapter 3, 3.4.23, page 3.4-354, lines 21-27

[20] Public Policy Institute of California. *Stress Relief. Prescriptions for a Healthier Delta Ecosystem.* April 2013

and technical basis for the assessment is not provided, and the means of establishing relationships between contaminant reductions and covered species is not identified.

The BDCP must include development of this science JPA to support adaptive management. The BDCP must be updated to include development of the baseline for assessments prior to implementation of all conservation measures.

COMMENT 4 - INSUFFICIENT JUSTIFICATION FOR CONSERVATION MEASURE 19

CM19 is described in seven pages of the BDCP with little detail, numerous inaccuracies on urban runoff contaminants and water quality regulations, and without any evidence that CM19 control measures could provide any measurable benefits to the covered species. Conservation Measure 19 (CM19, BDCP Section 3.4.19) intends to decrease urban runoff contaminant discharge to support Objective L2.4 to provide water quality to "help restore native fish habitat". However, there is no technical analysis demonstrating the potential benefits of CM19 aside from incomplete descriptions of pyrethroid research in upstream urban tributaries; this research has *not* demonstrated relevance to impacts on covered species in the Delta. No technical justification is provided for the primary inclusion of urban runoff sources as a Conservation Measure over all other contaminant stressor sources that are described throughout the BDCP and BDCP DEIR/EIS but are absent as Conservation Measures. As proposed, CM19 provides no new benefits to downstream covered species. Furthermore, CM19 proposes measures that are already generally implemented by stormwater management programs and local planning departments with new development requirements.

Conservation Measure CM19 must be removed because it is not justified as an action that would reasonably improve the covered species populations in the Delta. The proposed conservation measure fails to meet a reasonable expectation of beneficial impacts for the following reasons:

- The BDCP and BDCP DEIR/EIS do not provide sufficient detail to reasonably conclude that the CM19 suggested best management practices (BMPs) would have any adverse or beneficial impact on water quality in the Delta.[21] Pesticides are identified as the primary "concern for fish" (BDCP page 3.4-327, lines 9-10) and as the basis for the need for CM19. The studies cited in the BDCP (Weston et al. 2005, Teh et al. 2005) do not show linkages between urban runoff and effects on covered species and therefore should not be used as justification for CM19.

  Most urban runoff from the Sacramento region and areas upstream of this region does not directly enter the Delta. As such, the conclusion that actions to reduce the amount of pollution in stormwater runoff entering Delta waterways will be of high benefit to Delta smelt, white sturgeon, steelhead, and Chinook salmon (Essex Partnership, 2009) does not consider the fate and transport to points where impacts to covered species are of concern (BDCP page 3.4-332). Even if contaminant load sources are reduced, it is not established that there would be a downstream Delta benefit since contaminant degradation, dilution, adsorption to particulates, and other fate and transport processes would reduce any aquatic life effects (Werner, et al. 2008, page 32), which is consistent with pyrethroid experimental studies downstream. Urban runoff dilutes some pollutants and is only an intermittent exposure during the higher flow wet season.

[21] Delta Stewardship Council. *Final Delta Plan. Page 230 recommendations* "WQ R2. Identify Covered Action Impacts. *Covered actions should identify any significant impacts to water quality.*"

- CM19 does not consider pesticide and other contaminant source control by the entities that manufacture, regulate, and control their use in urban and non-urban areas. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) gives the U.S. Environmental Protection Agency (EPA) authority to determine which pesticides can be used in the United States and how they can be used. The application and approval of pesticides are regulated by both the EPA and the California Department of Pesticide Regulation (DPR). Local agencies do not have the authority to limit the use of pesticides when applied according to these rules. If retained, CM19 should propose actions to better regulate and approve pesticide formulations and applications so that they will not have effects on covered species when used legally. The Central Valley Regional Water Quality Board recently adopted Basin Plan amendments that better acknowledge state and federal government responsibility.

  References to pesticide source control should acknowledge that municipalities are statutorily prohibited from regulating the use of pesticides, and that existing state and federal statutory authority for regulation of pesticides is sufficient only when it is properly exercised to prevent water quality impacts.

- The BDCP does not acknowledge that the most effective "source control" approach to control many contaminants in urban runoff is product control by manufacturers and regulators. In particular, lead and pesticides have been controlled through product reformulation or discontinuation. Recent legislation (SB346) will phase out copper in brake pads, a significant contributor to urban runoff loads.

- The BDCP and BDCP DEIR/EIS do not comprehensively evaluate all sources of contaminants and therefore cannot adequately evaluate how to control contaminants through CM19. The BDCP does not present an analysis that evaluates the downstream covered species benefit of any contaminant source controls. As discussed in the DEIR/EIS (Table 5.D.2-1 "Land Use and Typically Associated Containment Issues" (DEIR/EIS page 5.D-2, Line 27), urban runoff is only one source of contaminants in the Delta and is an insignificant source for most of the identified contaminants of concern. However, other sources identified as significant have not been specifically included in the conservation measures. The reference documents refer to a number of other pollutants that are attributed to other sources and for which urban runoff is not known to be significant contributor. For example, BDCP Table 3.4.19-2 references dissolved oxygen depression as a water quality impact; however, urban runoff likely does not contribute significantly to the downstream oxygen impairments. Another example is that CM19 is the only conservation measure identified with the Conservation Hatcheries Facilities covered activity for facilities construction (BDCP page 5.2-14); the role that urban stormwater (MS4) programs that are part of CM19 would have in mitigating construction of these facilities is not clear in the Effects Analysis and the referenced Appendix (5H). Only considering one of many sources without making direct connections between activities and outcomes is an imbalanced and flawed approach, especially when the relative impact of the selected source is not known or may be insignificant when compared to others. A computational model assessment of the benefits of all source control measures for all sources should be performed to examine the effect of sources on the downstream covered species. This evaluation should be conducted before determining the scope of a conservation measure on contaminant reduction.

- Contaminant sources, as a whole, and the entities that regulate and control their use and discharge, should be considered so that the most significant and cost-effective removal strategies are prioritized and addressed first. While we agree that continued reductions of discharged urban runoff contaminants is an important environmental effort (which is already underway), it is unrealistic to

assume that reductions of one intermittent source would cost-effectively result in significant or even measurable downstream changes. For example, the Central Valley Drinking Water Policy Workgroup evaluated urban and non-urban source control for multiple drinking water constituents of concern. The drinking water constituents of concern were then quantitatively modeled in hypothetical future conditions to evaluate the potential impact on the municipal water supply beneficial use. Hypothetical urbanization of the Central Valley did not cause significant changes to downstream water quality.[22]

- The effectiveness of urban runoff BMPs in terms of specific urban runoff quality changes and Delta impacts was not evaluated. For example, typical structural control benefits vary between contaminants, and while a particular BMP may decrease urban runoff loading for one contaminant, it may increase the urban runoff loading for another contaminant. In the case of pesticides, a BMP designed to remove sediment bound pesticides might be completely ineffective for removing pesticides that remain in the dissolved phase. The BDCP should evaluate urban runoff BMPs for potential benefits to downstream Delta water quality. Without a sufficient understanding of the downstream benefits, widespread implementation of additional BMPs is not justified.
- The BDCP does not adequately define the physical area of the expected urban land use changes and the spatial extent of CM19 control strategy implementation. The BDCP refers only to restoration areas outside of the statutory Delta as included in the Plan Area and makes no references to the urban areas in the periphery outside of the statutory Delta. The control strategies listed in CM19 are generally the type of best management practices already included in new urban development, but the conservation measure does not acknowledge the legal and logistical challenges of large scale changes to already developed urban areas. The great preponderance of MS4 drainage property is not municipally owned, and it is unclear how CM19 intends to implement private land use changes.
- There is no justification provided for the cost estimate for CM19 implementation, maintenance, or monitoring. The BDCP estimates approximately $50 million in CM19 stormwater treatment for all MS4 programs over the 50 year plan. This level of funding significantly underestimates the scope of urban stormwater treatment that would be necessary to provide detectible downstream benefits. The two rounds of Proposition 84 funding totaled approximately $86 million in stormwater projects covering a much smaller area than the urban areas inside and upstream of the Delta. For a rough comparison, this funding covered several hundred acres of "stormwater treatment", and the urban area in the Delta and tributary watersheds are hundreds of thousands of acres. Moreover, no funding is proposed for the BDCP-required effectiveness monitoring, which also is costly. The BDCP states that CM19 funding would come from existing Proposition 84 or 1E bonds and future water bonds. Because CM19 is inadequately described, it is not possible to accurately evaluate the potential financial liability to local stormwater management agencies.
- Because the area of CM19 implementation is unclear, it is not possible to accurately estimate its cost. Based on the results of previous Proposition 84 low impact development (LID) project funding and known costs of retrofit of existing development, $50 million would only fund improvements for a small fraction of the total urban or municipal area. The Central Valley Drinking Water Policy Workgroup estimated that best management practices (BMP) "treatment" for the entire urban area

[22] Central Valley Drinking Water Policy Workgroup Synthesis Report. February 2012.

within the Central Valley would cost $14.9 billion by 2030.[23] The extreme discrepancy in cost and scope is significant and suggests that the proposed CM19 would be insufficient in scope and resources to demonstrate benefits to covered species. This large discrepancy in the uncertainty of benefits and cost to local agencies is indicative of the inadequate evaluation and insufficient justification for CM19.

- Additional costs imposed on local agencies by CM19 may have potentially significant impacts that should be evaluated as part of the BDCP effects analysis. For example, to the extent that the proposed CM19 places a significant fiscal burden on local agencies, those agencies may be forced to defer or forego other improvements or programs designed to improve water quality or protect the environment.

Comprehensive Evaluation of Contaminant Sources and Prioritization of Contaminant Based Conservation (Control) Measures

CM19's focus on urban runoff is not justified. CM19 does not sufficiently address SMART, "specific, measurable, achievable, relevant, and time-bound," biological objectives as stated (BDCP page 3.3-3, lines 3-8). The BDCP provides no means to assess the effectiveness of meeting the goals for CM19. Impacts to covered species from contaminant sources should be sufficiently understood to result in cost effective benefits before implementing control measures. The evaluation of contaminant-based control measures in the BDCP and BDCP DEIR/EIS should include a robust evaluation through a stakeholder process with consideration to the following components:

- Technical evaluations of all reasonable contaminant control measures for all source categories, implementation methods, and their resulting water quality performance should be performed to characterize benefits and costs.
- A computational fate and transport model that incorporates the technical source evaluations should be performed to examine the effect of sources and source control on downstream water quality. The evaluation should consider downstream Delta locations of interest to the covered species and the potential water quality impacts of the examined control measures.
- An appropriate characterization of the impacts and uncertainty of impacts of all contaminant sources on the covered species should be performed. The BDCP chapter identifies pesticides as the contaminant of particular concern (page 3.4-.27, line 11) and bases its general characterization of urban runoff quality and pesticide impacts on pyrethroid pesticide research. The cited Weston research does not demonstrate that upstream urban runoff sources cause Delta covered species toxicity miles downstream from stormwater outfalls, but this research instead shows a decreasing toxicity signal from upstream sources.[24] Once the existing and potential water quality conditions are known at the downstream Delta locations of interest, an evaluation of the specific benefits to the covered species should be performed.
- Following the complete evaluation of contaminant sources and control effects on the covered species, the control measures should be prioritized based on the known benefits and costs of the control

[23] Geosyntec. *Urban Runoff Source Control Evaluation for Central Valley Drinking Water Policy.* Prepared for California Urban Water Agencies. March 2011. http://www.waterboards.ca.gov/rwqcb5/water_issues/drinking_water_policy/dwp_urban_sources_study.pdf

[24] Weston DP1, Lydy MJ. *Urban and agricultural sources of pyrethroid insecticides to the Sacramento-San Joaquin Delta of California.* Environ Sci Technol. 2010 Mar 1;44(5):1833-40. doi: 10.1021/es9035573..

measures.

This approach would also generate alternative contaminant control measures that could be used to better perform specific evaluations in the BDCP DEIR/EIS.

An evaluation of source controls and downstream benefits must be performed prior to including CM19 within the BDCP. The BDCP should designate funding to support stakeholder research, evaluations, and modeling so that any identified contaminant conservation measures can be appropriately evaluated.

Monitoring and Assessment Cost to Local MS4 Agencies

Local agency participation in planning conservation measures and other activities is vital to successful collaboration to restore and maintain the ecological health of the Delta. Further, implementation of the conservation measures to meet the Plan's goals will undoubtedly result in increased costs to local agencies to monitor and assess the effectiveness of the water quality improvement related activities. Local agencies' ability to generate funding to conduct these additional activities is subject to potentially significant limitations, including Proposition 218 and Proposition 26. For example, the operation, maintenance, and improvement of MS4s typically is funded by storm drainage rates, and under Proposition 218, a local agency can only increase storm drainage rates after (1) conducting a notice and protest process with a protest rate below 50%, and (2) obtaining voter approval for the increase from a majority of the ratepayers subject to the rate or from two-thirds of the electorate. Thus, the BDCP should include developing relationships among agencies, mobilizing the flow of technical information, and providing sufficient funding and resources to support water quality outcomes.

The BDCP must commit to participation with, and funding for, the Delta Plan, Delta Science Plan, and the Delta Regional Monitoring Program (RMP) and provision of additional resources (e.g., funding, monitoring, modeling, technical evaluation tools, etc. for local agencies) as a required action (i.e., not an additional action) with a known schedule. Source evaluation and effectiveness monitoring requirements should also be specifically funded by the BDCP, because the assessments are specific to covered species benefits.

COMMENT 5 - INSUFFICIENT EVALUATION OF WATER QUALITY IMPACTS

The BDCP evaluation of water quality impacts is insufficient and lacks clear methods and summaries of effects. In particular, there are significant insufficiencies for CM19 as described above; however, the evaluation of impacts for other conservation measures and the project as a whole are also insufficient. Several of the key inadequacies in the water quality assessment are described below and in the detailed comments provided in Attachment 3. The inadequacies include failure to consider detailed quantitative impacts for all constituents of concern, failure to consider impacts at locations on the Sacramento River near to and upstream of the proposed CM1 North Delta intakes, and failure to sufficiently evaluate temperature effects on the municipal drinking water (MUN) supply beneficial use. In general, the presentation of the Chapter 5 effects is highly fragmented and is based on cross-references to appendices. This inefficient organization makes it difficult to interpret results.

The BDCP is not consistent with recommendation WQ R2 of the Delta Plan: covered actions should identify any specific impacts to water quality. Insufficient evaluations are provided in the BDCP and the BDCP DEIR/EIS on the potential significant impacts to water quality from the BDCP, especially impacts that may impact MUN beneficial use upstream of the proposed new intakes.

The BDCP fails to assess water quality impacts on other beneficial uses (e.g., domestic and municipal drinking water) at areas just outside the Plan Area that will be impacted by CM1, CM2, and the related

operational modifications to upstream reservoirs. In addition, the BDCP also fails to assess the impacts of operational modifications to upstream reservoirs, including water storage and release patterns. Water storage and release patterns have a great impact on the river hydrology and Delta outflow[25]. Furthermore, they can have a significant effect on the quality of the water discharged to the downstream rivers (such as the Lower American River and Lower Sacramento River), as has been identified by the BDCP[26] and by Watershed Sanitary Surveys for those water bodies. Impacts to these downstream rivers are evident in the BDCP temperature model runs of the project and alternatives, and they are projected to be even more significant in the future due to climate change impacts. The BDCP alternatives could also affect clarity (turbidity), organic carbon, metals, nutrients, pathogens, and fate and transport impacts on other organics like pesticides[27]. The BDCP did not conduct an assessment of contaminant sources to prioritize where conservation measures would be best implemented. Finally, there was no apparent evaluation of cumulative impacts and synergistic effects of water quality constituents acting simultaneously.

These inadequacies must be addressed before implementation of the BDCP. The BDCP water quality evaluation must be expanded to include areas outside of the Plan Area that will be impacted by CM1 and CM2, a broader scope of water quality constituents of interest, an assessment of all non-negligible sources of contamination, and an evaluation of cumulative and synergistic effects on water quality.

Lack of Quantitative Water Quality Assessments

There was a very limited water quality evaluation conducted as part of the BDCP. Temperature evaluations focused on species survival with no consideration of other beneficial uses, such as drinking water [disinfection by-product (DBP) formation in treated water][28]. Salinity, dissolved oxygen, and turbidity[29] were evaluated as well as other constituents related to survival of the impacted species, including mercury, selenium, ammonia; however these constituents were only evaluated in the Delta[30]. The BDCP does not adequately evaluate the water quality impacts of the BDCP in the action area[31], especially in the reach of the Sacramento River from Emmaton to Veterans Bridge. Computational watershed and surface water quality modeling for all constituents of concern should be performed to quantify potential changes. The modeling would also provide vital information to assist in establishing a monitoring program that can detect changes below impact or effect levels. An understanding of diversions, exports, and upstream sources and their relative contribution to downstream ecological issues is lacking. Modeling of sources and system dynamics, as was done in the Central Valley Drinking Water Policy, should be supported and further developed; this is essential information for planning any activities and evaluating impacts and controls of stressors.

The BDCP must use more robust and widely accepted assessment tools to assess the potential impacts and evaluate performance of conservation measures through the permit term. These tools should be made available for use by all stakeholders.

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[25] BDCP, Chapter 2, 2.3.3.3.1, page 2-26, lines 18-20

[26] BDCP, Appendix 5C, 5C.0, page 5C.0-1, lines 4-11

[27] Sacramento River Watershed Sanitary Survey 2010 Update, Section 3

[28] BDCP, Attachment 5.C.C.

[29] BDCP, Attachment 5.C.D.

[30] BDCP, Appendix 5D

[31] BDCP, Chapter 1, 1.4.1, page 1-21, lines 21-25

Incomplete Analysis in Areas Adjacent to CM1 and CM2

The BDCP does not substantially evaluate the effects of CM1 and CM2 in the "near-field" action area where these projects are proposed, specifically the Lower Sacramento River between Fremont Weir and the northern boundary of the statutory Delta. The BDCP concludes that the evaluated starting operations (ESO) water operations will have few to no effects on contaminants in the Delta (page 5.D-53). However, the evaluation should consider the impact of removing higher quality Sacramento River water and the increased contribution from lower quality San Joaquin River water into the Delta, especially in the areas adjacent to the proposed North Delta intakes and diversions. The area-specific impacts of the increased influence of the San Joaquin River on the Delta and effects near to the proposed BDCP North Delta intakes on the Sacramento River should be considered.

The BDCP must be revised to include a more detailed water quality assessment of the impacts of CM1 and CM2 on the Lower Sacramento River and the North Delta.

Temperature Effects and Impacts on Drinking Water Supply

Changes in water temperature due to the BDCP alone will be significant and were either not evaluated in key locations (the Lower Sacramento River downstream from the Feather and American Rivers) or were considered non-significant. In fact, even small changes in water temperature can impact municipal water supply beneficial uses by changing source water quality (such as increasing pathogen or algal growth), changing treated water quality (such as accelerating disinfection byproduct formation), and impacting treatment facilities (such as altering existing processes or potentially requiring additional processes).

Temperature modeling on the Sacramento River was conducted using the Sacramento River Water Quality Model, but the modeling only evaluated locations between Shasta and Knights Landing/Hamilton City.[32] No temperature evaluation was presented on the Lower Sacramento River between Hamilton City and the Delta[33], which is included as part of the Study Area.[34] The temperature modeling on the Trinity, Feather, and American Rivers was conducted using the Recreation Temperature Model.[35] The lack of temperature modeling on the Lower Sacramento River is especially concerning, because Oroville Reservoir[36], which contributes to the Sacramento River via the Feather River in this stretch of the river, is the only reservoir that was determined to have significant impacts to flow and temperature in warm months. Projections of temperature increases on the Sacramento River in the vicinity of the City's Sacramento River Water Treatment Plant (WTP) are not available, as the BDCP did not conduct an evaluation downstream of the Feather River confluence.

Due to the shallow depth of Folsom Reservoir, the most profound temperature impacts occur at this reservoir and the downstream Lower American River.[37] Also, since Folsom Reservoir is much smaller than all the other upstream reservoirs and is located furthest south in the system, it is projected to have greater impacts from climate change than all the other reservoirs[38]. Mean monthly water temperature increases on the Lower American River were calculated by the Recreation Temperature Model. The temperature at Watt Avenue in September will vary based on reservoir storage. For storage less than

[32] BDCP, Appendix 5C, 5C.4, page 5C.4-6, Table 5C.4-2
[33] BDCP, Appendix 5A, 5.A.2.5.2, page 5A.2-53 through 5A.2-55
[34] BDCP, Chapter 5, 5.2.1, page 5.2-1, lines 23-28
[35] BDCP, Appendix 5C, 5C.4, page 5C.4-5, Table 5C.4-2
[36] BDCP, Chapter 5, 5.3.1, page 5.3-3, lines 15-17
[37] BDCP, Appendix 5A, 5.A.2.5.4, page 5.A.2-73, lines 21-23
[38] BDCP, Ibid, lines 30-32

300,000 acre-feet, the temperatures are generally greater than 70°F for all future cases without the BDCP [Existing Biological Conditions (EBC) 2, EBC2_Early Long Term (ELT), EBC2_Late Long Term (LLT)].[39] Storage above 300,000 acre-feet ranges between 65 and 70°F[40]. Implementation of Evaluated Starting Operations (ESO), Low-outflow Scenario (LOS), and High-outflow Scenario (HOS) BDCP operational scenarios further increase these projected temperatures. These are significant increases from current levels and would impact drinking water treatability and treated water quality.

The BDCP or DEIR/EIS must identify and evaluate the significance of the BDCP's temperature impacts on drinking water use.

Total Maximum Daily Load Compliance

The BDCP does not specifically evaluate compliance with the Delta Methylmercury TMDL, which specifies load allocations for subareas of the Delta. Several of the proposed conservation measures (2, 3, 4, 5, 7, 8, 9, 10, and 11) are restoration or habitat enhancement activities that have the potential to increase methylmercury concentrations within or tributary to the TMDL area. The BDCP does not propose how these activities will affect the subarea load allocations or the allocations for wetlands in the TMDL. Other TMDLs, such as those for pesticides, are also not specifically addressed when activities may not support the TMDL goals.

The BDCP effects analysis must make specific evaluations and clear statements of compliance or non-compliance with TMDLs, the associated wasteload allocations, and water quality regulations. The evaluation must also consider whether the BDCP will change the TMDL compliance timeline, including the expected date of compliance with the TMDL wasteload allocations for each subarea or reach.

Salinity, Clarity, and Other Constituents

Salinity, clarity, and all other constituents were only evaluated in the Delta.[41] The BDCP did not look at upstream impacts related to flow changes, especially those just outside of the Plan Area (such as the City's drinking water treatment plant intakes on the Lower Sacramento and Lower American Rivers), which may be impacted by propagation of intrusion/reverse flow caused by operation of CM1 and CM2 or from revised upstream reservoir operations to meet the BDCP biological goals and objectives.

The BDCP should not be constrained by lack of assessment tools or data. The BDCP should comprehensively identify the known science shortcomings and propose a means to fill these data gaps. Subsequently, an evaluation can be performed to determine whether such unknowns can be feasibly resolved. It is insufficient to determine that there are no significant BDCP impacts simply because the tools and data do not exist. As the system management failed in the past to protect the covered species, the BDCP should identify the critical science uncertainties.

Moreover, the discussion suggests that a wide base of science inputs was used, but the list of contributors does not include local agencies.[42] The BDCP describes the science that was considered, but it does not include science developed by local agencies. For example, the City participated in the Central Valley Drinking Water Policy Workgroup to evaluate the effects of expected long-term urban growth

[39] BDCP, Appendix 5A, 5A.2.5.4, page 5.A.2-76, Figure 5.A.2.5-24
[40] BDCP, Appendix 5A, 5A.2.5.4, page 5.A.2-76, Figure 5.A.2.5-24
[41] BDCP, Chapter 5, 5.3.2
[42] BDCP, page 5.1-1, lines 31-36

and hypothetical contaminant controls. The Workgroup used computational models to examine differences between alternatives on the entire Delta watershed area downstream from dams.

The BDCP must conduct a wider evaluation of water quality impacts in the area upstream of the Delta, which could be impacted by operational changes to the system. The BDCP should develop appropriate evaluation tools, utilize a wide base of science inputs, identify critical science uncertainties and data needs, and provide a plan for obtaining additional necessary data.

COMMENT 6 - INADEQUATE FLOW EVALUATION IN THE SACRAMENTO RIVER FOR CONSERVATION MEASURES 1 AND 2

The BDCP flow evaluations did not adequately present nor assess consideration of changes in flow in the Sacramento River near to and upstream of the CM1 North Delta intakes and the CM2 diversions at the Fremont and Sacramento Weirs. Within these areas, there are a number of municipal drinking water intakes and permitted discharges that would be affected by small changes in the volume and direction of flow or influence of tides. While climate change may also have significant effects, the CM1 and CM2 effects should also be evaluated without consideration of climate change to better isolate and understand the BDCP effects.

The BDCP must evaluate the flow impacts on the Lower Sacramento River in the vicinity of Sacramento River WTP including increases in sea level and tidal amplitude combined with reduced Sacramento River flows from CM1 and CM2. This evaluation must include reverse flow, not just as a velocity, but also as a particle tracking assessment in order to see water movement and backwater effects.

Conservation Measure 1 - Reverse Flow Evaluation on the Sacramento River

The BDCP states that the Sacramento River at Freeport is unidirectional;[43] however, modeling and data review conducted by Sacramento County Water Agency as part of its planning for its Freeport diversion shows that this is not true at all times[44]. The BDCP model runs to simulate Sacramento River flows at the North Delta Intake show that there can be negative velocities in the vicinity as well[45].

This statement must be revised to indicate that this is generally, or most commonly, unidirectional but can have periods of reverse flow during low Sacramento River flows combined with high tidal events.

In the future, if sea level rise is as significant as projected in the BDCP[46], then reverse flow and backwater effects may further propagate upstream. The BDCP did not evaluate outside of the Plan Area for reverse flow potential or backwater propagation. The only flow assessment was related to the Sacramento River flows near Georgiana Slough.[47] Also, the salinity evaluation was only conducted for Delta locations,[48] and no particle-tracking was performed in the Sacramento River outside of the Delta.

The Conservation Strategy listed in Chapter 3 of the BDCP includes an operational constraint to manage the North Delta Intakes (CM 1) to avoid increasing the magnitude, frequency, or duration of flow

[43] BDCP, Appendix 5C, 5C.5.3.13.1.11, page 5C.5.3-378, lines 19-21

[44] Volume 3: Modeling Technical Appendix to the Draft Environmental Impact Report/Environmental Impact Statement, Freeport Regional Water Project; Attachment A – Results of Preliminary Modeling of "Worst-Case" Reverse Flow Events. Flow Science. July 23, 2002.

[45] BDCP, Attachment 5C.A, 5C.A.6.3.1, page 5C.A-217, lines 20-44

[46] BDCP, Chapter 5, 5.2.4, page 5.2-11, lines 11-12

[47] BDCP, Appendix 5C, 5C.4.3.2.6, pages 5C.4-90 through 5C.4-96

[48] BDCP, Chapter 5, 4.3.2.4, page 5.3-25, lines

reversals in Georgiana Slough,[49] but it makes no mention of those events on the main stem of the Sacramento River. The flow evaluations presented in Appendix 5C of the BDCP are focused on the reverse flow occurring only at Georgiana Slough, and they do not provide any effects analysis of that flow upstream of this point on the Sacramento River[50]. Upstream effects could include reverse and zero-flow scenarios, which could also result in upstream propagation of backwater effects, not just a net negative flow in the river. Attachment 5C.A of the BDCP presents additional information on the flow analysis and indicates that future conditions without the BDCP could result in a two foot elevation increase of the Sacramento River at Hood, but that the BDCP CMs (3-22) could almost eliminate that impact[51]. One of the key uncertainties identified for CM1 to be addressed includes an investigation of the impacts of tidal effects and diversions on flows in the vicinity of the proposed intakes[52].

The combined impacts of sea level rise and tidal amplitude increase with reduced Sacramento River flows due to CMs 1 and 2 must be evaluated and this study should be expanded to see how far upstream on the Sacramento River these impacts are possible.

Finally, when determining the X2 location and Delta outflow requirements, which support export diversions and upstream reservoir releases, the BDCP models used a median value for X2.[53] Based on Figure 5.A.2.6-8, the model predicted that the median of two kilometers upstream could be half of the peak daily value.[54] Since the location of X2 is used in the evaluations to determine the Delta outflow requirements, it seems that the model predictions may underestimate flow requirements since it was based on median location and not the maximum.[55] This could result in either significant upstream propagation of tidal influences or increased reservoir releases to maintain the X2 location downstream.

The BDCP must be evaluated using a more frequent occurrence of the X2 location, such as the 75th percentile or higher, to identify the range of potential operational requirements for the CVP/SWP system.

Conservation Measure 2 – Flow Directional Evaluation for the Lower American River

The BDCP states that Sacramento River flow into the Yolo Bypass at the Fremont Weir currently occurs when main stem flows exceed 55,000 cubic feet per second (cfs) in about 70 percent of years.[56] It further states that during major storm events additional water enters the Yolo Bypass from the Sacramento Weir, which includes flows from the Sacramento and American Rivers.[57] The Sacramento Weir flows when Sacramento River flows at Freeport exceed 80,000 cfs (contributed by Sacramento and American Rivers).[58] Both of these weirs are located on the Sacramento River, upstream of the confluence with the American River. The BDCP documents that there is potential upstream movement of American River water toward these diversions during high flow events.

[49] BDCP, Chapter 3, 3.4.1.4.1, page 3.4-13, lines 22-23
[50] BDCP, Appendix 5C, 5C.4.3.2.6, pages 5C.4-90 through 5C.4-96
[51] BDCP, Attachment 5C.A, 5C.A.6.2, page 5C.A-216, Figure 5C.A-93
[52] BDCP, Chapter 3, 3.4.1.5.1, page 3.4-32, Table 3.4.1-5
[53] BDCP, Appendix 5A, 5A.2.6.2, page 5.A.2-91, lines 34-37
[54] BDCP, Appendix 5A, 5A.2.6.2, page 5.A.2-97
[55] BDCP, Chapter 5, 5.3.2.4, page 5.3-26, lines 5-11
[56] BDCP, Chapter 3, 3.4.2.2.1, page 3.4-43, lines 28-33
[57] BDCP, Chapter 3, 3.4.2.2.1, page 3.4-44, lines 11-13
[58] BDCP, Attachment 5C.A, 5C.A.3.4.4, page C.A-30, Figure 5.C.A-68

The CALSIM model for the BDCP only examined volumes of water and did not assess direction or particle tracking in the reach around the Fremont and Sacramento Weirs near the confluence of the Sacramento and American Rivers. The passage evaluation of the Yolo Bypass flows did not evaluate the flow impacts to the main stem of the Sacramento River[59]. The Sacramento River flows were evaluated between Keswick and Verona[60] and then at Fremont Weir[61]. There does not appear to be any evaluation of the flow conditions between Verona and Freeport. CM2 has not been fully developed, and a Yolo Bypass Fisheries Enhancement Plan (YBFEP) will be developed separately, along with an DEIR/EIS, by Year Four of the project[62]. This CM is expected to include a variety of phased options to improve Yolo Bypass, including 20 potential components. Three of those potential components may result in physical changes, which could change the flow diversions from the Sacramento River: components 8, 15, and 20[63]. The BDCP needs to clarify if the model evaluations included all the potential parts of the YBFEP or if they only included component 15 (the gated notch). If all potential parts were not included, the evaluation should be revised to include the full scope of CM2.

Component 15 (gated notch at Fremont Weir to increase flows to Yolo Bypass) will be achieved by lowering a portion of the Fremont Weir so that diversions from the Sacramento River will begin at lower flow rates (15,000 cfs).[64] This will significantly increase the number of days per year that it will operate, from 25 to 81 days per year, and extend the season (September through June vs. December through April)[65,66]. The flow will also have a significant increase, particularly from December through April[67]. This could have a significant impact on the quality of the City's Sacramento River WTP source water, since American River water could be siphoned upstream to the weirs and would not be available as a major component of the source water for the City's diversions downstream of the confluence of the American and Sacramento Rivers.

Adequate modeling of the impact of CM1 and CM2 on the Sacramento and American River confluence area was not conducted. Additional flow directional evaluation must be conducted prior to completion of the BDCP planning.

COMMENT 7 - INSUFFICIENT INCORPORATION OF CLIMATE CHANGE EFFECTS

The BDCP predicts that the most significant climate change impacts will be related to changes in precipitation type and pattern, which would then in turn impact reservoir inflow and outflow as well as sea level rise and potential tidal amplitude. In addition to changes in hydrology, there are anticipated changes to human activities due to climate change. For example, an increase in air temperature is expected to increase the demand for power. Much of the upstream reservoir system is used for hydropower generation. There could be planned/expected changes to the hydropower facilities, which

[59] BDCP, Appendix 5C, 5C.5.3.12, page 5C.5.3-341, lines 5-8

[60] BDCP, Appendix 5C, 5C.5.3.13.2, page 5C.5.3-382 through page 5C.5.3-397

[61] BDCP, Attachment 5C.A.3.4.3, page 5C.A-57

[62] BDCP, Chapter 3, 3.4.2.3.2, page 3.4-48, lines 21-22

[63] BDCP, Chapter 3, 3.4.2.3.3, page 3.4-51, lines 41-42 and page 3.4-52, lines 1-2, page 3.4-53, lines 1-22, and page 3.4-54, lines 19-27

[64] BDCP, Attachment 5C.A, 5C.A.3.4.4, page 5C.A-58, lines 10-11

[65] Ibid, page 5C.A-58, lines 43-44 through page 5C.A-59, lines 1-2

[66] BDCP, Appendix 5C, 5C.5.3.2, page 5C.5.3-33, Table 5C.5.3-17

[67] Ibid, page 5C.5.3-35, Table 5C.5.3-18

may additionally impact CVP/SWP reservoir inflow or operations for outflow. The hydropower changes were not accounted for in the modeling nor identified as an uncertainty for future evaluation through the Adaptive Management program. It is noted in the BDCP that Adaptive Management must be used to address the uncertainty associated with climate change projections and the ecological responses.[68] Yet, the only monitoring programs listed are those related to ecological responses, not the climate change variables like water quality, sea-level rise, and hydrology.[69] These impacts could change the inflow projections into project reservoirs, such as Folsom Reservoir[70] since it is highly dominated by upstream reservoir releases that are related to power generation.

The BDCP must reconsider other impacts caused by climate change that are not specifically included in the current evaluation to determine their significance and ability to affect the impacts analysis.

The NEPA baseline analysis is required to account for changes in patterns, but should also include known/planned change in operations. The BDCP notes that reservoir operations are impacted by numerous factors, including flood control requirements from the US Army Corps of Engineer's Water Control Manuals for each reservoir[71]. There will be a significant change on the Lower American River due to the US Army Corps of Engineer's Joint Federal Project at Folsom Dam and changes in the Water Control Manual for Folsom Reservoir, expected to be completed in 2017[72]. In addition, DWR is completing a System Reoperation Program in response to Senate Bill X2 1, which is reassessing reservoir operations and will include climate change adaptation and mitigation opportunities.[73] The CALSIM II Modeling Assumptions listed in Table C.A-1 of Attachment 5C.A[74] include Operations Criteria, which state that all future model evaluations were conducted using existing conditions. Given the status of both of the above projects, these should have been more accurately included in the future analyses. In addition, the BDCP's approach to climate change does not appear to anticipate or include any CVP/SWP operational changes likely to occur in response to the predicted climate change impacts, which is unrealistic and difficult to support, particularly in light of this year's experience in responding to ongoing drought conditions.

The future conditions analyses must be revised to include known/planned efforts, as well as realistic projections of future operational changes, that will be implemented to adapt to or mitigate impacts from climate change.

Appendix 5.C presents the CALSIM model results for projections of reservoir storage and flows in the downstream rivers. There was significant uncertainty associated with the CALSIM modeling related to reservoir operations, especially related to climate change predictions. These uncertainties need to be verified in the future by the BDCP to determine if the assumptions made in the effects analysis are valid or need to be revised, potentially impacting the results and subsequent operational conditions.

The BDCP must develop an outline of the information needed to improve the climate change

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[68] BDCP, Appendix 5A.2, 5.A.2.0, page 5A.2.0-3, lines 3-4

[69] Ibid, lines 7-13

[70] BDCP, Appendix 5A, 5.A.2.4.6, page 5.A.2-34, lines 4-6

[71] BDCP, Attachment 5.C.A, 5.C.A.3.4.1, page 5C.A-52, lines 39-44

[72] American River Watershed Sanitary Survey 2013 Update, pages 4-108 - 4-109

[73] Ibid, pages 4-94 – 4-95

[74] BDCP Attachment 5C.A, page 5C.A-9, table row 7

assumptions used in the modeling evaluations in the future as part of the Adaptive Management program.

COMMENT 8 - TECHNICAL ERRORS AND OMISSIONS

The BDCP inaccurately characterizes several issues as general knowledge. Characterization of urban runoff and its impacts on the Delta, the use of outdated orthophosphate (OP) pesticide data, and the ambiguity around the Plan Area are three issues that necessitate better clarity and justification.

Characterization of Urban Runoff

On page 3.4.327, the BDCP states that "Stormwater runoff is a leading source of water pollution in the United States and is a large contributor to toxic loads present in the Delta (Weston et al. 2005; Amweg et al. 2006; Werner et al. 2008). The Weston, et. al. and Amweg studies neither evaluate the pesticide loading to the Delta nor conclude that stormwater is a "leading source of water pollution". On page 3.4.327, it is stated that "Pyrethroid chemicals used as pesticides on suburban lawns are of particular concern, and are delivered to the Delta system by runoff."

These Weston and Amweg studies evaluated upstream creek sediments, primarily outside of the Delta. Additional studies by the same researchers that evaluated instream water column concentrations did not find the same toxicity signal in the downstream Delta, which is consistent with the City's assessment through the SSQP and Coordinated Monitoring Program (CMP). To date, the connection between Sacramento urban runoff pyrethroid concentrations and toxicity in the Delta has not been established. It is an unfounded technical leap to assume that urban runoff is a large contributor to toxic loads in the Delta. In addition, this also ignores the significant benefits of water quality management programs upstream of the Delta, as noted at the beginning of these comments.

The 2004 EPA 305(b) (EPA 2009) report, which is likely the basis for the assertion that stormwater runoff is a leading source, though it is not specifically cited, is inappropriately used. That report does not show urban stormwater runoff as the leading source for any of the receiving water types. The assessments in this document are primarily based on 303(d) impairment listing causes, which can be biased by more frequent sample collection and targeted source sample collection.

The BDCP must provide more specific (e.g., primary source, page number, etc.) references to the general statements regarding urban runoff as a water quality issue and provide a more balanced evaluation of the benefits of existing municipal stormwater management programs and their impacts on downstream covered species.

Historic Organophosphate Pesticide Data Not Relevant

Data from 2006 and before are consistently used through the analysis and discussion to draw conclusions on pesticides. Page 5.D-48 the BDCP states:

> *Surface water data indicate that concentrations are high for both diazinon and chlorpyrifos in back sloughs and small upland drainages, and concentrations are lower in both the main channels and main inputs to the Delta. High concentrations of chlorpyrifos also are found in Delta island drains, but concentrations of diazinon remain low in the same drains (McClure et al. 2006). In the past, elevated concentrations of diazinon and chlorpyrifos have been detected in the Sacramento and San Joaquin Rivers and in the Delta during particularly wet springs and after winter storm events (McClure et al. 2006). This could suggest that increased flow with accompanying increased suspended loads will result in increased mobilization of both diazinon*

and chlorpyrifos. Alternatively, the elevated concentrations may be attributable to irrigation or stormwater runoff from late winter/early spring dormant season spraying of orchard crops.

Characterization of OP pesticides based on data collected prior to 2005 should not be considered as representative of current conditions due to the fact that the urban use bans have been in effect since 2005. Numerous studies have characterized the lack of urban sources and absence of aquatic life effects from urban source OP pesticides. More recent data is readily available and should be referenced.

The pesticide evaluation must be performed with a more recent data set that reflects current conditions. The BDCP and DEIR/EIS must use robust datasets and evaluations that are available from DPR, USGS, local agencies, and regional partnerships.

Definition of the Plan Area and Inclusion of Conservation Measure Areas

The scope of the Plan Area is ambiguous with regard to areas directly impacted by conservation measures, and it is unclear if the omission of most of the urban Sacramento area is intentional. On page 1-3, the BDCP Plan Area is defined as covering "the Sacramento–San Joaquin Delta, as defined by California Water Code Section 12220 (statutory Delta), as well as certain areas in which conservation measures will be implemented such as Suisun Marsh and the Yolo Bypass" (Section 1.4.1, Geographic Scope of the BDCP and Figure 1-1). The referenced map does not identify significant upstream areas, but the use of "such as" implies "but not limited to." This statement and Figure 1-1 confine the Plan Area to the legal Delta area and some restoration areas and suggests that the urban areas used for stormwater treatment in CM19 and the Lower Sacramento River downstream of Fremont Weir (CM2) are not included in the Plan Area. The description of the Plan Area should clearly define the actual areas or describe the implication to areas not within the Delta, but included in conservation measures or other BDCP actions.

The BDCP must provide precise definitions of the Plan Area and justification for inclusion of the areas selected for the Plan Area.

Other Errors and Omissions

The City understands that a document the size and scope of the BDCP would have technical and editorial errors.

Various errors and omissions are identified in Attachment 3 and need to be reviewed and addressed.

If you have any questions please call Jim Peifer, Supervising Engineer at (916) 808-1416.

Sincerely,

John F. Shirey
City Manager

Copy to: Mayor and City Council
Dave Brent, Director of Utilities

Attachment 1 City of Sacramento Specific Comments on Bay Delta Conservation Plan Environmental Impact Report and Environmental Impact Statement
Attachment 2 Letter from NRDC dated January 16, 2013
Attachment 3 City of Sacramento Specific Comments on Bay Delta Conservation Plan

Section	Page	Line	Type	Key Document Text	Comment
Highlights	5		WQ, WS	The environmental review process has the following key objectives:Identify environmental impacts. Identify economic impacts. Evaluate reasonable alternatives that could avoid or minimize those impacts. Develop mitigation (ways to reduce or avoid environmental impacts). Provide information for public review and comment. Disclose to decision makers the project impacts, mitigation, and public comments.	The BDCP asserts that the environmental review process has identified environmental and economic impacts; however, this is not provided in the EIR/EIS. Also, it states that it has evaluated reasonable alternatives to avoid or minimize those impacts or provided mitigation, which is also not provided in the EIR/EIS.
Highlights	5		WQ, WS	Provided a comprehensive review and analysis of the following: ... The effects of Delta conveyance alternatives on water quality.	The BDCP asserts that the water quality review was comprehensive. However, there are many errors and omissions in the data assessment and a complete focus on Delta water quality for exporters, with very limited evaluation of upstream of Delta.
Highlights	14		WS	The Draft EIR/EIS also addresses cumulative impacts on the environment that could result from implementation of a BDCP alternative in combination with other past, present, and reasonably foreseeable projects.	The BDCP asserts that it has addressed cumulative impacts on the environment. Yet it has not included State and Federal plans for climate change adaptation and mitigation strategies in the future conditions assessments.
ES	1	19-21	WQ, CM19	The BDCP EIR/EIS has been prepared for the purpose of analyzing and disclosing the potential environmental effects and effects on the human environment associated with the alternatives and to identify potentially feasible ways to avoid, minimize, or mitigate adverse effects.	While there are options available to manage stormwater (e.g., pollutant source control, runoff treatment, and maintenance of conveyance systems), some elements are beyond local agencies' control, including the timing, duration, and magnitude of rainfall or the air deposition of pollutants, such as mercury and some pesticides. Furthermore, some best management practices are effective on only some pollutants. Identifying a local management program as a mitigation for the BDCP provides the potential for inconsistent goals between the regulatory programs and those of CM19, which are focused on protection of the two smelt species of fish and green sturgeon by generally reducing stormwater loading.
ES	1	26-27	WQ, WS	The conservation strategy is designed to restore and protect ecosystem health, water supply, and water quality within a stable regulatory framework.	The EIR/EIS states that the conservation strategy is to restore and protect water quality. Water quality should be protected upstream of the proposed North Delta intake, including all beneficial uses.
ES	1,3	19-21, 3-5	WQ, CM19, WS	The BDCP EIR/EIS has been prepared for the purpose of analyzing and disclosing the potential environmental effects and effects on the human environment associated with the alternatives and to identify potentially feasible ways to avoid, minimize, or mitigate adverse effects. Impacts on human, physical, and biological resource areas (see Section ES.8.1 for a list of resource areas/topics included in the evaluation) are presented in the document.	The EIR/EIS has significant omissions on analysis and disclosure of the potential environmental effects and the effects on the human environment, and on identification of potentially feasible ways to avoid, minimize, or mitigate adverse effects.

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ES.1.1	3	37-40	LOCAL, CM19	For BDCP CM2–CM22, the EIR/EIS intends to present a program-level analysis consistent with the level of detail provided in the BDCP. Therefore, for CM2–CM22, the potential exists for additional CEQA/NEPA environmental review and associated permit actions to be required prior to implementing these conservation measures.	The BDCP unfairly shifts environmental documentation costs to agencies performing conservation measures. As a program-level analysis, the BDCP should evaluate these costs and develop funding plans.
ES.1.1	4	8-9	LOCAL, CM19	The degree of specificity in a program EIR s impact analysis need only to be as detailed as the description of the elements in the program (State CEQA Guidelines Section 15146).	The EIR/EIS insufficiently assesses the impacts CM19 . Examples of stormwater treatment are specific, but omit a number of current preferred means of managing stormwater. A detailed assessment would quantitatively evaluate the benefits and impacts of CM19 for a wide range of constituents and conditions.
ES.1.1	4	14-16, 17-24	WQ, CM19, WS	NEPA and the CEQ's regulations for implementing NEPA (40 CFR 1502.14) require federal agencies to prepare an EIS for major federal actions that could significantly affect the quality of the human environment. The EIS must rigorously explore and objectively evaluate (CEQ 40 questions) the environmental effects of an action, including a range of reasonable alternatives, and identify mitigation measures to minimize adverse effects for the range of impacts of the proposal when they propose to carry out, approve, or fund a project that may have a significant effect on the environment. To ensure environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented must also be discussed and the EIS and Record of Decision should indicate the likelihood that such measures will be adopted or enforced, and when they might be available (40 CFR 1502.16[h] and 1505.2).	The EIR/EIS has significant omissions for the proposed actions that could significantly affect the quality of the human environment, the environmental effects of an action (including a range of reasonable alternatives), and identification of mitigation measures to minimize adverse effects for the range of impacts. The EIR/EIS should have a clear discussion of the means of compliance with these statutory requirements, including an assessment of the likelihood of implementation of each conservation measure and how the project would be modified if a conservation measure is not implemented.
ES.2.2.2.1	10-11	37-41, 1-2	WQ, CM19	In addition, urban development, large upstream dams and storage reservoirs, water diversions, hydraulic mining, and the development of a managed network of navigation, flood control, and irrigation canals have all affected water flow patterns and altered fish and wildlife habitat availability. These changes, coupled with higher water exports, declines in water quality from urban and agricultural discharges, and changes in the dilution capacity from managed inflows and diversions, have led to a decline in ecological productivity in the Delta.	This broad statement is misleading and not entirely correct. Urban runoff quality has improved since the implementation of municipal stormwater management programs as demonstrated by the Sacramento Stormwater Quality Partnership. Agricultural interests could likely make the same assertion based on improved control measures. Moreover, the Central Valley Drinking Water Policy modeling, as summarized in a variety of reports suggests that urban development actually has a net benefit on a number of water quality constituents. The statement should be revised to match conclusions from other groups, including the Contaminant Synthesis Report (http://www.swrcb.ca.gov/centralvalley/water_issues/delta_water_quality/comprehensive_monitoring_program/contaminant_synthesis_report.pdf) and the Delta Science Program.

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ES.2.2.2.2	11	15-16	WQ,WS	Regulations for the combined SWP and CVP Operations are intended to protect the beneficial uses of Delta water.	The City of Sacramento's Sacramento River Water Treatment Plant intake is within legal definition of Delta. Potential water quality impacts (MUN) to Sacramento River source water quality for the City's residents or mitigation measures were not specifically addressed in the BDCP or BDCP EIR/EIS.
ES.2.2.2.2	11	19-24	WQ, WS	The water rights of the SWP and CVP are conditioned by the State Water Board to protect the beneficial uses of water within the Delta under each respective project's water rights. In addition, under the COA, SWP- and CVP-coordinated reservoir releases and Delta exports enable each water project to achieve benefit from their water supplies and to operate in a manner protective of beneficial uses. It is the responsibility of the SWP and CVP to meet these beneficial uses regardless of hydrologic conditions.	Hydrologic and reservoir conditions are intrinsically related to water quality conditions. Water quality impacts from the proposed diversion and related reservoir operation must be carefully considered so that health risk and cost are not placed on local water agencies.
ES.3.1	12-13	35-36, 1	WQ, WS	For the purposes of the EIR/EIS, the Delta Region—or Plan Area and Areas of Additional Analysis (Figure ES-2)—encompasses the statutory Delta, as well as the areas where CM1–CM22 would be implemented outside the statutory Delta.	The Delta Region includes the Plan Area (statutory Delta) and areas where CM1-22 would be implemented. CM2 includes diversions at Fremont Weir, and yet the reach of the Sacramento River between Fremont Weir and the northern boundary of the Delta are not included. This decision seems inconsistent with the definition of the Delta Region. The reach of the Sacramento River between Fremont Weir and the northern boundary of the Delta should be included in the analysis.
ES.4.4	17	20	CM19	Provide, where feasible, quantitative targets and timeframes for achieving the desired outcomes	There are insufficient quantitative targets in CM19. The grant program should provide funding where there is most benefit for reducing contaminant related impacts to the specific species.
ES.4.4	17	23-25	CM19	Provide metrics for the monitoring program by which to evaluate the effectiveness of the conservation measures and, if necessary, provide a basis to adjust the conservation measures to achieve the desired outcomes.	There are insufficient metrics for effectiveness and basis for adjustments in CM19.
ES.4.5	18	26-28	WQ, CM19	Species. Species-specific conservation measures are designed to reduce the adverse effects of various stressors on one or more covered species. These include measures addressing toxic contaminants, nonnative predators, illegal harvest, and genetic threats.	CM19 should be more specific in addressing the sources of the contaminants impacting the specific covered species affected by urban runoff. It is not appropriate to include CM19 to generally see if reducing stormwater pollutant loading will help the two species or their habitats. A detailed assessment of the benefits of control measures to covered species from a range of source types should be performed before implementation of any contaminant-based control measure. This evaluation should prioritize actions and consider the cost of the control measure compared to the established benefit to the covered species.
ES.4.5	18	34-36	WQ, CM19	The remaining conservation measures, CM12–CM21, are intended to reduce the adverse effects of various stressors, including but not limited to, environmental contaminants, nonnative predators, and illegal harvest on covered species.	The evaluations provided in the BDCP and EIR/EIS are insufficient. Environmental contaminant reduction should look at all sources and prioritize efforts and resources where there will be most benefit.

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ES.5	21	5-6	SCOPE, WQ, WS	CEQA and NEPA require that an EIR and EIS include a detailed analysis of a reasonable range of alternatives to a proposed project.	An insufficient range of alternatives is provided. There are other alternatives besides just multiple alignments of conveyance that may have less impact on the Delta, such as regional independence, offline storage, and a wider portfolio of tools. This wider range of alternatives should be evaluated.
ES.5	21	6-11	WQ, WS	CEQA requires that an EIR evaluate alternatives to the proposed project that are potentially feasible and would achieve most of the basic project objectives while avoiding or substantially reducing project impacts. NEPA requires that a reasonable range of alternatives that meet the purpose and need of the proposed federal action be analyzed in an EIS at an equivalent level of detail to that of the proposed action. Under NEPA, a range of reasonable alternatives is analyzed to define the issues and provide a clear basis for choice among the options.	There has been an insufficient review of water quality impacts upstream of North diversion. No mitigation is provided for such potential impacts to beneficial uses.
ES.5	21	18-20	SCOPE, WQ, WS	Alternative 4 was refined and improved to identify a form of the proposed BDCP (Proposed Project) that is grounded in solid science and reaches what DWR considers to be an optimal balance between ecological and water supply objectives.	An insufficient range of alternatives is provided. The Alternate Portfolio should be evaluated as it would have less environmental and human impacts.
ES.5	21	20-27	SCOPE, WQ, WS	Notably, identification of Alternative 4 as the preferred CEQA alternative is tentative, and is subject to change as DWR and its partner lead and responsible agencies receive and consider public and agency input on the EIR/EIS. It is therefore possible that the final version of the BDCP may differ from Alternative 4 as described herein, either because Alternative 4 itself was further refined, because another alternative was determined to be preferable, or because the Lead Agencies, in response to input, developed a new alternative with some features from some existing alternatives and other features from other existing alternatives.	A wider range of alternatives should be developed that are consistent with the California Water Plan, ensure reliable water supply for all of California, and protect all beneficial uses.
ES.5.2.2	32	30-38	WQ, WS	While meeting biological goals and objectives of the Plan, the applicable Delta operational rules evaluated for BDCP alternatives are intended to address how much of the Delta inflow can be exported at the south Delta CVP and SWP pumping plants; how much of the Delta inflow can be exported at the BDCP north Delta intakes; and how much of the inflow is needed for Delta outflow. Addressing these three factors requires determining the most limiting (lowest) objective for south Delta exports, the most limiting (lowest) objective for north Delta intakes, and the most limiting (highest) objective for outflow. Because each alternative has a slightly different set of applicable rules with varying north Delta intake capacities, each BDCP alternative would have different Delta operations in many months.	Within the determination of exports and outflows, there does not appear to be any consideration for the volume of storage remaining in the upstream reservoirs. Since the volume of storage is critical to water supply and water quality in the upstream of the Delta area, as well as the ability to meet future outflows and exports, it seems that this factor should be considered in the rule and operational scenario development. Since all the model runs used reservoir storage as a parameter based on federal and state requirements (Section 5.3.1.1), it should be possible to evaluate the impacts.

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ES.5.9.1.5	53	25-29	WS	Fremont Weir overtops when the combined flow of Sutter Bypass and the Sacramento and Feather Rivers surpasses 55,000 cfs as measured at Verona; flows through an operable gate could begin when Sacramento River flow at Verona is more than 23,100 cfs. The additional flows to the Yolo Bypass would be limited to 6,000 cfs and would reduce the Sacramento River flow at Freeport by this same amount.	This summary of the Fremont Weir operations is inconsistent with the summary provided in the BDCP Document, Chapter 3 (3.6.4.2 on page 3-187), and some of the modeling appendices. This data should be reviewed and revised as appropriate in the various documents.
ES.8.3.2	48	35-38	CM19	In general, mitigation related to restoration and other activities in CM3-CM22 will be the responsibility of a larger group of agencies as set forth in relevant portions of the BDCP. Responsiblities for particular measures will be described in the Mitigation Monitoring and Reporting Program to be issued in connection with the Final EIR/EIS.	The mitigation, monitoring, and reporting details are critical pieces that local agencies should have a chance to review. The cost of these activities is potentially significant. The BDCP proponents and the State should fund these efforts, not local agencies. The benefit of these studies is to evaluate the success with regard to covered species, which is a direct benefit to the BDCP proponents and the State and is not a direct benefit to the local agency ratepayers.
1.5.1	1-12		SCOPE	1.5.1 Upstream of the Delta Region The Upstream of the Delta region is shown in Figures 1-5 through 1-8. This region comprises those areas in the SWP and CVP system upstream of the Delta. Operational changes at SWP facilities in this area may be necessary to move fresh water through and/or around the Delta consistent with operations of CM1.	The project area does not consider the land area tributary to the Plan Area or Project Area affected by the BDCP. In particular, the communities where CM19 is performed and upstream watersheds need to be addressed.
1.5.1	1-12	2-5	WQ, WS	The Upstream of the Delta region is shown in Figures 1-5 through 1-8. This region comprises those areas in the SWP and CVP system upstream of the Delta. Operational changes at SWP facilities in this area may be necessary to move fresh water through and/or around the Delta consistent with operations of CM1.	This statement indicates that upstream reservoir operations are expected to be changed under the BDCP. Subsequent downstream river flows and water quality changes need to be assessed in the reaches between the upstream reservoirs and the Delta.
1.5.1	Figure 1-7		SCOPE	Project Area definition	The project area does not consider the land area tributary to the Plan Area or Project Area affected by the BDCP conservation measures. The Plan Area and Study area are not sufficiently described in the EIR/EIS. Areas should be defined with specific boundaries.
1.6	1-13	3-9	WQ, WS	In assessing environmental effects associated with CM1, the EIR/EIS also refers to environmental commitments and other BDCP conservation measures that are intended to reduce, avoid, or minimize these effects. Additional site-specific environmental compliance documents, however, will likely be required for implementation of some conservation measures (including, for example, wetland permitting actions by the Corps of Engineers). Additional information and/or documentation may be necessary during consideration of related permit application and decision-making processes.	This statement indicates that the overall assessment of CM1 was completed assuming implementation of the other environmental commitments and CMs. It is unclear how CM1 can get project-level approval without the guaranteed implementation of the supporting conservation measures. If the other commitments and CMs are not implemented, the assessment environmental effects of CM1 will not be accurate and would need to be re-evaluated.

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1.7	1-28	1-14	WQ, WS	Water Supply, Surface Water Resources, and Water Quality. Water supply and surface water resources—key drivers for development of the BDCP—remain controversial issues for a wide array of stakeholders (e.g., agricultural interests, hunting and fishing interests, water agencies, local jurisdictions) because of the changes in water operations, surface water flow conditions, and diversions that could occur with changes to the SWP and CVP systems. Water quality is an issue of concern because of uncertainties regarding activities associated with conveyance facilities and their operations and restored habitat that could lead to discharge of sediment, possible changes in salinity patterns, and water quality changes that could result from modifications to existing flow regimes.	The BDCP states that water quality is an uncertain impact of great significance that was documented as a concern in the public scoping. Yet, the water quality evaluation was very limited geographically as well as limited in relation to constituents of interest for key beneficial uses just outside of the Delta boundary.
3.1	3-2	37-46	SCOPE	With respect to particular components of the BDCP that must be implemented separately through individual permit actions or other discretionary decisions, the EIR/EIS intends to provide a mixture of project- and program-level components. Specifically, the EIR/EIS is intended to provide project-level assessment of the potential effects of modified and/or new conveyance facilities (CM1), including project-specific mitigation. All other conservation measures are presented and analyzed at a program level, with the expectation that more detailed, site-specific analysis and associated site-specific environmental documents will be prepared later, prior to implementation of specific projects, as the BDCP (or an alternative) is implemented over time, as appropriate. (See Chapter 4, Approach to the Environmental Analysis, for more detail on agency decision making related to project- and program-level approvals using this EIR/EIS.)	There are a number of actions within the BDCP that should be considered on a project level approach, such as any specific diversion or additional intake. The EIR/EIS assessment could better evaluate these details since they are known in much detail. Sufficient detail is needed for a sufficient evaluation of interactions and cumulative impacts.
3.2	3-4, 3-5	31-2	SCOPE	Under these principles, the EIR needs to describe and evaluate only those alternatives necessary to permit a reasonable choice and "to foster meaningful public participation and informed decision making" (State CEQA Guidelines Section 15126.6[f]). Consideration of alternatives focuses on those that can either eliminate significant adverse environmental impacts or substantially reduce them; alternatives considered in this context may include those that are more costly and those that could impede to some degree the attainment of the project objectives (Section 15126.6[b]). CEQA does not require the alternatives to be evaluated at the same level of detail as the proposed project.	A wider range of alternatives would be more meaningful, especially broader options such as offline storage and regionally independent supplies.
3.3.1	3-17	Table 3-2	SCOPE	BDCP Covered Activities	Please clarify why some conservation measures are not considered covered actions or activities and if there are future implications if a particular conservation measure was found to have an impact on covered species.

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3.3.1	3-18	8-12	SCOPE	Consequently, the project area encompasses a larger geographic area than the Plan Area, comprising three defined regions: the Upstream of the Delta Region, the Delta Region (as defined in Chapter 1, Section 1.5, BDCP EIR/EIS Project Area—generally referred to as the Plan Area), and the SWP and CVP Export Service Areas (Figure 1-4).	The definition and justification for the Plan Area are insufficient. Some areas affected by the BDCP directly or indirectly through conservation measures are not included.
3.3.2	3-18	38-40	SCOPE	The covered activities outlined in Table 3-2 are included in the conservation measures (Table 3-3) and are discussed in detail in Section 3.6, Components of the Alternatives: Details.	There is an unclear correspondence between covered actions and the conservation measures; however, it is implied that all conservation measures are covered actions.
3.3.2.2	3-23	1-31	WQ	Adaptive Management and Monitoring Program	See comments on BDCP as it is referenced in this Section.
3.4.3	3-39	29-31	SCOPE	BDCP will implement measures intended to address the effects of other stressors (CM12–CM21; Tables 3-3 and 3-4) under all alternatives except the No Action Alternative. Section 3.6.3 provides a detailed description of these components.	It is not clear if these conservation measures are considered "covered actions". Urban stormwater treatment, in particular, is not in the referenced table (Table 2 3-2).
3.5.9.3	3-68	38-41	CM19, SCOPE	Urban Stormwater Treatment (CM19) – Under this conservation measure, the BDCP Implementation Office would provide a mechanism, through funding, for implementing stormwater treatment measures in urban areas that would result in decreased discharge of contaminants to the Delta.	The proposed action does not specify the area nor location where it would take place. It is not possible to adequately evaluate the benefit, impacts, or costs of the alternative without a clear specification of the intended scope of the action.
3.6.3.8	3-162	30-31	CM19	Reducing pyrethroids and other chemicals from urban areas and stormwater, which would improve the health of covered fish species.	It is not an established fact that urban runoff pyrethroids have effects outside of localized locations near to outfalls. In fact, the research cited in the BDCP documents by Weston and Lydy confirmed these localized effects. The benefits of "reducing the amount of pollution in stormwater runoff entering Delta waterways" need to be better understood before implementation of CM19 or any contaminant reduction strategy.
3.6.3.8	3-162	40-41	CM19	This conservation measure would be in effect over the 50-year BDCP period.	The BDCP does not clearly state that CM19 would be in effect for the 50-year period, but it provides funding for only the first ten years. The EIR/EIS should clearly state if the benefits claimed for the EIR/EIS are based on this initial 10 years of funding or continued efforts for the entire 50 years, and who would then fund these continued efforts. Before implementation of any contaminant control measures, a detailed assessment on control of all types of sources and their benefit to the covered species should be performed. This evaluation should consider costs relative to benefits and prioritize any control measure recommendations.

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3.6.3.8	3-163	29-34	CM19	Implementation of this conservation measure will be informed through compliance and effectiveness monitoring and adaptive management, as described in Chapter 3, Conservation Strategy, (Section 3.4.19) of the BDCP. The BDCP Implementation Office, in coordination with the fish and wildlife agencies, may discontinue effectiveness monitoring for this measure in future years if monitoring results indicate a strong correlation between reduction in stormwater pollution loads entering the Delta and responses of covered fish species.	It is insufficient to assess effectiveness with correlations when so many other factors contribute to covered species health. Better assessment tools are needed to be developed and agreed upon before developing the conservation measures.
3B.1.13	3B-28	23-27	WQ, WS	In the event of an accidental spill, personnel will identify and secure the source of the discharge and contain the discharge with sorbents, sandbags, or other material from spill kits and will contact appropriate regulatory authorities (e.g., National Response Center will be contacted if the spill threatens navigable waters of the United States or adjoining shorelines, as well as other appropriate response personnel).	Due to the proximity of the Fremont Weir to the Sacramento River Water Treatment Plant and the limited amount of response time, the City would like to request direct notification of any spills or impacts to source water quality from construction activities related to CM2. Contact information can be provided upon request.
3B.1.20	3B-40	6-7	WQ, WS	Provide Notification of Maintenance Activities in Waterways	If any maintenance activities result in impacts to source water quality, the City would like to request direct notification. Contact information can be provided upon request.
3B.2.1	3B-42	27-36	WS	The BDCP proponents commit to assisting in-Delta municipal, industrial, and agricultural water purveyors that will be subject to significant water quality effects from operation of Conservation Measure 1 (CM1) and effects on dissolved organic carbon (DOC) due to implementation of Conservation Measures 2-22 (CM2–22). This commitment shall apply specifically to those purveyors affected by significant increases in bromide, electrical conductivity, chloride, and DOC concentrations such that the purveyors will bear increased financial costs in order to continue to treat or otherwise supply water to acceptable standards. The assistance provided by the BDCP proponents is intended to fully offset any increased treatment or delivery costs attributable to CM1, or for DOC attributable to CM2–22 and may take the form of financial contributions, technical contributions, or partnerships.	This commitment addresses potential impacts from chloride/EC, bromide, and organic carbon, but is limited to in-Delta purveyors. Some MUN users are just beyond the limit of the Delta, but could potentially be impacted by operations changes from CM1 and CM2. This commitment should be reevaluated to consider an expanded geographic area with specific conditions.
3D.2.2	3D-3	12-16	AM, WQ	As the NEPA baseline, the No Action Alternative, sometimes referred to as the future no action condition, considers no action conditions to include continuation of operations of the SWP and CVP as described in the 2008 USFWS and 2009 NMFS BiOps and other relevant plans and projects that would likely occur in the absence of BDCP actions and which are well-defined enough to allow for meaningful analysis.	As per this definition, it seems that the DWR Reoperation Program should have been included as a relevant plan that would likely occur. The climate change analysis should have considered the potential operational adaptation and mitigation strategies in development. http://www.water.ca.gov/system_reop/
3D.3.2.1	3D-15	13-14	ERROR, SCOPE	Table 3D-4	This table does include reference to the Folsom Dam Safety Project, but additional comment is provided on Table 3D-A regarding its inclusion. Also, there is no inclusion of the DWR Reoperation Program, which needs to be considered in the analysis. http://www.water.ca.gov/system_reop/

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3D.3.4	3D-24	1-2	ERROR, SCOPE	Table 3D-6	This table does include reference to the Folsom Dam Safety Project, but additional comment is provided on Table 3D-A regarding its inclusion. It is unclear if the North Bay Aqueduct Alternative Intake Project, which has a Notice of Preparation submitted, has been included in this assessment. http://www.water.ca.gov/engineering/Projects/Current/NBA/. Also, there is no inclusion of the DWR Reoperation Program which needs to be considered in the analysis. http://www.water.ca.gov/system_reop/
3D.A	3D-46		ERROR, SCOPE	Table 3D-A	The DWR Reoperation Program should have been included in this table and identified as included as "YES" in the No Action Alternative and Cumulative Impact assessments. The DWR North Bay Aqueduct Alternate Intake Project should also be identified here and specifically clarified if included in the BDCP or separately.
3D.A	3D-99		ERROR, SCOPE	Table 3D-A	The Folsom Dam Flood Safety Project (Joint Federal Project) is included in the table and the assessments for No Action and Cumulative Impacts. However, the text description seems to indicate that no operational modifications were included in the assessments until a revised Water Control Manual is finalized. This needs to be modified and updated to reflect the current conditions of the WCM development. http://www.spk.usace.army.mil/Missions/CivilWorks/FolsomDamAuxiliarySpillway.aspx
3E.3.2.1	3E-19	33-34	WS, ERROR	Delta inflows are mainly driven by precipitation and runoff in the vast watershed that drains into the Delta (not by precipitation falling on the Delta itself).	This statement is incorrect. Delta inflows are significantly influenced by upstream reservoir releases, and the text should be revised to reflect contribution from both sources.
5.3.1	5-43	26-33	WS	The water supply analysis addresses changes to water supply to SWP and CVP water users in the Delta region, upstream of the Delta Region, and Export Service Areas due to implementation of BDCP conveyance facilities (CM1) and other conservation measures, specifically tidal marsh habitat restoration (CM4). The alternatives would modify the operations of the SWP and CVP facilities but would not modify the operations of water resources facilities owned and/or operated by other water rights holders. Therefore, the water supply analysis addresses impacts to DWR, Reclamation, and SWP and CVP contractors, as opposed to other water rights holders, as the BDCP does not include any regulatory actions that would affect any such water rights holders.	The water supply analysis is limited to the impacts on the BDCP proponents, and it is assumed that these actions do not impact the water supply of other users. Since operation of the upstream reservoir greatly influence the availability of water, as well as the quality of that water, it does not seem to be reasonable to assume that analysis should not have included other users.
5.3.1.1	5-49	37-40	WS	If sea level rise and climate change do not occur or occur differently than modeled for these analyses, water supply conditions under the alternatives will be different from the results presented in this section. Time will tell whether current predictions of conditions in 2060, though based on the best science currently available, will prove to be too optimistic or too pessimistic.	Given the uncertainty of the information used in the modeling, it is warranted to plan to include a reassessment of conditions at specified periods during the term of the permit to assess (particularly 2025) the climate change impacts and how those may affect the operational scenarios of the BDCP.

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5.3.3.1	5-57	7-9	WS	Effects and Mitigation Approaches for No Action Alternative	DWR is currently developing a System Reoperation Program that is developing alternative operations scenarios for the CVP/SWP system that will include adaptation and mitigation strategies to address projected climate change conditions. This should have been addressed somewhere in the BDCP as a reasonably foreseeable condition. http://www.water.ca.gov/system_reop/
5.3.3.1	5-58	12-13	WS	Table 5-3	This table should have included the Joint Federal Project at Folsom Dam and revised Water Control Manual which are expected to be operational in 2015. http://www.spk.usace.army.mil/Missions/CivilWorks/FolsomDamAuxiliarySpillway.aspx
5.3.3.1	5-61	8-15	WS	The frequency of Trinity, Shasta, and Folsom Lakes dropping to dead pool storage would increase by about 10% under the No Action Alternative as compared to Existing Conditions. These changes in storage would reduce the ability of the CVP and SWP to meet system water demands and environmental water needs. Adaption measures would need to be implemented on upstream operations to manage coldwater pool storage levels under future sea level rise and climate change conditions. As described in the methods section, model results when storages are at or near dead pool may not be representative of actual future conditions because changes in assumed operations may be implemented to avoid these conditions.	This text supports the likely change in system operations to address climate change impacts, which were not included in the NAA evaluation. By not including these adaptation and mitigation efforts, the impacts of climate change have been presented to show a worst case scenario. This may minimize the perceived, or relative, impact of the BDCP.
5A.A.2.1	5A-A5	22-23	WQ, WS, SCOPE	A brief description of the hydrologic, hydrodynamic, water quality, particle transport, reservoir and river temperature modeling tools used in the analytical framework is provided below.	The Lower Sacramento River was excluded from a temperature evaluation. This is a significant flaw since this is a large stretch of river, from Knights Landing to Freeport, where there are numerous beneficial uses. Also, there are projected to be significant impacts on the temperature of the Feather and American rivers downstream of the major reservoirs that could cause compound impact to the Lower Sacramento River. This reach needs to be evaluated.
5A.A.3.3	5A-A21	8-10	WQ, WS	The amount of spill over the Fremont Weir or the notch is computed using the daily patterned Sacramento River flow at Verona and the rating curves included in the model.	The evaluation of flows at the Fremont Weir should have included an investigation of the increase in potential for American River flows being drafted upstream rather than normal discharge downstream on the Sacramento River.
5A.A.3.3	5A-A23	26-32	WQ, WS	The CALSIM II simulations do not consider future climate change adaptation which may manage the SWP and CVP system in a different manner than today to reduce climate impacts. For example, future changes in reservoir flood control reservation to better accommodate a seasonally changing hydrograph may be considered under future programs, but are not considered under the BDCP. Thus, the CALSIM II BDCP results represent the risks to operations, water users, and the environment in the absence of dynamic adaptation for climate change.	The lack of inclusion of adaptation and mitigation strategies to address climate change is an inappropriate assumption. The DWR Reoperation Program is coordinating state and federal agencies on this specific issue, and this needs to be addressed as part of the BDCP. The system will be operated differently to address climate change impacts; therefore, the results of those conditions presented in this assessment will likely not represent future conditions and therefore should not be used for comparison.

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5A.B.5.5	5A-B67		SCOPE, ERROR	Table B-8, Operations Criteria: River-Specific, American River Folsom Dam flood control	The No Action Alternative Assumption is the same as the Existing Conditions Assumptions. This is incorrect because it does not account for the Joint Federal Project and Revised Water Control Manual that will be in place in 2015. This condition needs to be revised to reflect the dam modifications, as well as the revisions to operations.
5A.B.5.5	5A-B102		ERROR	Table B-13 - Fremont Weir/Yolo Bypass	The description of this item does not match all other sections of the BDCP and the EIR/EIS. This should be evaluated and confirmed, and all sections should be revised to reflect the actual proposed conditions and modeled scenarios.
5A.D.4	5A-D97	5-8	WQ, WS	The derived rating curves are used directly in the CALSIM II model to define the monthly and daily spills over the Fremont Weir and Sacramento Weir when integrated with the system operations and other components of the BDCP Alternatives.	This analysis should have been expanded to look at the direction of flow of the American River under this new operational condition; this is important to see if the river is drafted upstream under any range of combined flows on the Lower Sacramento and American rivers to identify operational conditions to prevent that upstream flow from occurring.
5A.D.7	5A-D133	5-7	WQ, WS	For the selected sea level rise scenarios, three-dimensional UnTRIM Bay-Delta model was simulated to evaluate the Delta hydrodynamic and salinity conditions under historical conditions.	This evaluation should have been expanded to see how far upstream the projected effects of sea level rise extends, to determine if there is an increase in reverse flow impacts or an increase in the reach of the upstream of the Delta area that could be affected by reverse flows or backwater effects.
5A.D.10.2	5A-D157	9-14	WQ	The results show that the effects on the upstream operations are primarily due to the climate change effect on the reservoir inflows, river temperatures, and the increased salinity intrusion in the Delta due to the projected sea level rise. The proposed BDCP operations did not impact the upstream reservoir conditions, both at end-of-May and end-of-September, because of the increased flexibility in the system. The proposed restoration under BDCP has limited effect on the overall system operations.	The information presented in this section is unclear and difficult to review. The data cannot be reviewed to confirm the conclusion stated by the BDCP. This section should be revised to allow better review of the information.
5A.D.10.3	5A-D167	8-11	WQ	The incremental changes between the No Action Alternative and the BDCP Alternative without considering the projected changes in climate and sea level were found to be similar to the results presented in the EIR/EIS, which included the climate change and sea level rise effects.	The information presented in this section is unclear and difficult to review. The data cannot be reviewed to confirm the conclusion stated by the BDCP. This section should be revised to allow better review of the information.
5B.B.2.2	5A-B14	17-23	WQ, WS	CALSIM II simulation for the No Action Alternative Late Long-Term, does not consider any adaptation measures for future climate change, which may result in managing the SWP and CVP system in a different manner than today to reduce climate impacts. For example, future changes in reservoir flood control reservation to better accommodate a seasonally changing hydrograph may be considered under future programs, but are not considered under the BDCP.	See comment on Appendix 5 A regarding lack of inclusion of adaptation and mitigation strategies.

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6.1.2.3	6-7	3-30	WS	Influence of Delta Tidal Flows	This section describes the variability in tidal flows on shorter-term basis, defined as daily, and indicates that the riverine conditions in the Sacramento River at Freeport can be influenced by tides related to flow, velocity, and elevation. This supports the need to extend the reverse flow evaluation upstream to define the extent of the impact as well as associated backwater effects.
6.1.3.3	6-16	7-10	WS	Because of its relative proximity to the Delta, and because the American River provides a large flow contribution, Folsom Dam's operation also can influence on Delta flood management and can increase flows in the Sacramento Bypass, which diverts water into the Yolo Bypass.	This statement indicates that American River flows can influence flows on the Sacramento River, toward Yolo Bypass, and that this should have been evaluated further as part of the modeling exercise. Changes in flow direction of the Sacramento River and related impacts to water quality are significant potential impacts to beneficial uses; this issue should be evaluated and mitigated.
6.3.1.2	6-43	3-15	WS	Existing Conditions precipitation assumptions are consistent with historical patterns. These historical patterns have been used by USACE and DWR to develop reservoir storage criteria to reduce flood potential in the watersheds. The assumptions for snowfall and rainfall patterns for the alternatives have been modified to reflect climate change that is anticipated to increase surface water runoff from rainfall in the winter and early spring and to decrease runoff from snowmelt in the late spring and early summer, as described in Chapter 5, Water Supply. However, the flood management criteria for maintaining adequate flood storage space in the reservoirs (as defined by the USACE and DWR for flood control release criteria) were not modified to adapt to the changes in runoff due to climate change. No changes in monthly allowable storage values related to CALSIM II model assumptions were included because these changes were not defined under the alternatives to achieve the project objectives or purpose and need for the BDCP. If USACE and DWR modify allowable storage values in the future in response to climate change, it is anticipated that the surface water flows and related water supply and water quality conditions would change.	This statement clarifies that although future hydrologic conditions were modified for project climate change impacts, there were no parallel modifications to the operations of the reservoirs to mitigate those impacts. This is an unreasonable assumption because the state and federal management agencies are developing a System Reoperation Program (led by DWR) to address this specific issue. As noted in the final sentence, the proposed modifications will have an impact on water supply and water quality, thus making the No Action Alternative an incomplete assessment. The model for the No Action Alternative and Action Alternatives should have included some modifications to the reservoir operational requirements to address climate change mitigation and adaptation.

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6.3.1.2	6-43	16-25	WS	For this EIR/EIS analysis, it was determined that estimating peak flows in a sub-monthly time step based on monthly flows simulated in CALSIM II would not be reliable for flood risk analysis because CALSIM's flood control considerations are limited to maximum allowable end of month storage. Even weekly or daily time steps would likely be unable to reflect the actual conditions faced by reservoir operators, who, based on policy decisions, could operate in a different way under severe conditions in response to circumstances as they arise in order to try to avoid catastrophic outcomes. Detailed quantitative hydraulic analysis models are currently being improved by USACE, DWR, and CVFPB. Those models are not currently completed and not available for use in this EIR/EIS. Therefore monthly CALSIM II outputs are used to provide only an indication of consistently high storages or flows that may or may not result in flood conditions.	This statement indicates that the model results are not sufficiently robust to make a determination of Less Than Significant related to Impacts SW-1 and SW-2, related to flood control. This should be identified by the BDCP as a key uncertainty that needs to be reassessed when the referenced hydraulic models are available, as part of the Adaptive Management program.
6.3.4	6-154	16-17	WS	Table 6-9	This table should have included the Joint Federal Project at Folsom Dam and revised Water Control Manual, which are expected to be operational in 2015, as well as some consideration of the DWR Reoperation Study related to climate change mitigation/adaptation strategies for the CVP/SWP.
6.3.4	6-157	5-9	WS	The SWRCB is conducting a concurrent program to update the Bay-Delta Water Quality Control Plan. This project is still under development, and the potential outcomes are not known at this time. Changes to surface water resources due to this project could result in changes in Delta outflow and Delta outflow patterns (increases and decreases depending on the time of the year for different scenarios) and water quality in the Delta watershed.	Since this project could have a significant impact on flow patterns and therefore impact the water quality, it should be identified as a key uncertainty and added to the Adaptive Management program for reassessment once it is finalized.
8	8-1		WQ	Water Quality	Additional comments are provided on various appendices to Chapter 8 and are incorporated as applicable to the various sections.
8.1	8-1	4-5	WQ	Chapter 8, Water Quality, describes the environmental setting and potential impacts of the BDCP on water quality in and upstream of the Sacramento-San Joaquin Delta.	The BDCP purports that this Chapter describes impacts on water quality upstream of the Delta. Yet there is very little data evaluation to support such evaluation. This Chapter needs to be expanded to provide a complete evaluation of water quality upstream of the Delta in accordance with this statement.

Section	Page	Line	Type	Key Document Text	Comment
8.1.5	8-3	37-43	SCOPE	Potential impacts resulting from water operations and maintenance of Conservation Measure 1 (Conservation Measure 1 provides for the development and operation of a new water conveyance infrastructure and the establishment of operational parameters associated with both existing and new facilities). For the purposes of the assessment, the study area was divided into the three regions which are discussed separately for each constituent for Conservation Measure 1: - Upstream of the Delta (including the Sacramento and San Joaquin River watersheds).	The water quality assessment are stated to cover watershed area, but are not adequately covered. This conflicts with Section 1.5.1 descriptions.
8.1.6	8-5	8-18	SCOPE	In some instances, the NEPA and CEQA discussions differ for a particular impact discussion becaus NEPA and CEQA have different points of comparison (or "baselines" in CEQA terms). The NEPA point of comparison for each alternative is based on the comparison of the action alternative (Alternatives 1A through 9) at 2060, with the no action alternative which supposes conditions at 2060 in the absence of the proposed project. The CEQA baseline is based on the comparison of the action alternative (Alternatives 1A through 9) at 2060 with existing conditions. Consistent with this, the NEPA point of comparison accounts for anticipated climate change conditions at 2060, whereas the CEQA baseline is assumed to occur during existing climate conditions. Therefore, differences in model outputs between the CEQA baseline and the action alternative (Alternatives 1A through 9) are due primarily to both the impacts of proposed alternative as well as future climate change conditions (sea level rise and altered precipitation patterns).	The alternatives examined are insufficient and do not constitute a reasonable range. The alternatives should look at a broader range of alternatives for water quality in addition to the Delta Reform Act covered species-focused activities. Because the baseline is considered continued operation of the existing facilities, additional alternatives that support regionally independent solutions and less conveyance should be required for an adequate evaluation.
8.2	8-5	20-26	SCOPE	This section defines the environmental setting/affected environment for surface water quality, reviews the environmental and regulatory setting with respect to water quality, and provides an assessment of existing water quality conditions in the study area (the area in which impacts may occur), shown in Figure 1-4, which includes the Plan Area (the area covered by the BDCP), upstream of the Delta, and the State Water Project/Central Valley Project (SWP/CVP) Export Service Areas. Water quality conditions refer to the chemical and physical properties of the surface water in the study area. setting/affected environment for surface water quality, reviews the environmental and regulatory setting with respect to water quality, and provides an assessment of existing water quality conditions in the study area (the area in which impacts may occur), shown in Figure 1-4, which includes the Plan Area (the area covered by the BDCP), upstream of the Delta, and the State Water Project/Central Valley Project (SWP/CVP) Export Service Areas. Water quality conditions refer to the chemical and physical properties of the surface water in the study area.	Earlier in Section 8.1.5, the text states that the tributary "watersheds" are covered in the assessment. In this section, it is stated that Figure 1-4 defines the study area. However, Figure 1-4 and the previous discussion include only the upstream waterways, but not the tributary watersheds, which would add a significantly larger area and is more accurate.

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8.2	8-5	33-35	ERROR	The term nonpoint source is defined to mean any source of water pollution that does not meet the legal definition of point source in Section 502(14) of the CWA and includes urban and irrigation runoff.	Stormwater covered NPDES permits (MS4) is considered a point source within Section 502(14), which does not apply to agricultural "stormwater". Clean Water Act amendments in 1987 clarified this categorization.
8.2	8-6	2-4	WQ	Because the primary concern of water temperature is effects on fish and aquatic organisms, temperature is addressed in Chapter 11, Fish and Aquatic Resources.	This assumption is incorrect. Temperature is one of the key general characteristics of drinking water that impacts many aspects of treatability and treated water quality. This is especially evident in the development of disinfection by-products. Higher temperatures significantly increase the rate of reaction and development of both THMs and HAAs in treated water, as documented in the 2013 Update to the American River Watershed Sanitary Survey (pages 3-39 to 3-43). This constituent needs to be included in Chapter 8 for its potential impacts to overall water quality.
8.2.1	8-6	16-17	WQ, ERROR	Finally, water quality data from selected monitoring stations were reviewed for specific constituents in Section 8.1.3.	This section reference is incorrect, and needs to be reviewed and revised.
8.2.1	8-6	20-22	SCOPE, WQ	The Delta environment is much more complex and dynamic than the rest of the study area and requires a more detailed approach. Hence, the water quality conditions in the Delta were reviewed at a greater level of detail.	The detailed assessment should occur in the areas where there are effects. While tidal influence adds complexity to the modeling, the higher level of detail is necessary upstream of the selected water quality locations (e.g., up to Veterans Bridge, etc.).
8.2.1.1	8-6	39-40	WQ, ERROR	The following sections (Sections 8.1.1.2 through 8.1.3.17) describe the Existing Conditions in the study area with respect to surface water quality and are organized in the following sequence.	These section references are incorrect, and needs to be reviewed and revised.
8.2.1.1	8-7	28-29	ERROR	Section 8.1.2, Selection of Monitoring Stations for Characterization of Water Quality, includes detailed discussions of the selected water quality constituents of concern in the study area.	Incorrect reference to previous section.
8.2.1.3	8-10	27-29	WS	The management of the SWP and CVP systems to meet water supply, flood management, and environmental obligations has a substantial effect on the quantity and timing of inflows to the Delta and on water quality in the study area.	We agree with this statement. It supports the need for more significant evaluation of reservoir operations in relation to downstream water quality impacts.
8.2.1.4	8-13	22-23	ERROR	Figure 8-6 shows land uses and major point sources (consisting primarily of municipal WTPs) and nonpoint sources (e.g., urban storm water runoff) of pollutants.	Urban stormwater is considered a point source.

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8.2.1.4	8-14	14-23	WQ, WS	Both variations in watershed hydrology and SWP and CVP operations affect the variability of water quality in the study area; also both SWP/CVP and non-SWP/CVP water diversions reduce the amount of water available for dilution and assimilation of contaminant inputs and hydrodynamic conditions associated with channel flows and tidal action in the Delta. Water quality can vary seasonally in response to winter-spring runoff and summer-fall lower-flow periods or seasonal agricultural practices and cropping; water quality also can vary from year to year as a result of precipitation and snowpack levels in the upper watersheds and the resulting releases from upstream reservoirs for water supply, flood management, and environmental obligations (e.g., fish flows, Delta water quality objective compliance), operations of the Delta Cross Channel, and seasonal and annual variations in SWP and CVP pumping rates.	This text displays the wide variability in source water quality and supports the need to evaluate constituents for short term impacts. The use of long term averages in the water quality assessment in this chapter needs to be reconsidered, and the data should be reevaluated for shorter term impacts, such as the periods applicable for drinking water regulations.
8.2.1.4	8-13, 8-14	16-40,1-13	WQ	Primary Factors Affecting Water Quality	This section presents a summary of some of the potential sources of contamination in the watershed that could impact water quality and the associated constituents of concern. This section is not comprehensive and does not provide any relative comparison or assessment of the specific sources' ability to impact source water quality. Text should be added to qualify the discussion and discuss the presence of additional sources and constituents of interest, especially at more local levels.
8.2.1.5	8-14	24	WQ, WS	Beneficial Uses	This text needs to be modified to include the State Water Board's Sources of Drinking Water Policy (Resolution 88-63) in addition to the Tributary Rule. Both apply to the Central Valley and indicate where the MUN beneficial use shall be assigned.
8.2.1.6	8-21	20-37	ERROR	*Omission*	This section on other Water Quality Plans does not identify several critical water quality planning efforts that are relevant, including CV-SALTS, salt and boron, pesticide and other TMDLs, Delta nutrient objective development, and the Central Valley Drinking Water Policy.
8.2.1.6	8-21	41-43	WQ, WS, ERROR	The incorporation of the MCLs, which apply to treated drinking water systems regulated by DPH, makes the MCLs also applicable to ambient receiving water with respect to the regulatory programs administered by the Regional Water Boards.	This text is incorrect and must be revised. MCLs are not always applied to treated water and can vary between water systems. The specific regulations in Title 22 indicate whether compliance is based on raw or treated water (Sections 64431/64432, 64442/64443, 64444/64445, 64449). In addition, a water system must continue the compliance location based on historical sites (raw vs. treated) so that may be the controlling factor. MCLs apply at varying locations and the text should reflect those conditions. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf

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8.2.1.7	8-23	Table 8-2	ERROR	*Omission*	The table title should include Sacramento and San Joaquin River tributaries that are referenced in table. It is unclear when the EIR/EIS evaluation is including these watershed reaches.
8.2.1.7	8-24	Table 8-3	ERROR	*Omission*	Delta Methylmercury TMDL adoption status should be included.
8.2.1.8	8-26	34-36	WQ, WS, ERROR	In light of these issues, the constituents of concern identified in Table 8-5 are addressed in detail for the purposes of characterizing existing water quality in the study area (Section 8.1.3, Existing Water Quality) and to support the water quality impact assessments.	This section reference is incorrect, needs to be reviewed and revised.
8.2.1.8	8-26	39-42	ERROR	The constituent-specific sections described subsequently (Section 8.1.3) characterize the potential effects on beneficial uses and various receptors, including known information regarding specific locations in the Delta most affected by the constituents.	Reference to Section 8.1.3 appears in error.
8.2.1.8	8-26	39-42	WQ, WS, ERROR	The constituent-specific sections described subsequently (Section 8.1.3) characterize the potential effects on beneficial uses and various receptors, including known information regarding specific locations in the Delta most affected by the constituents.	This section reference is incorrect, needs to be reviewed and revised.
8.2.1.8	8-29		WQ, WS, ERROR	Table 8-5	For the MUN beneficial use temperature should have an "X", and the evaluation should be presented in this chapter. Also, the trace metals, others category should be further expanded or footnoted to show all of interest to the MUN use.
8.2.2.1	8-27	4-32	SCOPE, WQ	Omission	Section should provide a table or appendix of tables that describe the sources of data for the constituents considered. At a minimum, the table(s) should provide a summary of the year range, reporting limits, type of sample, locations, and number of samples. Also, the database used should be made available for use and review.
8.2.2.2	8-27	34-36	WQ, WS	Based on data availability, data continuity, and geographic location, a total of 20 water quality monitoring stations were selected to characterize the water quality conditions in the study area (Figure 8-7).	Limiting data collection to those sets easily accessed through DWR likely precluded a comprehensive data evaluation in the areas upstream of the Delta. These sites should have been supplemented with reputable local programs, such as current MUN users regulatory compliance monitoring data, to ensure a sufficient number of data points. http://www.cdph.ca.gov/certlic/drinkingwater/Pages/EDTlibrary.aspx. Moreover there are a number of active data collection efforts by California Department of Pesticide Regulation, the Coordinated Monitoring Program (SSQP permit required river monitoring), and others.

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8.2.2.2	8-31	Table 8-6	SCOPE, WQ	Delta Source Water Locations	Selection of Sacramento River at Hood over the legislative definition of the Delta is inconsistent with the 'boundary' approach and excludes the upstream reach where a number of existing and proposed municipal drinking water intakes are located. The reach from I Street (or further upstream) to Hood should be evaluated in more detail as this is the area of increased impact from the BDCP intakes and other existing proposed intakes in the vicinity. Certainly, immediately upstream and downstream of the CM1 intakes should be evaluated.
8.2.2.2	8-31	1	WQ, WS	Table 8-6	For the four North of Delta locations the data source is listed as DWR, but this is insufficient reference to identify which monitoring program and time period the data represents. A footnote needs to be added to further clarify the source.
8.2.2.3	8-32	20-38	SCOPE, WQ	However, these locations generally represent the water quality occurring at these perimeter locations in the Delta.	Immediately upstream and downstream of the BDCP intakes should be evaluated in greater detail to understand with higher resolution the effects on water quality in this critical area. Hood is much further downstream than the I Street Bridge.
8.2.3	8-31	30-33	WQ, ERROR	The CEQA baseline, Existing Conditions, is defined in Appendix 3D and for the purposes of quantitative water quality assessments (as described in Section 8.3.4, Effects and Mitigation Approaches) is represented by Existing Conditions modeling runs, not historical water quality monitoring data as presented below.	This section reference is incorrect, and needs to be reviewed and revised. Also, it is unclear why the basis for existing conditions of the water quality are not based on real data results instead of model runs - which were not available for many of the constituents of interest.
8.2.3	8-34	33-34	ERROR	For more information on the comparisons made to the Existing Conditions modeling run for assessment purposes, see Section 8.3.3.2, Comparisons.	This section reference is incorrect, needs to be reviewed and revised.
8.2.3.8	8-58	35-37	WQ	Data for most EDCs, PPCPs, and nitrosamines in the Delta and the north- and south-of-Delta locations are very sparse because most compounds are not typically part of water quality sampling programs.	The previously mentioned water quality monitoring programs (DWR, BDAT, WDL) do not have significant data on these constituents, but there is data available in the watershed from USGS, MUN users, as well as some industrial dischargers (such as Aerojet on the American River). This data should have been collected to contribute to a more thoughtful evaluation of these constituents. References to studies outside of the Project Area are not technically supported due to the site specific nature of the sources. http://www.cdph.ca.gov/certlic/drinkingwater/Pages/EDTlibrary.aspx, http://cida.usgs.gov/nawqa_public/apex/f?p=136:1:0, https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=esmrAnalytical, http://www.ceden.us/AdvancedQueryTool

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8.2.3.9	8-63	Table 8-14	SCOPE, WQ	Omission	Data used is limited. However, significantly more data are available at the locations.
8.2.3.10	8-69	33-37	WQ	The beneficial uses most directly affected by nutrient concentrations include those relevant to aquatic organisms (cold freshwater habitat, warm freshwater habitat, and estuarine habitat), drinking water supplies (municipal and domestic supply), and recreational activities (water contact recreation, noncontact water recreation), which can be indirectly affected by the nuisance eutrophication effects of nutrients (Table 8-1).	The indirect effects of increased nutrients contributing to algal growth on the MUN use should be presented here as well, including taste and odor, interference with operations, increased levels of organic carbon, and the potential for algal toxins.
8.2.3.11	8-77	8-9	WQ, ERROR	Peak concentrations are important to municipal drinking water purveyors because of regulations that require advanced treatment depending on TOC concentrations.	This statement is incorrect. Regulations are based on quarterly and annual running averages. Operations are adjusted for system performance.
8.2.3.11	8-77	8-9	ERROR, WQ	Peak concentrations are important to municipal drinking water purveyors because of regulations that require advanced treatment depending on TOC concentrations.	It is stated elsewhere in the document that drinking water purveyors are concerned about annual averages of TOC, not peak concentrations. The median concentrations are most relevant to facility operation.
8.2.3.11	8-77	Table 8-20	ERROR	Omission	The table does not indicate the Sacramento River site location.
8.2.3.11	8-78	1-13	WQ, ERROR	DOC measured in the Sacramento River shows a trend of gradually increasing DOC with distance from Shasta Dam, where median concentrations of about 1 to 1.5 mg/L increase to about 1.5 mg/L to 2 mg/L at Hood (CALFED Bay-Delta Program 2007b:5–58). Major tributaries such as the Feather and American Rivers contain relatively low DOC as well, with median measured concentrations of 1.5 mg/L–2 mg/L. DOC on the lower San Joaquin River is comparatively greater but generally decreases with downstream distance, where median concentrations at Stevinson are nearly 6 mg/L and median concentrations at Vernalis are about 3 mg/L (CALFED Bay-Delta Program 2007b:5–49). This decrease in DOC can be attributed to inputs from tributaries such as the Merced, Tuolumne, and Stanislaus Rivers, with median DOC concentrations of 2 mg/L. Mean values for the north-of-Delta area during water years 2001–2006 ranged from 1.5 mg/L at the Feather River at Oroville to 2.0 mg/L at the Sacramento River at Veterans Bridge (Table 8-21). South-of-Delta mean values were higher than north-of-Delta stations examined (3.2 to 3.4 mg/L), and comparable to the mean at the Banks headworks (3.3 mg/L, Figure 8-38).	The discussion is confusing in its characterization of concentrations in various waters and the implied quality of the water as a drinking source. A maximum value is discussed as the critical assessment at first; however, mean values are then used. There exist many conceptual models which better explain the sources, relative loadings from tributaries, and the general organic carbon discussion. We recommend revising this paragraph to more accurately describe the high quality of the Sacramento River so that it is more consistent with the Drinking Water Policy Workgroup conclusions on organic carbon.
8.2.3.11	8-78	22-23	ERROR	The lowest observed mean concentrations of TOC in the Delta during the water years 2001–2006 ranged from 2.7 to 3.0 mg/L, occurring at the Sacramento River at Hood	It is not clear if the range of mean values at Hood is seasonal mean, annual mean, etc. It does not seem to match the median value shown in Table 8-20.

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8.2.3.11	8-78	Figure 8-42	ERROR	*Presentation*	In presenting side-by-side plots from different sites, it would be useful to use the same scale, especially if the intent is comparison. More information should be provided on whether monitoring programs have sample collection targets. For example, Sacramento River at Veterans Bridge is known to be biased to wet weather events.
8.2.3.11	8-78, 8-79	19-20, 4-5	WQ	Tables 8-21 and 8-22	There is a wide variety in the number of samples available for the various locations. Direct comparison of these values is not valid if the data sets do not represent the same period or frequency.
8.2.3.11	8-79	7- 8	WQ	There are no state or federal regulatory water quality objectives/criteria for organic carbon or any USEPA-recommended criteria.	The Central Valley Delta Drinking Water Policy, adopted in July 2013, clarifies that organic carbon is included in the chemical constituents narrative. This text needs to be revised accordingly. http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/resolutions/r5-2013-0098_res.pdf
8.2.3.11	8-79	17-20	WQ	Existing Delta water quality regularly exceeds 2 mg/L TOC, and existing treatment plants already are obligated to remove some amount of TOC. Nevertheless, changes in source water quality at municipal intakes may trigger additional enhanced TOC removal, and associated increased treatment costs.	It should be noted that this evaluation does not address the area upstream of the North Delta, where source water TOC levels are generally at or below 2 mg/L on a running annual basis and no treatment technique for TOC removal is required (as documented in the American and Sacramento Rivers Watershed Sanitary Surveys and their updates). Any increase above the current baseline levels may trigger increased treatment and associated costs.
8.2.3.12	8-80	14	WQ	The term pathogens refers to viruses, bacteria, and protozoa that pose human health risks.	The term pathogen is used in a very broad manner, and it should be noted more specifically that the prevalence, human health impact, and drinking water treatability for this group of constituents should not be generalized.
8.2.3.12	8-80	16-19	WQ	Most data that exist regarding pathogens are for coliform bacteria, which are indicators of potential fecal contamination by humans or other warm-blooded animals because of their relative abundance and ease of measuring in water samples.	The text needs to be modified to add language to clarify that fecal coliform or E. coli are indicators of fecal contamination, not total coliform.
8.2.3.12	8-80	20-22	WQ	Sources of pathogens include wild and domestic animals, aquatic species, urban stormwater runoff, discharge from WTPs, and agricultural point and nonpoint sources such as confined feeding lots and runoff.	Another source of pathogens in the watershed is related to spills associated with wastewater, whether from collection systems or treatment failures.

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8.2.3.12	8-82 to 8-83	38-44, 1-2	WQ, WS, ERROR	USEPA's surface water treatment rules require that systems using surface water, or groundwater under the direct influence of surface water, to: (1) disinfect water to destroy pathogens and (2) filter water or meet criteria for avoiding filtration to remove pathogens, so that the following contaminants are controlled at the following levels (U.S. Environmental Protection Agency 2009d). Total coliform: no more than 5% positive samples in a month (for water systems that collect fewer than 40 routine samples per month, no more than one sample can be positive per month). Every sample that has total coliform must be analyzed for either fecal coliforms or E. coli. If two consecutive total coliform positive samples occur, and one is also positive for E. coli/fecal coliforms, the system is deemed as having an acute MCL violation.	This section is incorrect and needs to be revised. This section presents an insufficient description of the Surface Water Treatment Rule, Interim Enhanced Surface Water Treatment Rule, and the Long Term 1/Long Term 2 Enhanced Surface Water Treatment Rules. In addition, it inaccurately refers to the requirements of the Total Coliform Rule (which apply to treated water quality in the distribution system). See descriptions in Title 22, Chapter 17 - http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf
8.2.3.13	8-83	13-16	WQ	Current use pesticides include carbamates (e.g., carbofuran), organophosphates (e.g., chlorpyrifos, diazinon, methyl parathion, malathion), thiocarbamates (e.g., molinate, thiobencarb), and more recently pyrethroids (e.g., permethrin, cypermethrin), a class of synthetic insecticides applied in urban and agricultural areas.	The identification of current use pesticides is incomplete and does not consider use of the pesticides in the upstream watersheds. This process should be reevaluated to include DPR reporting (http://calpip.cdpr.ca.gov/main.cfm) to identify pesticides of key interest to various beneficial uses. The MUN use potential pesticides of interest for consideration of monitoring and/or evaluation in the Sacramento Valley have been identified to the Central Valley Regional Board as part of the Irrigated Lands Regulatory Program by the Sacramento River Joint Source Water Protection Program (TDC Environmental; Rice Pesticide Prioritization memo dated 9/13/13 and Sacramento River Watershed Pesticide Prioritization memo dated 10/7/13).
8.2.3.13	8-83	25-28	WQ	The critical pathways for pesticides entering the rivers, streams, and the Delta include agricultural and urban stormwater runoff, irrigation return water, drift from aerial or ground-based spraying, and periodic release of agricultural return flows from rice production (Werner and Oram 2008).	Another pathway documented by the Central Valley Regional Board in the Irrigation Lands Regulatory Program is seepage through levees (Rice Pesticides Program 2013 Annual Monitoring Report) and subsurface tile drains (Attachment A to the WDR [R5-2014-XXXX] for Sacramento Valley Rice Growers), and these should be added to the text.
8.2.3.13	8-83	35-36	WQ	The timing of pesticide input to Delta waters is related to application rates, when pesticides are applied to farmed land, runoff events, and other transport processes (Kuivila and Jennings 2007).	Another factor affecting pesticide input to waters is the application method as well as best management practices (such as pesticide hold times) implemented through management programs such as the Irrigated Lands Regulatory Program.
8.2.3.13	8-85	Table 8-23	ERROR	Diazinon Concentrations, by Water Body Category	Data is irrelevant and not representative of current conditions, because it is based on a 2006 study. More recent data should be used after the diazinon and chlorpyrifos bans became effective.

Section	Page	Line	Type	Key Document Text	Comment
8.2.3.13	8-85	Table 8-24	ERROR	Table 8-24. Chlorpyrifos Concentrations, by Water Body Category	Data are irrelevant and not representative of current conditions because it is based on a 2006 study. More recent data should be used after the diazinon and chlorpyrifos bans became effective.
8.2.3.13	8-85	4- 5	WQ	Monitoring efforts at the north-of-Delta stations since 2001 have resulted in no pesticide detections, while monitoring at the south-of-Delta stations resulted in various detections.	This text needs to be expanded to explain that the evaluation was based on a few selected sites (four), and three of those were located above the major agricultural areas in the Central Valley. The conclusion that this is not a significant concern is based on too little data not sufficiently representing source contributions. This evaluation could easily be supplemented with data from the Central Valley Regional Board Irrigated Lands Regulatory Program. http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/water_quality_monitoring/index.shtml
8.2.3.16	8-100	42-43	WQ	Trace metals such as arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel, silver, and zinc occur naturally in the environment.	The Screening Analysis (Appendix 8C) indicated that aluminum should have been evaluated as part of this process. This is a critical constituent in drinking water treatment and must be evaluated for its impacts. This section must be revised to add aluminum to the evaluation.
8.2.3.16	8-101	29-31	WQ	Additional background for arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel, silver, and zinc is provided below.	This section does not provide background for chromium, iron, or manganese as noted in the text. This section needs to be revised to include these constituents in the background, as well as the evaluation as per the Screening Analysis (Appendix 8C) and Trace Metals Analysis (Appendix 8N). Also, aluminum needs to be added to the evaluation as noted above.
8.2.3.16	8-101	25-28	WQ	Their study showed that cadmium, copper, and zinc were transported primarily in dissolved form upstream of major agricultural activities but primarily in colloidal form downstream. Iron and lead were transported primarily in colloidal form at all mainstem Sacramento River sites.	The source analysis of the trace metals needs to be expanded to evaluate the contribution of the reservoirs to dissolved metal concentrations and better explain the transformation in downstream rivers.
8.2.3.16	8-102	35-36	WQ	Sources of copper contamination include natural deposits, industrial and urban wastewater, and urban stormwater runoff (Buck et al. 2006; U.S. Environmental Protection Agency 2009j).	Another source of copper in the Central Valley watershed is from agricultural use as an herbicide (http://calpip.cdpr.ca.gov/main.cfm). This text needs to be expanded to include that source, and the evaluations need to be expanded. Senate Bill 346 initiated the phase out of copper in brake pads, which is a signifcant source of copper in urban runoff.
8.2.3.16	8-103	34-36	WQ, WS	In 2000, the Association of California Water Agencies conducted a study to summarize arsenic data from across the state and to assess the effect of USEPA's arsenic standard on California's drinking water programs (Saracino-Kirby 2000).	The use of groundwater data evaluation is not applicable to the surface water quality evaluation and should be removed. Also, this data is representative of statewide data, which can vary significantly from the waters of the Project Area. This data needs to be reviewed and refined further to present applicable data to this project if it is intended to be used in this assessment.

Section	Page	Line	Type	Key Document Text	Comment
8.2.3.16	8-104	41-44	WQ, WS	Based on water quality criteria and objectives, and typical levels in surface waters, it is generally the case that arsenic, iron, and manganese are of primary concern for drinking water, while cadmium, chromium, copper, lead, nickel, silver, and zinc are of concern because of potential toxicity to aquatic organisms.	It should be noted that hexavalent chromium has been determined by CDPH and USEPA as a more significant human health risk and that primary MCLs are in development. In August 2013 CDPH proposed an MCL of 10 ug/L. This regulation is anticipated to be final in 2014 and should have been included in the metals assessment. http://www.cdph.ca.gov/services/DPOPP/regs/Pages/DPH-11-005HexavalentChromiumMCL.aspx
8.2.3.17	8-110	11-13	WQ	The construction and operation of dams in the Sacramento and San Joaquin River system have the effect of reducing TSS concentrations downstream because sediments become trapped in the reservoirs.	The dams and associated reservoirs of the SWP and CVP system do provide a sedimentation process frequently, but the operation of the reservoirs can also contribute to turbidity in downstream rivers. Low lake levels leave significant shoreline exposed and exacerbate the "first flush" effect of fall storms, low lake levels can also result in stratified anoxic zones containing dissolved metals being discharged downstream, and rapid or large releases can cause instream erosion in downstream rivers. These impacts need to be identified and assessed further.
8.2.3.17	8-110	17-20	WQ	Given that the dam and levee systems in place are unlikely to be removed, the human activity that most likely affects sediment delivery to the Delta is soil erosion associated with agricultural and urban land uses. These activities are pertinent because they occur downstream from the major dams on the system (Schoellhamer et al. 2007b).	Although turbidity generally increases from upstream to downstream, this statement is not true in all instances. Consideration of reservoir operations on the impact of turbidity levels in the downstream rivers needs to be assessed.
8.2.3.17	8-112	1-7	WQ, WS	USEPA's Surface Water Treatment Rules require systems using surface water or groundwater under the direct influence of surface water to implement the appropriate disinfection and/or filtration techniques to minimize turbidity in treated drinking water (U.S. Environmental Protection Agency 2006a). At no time can turbidity go above 5 NTU; systems that use filtration must ensure that the turbidity go no higher than 1 NTU (0.5 NTU for conventional or direct filtration) in at least 95% of the daily samples in any month. As of January 1, 2002, turbidity may never exceed 1 NTU, and must not exceed 0.3 NTU in 95% of daily samples in any month.	This text is incorrect and needs to be revised. This is an incorrect summary of the current versions of the Interim Enhanced Surface Water Treatment Rule. There needs to be distinction between the primary standards for turbidity associated with the SWTR and the secondary standard for turbidity (5 NTU). See Title 22, Chapter 17 - http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf
8.3	8-112	11-12	ERROR	The federal and state agencies responsible for regulating water quality in the study area are:	This text needs to be revised to add the California Department of Public Health as the primacy agency over drinking water in California.
8.3.1.5	8-115	32-34	WQ	The owners and operators of public water systems are required to comply with primary (health-related) MCLs and encouraged to comply with secondary (nuisance- or aesthetics-related) MCLs.	This text is incorrect and needs to be revised. This text does not accurately reflect California regulatory requirements. Although the Federal secondary standards are non-enforceable for water agencies, the State of California's drinking water program has adopted those as enforceable standards. A sentence should be added to clarify that for water agencies in California all primary and secondary standards are enforceable and the standards must be met. See Title 22, Chapter 15, Article 16 - http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf

Section	Page	Line	Type	Key Document Text	Comment
8.3.1.5	8-115	35	WS, ERROR	SDWA drinking water standards apply to treated water as it is served to consumers.	This text is incorrect and must be revised. MCLs are not always applied to treated water and can vary between water systems. The specific regulations in Title 22, Chapter 15 indicate whether compliance is based on raw or treated water (Sections 64431/64432, 64442/64443, 64444/64445, 64449). In addition, a water system must continue the compliance location based on historical sites (raw vs. treated), so that may be the controlling factor. MCLs apply at varying locations, and the text should reflect those conditions. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf
8.3.1.5	8-116	1-6	WQ, ERROR	Some constituents of Delta water are of particular concern to municipal contractors because they are either not removed, only partially removed, or are transformed by the treatment process into hazardous substances by community-used water treatment processes. Constituents of concern include TDS, chlorides, bromides, and organic compounds. These substances can be removed from raw water by advanced water treatment processes, but to do so substantially increases the cost borne by municipalities.	This text is not complete and should be qualified or corrected. There are many other constituents of concern that are not fully removed by conventional filtration, such as trace metals, or that have the potential to transform during treatment, such as organics. In addition to the cost for removal being higher, when source water levels are elevated there is greater possibility of detectability in treated water which can increase the risk to public health.
8.3.1.6 and 8.3.1.7	8-116	7-38	WS, ERROR	Summary of the Surface Water Treatment Rule and Stage 1 and Stage 2 Disinfectants and Disinfection Byproducts Rule and Long-Term 1 and Long-Term 2 Enhanced Surface Water Treatment Rule	We have concerns about how these sections are written and organized; we recommend that they be rewritten and organized to reflect the requirements more clearly and accurately. The microbial rules should be written in one section with correct references to all four SWTRs, including the Interim Enhanced SWTR. The disinfection by-product rules should be written separately with their requirements. See Title 22, Chapters 15.5 and 17 - http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf
8.3.2.11	8-121	22-28	WS, ERROR	DPH is designated by USEPA as the primary agency to administer and enforce requirements of the federal SDWA in California. Public water systems are required to monitor for regulated contaminants in their drinking water supply. California's drinking water standards (e.g., MCLs) are the same or more stringent than the federal standards and include additional contaminants not regulated by USEPA. Like the federal MCLs, California's primary MCLs address health concerns, while secondary MCLs address aesthetics, such as taste and odor. The California SDWA is administered by DPH primarily through a permit system.	This section is inaccurate. DPH is the "primacy" agency. The text needs to be revised to accurately reflect California enforcement of primary and secondary standards (Title 22, Chapter 15). California secondary standards are enforceable for water agencies, and this needs to be reflected in the text. California has developed standards for numerous constituents without a Federal MCL, and those should be addressed. Also, California point of compliance with MCLs varies depending on the specific constituent and water system. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf
8.3.2.13	8-123	4- 16	WQ, WS, ERROR	Summary of the Central Valley Water Board Drinking Water Policy	This text needs to be revised to reflect the known conditions of the Drinking Water Policy. This section is outdated and should have been updated to include the July 2013 Regional Board-adopted version of the Policy. http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/resolutions/r5-2013-0098_res.pdf

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8.4.1	8-127, 8-128	37-40, 1-2	WQ, SCOPE	1. Would implementation of the Alternatives result in water quality changes to the Plan Area, Upstream of the Delta, or SWP/CVP Export Service Areas that would result in exceedances of water quality criteria/objectives, or substantially degrade water quality, of/by sufficient frequency, magnitude, and geographic extent as to cause or substantially contribute to significant adverse effects on the beneficial uses of water in these areas of the affected environment?	This assessment is incomplete. Why is the assessment limited to the Plan Area? If there are effects in other areas they should be assessed as well.
8.4.1	8-128	3-4	WQ, SCOPE	2. Would implementation of the Alternatives result in beneficial effects on water quality in these areas?	Does "beneficial effects on water quality" refer to support of beneficial uses? This phrase should be revised for clarity.
8.4.1	8-128	11-15	WQ	Moreover, models available for use in addressing such questions have been previously developed for the effects of operations of the SWP-CVP facilities for only a few water quality parameters (e.g., EC, DOC, and temperature) in defined portions of the affected environment (i.e., the Delta), and are poorly developed or not developed at all for nearly all other water quality parameters and locations, nor for most of the conservation measures proposed for implementation.	There are other models that cover the same area for additional constituents (ammonia, nitrate, phosphorus, and others) or could be expanded to consider other constituents (methylmercury, pesticides, etc.). It is within the scope of this larger project to better develop these tools. The Central Valley Drinking Water Policy modeling efforts could be built on to better develop this. (http://www.waterboards.ca.gov/rwqcb5/water_issues/drinking_water_policy/dwp_wrkgrp_synthesis_rpt.pdf)
8.4.1	8-128	14-17	WQ	Conservative parameters were evaluated using available models used for SWP-CVP planning and operations (i.e., California Water Resources Simulation Model [CALSIM II, Delta Simulation Model 2 [DSM2], and Reclamation's Temperature Model) wherever applicable, as well as constituents directly addressed by these models, and included EC, DOC, and temperature.	DOC should not be considered a conservative constituent over large areas or time scales.
8.4.1	8-128	28-30	WQ, AM	In general, the fewest water quality changes of importance are expected to occur Upstream of the Delta, followed by the SWP/CVP Export Service Areas, with the greatest number and magnitude of water quality changes expected for the Plan Area.	We are concerned about the assumption that it is expected that the fewest water quality changes of importance are expected to occur upstream of the Delta. Potential water quality changes associated with revised CVP and SWP system operations to upstream waterbodies could be very significant to local users. This statement needs to be supported by water quality evaluations and verified in the future through the Adaptive Management program.
8.4.1	8-128	34-35	WQ	Models are available to simulate hydrodynamic and water quality changes within the Delta region.	Modeling should be performed in all BDCP affected areas so that all impacts can be sufficiently assesed. There are models such as WARMF that have also been developed for the watershed areas tributary to the Delta that were successfully integrated with CALSIM and DSM2.

BDCP/SDF

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8.4.1	8-129	3-13	WQ	The constituents of concern in the affected environment included both physically and chemically conservative and non-conservative parameters. The concentrations of conservative constituent tend to not be affected substantially by physical, chemical, or biological mechanisms that woul result in a loss of the constituent from the system. Thus, the concentrations of conservative constituents can be reasonably estimated and changes assessed with mass-balance accounting of the mixing of known volumes and concentrations of different water sources.	Conservative constituents can also have complex sources and sinks within the system that need to be accounted for, and simple mass balances over large areas and time periods must be accounted for in a model. This mass balance is essentially a conceptual model when it is used over these larger areas. The mass balance approach over large areas leads to additional uncertainty; incorrect conclusions can be drawn when time scales cannot be aligned properly.
8.4.1	8-129, 8-130	41-43, 1-4	WQ	It was determined that the action alternatives would result in all three categories of potential water quality effects within the Plan Area. However, based on the description of BDCP alternatives (see Chapter 3, Description of Alternatives) for construction activities or other conservation measures in the Upstream of the Delta and the SWP/CVP Export Service Area, water quality changes were expected to be minimal and, hence, are not addressed in as much detail. For those Alternatives that include specific CM1 measures in the Plan Area, however, a project specific level of analysis is included.	Insufficient information in the "Upstream of the Delta" areas is provided, especially impacts due to reservoir operations and reservoir stage. The areas just upstream from CM1 intakes past the CM2 diversions to the Feather River, in particular, could see thermal, flow, and reservoir impacts that could affect water quality and drinking water treatment. This reach of the river should be examined in detail.
8.4.1	8-130	28-30	WQ	Quantitatively evaluates constituents of primary concern where modeling tools were developed and were available for doing so, and qualitatively assesses effects where appropriate modeling tools were unavailable	Limiting assessment to available tools and science is insufficient for the scale of the project. The EIR/EIS does not adequately discuss the evaluated tools.
8.4.1	8-130	17-21	WQ	If the estimated water quality conditions for a constituent under an Alternative triggers one or more of the five water quality conditions defined as effects assessment criteria (NEPA) and thresholds of significance (CEQA) (see Section 8.3.2.3) at one or more of the assessment locations, then that Alternative was determined to have an adverse water quality effect (under NEPA) and a significant impact on water quality (under CEQA) for that water quality constituent or parameter.	This section reference is incorrect, and needs to be reviewed and revised.
8.4.1.1	8-130, 8-131	38-41, 1-39	WQ	*Ommissions*	The model assessment should include additional models or frameworks to evaluate non-conservative constituents and larger model domains (WARMF, HSPF, etc.). Also, the areas nearest to the proposed intakes should have higher resolution modeling for the adjacent areas.
8.4.1.2	8-131	41-43	WQ, SCOPE	Water quality changes in the affected environment upstream from the north-Delta boundary, which includes the Sacramento River to Shasta Lake, the Feather River to Lake Oroville, and the American River to Folsom Lake, were primarily assessed qualitatively.	The model domain and areas need to be described more specifically (e.g., Sacramento River at I Street to Keswick, etc.). Also, it is not clear where the 'detailed' modeling in the Sacramento Urban Area starts.

BDCP/SDT

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8.4.1.2	8-132	3- 11	WQ, WS	The assessment of water quality changes in water bodies upstream of the Delta relied, in part, on making determinations as to how reservoir storage and releases would be changed. Specific changes in reservoir storage and releases were determined from CALSIM II modeling of the SWP and CVP system (Appendix 5A describe the CALSIM II modeling performed in support of this assessment). Reservoir storage and river flow changes were then evaluated to make determinations regarding the capacity for the affected water bodies to provide dilution of watershed contaminant inputs. Also, if a particular parameter was found to be correlated to seasonal reservoir levels or river flows, how the parameter would be altered seasonally by operational changes in reservoir levels or river flows was assessed.	Consideration of upstream water quality impacts was very limited. The revised operation of CVP and SWP reservoirs could impact not only dilution ability but also the constituents present, such as trace metals, organic carbon, and pathogens, as well as changes due to temperature variability. A qualitative assessment of pesticides only considering dilution impacts is insufficient and does not take into consideration significant water quality factors, such as application and fate and transport. This qualitative assessment needs to be expanded for most constituents in the upstream of Delta area.
8.4.1.3	8-132	14-17	WQ	Using the methodology described below, changes in boron, bromide, chloride, mercury, methylmercury, nitrate, organic carbon, and selenium, within the Delta were determined quantitatively at 11 assessment locations (Figure 8-7),	The referenced Figure 8-7 has more than 11 "monitoring" points identified, and it is unclear which constituents were evaluated. Please provide a table that shows the constituents, types (e.g., quantitative), and locations of the assessments.
8.4.1.6	8-139	34-36	WS	Actions associated with new conveyance facilities and operations criteria that resulted in water quality changes associated with altered hydrodynamics, which were captured in the DSM2 modeling, were assessed quantitatively and discussed in Section 8.3.4.	This section reference is incorrect, and needs to be reviewed and revised.
8.4.1.6	8-139	37-39	WS	Restoration actions that would result in water quality changes associated with altered hydrodynamics, which were captured in the DSM2 modeling, are discussed in Section 8.3.4 as operations-related water quality changes (CM1).	This section reference is incorrect, and needs to be reviewed and revised.
8.4.1.6	8-140	8	WS	Table 8-38	This table indicates that CM 1 was the only conservation measure included in the CALSIM model evaluation to assess water quality impacts from revised hydrologic conditions. Since CM 2 includes a significant new diversion away from the Lower Sacramento River, CM 2 should have been included in that assessment as well, to identify water quality impacts to MUN users between Fremont Weir and Freeport.
8.4.1.7	8-141	4-6	ERROR	Water quality constituents are also discussed in section 8.1. Data in section 8.1 is meant to characterize general conditions in the affected environment, and water quality criteria and objectives presented in section 8.1 are a comprehensive set of all applicable criteria and objectives.	These section references are incorrect, and need to be reviewed and revised.
8.4.1.7	8-145	Table 8-42	ERROR	Table Footnote C - In some cases, data were reported as non-detects, and the entry contained an accompanying reporting limit. "Yes" indicates that at least one non-detect was replaced with the reporting limit in order to calculate summary statistics, while "No" indicates that this was not done, generally because no data were reported as non-detect.	For the purposes of calculating summary statistics it is not accurate to substitute "non-detects" with the reporting limit. The table should be updated to use an alternate presentation that is more reflective of conditions. See <http://pubs.acs.org/doi/pdf/10.1021/es053368a> for a discussion of appropriate methods.

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8.4.1.7	8-146 to 8-147	42-45, 1-2	WQ, WS	Bromide concentrations at a particular location and time in the Delta are determined primarily by the sources of water to that location, at a given time. Hence, long-term average concentrations at a particular Delta location are determined primarily by the long-term average sources of water to that location, and the long-term average concentration of bromide in each of the major source waters to the location. The major source waters to any given Delta location are: (1) Sacramento River, (2) San Joaquin River, (3) Bay water, (4) eastside tributaries, and (5) agricultural return water.	The use of long term average concentrations of bromide is unsupported given that the regulatory framework that this is applied to (disinfection by-products in the treated water) is based on a running annual average, calculated quarterly. The MUN beneficial use of the Sacramento River could be impacted very quickly if there is seawater intrusion occurring seasonally. Consideration should be made in this evaluation for the potential for seawater intrusion to impact water quality during a shorter interval period, similar to the evaluation for chloride.
8.4.1.7	8-149	16-18	WQ,WS	The effects of other conservation measures (i.e., CM2, CM3, and CM5–CM22) which do not substantially affect flows or Delta hydrodynamic conditions also were assessed qualitatively.	This statement is not correct, and the text needs to be revised. CM2 involves significant diversions from the Lower Sacramento River during an extended period of the year, which will significantly impact flows on the Sacramento River between Fremont Weir and the Delta.
8.4.1.7	8-162	2-7	ERROR	However, because nitrate concentrations vary considerably between the source waters to the Delta, conservative modeling via DSM2 and the mass-balance approach described in section 8.3.1.3 was employed to provide a characterization of changes in nitrate concentration anticipated as a result of changes in source water fractions throughout the Delta alone (using mean concentrations from Table 8-51, above).	This section reference is incorrect, and needs to be reviewed and revised.
8.4.1.7	8-162	30-32	ERROR	As discussed in the Methods For Analysis section (Section 8.3.1 above), DSM2 was utilized directly to model and predict DOC at 11 locations across the Delta, and the degree DOC changed under the various project alternatives.	This section reference is incorrect, and needs to be reviewed and revised.
8.4.1.7	8-162	32-36	ERROR	Because DOC is a precursor to the formation of DBPs which represent a long-term risk to human health, and because the existing source water quality goal is based on a running annual average, the quantitative assessment focuses on the degree to which an alternative may result in change in long-term average DOC concentrations at select locations upstream of the Delta, within the Delta, and in the SWP/CVP Export Service Areas.	The definition of long-term averaging needs to be specifically provided.
8.4.1.7	8-162	44	WQ	DOC in the Delta is generally considered to act conservatively; thus, the mass-balance modeling approach employed.	DOC is not a conservative constituent. Provide the basis for this assumption over the scope of the Delta residence time.
8.4.1.7	8-163	1-3	WQ	Moreover, the POC fraction would be largely removed through conventional drinking water treatment (State Water Project Contractors Authority 2007:3–2 19).	This statement is far too general to apply to the wide variety of water treatment facilities utilizing water in the Project Area. This should be revised to reflect that POC is more likely to be removed via physical processes than DOC but that removal rates can vary, as noted by the USEPA in the Stage 1 and 2 D/DBP Rules.

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8.4.1.7	8-163	11-16	WQ	In light of these source water goals and EPA's TOC removal action thresholds, the assessment of alternatives evaluates how each alternative would affect the frequency with which predicted future DOC concentrations would exceed 2, 3, and 4 mg/L on a long-term average basis at the assessment locations. Because, in many cases, the existing condition is one already exceeding 2 and 3 mg/L, the frequency with which DOC exceeds 4 mg/L becomes a key focus of the assessment, as well as the change in long-term average DOC concentration.	This statement reflects only the water quality conditions in the Delta. The areas upstream of the Delta have different water quality conditions related to organic carbon and have been able to maintain median source water levels below the 2 mg/L threshold as documented in the American and Sacramento Rivers Watershed Sanitary Survey and its Updates.
8.4.1.7	8-163	11-16	WQ	*see above*	References (for above comment): American River Watershed Sanitary Survey, 1998 Update, December 1998, Archibald & Wallberg Consultants, MWH American River Watershed Sanitary Survey, 2003 Update, December 2003, Archibald & Wallberg Consultants, MWH American River Watershed Sanitary Survey, 2008 Update, December 2008, Starr Consulting, Palencia Consulting Engineers American River Watershed Sanitary Survey, 2013 Update, December 2013, Starr Consulting, Palencia Consulting Engineers Sacramento River Watershed Sanitary Survey, 2000 Update, December 2000, Archibald & Wallberg Consultants et. Al. Sacramento River Watershed Sanitary Survey, 2005 Update, March 2006, MWH, Starr Consulting, Archibald & Wallberg Consultants Sacramento River Watershed Sanitary Survey, 2010 Update, December 2010, Starr Consulting, Palencia Consulting Engineers
8.4.1.7	8-163	35-37	WQ	Assessing pesticide-related effects is substantially challenged by: 1) limited available monitoring data in the Delta and other water bodies of the affected environment, and 2) a continually changing pesticide use market.	Although there are many challenges associated with assessing pesticide effects, monitoring data is not a controlling issue in the Central Valley. The Central Valley Regional Board Irrigated Lands Regulatory Program has collected and evaluated large amounts of data that should have been reviewed as part of this assessment. These evaluations can contribute to a better understanding of the priorities and vulnerabilities of the watershed. http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/water_quality_monitoring/index.shtml and http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/monitoring_plans_reports_reviews/index.shtml

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8.4.1.7	8-164	23-32	WQ	Perhaps more challenging than a limited monitoring effort is the dynamic state of the pesticide market. Regulatory and pest resistance pressures have left the pesticide market, namely the insecticide market, in a state of flux. Pesticide use varies from year to year depending on numerous external factors such as climate and associated pest outbreaks, cropping patterns, and economic trends in housing construction and urban development. Layered upon this year-to-year variation is an overall trend of decreased OP insecticides use and increased pyrethroid use, primarily due to the early regulatory phase-out of many OP insecticide uses initiated in early 2000. The market has yet to balance and reach equilibrium, and what limited and relatively short-term monitoring data that is available ultimately only represents a snapshot of a trend in the gradual replacement of many OP uses with that of pyrethroids. Until markets stabilize, trends will inevitably continue to develop.	Pesticide use is registered and relatively well understood. While urban uses are difficult to track, product availability is a good indicator. The "equilibrium" actually seems to be reached relatively quickly, and the noted paragraph should be further researched and updated for accuracy.
8.4.1.7	8-164, 8-165	44-46, 1-7	ERROR	And finally, if transported to surface waters, sufficient amounts of pesticide must be present that once diluted by surface water flows, the resulting concentration is of a magnitude capable of eliciting a measurable effect in aquatic life. All of these factors contribute in the end to the potential for adverse beneficial use effects, but of the many factors involved, CVP/SWP operations only affect river flows and, thus available dilution. In an estuary environment, where substantial dilution capacity typically occurs, duration of aquatic life exposure in addition to pesticide concentration is important. While the capacity of the Delta to dilute pesticide inputs is largely unaffected by CVP/SWP operations, the duration of exposure, or residence time, can be affected by operations. Therefore, in the Delta, changes in source water fractions represent long-term changes in exposure potential.	Concentrations of contaminants could increase in areas of lesser flow downstream from the North Delta intakes as the higher quality Sacramento River water is exported. Therefore, the qualitative conclusion should be that an increase is expected due to CM1.
8.4.1.7	8-165	22-24	WQ	Effects of alternatives on pesticides are primarily incidental and indirect, as existing and future sources of pesticide loading are largely unrelated.	Concentrations could increase in areas of lesser flow downstream from the intakes as the higher quality Sacramento River water is exported. Therefore, the qualitative conclusion should be that an increase in pesticides is expected.
8.4.1.7	8-169	12	ERROR	Water quality criteria used in the assessment of trace metals are presented in Table 8-51.	This table reference is incorrect, and needs to be reviewed and revised.
8.4.1.7	8-170	3	WQ	Table 8-58	This table does not include aluminum, which should have been included in the evaluation as per the Screening Assessment (Appendix 8C). This table needs to be updated, and the evaluation needs to be expanded.

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8.4.1.7	8-170	6-15	WQ	Throughout the trace metals assessment dissolved metals concentrations are utilized, because the dissolved fraction better approximates the bioavailable fraction to aquatic organisms. Furthermore, drinking water treatment plants readily remove particulate and suspended matter from raw water. While maximum contaminant levels for treated drinking water are measured on a total recoverable basis, the dissolved fraction of these metals is taken as the more accurate predictor of metals concentration post-treatment. This is particularly the case with iron and manganese which are both naturally abundant in soil. Total recoverable iron and manganese concentrations can be very high in water carrying a substantial load of suspended matter (i.e., TSS). Therefore, assessment of aquatic life and drinking water effects utilizes the dissolved fraction of trace metals in the environment.	The use of dissolved metals concentrations for MUN evaluation is fundamentally flawed and incorrect. The evaluation for trace metals relative to the MUN beneficial use needs to be reassessed based on total fraction. Compliance can be based on either raw or treated water levels, as per Title 22 Section 64432 (e), and needs to be considered. Conventional water treatment processes include coagulation, flocculation, sedimentation, and filtration, typically referred to as conventional filtration. The specific design parameters vary from facility to facility. The removal rate of a constituent will also vary from facility to facility, depending on source water quality and water treatment operations. The American Water Works Association has published a general treatment effectiveness table for a variety of constituents (Water Quality and Treatment, A Handbook of Community Water Systems. American Water Works Association,4th Ed. Table 3-1 General Effectiveness of Water Treatment Processes for Contaminant Removal (p 184-185)) . This table indicates that iron and manganese have a wide range of removal for conventional filtration, from 20 to 100 percent. Chromium also has a wide range of removal that depends on the species present, from zero to 100 percent. Aluminum generally has a fair removal rate, 20 to 60 percent, through conventional filtration. The statement also does not account for the additional costs associated with performing additional levels of removal associated with higher source water loading and potential increase in public health risk due to higher treated water levels.
8.4.2.1	8-173	15-36	WQ, ERROR	Screening Analysis and Results	See Separate Comments on Appendices 8 C-N
8.4.2.1	8-173	26-28	WQ	Of these, 15 are addressed further in the Screening Analysis itself in Appendix 8C because they did not warrant alternative-specific analyses, and 1—temperature—is addressed in Chapter 11, Fish and Aquatic Resources.	This evaluation needs to be expanded to include Temperature effects related to the MUN beneficial use. Temperature is a key general water quality parameter that has an impact on the source water quality, treatability (related to rate processes), and treated water quality for drinking water (Water Quality and Treatment, A Handbook of Community Water Systems. American Water Works Association,4th Ed.).
8.4.2.1	8-174	1	WQ	Table 8-61	Footnote 'e' needs to be revised to include chromium and iron.
8.4.2.2	8-174 to 8-175	9-10, 1-2	WQ	The CEQA baseline, "Existing Conditions", is defined in Appendix 3D, and for the purposes of the quantitative water quality assessments, is represented by Existing Conditions modeling runs, not historical water quality monitoring data as presented in Section 8.1.3.	The section reference is incorrect and needs to be reviewed and revised. Also, it is unclear why modeling output was used over real data to provide the basis for the Existing Conditions water quality assessment.
8.4.2.3	8-176	8- 9	ERROR	(applicable objectives/criteria are identified in Appendix 8A and the constituent-specific assessments in Section 8.3.1.7)	This section reference is incorrect, and needs to be reviewed and revised.

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8.4.2.3	8-177	30-35	WQ	As such, effects criterion/threshold #1 will identify significant impacts under CEQA when water quality under an alternative is anticipated to change substantially, thereby causing adverse effects to beneficial uses, and will avoid making such determinations when the violation of a water quality standard is too infrequent, low in magnitude, and/or isolated geographically to actually cause any adverse effects on beneficial uses of the water body or water body segment.	It is not clear what the phrase "low in magnitude" is intended to refer to relative to water quality standard exceedances. The 303(d) impairment listing guidance does not consider the magnitude of exceedances when finding impairments to beneficial uses. More specific guidance that demonstrates consistency with water quality regulation should be used and cited so that the review can properly evaluate the assessment of water quality impacts.
8.4.3.1	8-178	5 -7	ERROR	Per the description of comparisons made in this chapter which are discussed in section 8.3.2.2, this section contains the comparison of the No Action Alternative vs. Existing Conditions for CEQA purposes.	This section reference is incorrect, and needs to be reviewed and revised.
8.4.3.1	8-184	9-12	WQ, WS	While greater water demands under the No Action Alternative would alter the magnitude and timing of reservoir releases north and east of the Delta, these activities would have negligible, if any, effect on the sources, and ultimately the concentration of bromide in the Sacramento River, the eastside tributaries, and the various reservoirs of the related watersheds.	The No Action Alternative has climate change and sea level rise associated with it; therefore, the potential for reverse flows in the Sacramento River and increased tidal influence should have been included in the evaluation for bromide. These influences could impact the frequency and concentration of peak bromide levels (shown to be 100 ug/L at Hood in Table 8-43).
8.4.3.1	8-187	19-22	WQ, WS	Consequently, changes in the magnitude and timing of reservoir releases and river flows upstream of the Delta would have negligible, if any, effect on chloride sources, and ultimately the concentration of chloride in the Sacramento River, the eastside tributaries, and the various reservoirs of the related watersheds.	The No Action Alternative has climate change and sea level rise associated with it. Therefore, the potential for reverse flows in the Sacramento River and increased tidal influence should have been included in the evaluation for chloride. These influences could impact the frequency and concentration of peak chloride levels (shown to be 33 mg/L at Hood in Table 8-45).
8.4.3.1	8-194	40-43	WQ, WS	Based on these considerations, EC levels (highs, lows, typical conditions) in the Sacramento River and its tributaries, the eastside tributaries, or their associated reservoirs upstream of the Delta would not be expected to be outside the ranges occurring under Existing Conditions.	The No Action Alternative has climate change and sea level rise associated with it; therefore, the potential for reverse flows in the Sacramento River and increased tidal influence should have been included in the evaluation for EC. These influences could impact the frequency and concentration of peak EC levels.
8.4.3.1	8-204	13-16	WQ, WS	Consequently, long-term average DOC concentrations under the No Action Alternative would not be expected to change by frequency, magnitude and geographic extent, relative to Existing Conditions and, and thus, would not adversely affect the MUN beneficial use, or any other beneficial uses, in water bodies of the affected environment located upstream of the Delta.	The evaluation of DOC concentrations does not take into account timing of reservoir releases and impacts on dilution of downstream sources, the potential for diverted flows at Fremont Weir to siphon lower organic carbon water from the Feather River and American Rivers away from the Lower Sacramento River, and climate change impacts. Climate change impacts have the potential for increased temperatures to impact algal growth that can increase organic carbon levels and for increased intensity storm events to transport more organic carbon from the watershed. These should be considered in the evaluation.

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8.4.3.1	8-206	41-43	WQ, WS	Pathogen concentrations in the Sacramento and San Joaquin Rivers have a minimal relationship to flow rate in these rivers, although most of the high concentrations observed have been during the wet months (Tetra Tech 2007).	Coliform concentrations in the Sacramento area do show an increase in wet periods as well (American and Sacramento River Watershed Sanitary Surveys and Updates); since climate changes include the increase in precipitation in Northern California and the increase in storm intensity, an evaluation should be conducted to determine if climate change could impact the concentrations of source water levels of pathogens.
8.4.3.1	8-208	9-14	WQ	Cryptosporidium and Giardia, Data were available only for the Sacramento River, limiting the ability to make comparisons between sources. Often not detected and when detected, concentrations typically less than 1 organism per liter. There may be natural/artificial barriers/processes that limit transport to water. Significant die off of those that reach the water contribute to the low frequency of detection.	This comment is typical to all the pathogen evaluations for the NAA and all action alternatives. Related to protozoa, there has been a gross misrepresentation and interpretation of the evaluation conducted as part of the Conceptual Model for Pathogens and Pathogen Indicators in the Central Valley. The Conceptual Model notes that there was limited data availability for protozoa for the study and presents what was available as a general indicator, not a confirmed source assessment or quantification of risk. It should be noted that Cryptosporidium and Giardia source water concentrations of 1 organism per liter would trigger additional treatment requirements under the SWTRs, and these levels are not considered low. The statement that there is significant die off contributing to low frequency of detection is incorrect on two fronts. First of all, protozoa are notable resistant in the ambient environment with low rates of decay as shown in Table 4-1 and Figure 4-1 and discussed in Chapter 2 of the Conceptual Model. In addition, they can be resistant to conventional filtration, so high source water concentrations require additional treatment. Finally, the Conceptual Model shows that Giardia was detectable in 45 to 70 percent of samples, Figure 3-4, which is frequent.
8.4.3.1	8-208	23-28	ERROR	The effects of the No Action Alternative relative to Existing Conditions would be changes in the relative percentage of water throughout the Delta being comprised of various source waters (i.e., water from the Sacramento River, San Joaquin River, Bay water, eastside tributaries, and agricultural return flow), due to potential changes in inflows particularly from the Sacramento River watershed due to increased water demands (see Table 8-55) and somewhat modified SWP and CVP operations.	This table reference is incorrect, and needs to be reviewed and revised.
8.4.3.1	8-210	2-3	WQ	Therefore, the pesticide assessment focuses on the present use pesticides for which substantial information is available, namely diazinon, chlorpyrifos, pyrethroids, and diuron.	The basis for selection of present use pesticides assessed in this report is insufficient. More information needs to be presented to explain why other pesticides of interest were not included, other than a lack of data for the limited sites included in the data evaluation.

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8.4.3.1	8-211	19-24	WQ, WS	However, summer average flow reductions of up to 12%, relative to Existing Conditions, are not considered of sufficient magnitude to substantially increase in-river concentrations or alter the long-term risk of pesticide-related effects on aquatic life beneficial uses. Greater long-term average flow reductions, and corresponding reductions in dilution/assimilative capacity, would be necessary before long-term risk of pesticide related effects on aquatic life beneficial uses would be adversely altered.	More information is needed to support the lack of sufficiency of flow reductions to impact ambient water concentrations of pesticides. The reliance upon assimilative capacity may not be valid if discharging to a high quality waterbody since it may show a trend of degradation.
8.4.3.1	8-219	34-42	WQ, WS	Relative to Existing Conditions, under the No Action Alternative sources of trace metals would not be expected to change substantially with exception to sources related to population growth, such as increased municipal wastewater discharges and development contributing to increased urban runoff. Facility operations could have an effect on these sources if concentrations of dissolved metals were closely correlated to river flow, suggesting that changes in river flow, and the related capacity to dilute these sources, could ultimately have a substantial effect on long-term metals concentrations. On the Sacramento River, available dissolved trace metals data and river flow at Freeport are poorly associated (Appendix 8N, Figure 1).	This section has not included a fair and complete assessment of impacts on source water concentrations upstream of the Delta of trace metals and needs to be revised. The BDCP has asserted that the construction of the upstream dams has allowed downstream levels of metals to be reduced by trapping the particulate matter containing those metals. An assessment of reservoir storage volumes relative to dissolved metals concentrations should have been conducted. Low lake levels can result in stratifications and diversions from anoxic zones, which may have higher concentrations of dissolved metals that are resuspended from sediment. Metals concentrations should be evaluated for total fraction and compared with reservoir storage levels as well as flow.
8.4.3.1	8-220	4-11	WQ, WS	Given the poor association of dissolved trace metal concentrations with flow, river flow rate and reservoir storage reductions that would occur under the No Action Alternative, relative to Existing Conditions, would not be expected to result in a substantial adverse change in trace metal concentrations in the reservoirs and rivers upstream of the Delta. As such, the No Action Alternative would not be expected to substantially increase the frequency with which applicable Basin Plan objectives or CTR criteria would be exceeded in water bodies of the affected environment located upstream of the Delta or substantially degrade the quality of these water bodies, with regard to trace metals.	This section has a conclusion which is not proven, since no comparison was made with the total fraction of the metals and no correlations were assessed between the metals and reservoir levels. This statement needs to be revised based on a reevaluation of the data.
8.4.3.1	8-220	30-32	WQ	The arsenic criterion was established to protect human health from the effects of long-term chronic exposure, while secondary maximum contaminant levels for iron and manganese were established as reasonable goals for drinking water quality.	This text incorrectly states that MCLs for iron and manganese are "reasonable goals". California water systems are required to comply with these drinking water standards, and the text needs to be revised to reflect the condition. See Title 22, Chapter 15 (http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf)
8.4.3.1	8-220	33-34	WQ	The primary source water average concentrations for arsenic, iron, and manganese are below these criteria.	This text is misleading since the total fraction of iron and manganese are both higher than the criteria. A reassessment needs to be conducted to evaluate the total fraction, and this text needs to be clarified.

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8.4.3.1	8-222	17-21	WQ	Because of such a relationship, the changes in mean monthly average river flows under the No Action Alternative are not expected to cause river TSS concentrations or turbidity levels (highs, lows, typical conditions) to be outside the ranges occurring under Existing Conditions. Consequently, this alternative is expected to have minimal effect on TSS concentrations and turbidity levels in the reservoirs and rivers upstream of the Delta, relative to Existing Conditions.	This assessment does not account for other reservoir operations that may affect the turbidity of the ambient water quality, as noted in previous comments on Section 8.2.3.17. Also, climate change conditions may result in increased fire risk and storm intensity that could contribute increased solids loading to the waterbodies.
8.4.3.9	8-408	19-30	WQ	Under Alternative 4, over the long term, average annual delta exports are anticipated to range from an increase of 112 TAF under scenario H1 to a decrease by 730 TAF under scenario H4 relative to Existing Conditions, and an increase by 815 TAF under scenario H1 to a decrease of 27 TAF under scenario H4 relative to the No Action Alternative. Since, over the long-term, between 47 (scenario H1) and 49% (scenario H4) of the exported water will be from the new north Delta intakes, average monthly diversions at the south Delta intakes would be decreased because of the shift in diversions to the north Delta intakes (see Chapter 5, Water Supply, for more information). The result of this is increased San Joaquin River water influence throughout the south, west, and interior Delta, and a corresponding decrease in Sacramento River water influence. This can be seen, for example, in Appendix 8D, ALT 4, H3–Old River at Rock Slough for ALL years (1976–1991), which show increased San Joaquin River (SJR) percentage and decreased Sacramento River (SAC) percentage under the alternative, relative to Existing Conditions and the No Action Alternative.	The analysis should report and evaluate in more detail the effects on hydrodynamics in the Sacramento River up to the I Street Bridge, due to the fact that the significant reduction in Sacramento River flows downstream of Hood will certainly increase tidal influences on the upstream reach. The evaluation should include points between Emmaton and I Street.
8.4.3.9	8-416	17-19	WQ	Bromide loading in these watersheds would remain unchanged and resultant changes in flows from altered system-wide operations under Alternative 4 would have negligible, if any, effects on the concentration of bromide in the rivers and reservoirs of these watersheds.	Similar to the comment on the No Action Alternative, there needs to be further assessment of the potential for reverse flow to propagate further upstream on the Sacramento River, increasing seawater intrusion upstream of the Delta (due to both CM1 and CM2) and increasing seasonal, peak bromide levels.
8.4.3.9	8-422	39-43	ERROR	Modeling scenarios included assumptions regarding how certain habitat restoration activities would affect Delta hydrodynamics (CM2 and CM4), and thus such hydrodynamic effects of these restoration measures were included in the assessment of CM1 facilities operations and maintenance (see Impact WQ-1).	The reference to Impact WQ-1 does not appear correct. This needs to be reviewed and revised.
8.4.3.9	8-423	37-40	WQ	Consequently, the Alternative 4 H1–H4 Scenarios would not be expected to cause exceedances of chloride objectives/criteria or substantially degrade water quality with respect to chloride, and thus would not adversely affect any beneficial uses of the Sacramento River, the eastside tributaries, associated reservoirs upstream of the Delta, or the San Joaquin River.	There needs to be further assessment of the potential for reverse flow to propagate further upstream on the Sacramento River, increasing seawater intrusion upstream of the Delta (due to both CM1 and CM2) and increasing seasonal, peak chloride levels.

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8.4.3.9	8-424	21	ERROR	More discussion of this phenomenon is included in Section 8.3.1.3.	This section reference is incorrect and needs to be reviewed and revised.
8.4.3.9	8-436	14-17	WQ, WS	Based on these considerations, EC levels (highs, lows, typical conditions) in the Sacramento River and its tributaries, the eastside tributaries, or their associated reservoirs upstream of the Delta would not be expected to be outside the ranges occurring under Existing Conditions or the No Action Alternative.	Similar to the comment on the No Action Alternative, there needs to be further assessment of the potential for reverse flow to propagate further upstream on the Sacramento River, increasing seawater intrusion upstream of the Delta (due to both CM1 and CM2) and increasing seasonal, peak EC levels.
8.4.3.9	8-439	36-44	WQ	River flow rate and reservoir storage reductions that would occur under Alternative 4, Scenarios H1–H4, relative to Existing Conditions, would not be expected to result in a substantial adverse change in EC levels in the reservoirs and rivers upstream of the Delta, given that: changes in the quality of watershed runoff and reservoir inflows would not be expected to occur in the future; the state's aggressive regulation of point-source discharge effects on Delta salinity-elevating parameters and the expected further regulation as salt management plans are developed; the salt-related TMDLs adopted and being developed for the San Joaquin River; and the expected improvement in lower San Joaquin River average EC levels commensurate with the lower EC of the irrigation water deliveries from the Delta.	It is unclear if the regulatory programs and water quality policies described are intended as a mitigation measure. Regulatory programs like CV-SALTS will be dramatically affected by the BDCP and will likely require a "grand" solution to prevent the continued accumulation of salts in the Central Valley. Operation of the water exports has amplified the problem, and the BDCP should also address this long-term issue. It is insufficient to assume that salt accumulation will resolve itself through regulatory programs. Further, the proposed mitigation measures are continued assessment and investigative approaches that do not commit to actual reductions in salinity.
8.4.3.9	8-446	17-21	WQ	BDCP Conservation Measure 12 (CM12) addresses the potential for methylmercury bioaccumulation associated with restoration activities and acknowledges the uncertainties associated with mitigating or minimizing this potential effect. CM12 proposes project-specific mercury management plans for restoration actions that will incorporate relevant approaches recommended in Phase 1 Methylmercury TMDL control studies.	As a bioaccumulate, the load of methylmercury should be considered as well in the evaluation of impacts, including detailed assessments at locations in the Delta and upstream. The effects of the restoration areas are not adequately characterized in the water quality analysis. The effects should be estimated to provide a better sense of the uncertainty and potential range of loads and concentrations associated with the BDCP actions. At a minimum, the EIR/EIS should evaluate consistency with the Delta Methylmercury TMDL allocations for each of the subregions and how the BDCP would impact compliance with the TMDL targets for each area.
8.4.3.9	8-446, 8-447	3-42, 1-2	WQ	Impact WQ-14: Effects on Mercury Concentrations Resulting from Implementation of CM2–22	The evaluation concludes that there are adverse impacts and significant uncertainties, but it does not propose mitigation measures to reduce methylmercury loads or concentrations. The Delta is impaired for methylmercury with no available assimilative capacity. The evaluation should consider mitigation measures to reduce the potential load increase. Numerous mitigation measures (e.g., offset in other historic source locations) should be considered as part of the TMDL Phase 1 evaluation.

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8.4.3.9	8-447	3-8	WQ	There would be no substantial, long-term increase in mercury or methylmercury concentrations or loads in the rivers and reservoirs upstream of the Delta or the waters exported to the CVP and SWP service areas due to implementation of CM2–CM22 relative to Existing Conditions. However, in the Delta, uptake of mercury from water and/or methylation of inorganic mercury may increase to an unquantified degree as part of the creation of new, marshy, shallow, or organic-rich restoration areas.	The Sacramento River reach between Veterans Bridge and Emmaton is not adequately characterized and is not consistent with the previous NEPA finding of adverse effects due to uncertainty, since this reach would be affected by the restoration areas that introduce the uncertainty. Throughout this assessment, this reach is not evaluated sufficiently.
8.4.3.9	8-451	27-31	CM19, WQ	Because urban stormwater is a source of nitrate in the affected environment, CM19, Urban Stormwater Treatment, is expected to slightly reduce nitrate loading to the Delta, thus slightly decreasing nitrate-N concentrations relative to the No Action Alternative. Implementation of CM12–CM18 and CM20–CM22 is not expected to substantially alter nitrate concentrations in any of the water bodies of the affected environment.	Urban wet weather runoff is generally low in nitrates, and the conclusion that CM19 would reduce nitrate concentrations is unfounded. A reference should be provided that demonstrates that urban wet weather runoff is high in nitrates should be provided. In some cases, especially in the San Joaquin River, urban runoff dilutes river concentrations. Many CM19 and current low impact development (LID) control measures are intended to reduce flows. Restoration areas use groundwater that is higher in nitrates for habitat flows.
8.4.3.9	8-452	11-18	WQ, WS	Thus changes in system operations and resulting reservoir storage levels and river flows under the various operational scenarios of Alternative 4 would not be expected to cause a substantial long-term change in DOC concentrations in the water bodies upstream of the Delta. Any negligible changes in DOC levels in water bodies upstream of the Delta under Scenarios H1–H4 of Alternative 4, relative to Existing Conditions and the No Action Alternative, would not be of sufficient frequency, magnitude and geographic extent that would adversely affect any beneficial uses or substantially degrade the quality of these water bodies, with regards to DOC.	Similar to the previous comment on the No Action Alternative. There needs to be further assessment of the other factors potentially influencing organic carbon concentrations in the source water quality, both in the Delta and upstream of the Delta. Factors that should be assessed include changes due to revised reservoir operations, increase in diverted flows at Yolo Bypass, and climate change impacts.
8.4.3.9	8-456	12-20	CM19, WQ	Implementation of CM12–CM22 would not be expected to have substantial, if even measurable, effect on DOC concentrations upstream of the Delta, within the Delta, and in the SWP/CVP service areas. Consequently, any negligible increases in DOC levels in these areas of the affected environment are not expected to be of sufficient frequency, magnitude and geographic extent that they would adversely affect the MUN beneficial use, or any other beneficial uses, of the affected environment, nor would potential increases substantially degrade water quality with regards to DOC.	This conclusion statement is inaccurate and misleading, and the assessment is insufficient. The conclusion seems in contrast to some conclusions in CM2-CM5 and CM7-CM12 that could affect organic carbon. In some cases, increases of 0.5 mg/L were projected that could impact MUN beneficial uses by requiring additional water treatment. This increase is a substantial fraction of current concentrations. A more detailed assessment should be performed to evaluate the impact on beneficial uses.
8.4.3.9	8-456	21-24	WQ, WS	Change in Delta hydrodynamics involves a two part process, including the conveyance facilities and operational scenarios of CM1, as well as the change in Delta channel geometry and open water areas that would occur as a consequence of implementing tidal wetland restoration measures such as that described for CM4.	Since CM2 results in significant flows diverted from the Sacramento River seasonally, this can also impact the hydrodynamics and thus should have been included in the evaluation on the impact to DOC, both in the Delta and upstream of the Delta.
8.4.3.9	8-457	32-33	WQ	Furthermore, DOC is not bioaccumulative, therefore changes in DOC concentrations would not cause bioaccumulative problems in aquatic life or humans.	While DOC is not bioaccumulative, the effect on human health is as a disinfection byproduct precursor, such that it should essentially be considered bioaccumulative, depending on the context of the analysis.

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8.4.3.9	8-458	8-38	WQ	The BDCP proponents will also establish measures to help guide the design and creation of the target wetland habitats. At a minimum, the measures should limit potential increases in long-term average DOC concentrations, and thus guide efforts to site, design, and maintain wetland and riparian habitat features, consistent with the biological goals and objectives of the BDCP. For example, restoration activities could be designed and located with the goal of preventing, consistent with the biological goals and objectives of the BDCP, net long-term average DOC concentration increases of greater than 0.5 mg/L at any municipal intake location within the Delta.	As presented, mitigation measure WQ-18 notes that it may not be possible to include the measure in light of other BDCP goals. Furthermore, there are insufficient assurances in place on how the BDCP will monitor future changes in DOC and causes of impairments to municipal drinking water intakes. The EIR/EIS should evaluate the impact on drinking water intakes and treatment if mitigation is not implemented or effective.
8.4.3.9	8-458	39-40	WQ, WS	Impact WQ-19, Effects on Pathogens	See other comments on pathogen text in the No Action Alternative.
8.4.3.9	8-462	21-26	WQ	Because of a great deal of scientific uncertainty in the loading of coliforms from these various sources, the resulting change in coliform loading is uncertain, but it is anticipated that coliform loading to Delta waters would increase. Based on findings from the Pathogens Conceptual Model that pathogen concentrations are greatly influenced by the proximity to the source, this could result in localized increases in wildlife-related coliforms relative to the No Action Alternative.	Mitigation should be required based on the uncertainty of coliform and pathogen source changes from new restoration areas and the conclusion that restoration areas would increase concentrations of pathogens. The July 2013 Basin Plan Amendment includes narrative objectives for Giardia and Crytosporidium and trigger levels for investigative action. The CEQA and NEPA impact assessment is insufficient because these triggers are not properly evaluated and the finding of "not adverse" is inconsistent with the Basin Plan if drinking water intakes are impacted.
8.4.3.9	8-464	11-14	WQ	Monitoring for pyrethroid insecticides in main-stem rivers is limited and detections are rather few. With the replacement of many traditionally OP related uses, however, it is conservatively assumed that pyrethroid incidence and associated toxicity could ultimately take a pattern of seasonality similar to that of the chlorpyrifos or diazinon.	There is much data in the Sacramento Delta collected in the last five years by the CMP (15-20 data points). Pyrethroids have a different transport mechanism, decay rate, effect levels, and application pattern, and it is not reasonable to assume that "toxicity patterns" would be similar to OP Pesticides.
8.4.3.9	8-464	40-42	WQ, WS	However, summer average flow reductions of up to 19% are not considered of sufficient magnitude to substantially increase in-river concentrations or alter the long-term risk of pesticide-related effects on aquatic life beneficial uses.	More information is needed to support the lack of sufficiency of flow reductions to impact ambient water concentrations of pesticides. The reliance upon assimilative capacity may not be valid if discharging to a high quality waterbody, since it may show a trend of degradation
8.4.3.9	8-467	25-28	WQ	Because long-term average pesticide concentrations are not expected to increase substantially, no long-term water quality degradation with respect to pesticides is expected to occur and, thus, no adverse effects on beneficial uses would occur. This impact is considered to be less than significant. No mitigation is required.	The EIR/EIS does not adequately nor sufficiently discuss the uncertainty of this broad conclusion. There are a number of factors that may require additional pesticide use such as invasive weed productivity interfering with CM1 or CM2 operation due to climate change, increased agricultural applications due to climate change, and the unknown effect of the changes in flow patterns that may alter "scour" and dilution of pesticides already in the system. This finding is inaccurate since a number of the conservation measures may increase pesticide concentrations, and it is not clear whether or when each conservation measure will be completed.

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8.4.3.9	8-467	25-28	WQ	Because long-term average pesticide concentrations are not expected to increase substantially, no long-term water quality degradation with respect to pesticides is expected to occur and, thus, no adverse effects on beneficial uses would occur. This impact is considered to be less than significant. No mitigation is required.	The uncertainty with the broad conclusion is not sufficiently evaluated. There are reasonable conditions which may lead to increases in pesticides that should be evaluated. It is misleading to draw this broad conclusion based only on qualitative assessments when quantitative approaches are feasible and data are available. The EIR/EIS should perform a quantitative computational modeling effort to evaluate pesticide concentrations.
8.4.3.9	8-479	10-13	WQ, WS	Facility operations could have an effect on these sources if concentrations of dissolved metals were closely correlated to river flow, suggesting that changes in river flow, and the related capacity to dilute these sources, could ultimately have a substantial effect on long-term metals concentrations.	Reservoir operation will control the elevation, thus storage volume, in the reservoirs. These volumes could result in stratification of the reservoir and impacts to the concentration of dissolved metals in the water discharged to downstream rivers and should be evaluated. The USGS NAWQA program has identified upstream reservoirs and mines as sources of trace metals (http://ca.water.usgs.gov/user_projects/sac_nawqa/study_description.html) Metals evaluations need to be conducted on total metals fraction relationship to storage volumes, to account for impacts to drinking water treatment requirements and treated water levels.
8A	8A-1	Table 8A-1	WS, ERROR	1,1,1-trichlorobenzene MCL 0.2 mg/L	This is incorrect. No standard exists for this constituent. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf
8A	8A-1	Table 8A-1	WS, ERROR	1,1,1-trichloroethane	There is an MCL of 0.2 mg/L which should be shown in the last column. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf
8A	8A-1	Table 8A-1	WS, ERROR	1,1,2-trichloro-1,2,2-trifluoroethane MCL 0.12 mg/L	This is incorrect. The MCL is 1.2 mg/L for this constituent. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf
8A	8A-1	Table 8A-1	WS, ERROR	1,1,2-trichlorobenzene MCL 0.005 mg/L	This is incorrect. No standard exists for this constituent. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf
8A	8A-1	Table 8A-1	WS, ERROR	1,1,2-trichloroethane	There is an MCL of 0.005 mg/L, which should be shown in the last column. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf
8A	8A-1	Table 8A-1	WS, ERROR	1,2-dichloropropene MCL 0.005 mg/L	This is incorrect. No standard exists for this constituent. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf
8A	8A-1	Table 8A-1	WS, ERROR	1,2-dichloropropane	There is an MCL of 0.005 mg/L, which should be shown in the last column. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf
8A	8A-2	Table 8A-1	WS, ERROR	Arsenic MCL 0.01 mg/L	This is incorrect. The MCL is 0.010 mg/L for this constituent. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf

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8A	8A-5	Table 8A-1	WS, ERROR	Sulfate	There is an MCL of 250 mg/L for this constituent, and it should be added to the table. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Recentlyadoptedregulations/R-21-03-finalregtext.pdf
8A	8A-5	Table 8A-1	WS, ERROR	Thiobencarb MCL 0.001 mg/L	This is incorrect. There is a primary and a secondary MCL for this constituent, and it should be represented by both 0.07/0.001 mg/L. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf
8A	8A-5	Table 8A-1	WS, ERROR	Toxaphene MCL 0.003 and 0.005 mg/L	There should only be one line for toxaphene, and the correct MCL is 0.003 mg/L. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-2-13-2014.pdf
8A	8A-14	Table 8A-3	WS, ERROR	Chemical Constituents Narrative	This narrative water quality objective needs to be included as it applies to the Region 5 Basin Plan and includes organic carbon as per the Drinking Water Policy. http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/resolutions/r5-2013-0098_res.pdf
8B	8B-1 to 8B-5	Table B-1	WQ, WS, SCOPE	Summary of Data Availability for Use in Environmental Setting	Four sites are located upstream of the Delta in the North (Sacramento River at Keswick, Feather River at Oroville, American River at WTP, and Sacramento River at Verona). The table needs additional footnotes explaining the specific programs and sources of data for each constituent. Many constituents of interest for drinking water do not have any data evaluated at any of these four sites. The limited data do not support that a complete assessment has been conducted for the area upstream of the Delta, and this data should have been supplemented with available data from existing MUN users in the Sacramento metropolitan area.
8C.1	8C-1	4-5	WQ	A constituent "screening analysis" was performed as the first portion of the overall analysis of water quality effects of implementing the Alternatives.	This process is fundamentally flawed as it was focused on evaluating only the data that was readily available at the few sites selected for ease of data acquisition. As noted in the comment on Appendix 8B, there was limited data available at the selected sites upstream of the Delta in the Sacramento River system. There is significantly more data readily available in the Sacramento Valley, as presented in other comments herein. The process should have identified water quality constituents of concern, based on the applicable beneficial uses, and then targeted data collection on those constituents in order to determine the water quality effects of the BDCP.
8C.1	8C-1	20	WQ, WS, ERROR	This screening analysis evaluated 182 water quality constituents/parameters.	The list of constituents provided in Step 1 (Table SA-6) is missing 36 constituents with primary or secondary MCLs in drinking water. All of those regulated constituents should have been placed on an initial screening list (perhaps as part of Step 4) to determine if they needed to be evaluated and if data was readily available to assess.

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8C.1.1	8C-1	35-38	WQ, SCOPE	However, for consistency and due to data availability concerns, the input data for the screening analysis was limited to two data sets that were publically available via the web and managed by a public agency (i.e., data from the DWR Water Data Library and the Bay Delta and Tributaries Project [BDAT]).	Although these data sets do provide ease of obtaining and consistency in evaluation, neither program is focused on evaluating the MUN beneficial use; therefore, the data sets are insufficient in terms of the number of constituents and the number of data points to assess the water quality impacts to that and other beneficial uses. The data collection should have targeted key constituents and geographic areas where additional data should have been obtained from other reliable programs such as CDPH compliance monitoring and Central Valley Regional Water Board WDR and NPDES permit monitoring.
8C.1.1.1	8C-2	5	WQ, SCOPE	Table SA-1	The Sacramento River upstream of the Delta is solely represented by five sites located within the Delta (at Hood and Greene's Landing) and therefore not representative of upstream conditions. For example, there are significant differences in water quality, such as presence and detectability of pesticides from upstream agriculture, which cannot be assessed at the Delta sites for potential impacts to upstream water quality from reduced dilution. This analysis was too limited in scope and should have been expanded to target key geographic areas upstream of the Delta.
8C.1.2	8C-3	2-4	WQ	Because modeling performed in support of the Environmental Consequences impact assessments assumed no new sources of water quality constituents, water quality concerns arise primarily through altered mixing of Delta source waters.	The broad statement is misleading and should be corrected. New sources may exist in the restoration wetlands and other conservation measures. What is the basis for assuming that there are no new sources? Pathogens, methylmercury, organic carbon, and potentially increased use of groundwater to offset upstream supply restrictions during droughts are all constituents where new sources (restoration areas, water supply changes, etc.) should be considered as part of the EIR/EIS.
8C.1.3.1.2	8C-6	14-18	WQ	Available tools were considered appropriate for modeling only those constituents that could be assumed to be conservative (i.e., not transformed into a new constituent or lost as water flows through the system). Constituents of concern that could not be analyzed through quantitative modeling, or for which it was determined that quantitative modeling was not necessary for an environmental impacts determination, were carried forward for qualitative analysis.	This is an unnecessary limitation. The BDCP should be required to collect additional data and develop modeling tools for all constituents of concern.
8C.1.3.2	8C-6	21	WS, ERROR	Summary of Source Water Data (Step 1) -	This process is missing 36 constituents with primary or secondary MCLs in drinking water. There are five constituents that we recommend be added to the screening analysis, at a minimum, including aluminum, perchlorate, 1,1,2-trichloro-1,2,2-trifluoroethane, di (2-ethylhexyl) adipate, and di (2-ethylhexyl) phthalate based on potential risk to source water quality.
8C and 8C.1.3.2.1	8C-6	28-30	ERROR	In addition to the 28 summary characteristics identified in Section 4.4.2.1 and Section 4.4.2.2, the following were 29 determined across all source water locations.	This section reference is incorrect and needs to be reviewed and revised.

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8C.1.3.3	8C-7	18	WQ, ERROR	Determine if maximum detect exceeds minimum applicable criterion	The primary drinking water standards for metals are based upon the total fraction of the metal in analysis, not the dissolved fraction as per SDWA. Drinking water treatment provides variable levels of metals reduction, depending on the process, other water quality criteria, and the fraction total/dissolved metals present. It is incorrect to apply the metals MCLs to the dissolved fraction for analysis, and this needs to be revised.
8C.1.3.3	8C-7	20	WQ	Determine if constituent is of concern based on professional judgment	It is unclear what is the basis for professional judgment to carry *E. coli* forward for Step 5 evaluation. If this is based on impacts to the MUN beneficial use, E. coli is only used as a surrogate to represent potential risk to human health from pathogens. Source water concentrations of E. coli can be used by the California DPH if direct monitoring of Giardia and viruses is not available to determine the level of treatment required at a water treatment plant (based on the SWTR and its USEPA and California DPH guidance documents). This needs to be clarified and specified for what trigger levels will be used.
8C.1.3.4	8C-8	6	WQ	Determine if constituent is of concern based on professional judgment	It is unclear what is the basis for professional judgment related to total and fecal coliform and Giardia and Cryptosporidium evaluations. The concentrations of these constituents in the source water are what determine the level of treatment required in the source water, as per the SWTRs, and therefore they are of significant concern to the MUN use. These constituents are not carried forward for evaluation for the MUN use; this needs to be reevaluated, based on limited data and the significance of the constituents.
8C.1.3.5	8C-8	14-16	WQ	Non-detect constituents carried forward from screening in Step 3 and additional constituents of concern not analyzed for in the dataset (e.g., pyrethroids and dioxins) were assessed against the following triggers for potential detailed assessment.	The process for selecting additional constituents of concern needs to be described. There are many drinking water constituents with regulatory standards that were not included and should have been evaluated and considered for inclusion that are not included in Table SA-9 (See comment on Step 1 evaluation).
8C.1.3.6	8C-8	30-31	WQ	Determine if adequate modeling tools, relative to the physical/chemical properties of the constituent, exist to perform a quantitative assessment in the Delta	Please provide a basis for making this determination of adequate modeling tools and which tools were evaluated and why they were not found to be adequate. Certainly, such tools should be available for adaptive management, and beginning with these tools now would provide much needed information.
8C.1.3.6	8C-8	32-34	WQ	Determine if a quantitative assessment is necessary to determine the potential environmental impact (e.g., when all source water concentrations are similar, then the mixed condition is predictable without quantitative modeling)	The suggested approach that modeling is only necessary for hydrodynamics (i.e., blended sources of the same magnitude are essentially 'mixed') does not consider non-conservative processes or the additive effects of some toxicants. All assessments should be based on quantitative approaches.

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8C.1.4.4	8C-11	12-13	WQ	Decreasing the thresholds to nine would trigger quantitative analysis of iron and manganese. Further threshold reductions to six would trigger chromium.	This finding of the Sensitivity Analysis supports that iron, manganese, and chromium need to be carried forward in the Screening Analysis and examined in more detail in Chapter 8.
8C.1.5.2	8C-12	38-40	WS, ERROR	Secondary MCLs are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations.	This statement is incorrect. Secondary MCLs are enforceable standards for public water systems in California as per Title 22, Chapter 15, Article 16. The text needs to be revised accordingly and the evaluation reconsidered.
8C.1.5.2	8C-13	5-7	WS	Coagulation/flocculation and filtration remove metals like iron, manganese, and zinc. Aeration removes iron and manganese. Granular activated carbon removes most of the contaminants which cause color (U.S. EPA 2012b).	The efficiency of conventional filtration to remove metals is highly variable (AWWA Water Quality and Treatment, 4th Ed., Table 3.1) and should not be represented as consistent. Also, aeration and GAC are not standard treatment processes implemented by most MUN users and should not be identified as typically available treatment.
8C	8C-22	Table SA-6.	WQ	*Error*	The basis for calculation of means and standard deviations for constituents with non-detects or not detected in any samples is not provided.
8C	8C-22	Table SA-6.	WQ, CM19	*Observation*	Very limited chlorpyrifos, diazinon, and bacteria data were included in the screening process, and most all data were reported as non-detect. No pyrethroid data were included. The use of this limited dataset conflicts with assertions made throughout the EIR/EIS and the BDCP that pesticides are present. The data used for the EIR/EIS is misleading, inconsistent, and inadequate.
8C	8C-22 to 8C-27		WQ	Table SA-6	A review of this data set shows that there are numerous constituents with results that are obviously out of range. This data needs to be inspected further to identify inconsistent data points. Examples at the SAC site include high results for asbestos, chloride, bromide, and sulfate. Other issues recommended for review include high detection limits for Giardia and Cryptosporidium, non-detectability for total and fecal coliform and E. coli (which are ubiquitous), and the lack of total fraction metals for nickel and selenium.
8C	8C-28 to 8C-31		WQ, WS	Table SA-7	All metal constituents with primary drinking water MCLs need to have the criteria revised so that the MCL does not apply to the dissolved fraction, and applies only to the total fraction.
8C	8C-29		WQ	Table SA-7	It is unclear why chromium was not carried forward when a trend of degradation is identified in the table. Also, since there is a proposed MCL of 10 ug/L, the constituent should have been carried forward based on professional judgment. This evaluation needs to be reconsidered and revised.
8C	8C-29		WQ, ERROR	Table SA-7	Total iron is shown as being forwarded to the Step 5 evaluation, but it is not included in Table SA-10. This error needs to be corrected, and the constituent needs to be moved forward in the evaluation.

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8C	8C-34 and 8C-36		WQ	Table SA-8	1,3-dichloropropene has an MCL of 0.5 ug/L. This needs to be applied to its two isomers: cis-1,3-dichloropropene and trans-1,3-dichloropropene.
8C	8C-38		WQ	Table SA-10	Iron needs to be included in this table as per Step 2 analysis in Table SA-7. Also, it should be noted that water temperature is carried forward for a qualitative analysis but that the analysis provided is limited to the aquatic life beneficial use and does not apply to drinking water. Temperature is a key parameter for drinking water treatment and quality, and the evaluation should be expanded to address the MUN beneficial use.
8C	8C-39 to 8C-40		WQ	Table SA-11	The list of trace metals is not complete since iron was not carried forward in the Step 5 analysis (Table SA-10). In addition, any revised evaluation for chromium should be considered before finalizing this table.
8L.1	8L-2 to 8L-3		WQ, SCOPE	Tables 2, 3, and 4	Pesticide use in the Central Valley varies greatly by crops produced and geographic distribution. Splitting the flow analysis for dilution into two seasons is insufficient to evaluate the range of potential impacts. The evaluation should have included four seasons (winter, spring, summer, and fall) to more accurately relate dilution potential to seasonal applications of pesticides.
8N.1	8N-1	6	WQ	Tables and figures below support the trace metals assessment.	The appendix needs to be expanded to include an assessment of available aluminum data. The assessment of dissolved metals should consider impacts of the upstream reservoir storage levels and the potential relationship to peak levels, especially of iron and manganese in the Sacramento River. Also, a companion assessment of the total fraction of each metal needs to be presented as well.
25.1.1	25-2	13-14	WQ, WS	For the purposes of this analysis, the study area (the area in which impacts may occur) for public health is defined as the Plan Area (the area covered by the BDCP) and Areas of Additional Analysis.	This evaluation is very limited, to only the Plan Area or Delta Region, in scope and therefore does not account for impacts to upstream diverters related to the MUN beneficial use. This evaluation is not complete, as it should have evaluated the impacts to the MUN users upstream caused by changes in reservoir storage and river flow conditions.
25.1.1.1	25-3 to 25-4		WQ, WS	Drinking Water - Constituents of Concern	The evaluation is focused on constituents of concern related to Delta users only. The evaluation should consider a complete list of constituents of interest for all upstream MUN users. The list of constituents is limited to disinfection by-products, trace metals, and pesticides. There is no clarification why this does not match the evaluations conducted as part of Chapter 8 and its appendices. The list of trace metals and pesticides is incomplete and should be explained or expanded.

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25.1.1.3	25-12	18-21	WQ	Furthermore, sediment disturbance would be limited to localized areas under the alternatives since, based on the pathogen conceptual model (discussed in Section 25.3.1.2, Pathogens and Water Quality), pathogen concentrations experience a rapid die-off the farther they travel from their source; thus, this issue is not discussed further.	As noted in the comments in Chapter 8, this statement on pathogen die-off is incorrect and needs to be revised and included in the discussion.
25.1.1.3	25-12	24-26	WQ	Although transport rates are initially increased during wet weather events, the increased availability of water to the Delta helps to reduce pathogen viability during these instances.	This statement is not a general knowledge in the water industry, and a reference for this statement needs to be provided which supports the reduced pathogen viability.
25.1.1.3	25-12	29-32	WQ	In most instances, pathogens in drinking water sources are removed by filtration or bio-membranes, or are destroyed by disinfection. Infections in humans may arise from pathogens that break through standard treatment processes implemented at drinking water sources. Infection in humans may also result from food ingestion or the ingestion of untreated water during recreation.	This section focuses on the recreational risk associated with increased pathogen concentrations. Therefore, it is incorrect to discuss drinking water treatment in this section. The first two sentences should be deleted and the third sentenced revised accordingly to focus on recreation.
25.1.1.3	25-12	33-35	WQ	Although there are many potential pathogens that enter Delta waterways, the presence of pathogens identified in Table 25-33 is tested by wastewater treatment service districts, public drinking water service districts, and other public agencies as needed (e.g., Department of Public Health).	The Table reference is incorrect and needs to be reviewed and revised. Also, if the reference is to Table 25-3, then it is unlikely that the reference public agencies monitor for these specific constituents at any regular frequency. This statement and the table need to be reviewed, confirmed, and corrected as appropriate. See CIWQS Database to confirm - https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=esmrAnalytical
25.1.1.3	25-13 to 25-14	3-13, 1-10	WQ	Water Treatment	Since the pathogen discussion focuses on the recreational impacts, it is inappropriate to include a discussion on water treatment in this section. This entire subsection needs to be deleted.
25.1.1.3	25-14	33-38	WQ, ERROR	Data for Cryptosporidium and Giardia along the Sacramento River showed that these parameters were often not detected, and when detected the concentrations were generally low, typically less than one organism per liter (Tetra Tech 2007). The incidence of these pathogens could be caused by the presence of natural or artificial barriers that limit transport to water and by the significant die-off of oocysts that do reach the water, as well as by limitations in the analytical detection of Cryptosporidium oocysts in natural waters (Tetra Tech 2007).	As noted in the comments in Chapter 8, these statements on pathogen die-off, significance of detection, and relative frequency of detection are incorrect and need to be revised and included in the discussion.
25.1.1.3	25-15	10-12	WQ, ERROR	It was determined in the report by Tetra Tech (2007) that the data are inadequate to assess if the sites examined exceeded these standards. California drinking water MCLs do not exist for pathogens.	The reference to the Tetra Tech Conceptual Model is inappropriate because its focus was evaluation of the data for drinking water risk, which is not the purpose of this section - it is stated that this is focused on pathogen risk from recreation. This text should be deleted.

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25.2.2.4	25-25	22-28	WS	The Safe Drinking Water Act (SDWA) was established to protect the public health and quality of drinking water in the United States, whether from aboveground or underground sources. The SDWA directed EPA to set national standards for drinking water quality. It required EPA to set MCLs for a wide variety of potential drinking water pollutants (see Appendix 8A of Chapter 8, Water Quality). The owners or operators of public water systems are required to comply with primary (health-related) MCLs and encouraged to comply with secondary (nuisance- or aesthetics-related) MCLs. SDWA drinking water standards apply to treated water as it is served to consumers.	This text needs to be clarified to indicate that these are federal standards only, and that the applicable regulations in California are provided in Section 25.2.3.2.
25.2.2.5	25-25	37-39	WS, ERROR	The SWTR applies to all drinking water supply activities in California and its implementation is overseen by the California Department of Public Health (CDPH).	The text is incorrect and needs to be revised to clarify that the SWTR applies to drinking water systems utilizing surface water or groundwater under the direct influence of surface water. Also, it should be clarified that CDPH implementation is based on the California adopted versions of the SWTRs.
25.2.3.2	25-26	14-20	WQ	EPA has designated CDPH as the primary agency to administer and enforce the requirements of the federal SDWA in California. Public water systems are required to be monitored for regulated contaminants in their drinking water supply. California's drinking water standards (e.g., MCLs) are the same as or more stringent than the federal standards, and include additional contaminants not regulated by EPA. Like the federal MCLs, California's primary MCLs address health concerns, while secondary MCLs address aesthetics, such as taste and odor. The California SDWA is administered by CDPH, primarily through a permit system.	CDPH is the "primacy" agency for the SDWA in California. For water agencies, California's secondary MCLs are enforceable standards, unlike federal regulations, and this needs to be clarified in the text. See Title 22, Chapter 15 - http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf
25.2.4.5	25-28	15-21	WQ	Primary MCLs are established for the protection of environmental health and secondary MCLs are established for constituents that affect the aesthetic qualities of drinking water, such as taste and odor. Both the Central Valley and San Francisco Bay Basin Plans incorporate by reference the CDPH numerical drinking water MCLs. The incorporation into the Basin Plans of the MCLs, which are normally applicable to treated drinking water systems regulated by CDPH, makes the MCLs also applicable to ambient receiving waters regulated by the Regional Water Boards.	The text needs to be modified to add language clarifying that both primary and secondary MCLs are enforceable regulations in California for public water systems. Also, the text needs to be modified to clarify that MCLs do not "normally apply" to treated water, see specific comments on Section 8. See Title 22, Chapter 15 - http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf
25.3.1.2	25-35	24-28	WQ, ERROR	As described in Chapter 8, Water Quality (Section 8.3.3), the findings of the Pathogen Conceptual Model state that pathogen concentrations are greatly influenced by proximity to the pathogen-generating source, and pathogen concentrations in the study area are generally not influenced by flow rates or inputs from the Sacramento and San Joaquin Rivers because of travel time and rapid pathogen die-off rates.	As noted elsewhere, the statement regarding rapid pathogen die-off rates is incorrect and needs to be deleted. The discussion should be reviewed and revised appropriately.

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25.3.1.2	25-35	29-32	WS	Human exposure to pathogens primarily occurs through drinking water or contact with pathogen sources in water. The removal of pathogens in drinking water happens prior to distribution and treatment techniques generally have a greater than 99% removal rate, as described in Section 25.1.1.33; therefore, pathogens would have a very limited effect on drinking water quality.	This section was focused on the pathogen risk to recreators. The explanation as to why the drinking water risk was not evaluated and presented here should have been included earlier in the Chapter to clarify its exclusion. Also, the section reference is incorrect and needs to be reviewed and revised.
25.3.1.3	25-36	12-18	WQ	Therefore, this analysis summarizes the qualitative and quantitative results presented in Chapter 8 to identify whether the construction and operation of the facilities associated with the alternatives would exceed water quality standards for pesticides that do not bioaccumulate (for this assessment, only present use pesticides for which substantial information is available, namely diazinon, chlorpyrifos, pyrethroids, and diuron, are addressed); trace metals of human health and drinking water concern (i.e., arsenic, iron, and manganese); DBPs, including HAA5, bromated, chlorite, and THMs via the THM formation potential5 (THMFP).	This summary is incomplete as compared with the analysis presented in Chapter 8 and needs to be reviewed and revised accordingly and updated to include any revised analysis in response to public comments on the draft EIR/EIS. Also, there is reference to trace metals (arsenic, iron, and manganese) which were not presented in Section 25.1.1.1, and this needs to be reviewed and corrected.
25.3.2	25-39	16-23	WQ	Exceedance(s) of water quality criteria for constituents of concern such that an adverse effect would occur to public health from drinking water sources. This analysis is based on the qualitative and quantitative results presented in Chapter 8, Water Quality, to identify whether the construction and operation of the alternatives would exceed water quality standards for pesticides that do not bioaccumulate (present use pesticides for which substantial information is available, namely diazinon, chlorpyrifos, pyrethroids, and diuron); trace metals of human health and drinking water concern (i.e., arsenic, iron, and manganese); DBPs, including HAA5, bromated, chlorite; and THMs via the THMFP.	This criteria for significance should be reevaluated based on any changes to the water quality analysis presented in Chapter 8 based on comments received on the Draft EIR/EIS.
25.3.3.1	25-45	1-6	WQ	However, under the No Action Alternative, existing exceedances would not increase above baseline conditions (see Chapter 8) to levels that adversely affect any beneficial uses or substantially degrade water quality. Furthermore, drinking water from the study area would continue to be treated prior to distribution into the drinking water system. Therefore, there would be no adverse effect on drinking water due to new water conveyance facilities.	This determination should be revised based on any changes to the water quality evaluation analysis presented in Chapter 8 based on comments received on the Draft EIR/EIS.
25.3.3.9	25-112	3-6	WS	Changes to DOC and bromide concentrations and, by extension, DBPs, under Alternative 4 operational scenarios (H1–H4) suggest that there would not be exceedances of DBP criteria due to operations, because long-term average DOC and bromide concentrations would be only slightly higher under this alternative relative to the No Action Alternative.	Similar to another comment on Chapter 8, the use of long term average concentrations of bromide and DOC should be reconsidered. The treatment technique for TOC removal is based on a running annual average, calculated quarterly, so shorter-term impacts could occur quickly due to seasonal variability in TOC levels of the source water. Also, future conditions from both climate change and reservoir operations could result in more frequent and expanded reverse flow scenarios on the Sacramento River, which could impact the detectability of bromide in the source water periodically.

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25.3.3.9	25-113	5-11	WS	Mitigation Measure WQ-5 is available to reduce these effects (implementation of this measure along with a separate, non-environmental commitment as set forth in EIR/EIS Appendix 3B, Environmental Commitments, relating to the potential increased treatment costs associated with bromide-related changes would reduce these effects). Further, DWR issued a Notice of Preparation on December 2, 2009 to construct and operate the AIP that would establish an alternative surface water intake on the Sacramento River upstream of the Sacramento Regional Wastewater Treatment Plant discharge.	It is unclear if the NBA AIP operations defined in the Mitigation Measure have been sufficiently included in the modeling and evaluations. This additional diversion could impact the likelihood, frequency, and duration of reverse flow scenarios on the Sacramento River and could require additional modifications to the upstream reservoir release requirements, impacting source water quality between the upstream reservoirs and the Delta. This should be clarified and confirmed.
25.3.3.9	25-113	21-28	WQ, WS	Water quality modeling results indicate that water conveyance facilities operations would not substantially change concentrations of metals of primarily human health and drinking water concern (arsenic, iron, manganese) in Delta waters relative to the No Action Alternative. The arsenic criterion was established to protect human health from the effects of long-term chronic exposure, while secondary maximum contaminant levels for iron and manganese were established as reasonable goals for drinking water quality. Average concentrations for arsenic, iron, and manganese in the primary source water (Sacramento River, San Joaquin River, and the bay at Martinez) are below these criteria.	Consideration of impacts to trace metals from reservoir reoperation should be included in the assessment, as commented on Chapter 8. This summary may need to be revised accordingly. Also, it needs to be clarified that secondary MCLs for iron and manganese are not goals in California, rather they are enforceable standards for water agencies. Finally, only average concentrations of the dissolved fraction of iron and manganese are lower than the MCLs, so a revised assessment of the total fraction, as requested in Chapter 8, could result in a revised summary in this section.
25.3.3.9	25-114	20-25	WQ, WS	Furthermore, drinking water from the study area would continue to be treated prior to distribution into the drinking water system, and water treatment plants are required to meet drinking water requirements set forth in the California Safe Drinking Water Act (Health and Safety Code Section 116275 et seq.) and the regulations adopted by CDPH. Therefore, it is not anticipated that there would be adverse effects on public health related to pesticides from drinking water sources.	Conventional filtration is not effective at treatment and removal of organic compounds, such as pesticides and herbicides (See AWWA's Water Quality and Treatment, A Handbook of Community Water Systems. American Water Works Association,4th Ed. Table 3-1 General Effectiveness of Water Treatment Processes for Contaminant Removal (p 184-185). Advanced treatment processes would be required, such as granular activated carbon, and would need to be implemented at additional cost to most of the current MUN users. If water treatment is being depended on to reduce or minimize the impact to public health, then the associated costs for advanced treatment should be evaluated and incorporated into the assessment. Attachment A provides treatment cost information from the 2012 ACWA Public Health Goal Survey, which demonstrates the significant costs to water agencies and their customers for contaminant removal.
25.3.3.9	25-114	28-32	WQ, WS	Water quality modeling results (Chapter 8, Water Quality, Section 8.3.3.9) indicate that changes in flows under Alternative 4 operational scenarios would not, for the most part, result in increased exceedances of water quality criteria for constituents of concern (DBPs, trace metals and pesticides) in the study area.	Similar to the NEPA Effects comments above, the CEQA conclusion should be reconsidered if revisions are made to the water quality assessment in Chapter 8.

Section	Page	Line	Type	Key Document Text	Comment
25.3.3.9	25-114	44-46	WQ, WS	The increase in long-term average bromide concentrations predicted for Barker Slough would result in a substantial change in source water quality to existing drinking water treatment plants drawing water from the North Bay Aqueduct.	The use of long term average concentrations of bromide should be reevaluated, as noted in comments on Chapter 8
25.4.1.1	25-183	23-25	WQ, WS	This cumulative impact analysis considers past, present, and reasonably foreseeable future projects that could affect the same resources and, where relevant, occur within the same time frame as the BDCP action alternatives.	As mentioned in other comments on Chapters 5 and 6, the list of projects should have included state and federal climate change adaptation and mitigation strategies, as well as the Joint Federal Project and associated Water Control Manual at Folsom Dam. Has the North Bay Aqueduct Alternative Intake Project been included in the modeling of the BDCP or should it be included in this cumulative impact analysis?
25.4.1.1	25-189	38-45	WQ, WS	However, drinking water from the study area would continue to be treated prior to distribution into the drinking water system, and water treatment plants are required to meet drinking water requirements set forth in the California Safe Drinking Water Act and the regulations adopted by CDPH. Therefore, it is not anticipated that there would be a cumulatively considerable contribution to adverse effects on public health from pesticides in drinking water due to implementation of BDCP action alternatives; nor would implementation of the BDCP action alternatives in combination with any of the projects listed in Table 25-10 be expected to result in a cumulative adverse effect on public health with regards to pesticides in drinking water in the study area associated with DOC.	As noted in the previous comment, conventional filtration is not effective at treatment and removal of organic compounds, such as pesticides and herbicides. Advanced treatment processes would be required, such as granular activated carbon, and would need to be implemented at additional cost to most of the current MUN users. If water treatment is being depended on to reduce or minimize the impact to public health, then the associated costs for advanced treatment should be evaluated and incorporated into the assessment.
25.4.1.1	25-190	2-6	WQ, WS	Implementing the projects listed in Table 25-10 in combination with any of these BDCP alternatives is not anticipated to result in the potential for increases in public health concerns because changes in existing concentrations of DBPs, trace metals, or pesticides affecting water quality could occur from cumulative project actions that affect the location, timing, and amount of water diversions; but the changes in flows would not be considerable.	This statement appears to be based on a qualitative judgment and needs to be supported with technical information. It appears that dilution associated with river flows is the main basis for the impacts, but there are other factors, such as sea level rise and reservoir storage, that could be attributed to impacts.
25.4.1.1	25-194	1-3	WQ	the cumulative water quality condition in the study area for the pathogens and trace metals is not considered to be adverse.	This determination does not account for any in-reservoir or in-river generation of these constituents. This evaluation needs to be broadened and include the total fraction of trace metals.
25.4.1.1	25-194	16-18	WQ, ERROR	However, the localized nature of pathogen generation and the quick die-off of pathogens once released into water bodies would generally prevent substantial pathogen exposure to recreationists and the cumulative effect would not be considerable or adverse.	This statement regarding the quick die-off of pathogens is technically incorrect and needs to be removed. See comments on Chapter 8. This text needs to be reviewed and revised.

Section	Page	Line	Type	Key Document Text	Comment
29.2	29-1	33-35	WQ, WS	How will the impacts of the BDCP alternatives on the study area for each resource (the area in which impacts may occur) be affected by climate change? i.e., are future changes in climate likely to exacerbate project impacts?	This question was only addressed in the BDCP by identifying potential changes to sea level rise and hydrologic variations, but the BDCP did not address or incorporate planned mitigation/adaptation strategies which are being developed by DWR/USBR/USACE (as discussed in previous comments on Chapters 5 and 6) to address the impacts. This evaluation should be revised to include this information.
29.2	29-1	36-37	WQ, WS	How will the BDCP alternatives affect the resiliency and adaptability of the Plan Area (the area covered by the BDCP) to the effects of climate change?	Since the BDCP alternatives rely on operations of upstream storage reservoirs as part of the solution for meeting Delta outflow requirements, the resilience and adaptation analysis conducted in this Chapter should have been expanded to include the impacts from revisions to upstream reservoir operation changes. This evaluation should be expanded to evaluate the resiliency and adaptability of other portions of the Project Area, such as the upstream reservoirs and the rivers below them to the Delta.
29.2	29-3	5	WQ, WS	Table 29-1	This table is missing several linkages. Water Quality (Ch. 8) should be linked to increased fire risk since wildfires have a great impact on the watershed conditions and the runoff from the area. Public Health (Ch. 25) should be linked to increased water temperature, reduced precipitation/runoff volume, shift from snowfall to rainfall, early snowmelt, and changes in erosion/sedimentation rates since all of these effects could result in an impact to the source water quality that enters the drinking water treatment plants, potentially impacting public health; this is especially concerning for direct users directly upstream of the Delta.
29.6.1	29-15	7-8	WS	Resiliency and Adaptability to Sea Level Rise and Hydrology Changes	This section focuses only on the resiliency and adaptability of the BDCP to meet Delta export demands in the face of sea level rise and other climate changes. The waters supply reliability is largely based on the ability to divert Sacramento River water in lieu of the current diversion locations. All evaluations are focused on the Plan Area (Delta) and do not make consideration of the changes in resiliency or adaptability of other Project Areas, such as upstream of the Delta. It should be clarified why these were excluded or expand the evaluations to consider those areas as well.
29.6.1.1	29-15	27-29	WS	While these change metrics represent long-term averages, modeling results for the BDCP 2060 period also indicate that droughts will increase in severity and duration—resulting in periods of critical dryness.	This statement supports the need to look at short-term periods, which would allow identification of periods of increased vulnerability to water supply and quality, such as during droughts.
29.6.1.1	29-16	6-10	WS	DWR's modeling of future conditions suggests that with current management and operations, level of demand, and current climate, major CVP and SWP reservoirs could reach dead storage levels (the level below which water cannot be released) and that the likelihood of these critical conditions will increase substantially as the climate warms.	The dead storage levels for each of the major CVP and SWP reservoirs should be identified in this section.

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Section	Page	Line	Type	Key Document Text	Comment
29.7.1.2	29-24	25	WS	State (Applicable Plans and Policies)	The DWR Reoperation Program should be included in this evaluation, since one of the goals of the program is to revise CVP/SWP operations to provide adaptation and mitigation for climate change impacts. http://www.water.ca.gov/system_reop/
29A.1	29A-1	5-6	WQ, WS	This appendix contains a summary of projected climate change modeling analyses of Delta tidal flows and salinity conditions conducted for Chapter 6, Surface Water and Chapter 8, Water Quality.	Previous comments on Chapters 6 and 8 indicate why the City recommends that this evaluation be expanded up the Sacramento River to determine if climate changes, on their own or in combination with CMs 1 and 2, have the potential to cause reverse flow or backwater effects just upstream of the Delta.
29B.8	29B-4	31-33	WQ, WS	The projected inflows to Folsom Reservoir are therefore the combination of projected changes in rainfall and snowmelt runoff together with possible changes in the operations of these upstream storage projects.	It is unclear if the modeling analysis included any changes in the operations of upstream storage reservoirs. Since these are a key function on the inflow to Folsom Reservoir, future changes in operations should have been investigated. Given the hydropower dominance in the watershed, it is reasonable to assume that future storage levels will change to meet the projected future power demand increases during summer months. An evaluation of the Federal Energy Regulatory Commission (FERC) relicensing for Placer County Water Agency, Sacramento Municipal Utility District, Pacific Gas and Electric, and El Dorado Irrigation District should be conducted to identify climate change adaptation and mitigation strategies or plans.
29C.1	29C-1	5-6	WQ, WS, SCOPE	This appendix contains a summary of projected climate change modeling of water temperature analyses conducted for Chapter 8, Water Quality, and Chapter 11, Fish and Aquatic Resources.	Temperature was not evaluated in Chapter 8 as an impact to water quality of interest to the MUN beneficial use. This constituent is of concern and should have been included in that evaluation, as commented previously.
29C.2	29C-1	17-18	WQ, WS	Temperature Effects from Reservoir Operations and Climate Change	This section needs to be expanded to include general information on how temperature relates to the MUN beneficial use, especially regarding its impact on associated source water quality, water treatment efficiencies, and treated water quality.
29C.2.9	29C-12	12-13	WQ, WS	Folsom reservoir is operated to meet water temperature objectives at the Watt Avenue Bridge, about 13 miles downstream from Nimbus Dam (68°F from June 1 to September 30).	Watt Avenue Bridge is located just upstream of the E.A. Fairbairn WTP and provides a good estimate of the source water temperature at the EA Fairbairn WTP, which could be used in an assessment for the impact to the MUN beneficial use.
29C.2.9	29C-13	26-28	WQ, WS	The simulated effects of climate change on the Folsom Dam and Nimbus Dam release temperatures were quite large (5–10°F) in September and October.	An increase of 5–10°F in a drinking water supply can significantly affect operations and treated water quality. A similar increase in temperature was evaluated when the Temperature Control Device was installed at Folsom Dam as part of the 2013 Update to the American River Watershed Sanitary Survey. A 5–7°F increase in temperature resulted in an increase in disinfection by-products in the distribution system ranging from 13 to 45 percent. These temperature increases are significant and need to be included in the analysis for impact to the MUN beneficial use upstream of the Delta.

BDCP/SDT

Section	Page	Line	Type	Key Document Text	Comment
29C.2.9	29C-13	30-33	WQ, WS	The simulated effects of climate warming should be confirmed with more detailed temperature modeling of Folsom Reservoir that includes potential changes in temperature panel operations. The Folsom temperatures were simulated to increase more than any other reservoir, because of the very limited cold water storage and very low carryover storage in most years.	The recommendation for more specific modeling in the American River system does not appear to be carried out anywhere else in the Adaptive Management program or in the Environmental Commitments. This is a very significant impact to MUN beneficial users and needs to be addressed more thoroughly.

List of Acronyms

ACWA	Association of California Water Agencies
AWWA	American Water Works Association
BDAT	Bay Delta and Tributaries Project
BDCP	Bay Delta Conservation Plan
BiOp	biological opinion
BMP	Best management practice
CALSIM II	California Water Resources Simulation Model
CDPH	California Department of Public Health
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CIWQS	California Integrated Water Quality System
CM	Conservation Measure
COA	Coordinated Operation Agreement
CTR	California Toxics Rule
CVFPB	Central Valley Flood Protection Board
CVP	Central Valley Project
CVSALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CWA	Clean Water Act
DOC	Dissolved Organic Carbon
DBPs	disinfection by-products
DPH	Department of Public Health
DPR	Department of Pesticide Regulation
DSM	Delta Simulation Model
DWR	Department of Water Resources
EC	Electrical Conductivity
EDCs	endocrine-disrupting compounds
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
HAAs	haloacetic acids
HSPF	Hydrological Simulation Program-FORTRAN
MCL	Maximum Contaminant Level
MS4	Municipal separate storm sewer system
MUN	Municipal and Domestic Supply
NAA	No Action Alternative
NBA AIP	North Bay Aqueduct Alternative Intake Project
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPS	Non-point source
NTU	Nephelometric Turbidity Units
OP	Organophosphate
POC	Particulate Organic Carbon
PPCPs	pharmaceutical and personal care products

List of Acronyms (continued)

SJR	San Joaquin River
SSQP	Sacramento Stormwater Quality Partnership
SWP	State Water Project
SWRCB	State Water Resources Control Board
SWTR	Surface Water Treatment Rule
TAF	thousand acre-feet
THMs	trihalomethanes
THMFP	THM formation potentials
TOC	Total Organic Carbon
TMDL	Total maximum daily load
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WARMF	Watershed Analysis Risk Management Framework
WCM	Water Control Manual
WDL	Water Data Library
WDR	Waste Discharge Requirements
WTP	Water Treatment Plant

BDCP1527

ATTACHMENT A TO CITY OF SACRAMENTO SPECIFIC COMMENTS ON BDCP EIR/EIS

BDCP1527

April 2014

ATTACHMENT NO. 3
Table 1
Reference: 2012 ACWA PHG Survey

COST ESTIMATES FOR TREATMENT TECHNOLOGIES
(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated Unit Cost 2012 ACWA Survey ($/1,000 gallons treated)
1	Ion Exchange	Coachella Valley WD, for GW, to reduce Arsenic concentrations. 2011 costs.	1.84
2	Ion Exchange	City of Riverside Public Utilities, for GW, for Perchlorate treatment.	0.89
3	Ion Exchange	Carollo Engineers, anonymous utility, 2012 costs for treating GW source for Nitrates. Design souce water concentration: 88 mg/L NO_3. Design finished water concentration: 45 mg/L NO_3. Does not include concentrate disposal or land cost.	0.67
4	Granular Activated Carbon	City of Riverside Public Utilities, GW sources, for TCE, DBCP (VOC, SOC) treatment.	0.45
5	Granular Activated Carbon	Carollo Engineers, anonymous utility, 2012 costs for treating SW source for TTHMs. Design souce water concentration: 0.135 mg/L. Design finished water concentration: 0.07 mg/L. Does not include concentrate disposal or land cost.	0.32
6	Granular Activated Carbon, Liquid Phase	LADWP, Liquid Phase GAC treatment at Tujunga Well field. Costs for treating 2 wells. Treament for 1,1 DCE (VOC). 2011-2012 costs.	1.36
7	Reverse Osmosis	Carollo Engineers, anonymous utility, 2012 costs for treating GW source for Nitrates. Design souce water concentration: 88 mg/L NO_3. Design finished water concentration: 45 mg/L NO_3. Does not include concentrate disposal or land cost.	0.72
8	Packed Tower Aeration	City of Monrovia, treatment to reduce TCE, PCE concentrations. 2011-12 costs.	0.39
9	Ozonation+ Chemical addition	SCVWD, STWTP treatment plant includes chemical addition + ozone generation costs to reduce THM/HAAs concentrations. 2009-2012 costs.	0.08
10	Ozonation+ Chemical addition	SCVWD, PWTP treatment plant includes chemical addition + ozone generation costs to reduce THM/HAAs concentrations, 2009-2012 costs.	0.18

COST ESTIMATES FOR TREATMENT TECHNOLOGIES

(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated Unit Cost 2012 ACWA Survey ($/1,000 gallons treated)
11	Coagulation/Filtration	Soquel WD, treatment to reduce manganese concentrations in GW. 2011 costs.	0.68
12	Coagulation/Filtration Optimization	San Diego WA, costs to reduce THM/Bromate, Turbidity concentrations, raw SW a blend of State Water Project water and Colorado River water, treated at Twin Oaks Valley WTP.	0.77
13	Blending (Well)	Rancho California WD, GW blending well, 1150 gpm, to reduce fluoride concentrations.	0.64
14	Blending (Wells)	Rancho California WD, GW blending wells, to reduce arsenic concentrations, 2012 costs.	0.52
15	Blending	Rancho California WD, using MWD water to blend with GW to reduce arsenic concentrations. 2012 costs.	0.62
16	Corrosion Inhibition	Atascadero Mutual WC, corrosion inhibitor addition to control aggressive water. 2011 costs.	0.08

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ATTACHMENT NO. 3
Table 2
Reference: Other Agencies

COST ESTIMATES FOR TREATMENT TECHNOLOGIES
(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated Unit Cost 2012 Other References ($/1,000 gallons treated)
1	Reduction - Coagulation-Filtration	Reference: February 28, 2013, Final Report Chromium Removal Research, City of Glendale, CA. 100-2000 gpm. Reduce Hexavalent Chromium to 1 ppb.	$1.47 - $9.23
2	IX - Weak Base Anion Resin	Reference: February 28, 2013, Final Report Chromium Removal Research, City of Glendale, CA. 100-2000 gpm. Reduce Hexavalent Chromium to 1 ppb.	$1.50 - $6.29
3	IX	Golden State Water Co., IX w/disposable resin, 1 MGD, Perchlorate removal, built in 2010.	$0.46
4	IX	Golden State Water Co., IX w/disposable resin, 1000 gpm, perchlorate removal (Proposed; O&M estimated).	$1.00
5	IX	Golden State Water Co., IX with brine regeneration, 500 gpm for Selenium removal, built in 2007.	$6.57
6	GFO/Adsorption	Golden State Water Co., Granular Ferric Oxide Resin, Arsenic removal, 600 gpm, 2 facilities, built in 2006.	$1.72 -$1.84
7	RO	Reference: Inland Empire Utilities Agency : Chino Basin Desalter. RO cost to reduce 800 ppm TDS, 150 ppm Nitrate (as NO3); approx. 7 mgd.	$2.25
8	IX	Reference: Inland Empire Utilities Agency : Chino Basin Desalter. IX cost to reduce 150 ppm Nitrate (as NO3); approx. 2.6 mgd.	$1.25
9	Packed Tower Aeration	Reference: Inland Empire Utilities Agency : Chino Basin Desalter. PTA-VOC air stripping, typical treated flow of approx. 1.6 mgd.	$0.38

10	IX	Reference: West Valley WD Report, for Water Recycling Funding Program, for 2.88 mgd treatment facility. IX to remove Perchlorate, Perchlorate levels 6-10 ppb. 2008 costs.	$0.52 - $0.74
11	Coagulation Filtration	Reference: West Valley WD, includes capital, O&M costs for 2.88 mgd treatment facility- Layne Christensen packaged coagulation Arsenic removal system. 2009-2012 costs.	$0.34
12	FBR	Reference: West Valley WD/Envirogen design data for the O&M + actual capitol costs, 2.88 mgd fluidized bed reactor (FBR) treatment system, Perchlorate and Nitrate removal, followed by multimedia filtration & chlorination, 2012. NOTE: The capitol cost for the treatment facility for the first 2,000 gpm is $23 million annualized over 20 years with ability to expand to 4,000 gpm with minimal costs in the future. $17 million funded through state and federal grants with the remainder funded by WVWD and the City of Rialto.	$1.55 - $1.63

ATTACHMENT NO. 3
Table 3
Reference: 2010 ACWA Cost of Treatment Table, Costs Revised for 2012

COST ESTIMATES FOR TREATMENT TECHNOLOGIES
(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated 2012* Unit Cost ($/1,000 gallons treated)
1	Granular Activated Carbon	Reference: Malcolm Pirnie estimate for California Urban Water Agencies, large surface water treatment plants treating water from the State Water Project to meet Stage 2 D/DBP and bromate regulation, 1998	0.53-1.00
2	Granular Activated Carbon	Reference: Carollo Engineers, estimate for VOC treatment (PCE), 95% removal of PCE, Oct. 1994,1900 gpm design capacity	0.24
3	Granular Activated Carbon	Reference: Carollo Engineers, est. for a large No. Calif. surf. water treatment plant (90 mgd capacity) treating water from the State Water Project, to reduce THM precursors, ENR construction cost index = 6262 (San Francisco area) - 1992	1.16
4	Granular Activated Carbon	Reference: CH2M Hill study on San Gabriel Basin, for 135 mgd central treatment facility for VOC and SOC removal by GAC, 1990	0.45-0.66
5	Granular Activated Carbon	Reference: Southern California Water Co. - actual data for "rented" GAC to remove VOCs (1,1-DCE), 1.5 mgd capacity facility, 1998	2.08
6	Granular Activated Carbon	Reference: Southern California Water Co. - actual data for permanent GAC to remove VOCs (TCE), 2.16 mgd plant capacity, 1998	1.35
7	Reverse Osmosis	Reference: Malcolm Pirnie estimate for California Urban Water Agencies, large surface water treatment plants treating water from the State Water Project to meet Stage 2 D/DBP and bromate regulation, 1998	1.56-2.99
8	Reverse Osmosis	Reference: Boyle Engineering, RO cost to reduce 1000 ppm TDS in brackish groundwater in So. Calif., 1.0 mgd plant operated at 40% of design flow, high brine line cost, May 1991	3.69
9	Reverse Osmosis	Reference: Boyle Engineering, RO cost to reduce 1000 ppm TDS in brackish groundwater in So. Calif., 1.0 mgd plant operated at 100% of design flow, high brine line cost, May 1991	2.27
10	Reverse Osmosis	Reference: Boyle Engineering, RO cost to reduce 1000 ppm TDS in brackish groundwater in So. Calif., 10.0 mgd plant operated at 40% of design flow, high brine line cost, May 1991	2.46
11	Reverse Osmosis	Reference: Boyle Engineering, RO cost to reduce 1000 ppm TDS in brackish groundwater in So. Calif., 10.0 mgd plant operated at 100% of design flow, high brine line cost, May 1991	1.90
12	Reverse Osmosis	Reference: Arsenic Removal Study, City of Scottsdale, AZ - CH2M Hill, for a 1.0 mgd plant operated at 40% of design capacity, Oct. 1991	6.17

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COST ESTIMATES FOR TREATMENT TECHNOLOGIES

(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated 2012* Unit Cost ($/1,000 gallons treated)
13	Reverse Osmosis	Reference: Arsenic Removal Study, City of Scottsdale, AZ - CH2M Hill, for a 1.0 mgd plant operated at 100% of design capacity, Oct. 1991	3.64
14	Reverse Osmosis	Reference: Arsenic Removal Study, City of Scottsdale, AZ - CH2M Hill, for a 10.0 mgd plant operated at 40% of design capacity, Oct. 1991	2.73
15	Reverse Osmosis	Reference: Arsenic Removal Study, City of Scottsdale, AZ - CH2M Hill, for a 10.0 mgd plant operated at 100% of design capacity, Oct. 1991	1.69
16	Reverse Osmosis	Reference: CH2M Hill study on San Gabriel Basin, for 135 mgd central treatment facility with RO to remove nitrate, 1990	1.70-2.99
17	Packed Tower Aeration	Reference: Analysis of Costs for Radon Removal... (AWWARF publication), Kennedy/Jenks, for a 1.4 mgd facility operating at 40% of design capacity, Oct. 1991	0.98
18	Packed Tower Aeration	Reference: Analysis of Costs for Radon Removal... (AWWARF publication), Kennedy/Jenks, for a 14.0 mgd facility operating at 40% of design capacity, Oct. 1991	0.52
19	Packed Tower Aeration	Reference: Carollo Engineers, estimate for VOC treatment (PCE) by packed tower aeration, without off-gas treatment, O&M costs based on operation during 329 days/year at 10% downtime, 16 hr/day air stripping operation, 1900 gpm design capacity, Oct. 1994	0.26
20	Packed Tower Aeration	Reference: Carollo Engineers, for PCE treatment by Ecolo-Flo Enviro-Tower air stripping, without off-gas treatment, O&M costs based on operation during 329 days/year at 10% downtime, 16 hr/day air stripping operation, 1900 gpm design capacity, Oct. 1994	0.27
21	Packed Tower Aeration	Reference: CH2M Hill study on San Gabriel Basin, for 135 mgd central treatment facility - packed tower aeration for VOC and radon removal, 1990	0.42-0.69
22	Advanced Oxidation Processes	Reference: Carollo Engineers, estimate for VOC treatment (PCE) by UV Light, Ozone, Hydrogen Peroxide, O&M costs based on operation during 329 days/year at 10% downtime, 24 hr/day AOP operation, 1900 gpm capacity, Oct. 1994	0.51
23	Ozonation	Reference: Malcolm Pirnie estimate for CUWA, large surface water treatment plants using ozone to treat water from the State Water Project to meet Stage 2 D/DBP and bromate regulation, *Cryptosporidium* inactivation requirements,1998	0.12-0.24
24	Ion Exchange	Reference: CH2M Hill study on San Gabriel Basin, for 135 mgd central treatment facility - ion exchange to remove nitrate, 1990	0.57-0.74

Note: *Costs were adjusted from date of original estimates to present, where appropriate, using Engineering News Record (ENR) building costs index (20-city average) from Dec 2012.

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January 16, 2013

Re: **A Portfolio-Based Conceptual Alternative for BDCP**

Dear Secretary Salazar, Secretary Laird, Deputy Secretary Meral and Commissioner Connor,

We represent a coalition of business and environmental organizations. We are writing to request that the attached conceptual alternative be considered in the BDCP process, including as a stand-alone alternative in the required CEQA/NEPA analyses and Clean Water Act Section 404 alternatives analysis. Our constituents believe strongly in the need for a science-based, cost-effective BDCP plan to help achieve the co-equal goals of restoring the Bay-Delta ecosystem and salmon fishery, and improving water supply reliability for California. None of us believes that the status quo in the Delta is acceptable.

Although many stakeholders have recommended that BDCP consider certain elements that are included in the attached document, we thought it would be most helpful at this point in the BDCP process to offer a *package* of actions and investments that, taken together, represent an alternative that could attract support from a diverse coalition of interests. This is a conceptual alternative, not a proposed BDCP preferred project. We believe that analysis of this alternative will assist BDCP in developing the most cost-effective, environmentally beneficial final BDCP project with the best chance of implementation.

At the heart of the conceptual alternative are two simple principles. First, BDCP must be grounded in the best available science regarding ecosystem management. This approach is essential to designing a successful, long-term plan for a water supply system and ecosystem as complex and dynamic as the Bay-Delta. This approach is also essential to ensure that the BDCP plan can meet legal requirements and receive permits. We applaud Governor Brown and Secretary Salazar for emphasizing their commitment to a science-based approach to BDCP in their July 25, 2012 announcement.

The second core principle is that the BDCP make fiscal sense. The final BDCP plan must be both affordable and financeable or it will ultimately fail. We believe it is imperative at this point in the BDCP process to avoid the economics and financing issues that plagued CALFED and contributed to its eventual failure.

This conceptual alternative was also developed with two practical realities in mind. First, the conceptual alternative has been developed based on the reality that many California water suppliers are looking closer to home to meet their long-term water supply needs and are planning to reduce their demand for water imported from the Bay-Delta. The second reality is that cities and water agencies, as well as federal, state and local budgets are facing significant financial constraints. We believe that it is critically important to balance the timing and need for investments in the Delta with a strategy that also advances continued water agency investments in local water supply development.

This "portfolio-based' approach reflects the real world desire of water suppliers and the public to evaluate the relative benefits of investments both within and outside of the Delta, and is consistent with the increased discussion in BDCP, over the past six months, of South of Delta water supply alternatives.

One of the cornerstones of the conceptual alternative is a proposal to evaluate a 3,000 cfs, single-bore North Delta diversion facility. This facility would produce significant financial savings, in comparison with a larger conveyance facility, while still providing water reliability benefits. In fact, we believe it could produce greater overall benefits at a lower cost, with some of the savings invested in local water supply sources, new South of Delta storage, levee improvements and habitat restoration. For example, investments in proven, cost-effective local water supply strategies can both increase export area water supplies and reduce the risk of disruption from earthquakes and other disasters. Southern California 2010 Urban Water Management Plans have already identified 1.2 MAF of potential additional local supply projects, only a small fraction of which have been factored into Delta planning.

Many of these local investments could provide significant, broad and long-term benefits. For example, a relatively small investment (in comparison with the cost of a new Delta facility) in Delta levees would provide significant water supply benefits beyond those achievable by the BDCP as currently conceived. The BDCP currently anticipates that, even with a large facility, on average, approximately half of the water exported from the Delta would still be pumped by the South Delta facilities (with more than three quarters of exported water pumped from the

South Delta in critically dry years). Therefore, reducing the vulnerability of Delta levees would provide significant water supply reliability benefits for South of Delta water users, particularly in dry years. Such an investment, in combination with local and public funds, would provide additional local benefits in the Delta. We believe that BDCP should include such "win-win" opportunities to collaborate with in-Delta interests.

It is essential not to delay an evaluation of the likely yield of a new Delta facility. The conceptual alternative also calls for the careful analysis of the best science available today regarding water project operations with a new facility. In particular, this approach calls for the analysis of an operations proposal developed by state and federal biologists to conserve and manage a full range of covered Delta fish species, including consideration of the need to protect upstream fisheries resources. We understand that state and federal biologists have undertaken an extensive effort to prepare such an operational scenario. The signatories to this letter have not endorsed these proposed operations. Rather, given that this operational scenario represents an important effort by state and federal biologists, it should be analyzed in the BDCP EIR/EIS, the Effects Analysis and the 404 analysis.

This conceptual alternative includes initial cost estimates that suggest that this approach could provide superior environmental results, increased water supply and greater reliability at a reduced cost. By expanding benefits and lowering costs, this portfolio approach could assist with project financing. We encourage BDCP to include this approach in its analysis of economics and financing issues, and to refine the cost estimates included in this conceptual alternative.

We sincerely believe that this conceptual alternative has the potential to produce superior benefits at a similar or lower cost to water users and the public. Because it is based on the best available science, we believe it would be more readily permittable. It also promises to deliver benefits more rapidly. And, finally, we believe that this approach will be helpful in attracting broader support for BDCP, both within and outside of the Delta.

We request that this conceptual alternative be analyzed as a stand-alone alternative in BDCP's environmental documents. In addition, we recommend that BDCP use this portfolio approach to compare the potential benefits and impacts of multiple alternatives, including a full range of different conveyance facility capacities. Such comparisons are needed so decision-makers can fully understand the choices they face and can select the optimum portfolio of actions that will best serve the state.

Thank you for your hard work to design an effective plan to meet the challenges we face in the Delta. We hope that this conceptual alternative will continue to advance the discussion. We look forward to an opportunity to discuss the conceptual alternative with you, including how it may best be incorporated into BDCP's analysis.

Sincerely,

Barry Nelson, Senior Policy Analyst
Natural Resources Defense Council

Tony Bernhardt
Environmental Entrepreneurs

Linda Best, President and CEO
Contra Costa Council

Gary Bobker, Program Director
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Defenders of Wildlife

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Planning and Conservation League

Attachment 3. City of Sacramento Specific Comments on Bay Delta Conservation Plan

Section	Page	Line	Type	Reference Document Text	Comment
1.1	1-3	15-33	SCOPE	The Plan Area covers the Sacramento San Joaquin Delta, as defined by California Water Code Section 12220 (statutory Delta), as well as certain areas in which conservation measures will be implemented such as Suisun Marsh and the Yolo Bypass (Section 1.4.1, Geographic Scope of the BDCP) (Figure 1-1). The infrastructure of the state and federal water projects form an integrated system that extends beyond the boundaries of the Delta; as such, the BDCP will affect water operations, species, and habitat both inside and outside of the Delta. While the Plan Area generally does not include areas upstream and downstream of the Delta, the Plan addresses the upstream and downstream effects of covered activities (Chapter 5, Effects Analysis)	The statement implies that the project is confined to the legal Delta area; however, a number of the conservation measures, including CM19, include areas outside of this area. The description of the project area should clearly define the actual areas or describe the implication to areas not within the Delta, but included in conservation measures or other BDCP actions. Only a small fraction of the Sacramento urban area is within the legal Delta.
1.6.2	1-40	1-7	WQ, AM	The BDCP is built on and reflects the extensive body of scientific investigation, study, and analysis of the Delta compiled over several decades, including the results and findings of numerous studies initiated under the CALFED Bay-Delta Science Program and the Ecosystem Restoration Program, the long-term monitoring programs conducted by the Interagency Ecological Program (IEP), research and monitoring conducted by state and federal resource agencies resource agencies, water contractor scientists, and research contributions of academic investigators.	The BDCP should identify the known science shortcomings and propose a means to fill these data gaps. Given the uncertainty in causes of covered species effects, a clear assessment of data gaps and necessary tools should be included in the BDCP.
2.3.2.1.5	2-18	6-17	WQ, AM	Other sources of flows of toxic substances in the ecosystems of the Plan Area include wastewater treatment plants, urban runoff, and upstream sources. Although there is considerable uncertainty regarding the effects of some of these toxics on fish, at least three mechanisms have been identified through which toxics could affect fish. First, direct exposure to toxics could have negative impacts on fish, especially to more vulnerable life stages such as eggs and larvae. Second, toxic substance-induced mortality of zooplankton, a source of food for nearly all fish species at one or more life stages, could limit food to fish species and result in reduced growth rates, reproductive output, and survival rates. Third, the bioaccumulation of toxics such as mercury and selenium by Potamocorbula is well documented, and likely occurs in other organisms as well. Because some fish (e.g., sturgeon and splittail) and aquatic birds (e.g., surf scoter, American coot, and scaup) forage on organisms that bioaccumulate mercury and/or selenium, their tissue can bioaccumulate these toxics, thus reducing growth, reproduction, and survival (Luoma and Presser 2000).	The statement regarding the uncertainty of the effects of toxics on fish should be expanded to identify where the uncertainty exists and broadened to include the uncertainty in fate and transport between sources and Delta effects. It will be important to understand the entire physical model from sources, fate and transport, and exposure period in order to improve conditions, provide effective conservation measures, and evaluate conservation measure effectiveness. Identifying these data and understanding the gaps is important to improving the science.
3.1; 3.3; 3.4	3.1-4; 3.4-326	7-8; 17-18	CM19	The BDCP Page 3.1-4 states, 'The conservation measures comprise the specific actions to be taken to meet the biological goals and objectives.' And, the Conservation Strategy (Section 3.4) specifies 22 Conservation Measures (CM). Urban Stormwater Treatment is Conservation Measure 19 (CM 19) and page 3.4-326 Line 17-18 states, 'The primary purpose of CM 19 is to contribute to Objective L2.5, which calls for water quality conditions within the Delta that help restore native fish habitat.	Page 3.4-326 provides an improper reference. CM19 is included in Objective L2.4 not L2.5 (page 3.3-7).

Section	Page	Line	Type	Reference Document Text	Comment
3.2.1.2	3.2-3	36-38	CM19, WQ	The BDCP is not intended to encompass the entire range of the covered species (except in the case of Delta smelt), nor is it intended to address all of the stressors that have contributed to the decline of these species. Rather, it is focused on stressors that can be addressed feasibly within the Plan Area.	The BDCP does not provide sufficient review of all of the stressors to demonstrate that all of the feasible measures have been considered.
3.2.3	3.2-6	36-39	WQ	Changes in water quality have important direct and indirect effects throughout the estuarine ecosystem. Water quality in the Delta is affected by a variety of discharges from agricultural, industrial, and urban sources that have been linked to ecological changes (e.g., Thompson et al. 2000; Glibert 2010).	The BDCP does not present a stressor source evaluation when developing the aquatic resources component of conservation measures. While several types of potential sources with "direct or indirect" effects are identified, only urban runoff was identified for inclusion as a conservation measure. In particular, the cited source for urban runoff impacts, (Thompson et al, 2000), was written prior to the use regulation changes to pesticides. Since the registration changes, incidences of aquatic species mortality related to urban runoff have declined as observed by the SSQP and others statewide (Schiff, Kenneth; Bax, Beth; Markle, Phil; Fleming, Terry; and Newman, Jennifer (2007) "Wet and Dry Weather Toxicity in the San Gabriel River," Bulletin of the Southern California Academy of Sciences: Vol. 106: Iss. 3.). The BDCP should include a more extensive evaluation of the sources, fate and transport, and the impact on aquatic life beneficial uses for all sources, including diversion flows, atmospheric deposition, point sources, and nonpoint sources to determine if load reductions are feasible and would improve Delta conditions.
3.2.3	3.2-6	36-38	CM19, WQ	Changes in water quality have important direct and indirect effects throughout the estuarine ecosystem. Water quality in the Delta is affected by a variety of discharges from agricultural, industrial, and urban sources that have been linked to ecological changes (e.g., Thompson et al. 2000; Glibert 2010).	This statement does not include all of the sources and activities that can result in changes in water quality. The BDCP will result in reduced dilution in the Delta, which should be considered in the discussion of water quality.
3.2.3	3.2-7	28-29	WQ	Improve passage of fish within and through the Delta by improving hydrodynamic and water quality conditions that can create barriers to movement and high susceptibility to predators.	This statement should be clarified as to the water quality parameters of concern.
3.2.3	3.2-7	40-41	WQ	In addition, it addresses specific stressors on covered fishes, such as impediments to fish passage, sources of unnatural mortality, and water quality impairments.	This statement discusses that the BDCP addresses water quality impairments, but the BDCP does not provide sufficient evaluation of this topic.
3.2.3.3	3.2-10	18-27	CM19, WQ	Other measures include actions to increase dissolved oxygen in specific problem areas important to salmonid migration (CM14 Stockton Deep Water Ship Channel Dissolved Oxygen Levels), to contribute to overall Delta water quality improvements (CM12 Methylmercury Management, CM19 Urban Stormwater Treatment) to reduce illegal harvest of covered fishes (CM17 Illegal Harvest Reduction), to reduce the number of small water diversions in the Plan Area (CM21 Nonproject Diversions), to develop new and expanded conservation hatcheries for delta smelt and longfin smelt for the purpose of establishing refugial populations that will not impair the genetic fitness of the wild stocks (CM18 Conservation Hatcheries), and to reduce the risk of new invasive species appearing in the Plan Area (CM20 Recreational Users Invasive Species Program).	Based on the presented evaluation summary, CM12 and CM19 are included as conservation measures to "contribute to the overall Delta water quality improvements". While CM12 is focused on evaluating the effects of restoration areas created by the BDCP, there is no specific justification provided for inclusion of CM19. The benefit of CM19 to downstream water quality is not well established. The BDCP should provide a justification for inclusion of CM19 based on known or reasonably expected quantified downstream benefits compared to total implementation costs.

BDCP/SQT

Section	Page	Line	Type	Reference Document Text	Comment
3.2.3.3	3.2-10	21-22	CM19, WQ	to contribute to overall Delta water quality improvements (CM12 Methylmercury Management, CM19 Urban Stormwater Treatment)	Other feasible measures to contribute to overall Delta water quality improvement should be included in this discussion.
3.2.3.3	3.2-10	22	ERROR	... to contribute to overall Delta water quality improvements (CM12 Methylmercury Management, CM19 Urban Stormwater Treatment) to reduce illegal harvest of covered fishes ...	Missing comma between "(Stormwater Treatment)" and "to reduce illegal harvest of covered fishes".
3.3.1	3.3-2	2-5	AM	Failure to achieve a biological goal or objective will not be a basis for a determination by the fish and wildlife agencies of noncompliance or for the suspension or revocation of the permits as long as the Permittees are properly implementing the BDCP and in compliance with the Implementing Agreement and the permit terms and conditions.	The BDCP does not incentivize meeting biological goals to minimize degradation. For example if the BDCP is unable to fund CM3-CM22, how would the program change and what would the export limitations be? If climate change amplifies the effect of the BDCP and ecological strain on covered species, what incentive would be in place to implement changes to offset the amplified impacts?
3.3.2	3.3-3	3-8	CM19	Biological objectives are expressed as specific outcomes that are expected to be achieved by the Plan for ecosystems, natural communities, covered species or species' habitat, or stressor attributes. Biological objectives are "SMART" - specific, measurable, achievable, relevant, and time-bound - to the maximum extent possible. Where a high level of uncertainty is associated with the measurability or achievability of an objective, that uncertainty is explicitly acknowledged in the objective, its associated rationale, or in both locations.	CM19 does not sufficiently address SMART objectives as stated. There is not a specific linkage to specific water quality improvement needs and goals for urban stormwater. Since there's uncertainty in sources and goals for contaminant related stressor impacts and solutions, the BDCP should provide for additional research, evaluations, and modeling to provide a basis for urban stormwater treatment or other source reduction efforts.
3.3.4	3.3-7	Table 3.3-1	CM19, WQ	Objective L2.4: Support improved ecosystems function in aquatic natural communities by implementing actions to improve water quality, including reducing dissolved oxygen impairments in the Stockton Deep Water Ship Channel, reducing pollutant loading by urban stormwater, and minimizing mobilization of methylmercury from lands in the reserve system.	The basis for the urban runoff loading reduction objective is not provided in an assessment that evaluates sources of pollutants, their fate and transport, and benefits to Delta aquatic life. The objective combines the lack of preciseness in the potential benefits of the measure with a precise identification of one source. While pollutant reductions are an existing goal of MS4 programs, inclusion as a conservation measure is not necessary, provides no new benefits, and is not evaluated against other source control efforts. The general reference to urban runoff in this text should be removed.
3.3.4	3.3-5 to 3.3-34		CM19, WQ	*various*	There are many references to CM19 and justification based on pollutant loading, which is not supported in the BDCP. See previous comments on Objective L2.4 and its rationale.
3.3.4	3.3-15 to 3.3-23	Table 3.3-1	CM19	Table 3.3-1. Conservation Strategy Goals and Objectives with Associated Conservation Measures	CM 19 also is listed as being applicable to ten (10) 'Species-Specific Goals and Objectives' between pages 3.3-15 and 3.3-23. Because the listed contaminants were selected based on, '...the types of contaminants that have effects on fish.' (page 5.D-5), and stormwater (as shown in Table 5.D.2-1 and the rationale provided above) is not a significant source of those contaminants, CM19 should be deleted from each/all of the 'Species-Specific Goals and Objectives' namely: DTSM1.1, DTSM2.1, LFSM1.1, WRCS1.1, SRCS1.1, FRCS1.1, STHD1.1, GRST1.1, WTST1.1, and WTST3.1.

Section	Page	Line	Type	Reference Document Text	Comment
3.3.5.2	3.3-43	10-28	CM19, WQ	As stormwater runoff flows to the Delta, it accumulates sediment, oil and grease, metals (e.g., copper and lead), pesticides, and other toxic chemicals. Unlike sewage, stormwater is often not treated before discharging to surface water. Despite stormwater regulations limiting discharge volumes and pollutant loads, many pollutants still enter Delta waterways in stormwater. Of particular concern for fish species is the overuse of pesticides, some of which can have deleterious effects on the aquatic food chain (Weston et al. 2005; Teh et al. 2005). Pyrethroid chemicals used as pesticides on suburban lawns are of particular concern and are delivered to the Delta system by runoff. These chemicals at very low concentrations can have lethal effects on low trophic levels of the food chain (plankton), and mainly sublethal effects on covered fish species (Weston and Lydy 2010). Other urban pollutant sources, which can be transported directly or indirectly by stormwater runoff to the Delta, include nutrients from failing septic systems, and viruses and bacteria from agricultural runoff. As described in CM19 Urban Stormwater Treatment, the Implementation Office will provide a mechanism for implementing stormwater treatment measures that are intended to result in decreased discharge to the Delta of contaminants derived from urban stormwater, which is intended to improve water quality conditions in the Plan Area to the benefit of covered species.	The provided rationale for the objective does not link urban runoff to downstream effects in the Delta, but rather the effect of pesticides on aquatic species. A more complete computational rationale is feasible and should be required before identifying one source of pollutants or pesticides for a conservation measure. Much of the Weston et. al. work is limited to upstream tributaries that primarily convey urban runoff; study work downstream did not identify the same magnitude of effects. Again, there is a lack of precision on the understanding of the sources, fate and transport, and impact to aquatic life that does not support the source focus of CM19. Also, as stated, the objective accurately describes that MS4 NPDES permits already include provisions for pollutant reduction requirements and then states that CM19 will "help local jurisdictions ... achieve compliance with NPDES Permits". Please provide additional information on which parts of NPDES permits CM19 will assist compliance efforts. Please also provide a specific designation of the areas to which CM19 is intended to apply.
3.3.5.2	3.3-43	10-28	CM19, WQ	(continued from above reference text) The stormwater treatment measures to be implemented as part of CM19 Urban Stormwater Treatment will help the local jurisdictions within the Plan Area achieve compliance with NPDES MS4 Phase I and Phase II permit conditions, which is expected to reduce pollutant loads of point and non-point source effluent discharged within the Plan Area.	
3.3.7.6	3.3-165	14-20	CM19, WQ	Exposure to toxins. Toxic chemicals are widespread throughout the Delta and may be present at a more localized scale in response to episodic events (e.g., stormwater runoff, point-source discharges). These toxic substances include mercury, selenium, copper, pyrethroids, and endocrine disruptors with the potential to affect fish health and condition and negatively affect steelhead distribution and abundance directly or indirectly. Sublethal concentrations may interact with other stressors (e.g., seasonally elevated water temperatures, predation, or disease) to increase vulnerability of steelhead to mortality.	As described, a number of contaminant sources are present and act in a complex fashion. While reductions in the toxins noted are likely beneficial to downstream species, a better understanding of how the benefits of control programs can be measured is necessary to best understand the opportunities for effectively protecting covered species and other beneficial uses. More comprehensive evaluations should be performed by the BDCP prior to initiating actions with unknown benefits and high costs.
3.3.7.8.3	3.3-195	10-13	CM19	Reducing pollutants in the Plan Area will be accomplished by implementing CM12 Methylmercury Management and CM19 Urban Stormwater Treatment, which will contribute to improving water quality and physical habitat parameters within the Plan Area, thus contributing to an increase to the extent of habitat potentially suitable for green sturgeon.	The pollutant reduction strategy should be more carefully considered, especially as it relates to source control in CM12 and CM19. The relative benefit of reduction of any source categories to covered species was not performed. A detailed assessment should be performed to establish benefits to costs for a variety of sources.

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Section	Page	Line	Type	Reference Document Text	Comment
3.4.12.3	3.4-264	Table 3.4.12-1	WQ	Effectiveness Monitoring Relevant to CM12	The conservation measure only evaluates the wasteload leaving the restoration areas and not the effect on downstream methylmercury concentrations in the water column or fish tissue. An additional assessment is necessary to support the BDCP and evaluate the effect on fish tissue concentrations.
3.4.19.1	3.4.327	4-6	ERROR, CM19	Stormwater runoff is a leading source of water pollution in the United States and is a large contributor to toxic loads present in the Delta (Weston et al. 2005; Amweg et al. 2006; Werner et al. 2008).	The Weston and Amweg studies cited neither evaluate the pesticide loading to the Delta nor conclude stormwater as a "leading source of water pollution". These initial studies looked at creek sediments outside of the Delta. Additional studies by the same researchers that evaluated instream water column concentrations did not find the same toxicity signal in the downstream Delta. To date, the connection between urban runoff pyrethroid concentrations and toxicity in the Delta has not been well understood. It is an unfounded technical leap to assume that urban runoff is a large contributor to toxic loads in the Delta. The 2004 EPA 305(b) (EPA 2009) report, which is likely the basis for the assertion that stormwater runoff is a leading source, though it is not specifically cited, is inappropriately used. The report does not show urban stormwater runoff as the leading source for any of the receiving water types.
3.4.19.1	3.4.327	11-12	ERROR, CM19	Pyrethroid chemicals used as pesticides on suburban lawns are of particular concern, and are delivered to the Delta system by runoff.	No reference is provided for the statement. Pyrethroid transport over long distances is not established in current literature. Pyrethroids are legal for consumers to use as regulated by EPA and the Department of Pesticide regulation. It is not clear what studies identified this source as an impact to the Delta and why lawn use is described to be of more concern.
3.4.19.1	3.4.327	14-16	ERROR, CM19	Other urban pollutant sources, which can be transported directly or indirectly by stormwater runoff to the Delta, include nutrients from failing septic systems, and viruses and bacteria from agricultural runoff.	The last sentence incorrectly incorporates non-urban and non-runoff sources into urban runoff. A more effective approach would be to evaluate all contaminant sources to develop an approach that could effectively improve Delta conditions and protect beneficial uses. Source control should be strategic and informed rather than arbitrarily focused on limited data and generalizations. The Sacramento Stormwater Quality Partnership participated in the Central Valley Drinking Water Policy development that included the modeling, downstream benefit, and cost of control measures. This approach is recommended for the BDCP to characterize contaminants and their sources and to identify opportunities for effective management.
3.4.19.1	3.4.327	21-24	SCOPE	These permits require municipalities to develop and implement a stormwater management plan or program with the goal of reducing the discharge of pollutants to the maximum extent practicable under Section 402(p) of the Clean Water Act. CM19 will be implemented within the context of these comprehensive plans. Phase II of the regulations that established MS4 permits requires smaller municipalities and construction sites, referred to as Small MS4s, to comply with similar requirements.	MS4 permitted agencies already have management programs and contaminant reduction programs in place, and CM19 is not necessary. An evaluation of the benefit to downstream covered species for a variety of source control measures is necessary to prioritize actions before they are required for any source types.

Section	Page	Line	Type	Reference Document Text	Comment
3.4.19.2.1	3.4-327	27-36	CM19	Proposed actions will be reviewed by technical staff in the Implementation Office or by outside experts supporting the Implementation Office. Projects will be funded if the Implementation Office determines that they are expected to benefit covered species.	CM19 does not provide any detail on how the determination would be made that an action could benefit covered species. A major concern is that CM19 could lead to actions required in NPDES permits that are not beneficial or are inconsistent with existing water quality policies and permits. Such control measures may be costly with little effect, and there is no process discussed in the BDCP to make these cost/benefit assessments for control measures. Moreover, local agencies (stormwater entities) are not specifically represented in the Implementation Office and would not be able to directly participate in identification of the most effective control options. This essentially adds another layer of regulation for NPDES dischargers. Expertise in urban runoff control and a sophisticated understanding of local drainage systems is necessary to effectively manage control measures.
3.4.19.2.1	3.4-327	27-36	CM19	*Omission from text*	The conservation measure does not specify whether it is intended to be a retrofit of existing development or new construction. The MS4 can only affect land use through new building permits and new land development. CM19 does not provide enough detail on how it would be implemented by a MS4 agency area such that a reasonable cost estimate could be prepared. Large scale retrofit is costly and does not always provide a water quality benefit. These costs can be better developed with available information such as the Central Valley Drinking Water Policy Workgroup urban runoff report (http://www.waterboards.ca.gov/central valley/water_issues/drinking_water_policy/dwp_urban_sources_study.pdf)
3.4.19.3	3.4-329	1-7	CM19	Effectiveness monitoring will be conducted to evaluate progress toward advancing the biological objectives discussed below in Section 3.4.19.4, Consistency with the Biological Goals and Objectives. Individual stormwater entities will be responsible for conducting the monitoring necessary to assess the effectiveness of BDCP-supported elements of their stormwater management plans.	The Conservation Measure requires the stormwater agencies to perform the effectiveness assessments without funding support from the BDCP proponents or the State of California and without a direct means to evaluate the effect of projects on covered species. The BDCP only suggests evaluating decreases in loads and improving urban runoff water quality. These assessments are too general to understand more complex downstream effects. Before conservation measures are initiated, a more detailed fate and transport model and a beneficial use assessment tool are necessary and should be developed by the BDCP to establish baseline conditions and effects. It is unreasonable to expect that one source group would develop these tools.
3.4.19.3	3.4-329	9-12	CM19	The Implementation Office will provide ongoing review of monitoring, progress, and other relevant reports from the stormwater entities and will coordinate with the stormwater entities to adjust stormwater pollution reduction strategies and annual funding levels through the adaptive management process, as appropriate, based on this review.	The role of the Implementation Office includes recommending changes to the stormwater entity programs. Further, the Adaptive Management Team provides the analysis of the stormwater entity-collected data. As stated, the burden of further data collection falls on the stormwater agencies, while the decision making and conclusion drawing power is elsewhere. Local agencies should be allowed meaningful advisory or oversight roles within the Implementation Office for those issues that affect them.

BDCP/SCT

Section	Page	Line	Type	Reference Document Text	Comment
3.4.19	3.4-330	Table 3.4.19-1	CM19, LOCAL	Implement BMPs for urban stormwater runoff through local jurisdictions within the Plan Area (e.g., cities and towns) to achieve compliance with NPDES MS4 and Phase II NPDES MS4 permit conditions.	The description of the Conservation Measure references "NPDES" requirements several times, which suggests and could be interpreted by Regional Water Quality Control Board permit writers and enforcement staff to mean that the Conservation Measure participation is not voluntary. We agree that NPDES MS4 programs have successfully improved urban runoff quality and request that no new requirements be implemented within NPDES permits as they have not been justified.
3.4.19	3.4-330	Table 3.4.19-2	CM19, ERROR	Reduction of pollutant loads in stormwater discharges will reduce a substantial source of nonpoint source pollutant loading in Delta tributary watersheds.	Urban runoff (MS4 NPDES) is not part of the non-point source (NPS) classification. Even if urban runoff load sources are reduced, it is not established that there would be a downstream Delta benefit as degradation, dilution, and other fate and transport process may sufficiently reduce the net effect. Moreover, for many aquatic life impacts, it is the concentration rather than the load that is "experienced," and urban runoff may dilute some pollutants or cause only an intermittent exposure period.
3.4.19	3.4-332	2-16	CM19	Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) analysis indicates that actions to reduce the amount of pollution in stormwater runoff entering Delta waterways will be of high benefit to delta smelt, white sturgeon, steelhead, and Chinook salmon (Essex Partnership 2009).	The cited DRERIP documents were reviewed, and there was no indication that "reductions in the amount of pollution in stormwater runoff entering Delta waterways will be of high benefit". Those documents discuss the potential impacts to some aquatic life, but they do not evaluate the fate and transport from urban areas to the Delta. Much of the Sacramento urban runoff does not directly enter the Delta, and the conclusion does not consider the fate and transport to points where impacts to covered species are of concern. While reductions in pollutant and improvements to water quality are generally beneficial, this summary oversimplifies the discussion in the referenced document. Some of the Table 3.4.19-2 information references dissolved oxygen depression as the water quality impact; however, urban runoff likely does not contribute significantly to the downstream oxygen impairments (http://water.epa.gov/scitech/wastetech/guide/stormwater/upload/2006_10_31_guide_stormwater_usw_b.pdf). The reference documents also refer to a number of other pollutants that are not known to be significant effects from urban runoff or those that have other sources.
3.4.23.3	3.4-356	10-15	AM	Conservation measures that have been funded and implemented properly and, nonetheless, are not achieving their intended outcomes may be considered less than effective and not worth continuing to implement (or continuing at a reduced effort). Funding dedicated for conservation measures that later prove less than effective could be reallocated to further support more effective conservation measures, within the scope of the Plan commitments and consistent with available funding.	The process of review and reallocation of funding seems reasonable and pragmatic. However, additional language is necessary to protect the agencies and programs that are implementing programs such as CM19. Given the potential costs for CM19 implementation, a more substantial role in oversight of adaptive management is reasonable for those issues that affect local agencies. The BDCP should provide conservation measure funding assurances for the take permit period or assurances to fund the cost to remove or demobilize a conservation measure that is identified as not worth continuing.

BDCP1581

Section	Page	Line	Type	Reference Document Text	Comment
3.6.3.2	3.6-11	38-45 and 3.6.12 line 1	COST	The BDCP includes adequate budget for and assurances that sufficient funds will be available to carry out the monitoring and research activities necessary to implement the adaptive management and monitoring program (See Chapter 8, Implementation Costs and Funding Sources, for an accounting of costs and funding assurances). Integration of the BDCP monitoring and research program, where practicable, with the common activities of the IEP, Delta Science Program and other relevant programs has been factored into the cost estimates. The funding structure and integration efforts are important elements of this Plan. Inadequate funding for the ecological monitoring needed to compare the outcomes of the alternative policies has proven to be a common impediment to successful implementation of other adaptive management programs (Walters 2007).	We support that the BDCP should provide adequate funding of science programs that will develop independent and reliable science and assessments. We recommend including a detailed discussion of the role of the Delta Science Program and processes anticipated for evaluating BDCP assessments and adaptive management. The proposed budget is inadequate to properly manage adaptive management and be inclusive to local agencies. Commitment to funding and providing funding opportunities to groups like the Delta Regional Monitoring Program are critical to successful adaptive management and science programs.
3.6.3.4.8	3.6-18	entire	Local	Step 8: Communicate Current Understanding	We appreciate the approach discussed in this section to provide unbiased study products to be made available to the public. We note that the organizational structure does not provide for local agency participation in review of the products, and the process does not provide a clear description of how the scientific peer review will be objective and coordinated with other programs related to Delta science.
3.D	3.D-2	Table 3.D-1	CM19	Compliance Monitoring Actions	The table does not indicate that there are existing stormwater programs to address contaminants. Stormwater programs already include a wide range of program elements such as construction, industrial, illicit discharge, municipal operations, public outreach, and new development post construction standards and programs to control pollutant sources.
3.D	3.D-9		AM	Precise details of each of the effectiveness monitoring actions are not presented here and will be developed and then periodically updated through the adaptive management and monitoring program (Chapter 3, Section 3.6).	While precise details may not be possible at this time, the discussion should include a range of possible effectiveness monitoring actions to present an anticipated level of effort and outcomes.
3.D	3.D-10	Table 3.D-2.	WQ	Effectiveness Monitoring Actions	The BDCP should monitor and assess downstream methylmercury concentrations and fish tissue concentrations to assess the effectiveness of the control measure meeting the regional wasteload allocations and the TMDL fish tissue targets.
3.D	3.D-25	Table 3.D-2.	CM19	Metric: Decreases in stormwater constituents/pollutant loads such as total suspended sediment, oil and grease, total and dissolved metals (i.e., copper and zinc), pesticides and other toxic chemicals	Decreases in urban runoff loads of these constituents already occurs through existing programs. What would the baseline be for the comparisons? How would the metric account for year-to-year differences in rainfall? What tools would be used for calculation of loads and assessment of trends? The BDCP should provide the assessment funding and tools, as well as address both in Adaptive Management.
3.D	3.D-25	Table 3.D-2.	CM19	Implement BMPs for urban stormwater runoff through local jurisdictions within Plan Area (e.g., cities and towns) to achieve compliance with NPDES MS4 and Phase II NPDES MS4 permit conditions.	It is not clear what specific areas are included. The Plan Area only intersects with a relatively small urban area, especially in the Sacramento urban area. Also, BMPs for stormwater are already implemented; how would the BDCP affect BMP implementation requirements?

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3.D	3.D-26	Table 3.D-2.	CM19	Annual effectiveness monitoring and reporting, performed by the individual stormwater entities, for the duration of the BDCP permit term	The effectiveness of stormwater programs is already determined as part of NPDES permit requirements, though the methods and approach continue to adapt and evolve to allow for better assessments. This should not be required as part of the BDCP as it is an overall activity of the MS4 agency that is not tied to specific BDCP activities.
3.D	3.D-26	Table 3.D-2.	CM19	Individual stormwater entities will be responsible for performing annual monitoring of BMPs implemented at the local level for the duration of the BDCP permit term.	Requirements for BMP monitoring may unnecessarily restrict agency resources over the BDCP permit term, as the performance of individual BMPs may be less important than the extent of implementation, an understanding of how the BMPs benefit downstream beneficial uses, or how the BMP affects covered species. MS4 agencies already know much about the effectiveness of these activities and need flexibility over the next 50 years to adapt to changing conditions and improve programs. Strict annual reporting schedules should be removed as they will constrain resources and slow the adaptive management of stormwater. Because of the variability of stormwater quality and quantity, 5-10 year time frames are necessary to implement effective programs. The 50 year term is unreasonable to apply to these MS4 programs that do not benefit from the BDCP.
3.D	3.D-26 (Table 3.D-2)	CM-19, first occurrence in table	CM-19, AM	Effectiveness Monitoring Actions: Conduct ongoing review of monitoring progress, and other relevant reports from the stormwater entities. Metric: Decrease in stormwater constituents/pollutant loads such as total suspended sediment, oil and grease, total and dissolved metals (i.e., copper and zinc), pesticides and other toxic chemicals. Success Criteria: Reductions in stormwater constituents and pollutant loads within the Plan Area over time. Timing and Duration: Annual effectiveness monitoring and reporting, performed by the individual stormwater entities, for the duration of the BDCP permit term.	The specified "monitoring action" is a review of reporting by others. The metric is vague and cannot be directly tied to effects on covered species. More robust tools and assessment methods are necessary to adequately assess changes in loads, improvements in water quality, and downstream benefits to covered species. The required monitoring and reporting over the entire BDCP permit term is a significant cost liability for local agencies and is not guaranteed to have benefits. Sacramento has only a small area in the Plan Area, and it is not clear how this requirement would be applied to just that area. The BDCP should perform a detailed evaluation of the benefit of all contaminant source controls on the covered species so that control actions can be prioritized relative to their cost.
3.D	3.D-26 (Table 3.D-2)	CM-19, second occurrence in table	CM-19, AM	Effectiveness Monitoring Actions: Fund individual stormwater entities in the Plan Area to implement best management practices (BMPs). Metric: Implement BMPs for urban stormwater runoff through local jurisdictions within the Plan Area (e.g., cities and towns) to achieve compliance with NPDES MS4 and Phase II NPDES MS4 permit conditions. Success Criteria: Reductions in pollutant loads in urban stormwater effluent generated by local jurisdictions. Timing and Duration: Individual stormwater entities will be responsible for performing annual monitoring of BMPs implemented at the local level for the duration of the BDCP permit term.	The BMPs would be implemented for the 50 year BDCP permit term, but the funding plan only covers 15 years and is insufficiently scoped and funded. The description does not acknowledge the issue of modifying privately owned land. The vagueness of the success criteria does not acknowledge the lack of nexus with benefits to covered species in the Delta. CM19 should be removed and replaced with a program to better identify contaminant management actions that can cost effectively benefit covered species.

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3.D	3.D-35	Table 3.D-3	CM19	Does reducing stormwater pollution loads result in measurable benefits to covered fish species or their habitat?	The BDCP does not specify how the measurable benefits to covered species will be evaluated. This evaluation process should be performed before implementation of the BDCP to understand the current effect of urban runoff and other sources on current species. If this cannot be performed before implementation of the BDCP, what guarantees will be made to ensure that an adequate assessment is made beyond the current non-specific BDCP finding that "lower contaminant loads are better?" The BDCP should provide the assessment funding and tools, as well as address both in Adaptive Management.
4.2.4.8	4-82	2-7	CM19	CM19 funds local projects that improve treatment of urban stormwater, but does not permit or authorize such projects. A project that requires in-water work is required to secure appropriate permits, including appropriate ESA consultation for any action with a federal nexus. Projects that do not require in-water work are expected to occur in developed areas that do not provide habitat for covered species. Accordingly, this conservation measure is not expected to result in incidental take of covered species or adverse modification of critical habitat.	CM19 would further burden local agencies with additional environmental documentation and permitting costs. If CM19 is not removed, it should be significantly modified to require an evaluation of all contaminant sources and the cost/benefit of control strategies. For any identified control strategies, the BDCP should provide funding.
4.2.6	4-89	9-14	CM19, AM, WQ	All BDCP monitoring activities undertaken by the Implementation Office are covered activities. All covered monitoring activities will be carried out in a manner consistent with protocols recommended by the Adaptive Management Team and approved by the fish and wildlife agencies. Monitoring activities currently proposed are detailed in Appendix 3.D, Monitoring and Research Actions.	CM19 appears in Table 3.D-2. This excerpt implies that the Adaptive Management Team will have oversight over the monitoring and effectiveness assessments for CM19 and its "covered activities". Much of the Sacramento and Stockton urban areas are outside of the Plan Area, though the definition of a covered activity specifies that it must be in the Plan Area. Moreover, covered activities refer to actions for which "take is authorized". Overall, the wording and document structure have these kinds of confusing ambiguities that should be fixed to ensure that the MS4 agencies are not obligated to participate in the take permit.
5.2.7.1	5.2-14	Table 5.2-4	CM19, WQ	Covered Action: Conservation Hatcheries Facilities Facilities construction Relevant Conservation Measure(s): CM19 Urban Stormwater Treatment Appendix: 5.H	It is unclear why CM19 is the only conservation measure listed under this covered activity. It is an imbalanced approach to only consider one of many effects, especially when the relative impact of the selected source is not known compared to others.
5.2.7.2	5.2-15	41-43 & Table 5.2-4	CM19, AM, WQ	Models used in the BDCP are listed and described in Table 5.2-5 along with a reference to the appendix where the models are applied. The models are categorized based on their general scope and intent. In addition, benefits and limitations of each model are listed in Table 5.2-5.	Pollutant concentrations and loading from watershed areas where CM19 is proposed are not included in the modeling domain. Watershed sources and fate and transport are not adequately addressed in the selected models. WARMF or HSPF type model is necessary to understanding at least relative impacts from sources and fate and transport of the key pollutants addressed by this conservation measure.
5.2.7.4	5.2-16	16-19	CM19, AM, WQ	Environmental models set the stage for the analysis of biological effects by describing key physical and chemical conditions across the Study Area. These conditions include flow, temperature, salinity, and turbidity. In the Delta, the analysis of physical conditions and biological effects is most often based on CALSIM II and Delta Simulation Model (DSM) 2 (Figure 5.2-3).	The environmental and biological models should consider the effects of pollutants referenced by the conservation measures as stressors, including metals, pesticides, and others.

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5.2.7.5	5.2-23	2-14	CM19, AM, WQ	Biological models are often linked to environmental models and characterize a biological change expected from the modeled change in physical conditions. Figure 5.2-4, for example, shows the biological models used to assess entrainment effects on delta smelt and the relationship to CALSIM II and DSM2. This figure also shows how biological models relate to specific life stages and reflect unique hypotheses about stressors and biological performance. Models used to evaluate entrainment (Appendix 5.B, Entrainment) and the effects of flow, temperature, salinity, and turbidity (Appendix 5.C, Flow, Passage, Salinity, and Turbidity) on biological performance fall into this category.	The environmental and biological models should consider the effects of pollutants referenced by the conservation measures as stressors, including metals, pesticides, and others.
5.2.7.10	5.2-29	8-10	CM19, AM, WQ	Although noting that assessing or ranking attributes (stressors) is very complex, the (2011) suggested that the relative importance of stressors cannot be assessed, or prioritized, independent of the relative importance of the objective that is stressed.	It should be noted that although the Delta Independent Science Board concluded that the ranking of stressors is feasible, this implies that contaminant control measures can be evaluated for at least their relative importance to water quality and for effects to the covered species. The Effects Analysis should evaluate any contaminant control measures before they are implemented as part of the BDCP.
5.2.7.10.3	5.2.35	14-22	WQ, AM	The overall conclusions regarding the effect of the conservation measures on covered fish species was made by weighting the conclusion regarding the environmental effects of conservation measures by the assumed importance of environmental change to the species. The logic of this process is illustrated in the following example: On the basis of quantitative and qualitative analyses in the appendices to this chapter, it is concluded that the BDCP will result in a positive (toward natural) change in an attribute, and, on the basis of the species attribute importance, change in that attribute is important to one or more life stages of a species. Therefore, it is concluded that the BDCP has an high change on that species/life stage. This conclusion is documented by computing a simple score: BDCP effect on an attribute times the importance of the attribute to the species/life stage.	The proposed weighted scoring system is insufficiently described. A transparent and understandable evaluation process should be presented in the BDCP. The BDCP should develop computational water quality models for the cumulative effect of all combinations of conservation measures. The outputs of the models can be used for effect modeling on the covered species. The effects should then be compared to a baseline of current conditions without the take permit.
5.2.7.11	5.2-47	Table 5.2-8	WQ, AM	Qualitatively discussed in Appendix 5.D, Contaminants. Some uncertainty regarding white sturgeon sensitivity to water quality and whether current water quality conditions negatively affect white sturgeon. Thus, evaluating the response of white sturgeon to improved water quality conditions is difficult, and may be somewhat negative (low potential for effect). However, certain conservation measures to be implemented as part of BDCP will contribute to improved water quality, including CM19 Urban Stormwater Treatment, CM12 Methylmercury Management, and CM14 Stockton Deep Water Ship Channel Dissolved Oxygen Levels. So while the BDCP has a low potential for negative effects, certain conservation measures will be implemented to provide a benefit to covered fish species.	The conclusion that the BDCP has a low potential for negative effects does not consider the area-specific impacts of the increased influence of the San Joaquin River and effects near to the BDCP intakes on the Sacramento River.

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5.D.0	5.D-ii	14-20	CM19, AM, WQ	Modeling results presented in Appendix 5.C, Flow, Passage, Salinity, and Turbidity, indicate that reduced dilution capacity in the Sacramento River at the Sacramento WWTP will result from changes in upstream reservoir operations associated with the ESO, not from diversion of water to the Yolo Bypass or from north Delta intakes located downstream of the WWTP. Quantitative analysis presented in this appendix indicates that the Sacramento River will have sufficient dilution capacity under the ESO for both ammonia and pyrethroids to avoid adverse effects from these contaminants on the covered fish.	The BDCP should look at water quality impacts due to changes in reservoir operations associated with operation of the Delta water diversions for the BDCP water agencies. The last sentence in essence states that pyrethroids will not be an issue.
5.D.0	5.D-ii	21-26	CM19, AM, WQ	Restoration actions will result in some level of mobilization and increased bioavailability of methylmercury, copper, and pesticides (including organophosphate, organochlorine, and pyrethroid pesticides). Given current information, it is not possible to estimate the concentrations of these constituents that will become available to covered fish species, but review of the conceptual models for each of these contaminants indicates that the effects should be limited both temporally and spatially. The most problematic of these potential effects is methylmercury. To address this issue, the Plan includes Conservation Measure (CM) 12 Methylmercury Management.	This discussion demonstrates the insufficiency of evaluation of the multiple sources of contaminants that should be considered, including the potential for restoration activities to contribute towards contaminant related issues for covered fish species. Conservation measures should be considered for other potential water quality impacts from the restoration projects, in addition to methylmercury.
5.D.1	5.D-1	11-12	CM19, AM, WQ	This analysis focuses only on changes in contaminants that are directly attributable to the covered activities that could affect covered fish species.	The analysis should include reservoir operational changes for the ESO.
5.D.2.1	Table 5.D.2-1	27	CM19	Table 5.D.2-1 Land Use and Typically Associated Containment Issues	The inclusion of urban stormwater as a CM in the absence of the other contaminant sources (e.g. historic mining, agriculture, and wastewater) discussed in Appendix 5.D implies that urban stormwater is the only significant source of contamination impacting native fish habitat; and, that improving urban runoff (in the absence of control strategies for other sources) will improve water quality sufficient to obtain the Objective (L2-4). In that significant water quality improvements for the selected contaminants of concern (listed below) cannot be effected by local stormwater programs (see rationale below), the rationale for inclusion of CM 19 in Objective L2.4 needs to be re-evaluated. As supported by literature and Table 5.D.2-1 'Land Use and Typically Associated Containment Issues' (page 5.D-2, Line 27): · Mercury and methylmercury: Legacy mining sources are recognized as the primary source, and reductions in stormwater concentration would have negligible benefit. · Selenium: Agricultural sources from areas with certain geologies are recognized as primary sources, and reductions in stormwater concentration would have negligible benefit.

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5.D.2.1	Table 5.D.2-1	27	CM19	Table 5.D.2-1 Land Use and Typically Associated Containment Issues	(continued from above comment) · Copper: Agricultural pesticides are recognized as a key source. Brake pads, which were identified as the primary source of copper in urban stormwater discharges, have been effectively addressed by the State of California through passage of SB 346. This legislation requires brake pad manufacturers to reduce the use of copper in brake pads sold in California to no more than 5% by 2021 and no more than 0.5% by 2025. · Ammonia/um: Agricultural and wastewater sources are recognized as the primary sources. Reductions in stormwater concentrations would have a negligible benefit.
5.D.2.1	5.D-3	24-25	CM19, WQ	Historically, polychlorinated biphenyls (PCBs) often were associated with urban discharge, and these contaminants have been detected in fish tissues in San Francisco Bay, although there is little research on PCB levels in the Delta	In Sacramento, PCBs are rarely detected in urban runoff, but are more frequently found in creek sediment from legacy sources. Urban runoff is not the current known source in the region, and any control measures would need to consider the clean-up issues in the creeks more than assessing urban runoff.
5.D.3	5.D-6	13-22	CM19, AM, WQ	Where available field data and quantitative modeling tool were deemed sufficient to capture the relevant aspects of the constituent in estimating impacts, quantitative model results are presented along with a full discussion of the conceptual model for each constituent. Where quantification would lead to results with very high margins of error and uncertainty and would not appropriately inform or define the effects on covered fish species, effects were discussed only qualitatively with the objective of determining the probability of effects on covered fish species.	Regardless of margin of error, relative impacts can be assessed between alternatives and the baseline. The BDCP should include a more detailed discussion of the modeling including the basis for finding quantitative modeling "inappropriate".
5.D.3.2.2	5.D-9	7-8	WQ	Reduction of flows in the Sacramento River downstream of the north Delta intakes also may result in decreased dilution of contaminants in the Delta.	We appreciate inclusion of this statement. This issue should be further evaluated in the BDCP.
5.D.3	5.D-10	Figure 5.D.3-1	CM19, AM, WQ	Generic Conceptual Model to Evaluate BDCP Contaminant Effects	The conceptual model does not evaluate the degradation of contaminants or their binding to organic carbon. For example, copper and trace organics are known to bind in such a way that removes their bioavailability.
5.D.4.3.1	5.D-38	14-20	WQ	Bruns et al. (1998) conducted water sampling between 1993 and 1995, compared both dissolved and total copper results against EPA AWQC and other criteria, and reported concentrations below criteria from almost all locations, including the Sacramento River. Because the criteria are dependent on sample-specific water quality measurements (including hardness), the criteria varied between sampling episodes. Significantly higher copper levels (at least an order of magnitude higher than all other results) that exceeded criteria were reported for Prospect Slough at the head of the Yolo Bypass.	Per the EPA objective, the copper water quality objective also considers dissolved organic carbon.
5.D.4.5.2.2	5.D-46	16-20	CM19, WQ	Given their affinity for soils, pyrethroids are not expected to spread far from the source area, and any suspension into the water column should be localized.	This conclusion also applies to the urban runoff loading, which is predominantly outside of the Plan Area. When considering the benefit of urban runoff treatment (CM19), this highly attenuated effect on downstream areas should be considered.

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5.D.4.5.2.3	5.D-46	12-14	CM19, WQ	Pyrethroid chemicals are used as pesticides in urban areas for pest control, and stormwater runoff has become an important source of pyrethroids in the Delta system. The purpose of CM19 Urban Stormwater Treatment is to provide treatment for stormwater to reduce input of contaminants. Thus, CM19 will result in decreased loading of pyrethroids to the Delta, although the level of this decrease cannot be defined at this time.	There is not a clear connection between effects on covered species and urban runoff sources of pyrethroids; however, the inclusion of CM19 is based on the potential benefit. A more detailed assessment of the benefit is necessary compared to control of other sources. This assessment should also consider the cost of control measures.
5.D.4.7.1	5.D-48	18-35	WQ	Surface water data indicate that concentrations are high for both diazinon and chlorpyrifos in back sloughs and small upland drainages, and concentrations are lower in both the main channels and main inputs to the Delta. High concentrations of chlorpyrifos also are found in Delta island drains, but concentrations of diazinon remain low in the same drains (McClure et al. 2006). In the past, elevated concentrations of diazinon and chlorpyrifos have been detected in the Sacramento and San Joaquin Rivers and in the Delta during particularly wet springs and after winter storm events (McClure et al. 2006). This could suggest that increased flow with accompanying increased suspended loads will result in increased mobilization of both diazinon and chlorpyrifos. Alternatively, the elevated concentrations may be attributable to irrigation or stormwater runoff from late winter/early spring dormant season spraying of orchard crops.	Characterization of OP pesticides based on data collected prior to 2005 should not be considered as representative of current conditions due to the fact that urban use bans have been effective since 2005. Numerous studies have characterized the lack of urban sources and absence of aquatic life effects from urban source OP pesticides.
5.D.4.9	5.D.50	21-23	CM19, WQ	Major sources of EDCs in the Central Valley are thought to be pyrethroid pesticides from urban runoff (Oros and Werner 2005; Weston and Lydy 2010), WWTPs (Routledge et al. 1998), and rangelands (Kolodziej and Sedlak 2007).	Previously, the document stated that pyrethroids are not mobile from the source site, and the sentence subject is the Central Valley rather than the Plan Area. Because this section is discussing fate and transport, the discussion should clearly discuss the location of the sources relative to the effect area of interest.
5.D.4.9.1.1	5.D.51	3-5	AM	Endocrine disruptors are a diverse group of chemicals, and it is not possible to evaluate fully the potential effects on the distribution and bioavailability of these chemicals from ESO water operations.	If a quantitative assessment cannot be performed, a relative assessment that alternatives introduce should be performed. This relative assessment would evaluate the direction and rough magnitude of impacts and present results in a format that is easy to discern.
5.D.4.10	5.D.51	18-21	CM19	Lead, PCBs, and hydrocarbons (typically oil and grease) are common urban contaminants that are introduced to aquatic systems via nonpoint-source stormwater drainage, industrial discharges, and municipal wastewater discharges.	MS4 systems are typically considered point sources, and it is unclear what is meant by non-point stormwater. Provide clarification of the intended source category.
5.D.5.1	5.D.52	41, 1-3	WQ	Important to this picture is that taking lands out of agricultural use will result in an overall reduction of agriculture-related contaminant loading, including pesticides, copper, and in some cases, concentrated selenium in irrigation drainage.	The net benefit of this land conversion should be better quantified and discussed.
5.D.5.1	5.D-53	5	WQ	ESO water operations will have few to no effects on contaminants in the Delta.	The evaluation should consider the impact of removing higher quality Sacramento River water and the increased contribution from lower quality San Joaquin River water, especially in the areas downstream from and near to the proposed intakes.

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5.D.5.3	5.D.59	4-11	WQ, AM	As discussed throughout this appendix, the amount of contaminants that will be mobilized and made more bioavailable to covered fish species due to inundation of ROAs is uncertain. This uncertainty is most critical for methylmercury, and to a lesser extent for pesticides and other metals. For each of the contaminants, the chemical-specific and site-specific factors that will determine resultant effects vary. CM12 is included in the BDCP to support site specific evaluation and monitoring of methylmercury production in restored areas. Data from this monitoring will assist in evaluating the effects of restoration actions and reduce the uncertainty associated with the potential exposure of covered fish to methylmercury mobilized by these actions.	The evaluation should specify the uncertainties and how they can be evaluated through data collection and analysis. It is within the scope of the BDCP to develop computational models for this analysis and future assessments. Moreover, the BDCP should fully fund a substantial monitoring program for the term of the BDCP to evaluate the unknowns. No evaluation of contaminants was presented in this section or the BDCP that justifies inclusion of CM19. The uncertainties of CM19 were not evaluated, and a comprehensive evaluation of the benefit of contaminant reductions from a range of sources was not presented.
5.D.5.3	5.D-59	4-11	AM, WQ	5.D.5.3 Uncertainties and Information Needs	This section is insufficient. The BDCP should have a commitment to the research needed to address mobilization of contaminants due to inundation of ROAs and other activities. A comprehensive assessment of the uncertainties and information needs should be prepared so that the efforts can be prioritized for the purpose of inclusion in the BDCP.
7	7-1	37-39	LOCAL	In addition, a Stakeholder Council will be created and regularly convened to enable public agencies, nongovernment organizations, interested parties, and the general public to provide ongoing input into the BDCP implementation process.	Local public agencies will have costs associated with the BDCP and will be in the area of greatest impact and, thus, should have a more primary role in the Permit Oversight and/or Adaptive Management Team in cases where assessments or decisions affect these agencies.
7.1	7-2	15-17	LOCAL	Various other parties, including the state and federal fish and wildlife agencies, other public agencies, nongovernment organizations, interested parties, and the public will be integral to the process of shaping decisions and effectuating actions set out in the BDCP.	This broad statement and usage of "integral" suggests a level of influence that is not supported by the rest of the section. For example, many of the listed entities would only be permitted interaction through the Stakeholder Council. While the Stakeholder Council can comment on BDCP actions, they are not give authority to "effect actions". This sentence should be reworded to specify the authority that these entities are granted in the process (e.g., contribute to, provide non-binding feedback, etc.)
7.2.8	7-26	5-9	LOCAL	[Note to reader: At the time of this Public Draft, the California Natural Resources Agency is working with representatives from Delta counties to identify an appropriate mechanism to involve Delta counties in Plan implementation. It is the intention of the agency to incorporate revisions to the implementation structure set forth in this chapter that address further Delta county participation in a final plan].	Because of its planning area size and proximity, the City of Sacramento and other local cities should also be further incorporated, like the counties, into the implementation structure.
8.1	8-1	39	LOCAL	This public contribution is further justified by the fact that there are stressors contributing to the decline of the Delta ecosystem and dependent species that are not directly related to operations of the SWP and Central Valley Project (CVP).	The benefit of the BDCP to the local public is not clear and should be better quantified. It has not been demonstrated that local stressors would be significant in the absence of the SWP and Central Valley Project (CVP). This statement should be justified based on established science.
8.2.3.12	8-36	11-12	WQ, LOCAL	The cost estimate for site characterization and soil sampling is $2.2 million. Costs are summarized in Table 8-17.	The costs should consider restoration area management costs to minimize methylmercury discharges. CM12 is intended as a methylmercury management action, but the costs only cover initial assessments. For example, compliance with the TMDL wasteload allocation will incur costs to implement control actions.

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8.2.3.19	8-46	14-15	CM19	Estimated costs for urban stormwater treatment are $50 million (Table 8-24)	The proposed cost is not adequate to implement wide-scale stormwater treatment and would likely have a negligible impact on Delta water quality. MS4 agencies would only be legally allowed to implement projects on municipal properties. New development and redevelopment local requirements already generally conform to the requirements in CM19, and the cost is passed on to land developers and homeowners. Effectiveness assessment monitoring in downstream waters would be difficult and expensive. The assessment monitoring for CM19 should be funded by the BDCP.
8.2.5	8-56	Table 8-30	CM19, LOCAL	Cost Estimate for Effectiveness and Compliance Monitoring	The projected costs for methylmercury monitoring and assessments are too low. The BDCP should contribute to wider methylmercury assessments and fish tissue surveys to confirm that restoration areas are not contributing to elevated concentrations and the impairment. Because this is a long-term water quality problem, long term monitoring costs are likely, and an estimate of $2.2M over 50 years is insufficient. If the intent is to consider "potential" research if loading problems are identified, there should be better discussion of the conditions that would trigger these additional research actions.
8.2.5	8-56	Table 8-30	CM19	*Omission of monitoring costs for CM19*	Demonstration of the effectiveness of stormwater treatment and related benefits to downstream receiving waters can be difficult and expensive. The BDCP should provide funding to support CM19 assessments.
8.2.5	8-57	Table 8-31	ERROR, AM	Cost Estimate for Potential Research	The commitment to "potential" research is not explained. The research program should show a firm commitment to funding studies to support filling current and future information needs. This is important to ensure implementation actions during the near-term implementation period are invested where there is most benefit, and to support adaptive management for later implementation actions.
9.1.3	9-3	1-29	ALT, WQ	BDCP development began in 2006. During the development of the BDCP, the participants carried out a focused effort to identify and consider a range of alternative approaches to water conveyance infrastructure and operating criteria (CM13), as well as a number of different approaches to natural community restoration and enhancement. Development and evaluation of a range of alternatives was also guided by the Delta Reform Act. California Water Code Section 85320(b)(2) specifically requires including a comprehensive review and analysis of seven factors.	The California Water Code Delta Reform Act provides minimum guidance for alternatives to evaluate, and the BDCP alternatives are too narrow. Additional alternative evaluation is required for the EIR/EIS to sufficiently evaluate the impacts of the BDCP. While the CWC requirements seem narrow in evaluating the alternatives to take, it is reasonable to evaluate additional alternatives to conveyance. For example, the Alternatives to Take section does not investigate developing and evaluating other means of increasing water supply in the system, which includes more off-line storage, treatment of waste streams for reclamation, and development of regionally independent solutions (seawater filtration, reuse, etc.). In particular, the latter two are much hindered by water rights law, territorial ownership and water agreements, and the complexity of the water quality laws with the Basin Plan, Title 22, and Porter Cologne. Streamlining of the water quality and planning components will better encourage these regionally independent alternatives to take.

Section	Page	Line	Type	Reference Document Text	Comment
10.3.1	10-5	4-12	AM	For example, recommendations related to the development of new planning tools (e.g., hydrodynamic, ecosystem, species models) were not deemed practical because they could not be developed to a usable form within the timeframe of BDCP development. These planning tools, however, could be designed during BDCP implementation to inform development and implementation of specific actions in fulfillment of the conservation measures. The BDCP adaptive management program (Chapter 3, Section 3.6, Adaptive Management and Monitoring Program) calls for the development and use of such models	The determination that development of the tools was not feasible should be better explained. By delaying development of these tools and deferring characterization of baseline conditions later, the uncertainty of impacts can be extended until the BDCP impacts cannot be undone. There are existing efforts in the Drinking Water Policy, CVSALTS, and others that could be used at least as a basis for some of the evaluations. If these tools can be developed for projects with smaller scopes, they should be required for the BDCP to remove uncertainty.
10.3.7.3	10-14	19-28	WQ, WS, LOCAL	The report also suggests that a broader array of alternatives and options for managing water is needed in Delta water planning efforts, including improvements in water-use technology, reuse technology, economizing on water use, and various degrees of long-term species protection. Clearly, the full resolution of these issues lies beyond the purview of the BDCP, but the BDCP can make important contributions by clearly defining water allocations (as is done in CM1 Water Facilities and Operation), by setting performance goals for conservation of affected species and natural communities (as is done in Chapter 3, Section 3.3 Biological Goals and Objectives), and by active participation in regional decision-making processes (as addressed in many sections addressing cooperation with neighboring HCPs and NCCPs, the BDCP's relationship to the Delta Plan, and the BDCP's relationship with other scientific efforts in the Delta).	The role of the BDCP and the water exports is fundamental to California water supply and support of all beneficial uses. The BDCP should evaluate the broader array of the alternatives; this evaluation and funding of additional technology and policy programs should in the least be coordinated with the California Water Plan or other state efforts to ensure that there are not oversights or gaps in the needed solutions to California's water challenges.

List of Acronyms

AWQC	Ambient Water Quality Criteria
BDCP	Bay Delta Conservation Plan
BMP	Best management practice
CALSIM II	California Water Resources Simulation Model
CM	Conservation Measure
CVP	Central Valley Project
CVSALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CWC	California Water Code
DO	Dissolved oxygen
DRERIP	Delta Regional Ecosystem Restoration Implementation Plan
DSM	Delta Simulation Model
EDCs	endocrine-disrupting compounds
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESO	evaluated starting operations
HCP	habitat conservation plan
HSPF	Hydrological Simulation Program-FORTRAN
IEP	Interagency Ecological Program
MS4	Municipal separate storm sewer system
NCCP	Natural Community Conservation Plan
NPDES	National Pollutant Discharge Elimination System
NPS	Non-point source
OP	Organophosphate
PCBs	Polychlorinated biphenyls
ROA	restoration opportunity areas
SMART	specific, measureable, achievable, relevant, and time-bound
SSQP	Sacramento Stormwater Quality Partnership
SWP	State Water Project
TMDL	Total maximum daily load