CALIFORNIA
Water Boards

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GOVERNOR

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SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

JUL 0 5 2013

Mr. Russell Stein
California Department of Water Resources
3500 Industrial Blvd.
West Sacramento, CA 95691

Dear Mr. Stein

COMMENTS ON THE SECOND ADMINISTRATIVE DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT FOR THE BAY DELTA CONSERVATION PLAN

Thank you for the opportunity to comment on the Second Administrative Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Bay Delta Conservation Plan (BDCP). The mission of the State Water Resources Control Board (State Water Board) and the Regional Water Quality Control Boards (Regional Water Boards) is to preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations. The State Water Board administers water rights in California, including water rights for the Department of Water Resources' State Water Project (SWP) and the U.S. Bureau of Reclamation's (USBR) Central Valley Project (CVP). The State and Regional Water Quality Control Boards also have primary authority over the protection of the State's water quality. The BDCP will require both water quality and water right approvals from the State Water Board, and possibly the Central Valley and San Francisco Bay Regional Water Quality Control Boards (collectively Water Boards). Accordingly, the Water Boards are responsible agencies for the BDCP pursuant to the California Environmental Quality Act (CEQA). As responsible agencies for the BDCP, the Water Boards conducted a preliminary review of parts of the BDCP and DEIR/EIS. The enclosure (BDCP EIR/EIS Review Document Comment Form) includes preliminary comments on these documents based on Water Board staff's limited review and current understanding of the project and environmental document. Staff has not reviewed all of the documents completely and also understands that additional changes are currently under development and consideration. Accordingly, once Water Board staff has additional time to review the BDCP and public draft EIR/EIS, we may amend these comments and provide additional detailed comments.

Water Board staff's review focused on:

- The CEQA analysis associated with Alternatives 4 (the preferred project) and 8 (the alternative requested by the State Water Board to provide a broad range of operational alternatives), including the associated impact analysis and mitigation measures.

- Information needed for the Water Boards to facilitate the processing of: (a) water right actions associated with the project, including information needed for conducting a review of the likelihood of potential injury to any other legal user of water and the extent to which fish and wildlife would be affected by the change; (b) water quality certifications for the construction and operation of the conveyance facilities and restoration projects (focused on CM1); and (c) National Pollutant Discharge Elimination System (NPDES) permits that might be needed for regulating pollutant discharges to surface waters during construction and operation of the conveyance facilities and restoration projects.

- Information to inform changes to the Water Quality Control Plan for the San Francisco Bay-Sacramento/San Joaquin Estuary (Bay-Delta Plan) and its implementation. The State Water Board is in the process of developing and implementing updates to the Bay-Delta Plan and flow objectives for priority tributaries to the Delta to protect beneficial uses in the Bay-Delta watershed. Phase 1 of this work involves updating San Joaquin River flow and southern Delta water quality requirements included in the Bay-Delta Plan. Phase 2 involves other comprehensive changes to the Bay-Delta Plan to protect beneficial uses not addressed in Phase 1, focused on fish and wildlife beneficial uses. Phase 3 involves changes to water rights and other measures to implement changes to the Bay-Delta Plan from Phases 1 and 2. Phase 4 involves developing and implementing flow objectives for priority Delta tributaries outside of the Bay-Delta Plan updates. Information from the BDCP process will primarily inform potential changes to the Bay-Delta Plan related to Phase 2 and likely changes to water rights in Phase 3.

In addition to reviewing the BDCP documentation, Water Board staff reviewed the comments on the December 2012 Administrative Draft BDCP that were prepared by National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), and the 2012 Red Flag comments on the February 2012 version of the BDCP Effects Analysis that were submitted by the U.S. Bureau of Reclamation (USBR) and the California Department of Fish and Wildlife (CDFW), USFWS, and NMFS (collectively the fishery agencies). State Water Board staff generally support the fishery agencies' comments contained in these documents and agree that the issues identified should be resolved.

Water Board staff look forward to continue working with the BDCP environmental review effort for this project. To facilitate our review and consideration of approvals needed for the BDCP, Water Board staff requests the opportunity to participate in on-going technical discussions concerning the BDCP and environmental review process. Water Board staff are also available to continue discussions regarding the process for considering the various approvals needed from the Water Boards for the project. If you have any questions concerning this matter, please contact me at rich.satkowski@waterboards.ca.gov or (916) 341-5439, or Karen Niiya at karen.niiya@waterboards.ca.gov or (916) 341-5365. Written correspondence should be addressed as follows: State Water Resources Control Board; Division of Water Rights; Attn: Richard Satkowski or Karen Niiya; P.O. Box 2000; Sacramento, CA 95812.

Sincerely,

Richard Satkowski,
Senior Water Resources Control Engineer
Division of Water Rights

Enclosure

Enclosure to July 5, 2013 Letter from Water Board's Staff

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No:__General Comments __***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Topic	Line #	Comment	ICF Response
1	Water Rights/ Bay-Delta Plan		As indicated in the EIR/EIS, the State and Regional Water Boards (Water Boards) have discretionary approval authority over the water right and water quality aspects of the proposed project and are responsible agencies for this project under the California Environmental Quality Act (CEQA). As responsible agencies under CEQA, the Water Boards must review and consider the environmental effects of the project identified in the EIR/EIS that are within their purview and reach their own conclusions on whether and how to approve the project involved. (Cal. Code Regs., tit. 14, § 15096, subd. (a).) In order for the Water Boards to determine whether the EIR/EIS adequately addresses all of the proposed actions, please identify all of the changes to water quality objectives, water rights, and other approvals that are needed for the BDCP. Specifically, please identify which water quality objectives are proposed to be changed, any new water rights that may be requested and any proposed changes to water rights. A table identifying the proposed changes in the beginning chapters of the EIR/EIS would be helpful. All of the proposed approvals that are needed by the BDCP must be identified and fully evaluated (including cumulative impacts) in the EIR/EIS and appropriate mitigation proposed in order for the Water Boards to consider those approvals. The Water Boards are available to work with the project proponents to develop the above information.	
2	Bay-Delta Plan		To consider changes to the Bay-Delta Plan needed for the BDCP, the State Water Board will need to independently review the scientific basis for any changes to the Bay-Delta Plan and make a determination that those changes are reasonably protective of beneficial uses. To support any changes needed for the BDCP, the scientific basis for those changes should be provided in the BDCP, EIR/EIS or other documentation (including changes to non-fish and wildlife flow objectives). The State Water Board will then independently evaluate this information and other relevant information to determine what, if any, changes to make to the Bay-Delta Plan to protect beneficial uses. The State Water Board will also need to conduct an anti-degradation analysis for any changes that may result in a degradation in water quality. Documentation and analysis to support that analysis should also be provided. Pursuant to state and federal law, the State Water Board is required to regularly review and update the Bay-Delta	

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			Plan to assure that it is reasonably protective of beneficial uses. Future updates to the Bay-Delta Plan will continue to be based on best available science and may therefore modify any BDCP elements that are affected by the Bay-Delta Plan to assure the reasonable protection of beneficial uses.	
3	Water Rights		Before the State Water Board may approve a change in a water right permit or license needed to implement the BDCP, including a change to the point of diversion specified in the permit or license, the Board must find that the change will not injure any legal user of water. (Wat. Code, § 1702.) Information concerning the extent, if any, to which fish and wildlife would be affected by the change shall also be considered. (Wat. Code, § 1701.2) The State Water Board has an independent obligation to consider the effect of the BDCP on public trust resources and to protect those resources where feasible (*National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419), and to prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water (Cal. Const., art. X, § 2; Wat. Code, § 275). Pursuant to its authority under the Water Code, the State Water Board may request additional information outside of the CEQA process to meet the State Water Board's public trust and other obligations. Accordingly, while BDCP parties may determine that CEQA does not require an analysis of all of the issues pertaining to water right change petition approval (including impacts to other legal users of water and public trust resources), it would assist the State Water Board in its consideration of the BDCP if the EIR/EIS discussed these issues. Given the similarity of the scope of analyses, it would be efficient to address these issues in one document.	
4	Water Rights, Bay-Delta Plan		As indicated in several comment letters on the BDCP environmental review process, for the Water Boards to consider any water quality and water rights applications or petitions for the BDCP, environmental documentation prepared for the project must disclose the significant effects of the proposed project and identify a reasonable range of interim and long-term alternatives that would reduce or avoid the potential significant environmental effects. The BDCP does not appear to propose interim water project operational measures needed to protect fish and wildlife beneficial uses beyond those requirements associated with biological opinions. The measures required by the biological opinions are designed to avoid jeopardy of listed species which is not the same standard as the standard of reasonable protection of beneficial uses. Since the State Water Board is required by law to periodically review and update, as appropriate, the Bay-Delta Plan, it will continue its independent review and update of the Bay-Delta Plan, and will establish requirements during the interim that are based on the best available science at the time of the update. The Water Boards will also need to independently evaluate the long-term measures proposed by BDCP and reach an independent conclusion on whether to approve changes associated with the project.	

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5	CWA 401		Section 401 of the Federal Clean Water Act (CWA) requires any applicant for a federal license or permit, which may result in any discharge to navigable waters, to obtain certification from the State that the discharge will comply with the applicable water quality parameters in the CWA. Under section 303 of the CWA and under the Porter-Cologne Water Quality Control Act, the State Water Board and U. S. Environmental Protection Agency approved, the Bay-Delta Plan. Additionally, the California Regional Water Quality Control Boards have adopted, and the State Water Board has approved, Water Quality Control Plans (basin plans) for each watershed basin in the State. These Basin Plans designate the beneficial uses of waters within each watershed basin, and water quality objectives designed to protect those uses pursuant to Section 303 of the Clean Water Act. (33 U.S.C. § 1313.) The beneficial uses together with the water quality objectives that are contained in the Basin Plans and state and federal anti-degradation requirements constitute California's water quality standards. If the Project does not comply with one or more of the water quality objectives or criteria, then DWR must identify the actions that it will take to bring its Project into compliance with the applicable water quality limits in order to fully protect and maintain the beneficial uses. When submitted, DWR's application for certification must meet the application filing requirements specified in Cal. Code Regs., tit. 23, section 3856. The State Water Board may request additional information to clarify, amplify, correct, or otherwise supplement the contents of the application. Supplemental information may include evidence of compliance with the water quality control plans. (Cal. Code Regs. tit. 23, § 3836.) A certification is issued when the State Water Board determines that an application for certification is complete and there is reasonable assurance the operation of the Project will comply with water quality standards and other appropriate requirements. The State Water Board must analyze potential Project-related environmental impacts to Project affected water bodies prior to making a determination that continued operation of the Project will be protective of the designated beneficial uses of the watershed.	
6	BDCP, EIR/EIS		As discussed in the State Water Board's letter to Gerald Meral of April 19, 2011 and other correspondence, in order for the State Water Board to consider changes to the Bay-Delta Plan and water rights, the BDCP must evaluate a sufficiently broad range of alternatives. Alternatives that reduce reliance on water from the Delta should be included in this range. Accordingly, it seems appropriate to include reduced reliance on water from the Delta as a conservation measure for the project and as mitigation for impacts associated with impacts related to inadequate water supplies to meet all needs for water within and outside of the Delta.	

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7	BDCP		The decision tree for Delta outflow includes four operational scenarios. Compared to the no-project alternative (which appears to be the appropriate comparison point for long-term effects), it appears that all of these operational scenarios decrease total Delta outflow (see Attachment 1: State Water Board analysis) in the late-long term. The justification for this limited range of Delta outflow scenarios is not clear given that there is strong information on the possible need for more Delta outflow for the protection of aquatic resources and the uncertainty that other conservation measures will be effective in reducing the need for flow. Specifically, recent research indicates that restoration of tidal marsh may not be feasible, possible, or effective. Accordingly, it appears appropriate to include a broader range of Delta outflows under the decision tree process.	
8	BDCP		The Decision Tree process described in Table 3.4.1-1 of the BDCP indicates that structured hypothesis testing would be conducted through a collaborative science program (a) to determine whether or not additional spring outflow above D-1641 requirements is needed to achieve longfin smelt abundance objective; and (b) to determine whether or not the position of the fall low salinity zone needs to be in Suisun Bay and the lower Delta to achieve BDCP objectives for Delta smelt habitat and abundance. Although BDCP text on page 3.4-19, starting on line 22, indicates that, prior to commencement of dual conveyance operation, hypotheses supporting each criterion will be tested in detail, and data will be collected, it is unclear whether operational changes and adaptive management will be part of the testing. Interim and long-term provisions for these measures should be developed and included in the BDCP to better inform decision making regarding adaptive management for the protection of all of the covered species and those that may be listed in the future.	
9	BDCP		Although the Decision Tree process proposes hypothesis testing for delta smelt and longfin smelt, it does not appear to take into consideration the flows that might be needed for other aquatic species, such as sturgeon and salmonids. The decision tree process should include consideration of flow needs for other listed species, as appropriate.	
10	BDCP		Decision-making authority for the Decision Tree does not appear to be explained in either the BDCP or the EIR/EIS. The role of the fishery agencies, State Water Board and other groups should be specified in the BDCP and EIR/EIS. Any data, analysis, and conclusions developed as part of the decision tree process, including fishery agency review and recommendations should be included in regularly-scheduled reports as part of the Plan of Implementation.	
11	EIR/EIS		The environmental impacts associated with the range of potential adjustments to CM1 operations anticipated as part of adaptive management, and as part of potential real-time operations changes, do not appear to be included in the EIR/EIS. An	

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			evaluation of the potential impacts should be included, especially potential impacts to species that were not the basis for the proposed operations.	
12	EIR/EIS		The EIR/EIS concludes that there are potentially significant impacts that are not mitigable. The EIR/EIS should describe how the BDCP is still consistent with the two coequal goals, especially the goal of protecting, restoring, and enhancing the Delta ecosystem. The BDCP proponents will also need to develop a statement of overriding considerations that explains how the benefits of the project outweigh the unavoidable adverse environmental effects.	
13	EIR/EIS		The EIR/EIS should provide tabular quantitative comparisons of the various alternatives, including flows, exports, temperatures, and other quantitative information. An example of such a table, prepared by State Water Board staff, is included as Attachment 2)	
14	BDCP/ EIS/EIR		The BDCP relies on habitat restoration to provide adequate ecosystem conditions to achieve the biological goals and objectives of the project. Available tidal energy, and the associated tidal exchange, might be attenuated as restoration projects begin to be constructed and put into operation. The reduction in tidal exchange might reduce the export of phytoplankton and reduce turbidity. Both of these effects might reduce the effectiveness of existing and future restoration areas. The BDCP and the EIR/EIS do not appear to analyze the effects of changes in tidal energy exchange that may result after construction and implementation of habitat restoration projects, and how those changes in tidal energy might affect transport of food and turbidity from the restored areas to locations where pelagic species are present. The Independent Science Board, in its Habitat Restoration Review (2013) suggested modeling research to evaluate how dissipations in tidal energy may reduce tidal ranges such that the effectiveness of restoration sites is reduced. Water Board staff support this approach.	
15	BDCP		Section 3.6.4.2 of the BDCP describes North Delta Diversion Bypass Flow Criteria. The proposed bypass flow criteria consist of constant low-level pumping, initial pulse protection, and three levels of post-pulse operations. Page 3-156, line 32 describes Post-Pulse Water Operations, which describes how Level I, Level II, and Level III bypass flows would be initiated. However, the process by which operations should return to Levels II and I pumping for the protection of fish species was not described, but should be.	
16	BDCP		Section 3.4.1.4 of the BDCP describes how operation of the conveyance facility will be controlled through criteria that are partly prescribed and partly adjustable through three processes: decision trees, adaptive management, and real-time operations. Although text starting at line 3 on Page 3.4-3 indicates that adaptive management would be used to modify operations after initiation of north Delta diversion operations, text on pages 3.4-19 through 3.4-20 does not specify that adaptive management will be implemented for either Spring Outflow or Fall Outflow	

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			after initiation of north Delta diversion operations. Given the uncertainty regarding the quantity of Spring and Fall outflow needed to achieve biological objectives and the likelihood that this uncertainty will not be fully resolved by the time the conveyance facility is in operation, it seems appropriate to include these operational parameters in the adaptive management program. Text on Page 3.4-21, starting at line 15, identifies the operational parameters that would be subject to real-time operation adjustments within limits described in Section 3.4.1.4.3: Delta Cross Channel Gates, Head of Old River Gate, South Delta Diversions, and North Delta Diversions. It is not clear from the discussion whether these operational parameters would also be subject to adaptive management. These operational parameters should also be included in the adaptive management program. The North Delta Diversion's operational parameter is associated with north Delta bypass flows. The north Delta bypass flows should therefore be included in the text on Page 3.4-21, starting at line 15, for clarity. This will provide consistency with text on Page 3.4-23, starting at line 1, which states that north Delta Diversion bypass flows will be part of real-time operations. It is not clear how the real-time operational ranges described in Section 3.4.1.4.3 were considered in the environmental analysis contained in the EIR/EIS. Please explain. Text on Page 3.4-21 states that some operational parameters would not be subject to real-time adjustments, as they would be operated according to criteria described in Section 3.4.1.4.3. For clarity, the specific operational parameters that will not be subject to real-time adjustments should be listed here. It appears that the operational parameters that will not be subject to real-time adjustments are: Old and Middle River/San Joaquin inflow/export ratio, spring outflow, fall outflow, winter and summer outflow, and export to inflow ratio. To address uncertainty in the various measures these operational parameters should be included in the adaptive management program. Page 3.4-23, line 1: The text suggests real-time operations of the North Delta Diversion bypass flows between December and June would not operate according to the criteria described in Table 3.4.1-2. Specifically, the text would allow real-time operations to operate at lower bypass flows than those described in Table 3.4.1-2, and it would not allow three-level post-pulse operation. This discussion is confusing, and should be clarified. Page 3.4-23, line 10: The text should include real-time operations as another way of informing the implementation of CM1.	

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17	BDCP		The BDCP, page 9-6, line 35 states the Combined Scenario 5 (CS5) alternative was developed to be an operational scenario focused on maximizing ecological benefits for aquatic covered species in the Delta, assuming that only flow changes would provide benefits, without consideration of the likely benefits provided by the BDCP's other conservation measures. The CS5 alternative became an "alternative to take" instead of a project alternative because the BDCP indicates this alternative would require water management operations outside of the BDCP Area, and that it would conflict with existing legal constraints, causing unresolvable conflicts between species needs and affecting upstream water rights. (Section 9.1.3.2.3 of the BDCP) The underlying science that was used to develop the CS5 alternative, and the modeling analysis that was performed to evaluate the alternative do not appear to be included in the BDCP and EIR/EIS documentation. This information should be made available.	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Executive Summary and Chapter No. 1__ Introduction***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	ES-34	34	This paragraph indicates a summary of existing CVP and SWP operations would be briefly summarized immediately following, but no summary was provided. Please provide the summary along with a summary of the proposed operations under the alternatives.	
2	ES-36	25	The section describing Scenario H does not refer the reader to a technical appendix where the underlying science can be found. An appendix with this information should be provided and referenced where appropriate in the document.	
3	ES-36	25	The section describing Scenario H refers to biological objectives, but does not tell the reader where the biological objectives can be found.	
4	ES-40	43	The Executive Summary indicates the project proponents anticipate approval from State Water Board for new SWP points of diversion in the Delta, which would likely be subject to conditions on DWR's and USBR's water rights to protect beneficial uses in the Delta. It further states that such changes "would not include changes in water rights; however, there are concerns that the BDCP could result in the potential for increased exports of water." This statement is incorrect. Implementation of the BDCP project will require changes to water rights and water right requirements. Further, the proposed project may affect other legal users of water through changes in salinity and flows. These issues are further discussed elsewhere in this comment letter.	
5	1-18 – 1-23		Section 1.6.1 describes the use of this EIR/EIS by other entities, and provides a table summarizing the agencies that might use this document, including their specific review, approval, or other responsibilities. Based on initial review of the second administrative draft EIR/EIS, the Water Boards will need additional information beyond what is provided in the document to implement their permitting authority. As currently written, section 1.6.1 does not state whether the project proponents intend to provide supplemental information at a later date to the individual approving agencies to augment the information in the EIR/EIS.	

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6	1-24	18-22	Similar to the executive summary, the EIR/EIS states that the project proponents anticipate approval from the State Water Board for new points of diversion in the Delta for the proposed project. The EIR/EIS further states that such changes would not include changes in water rights, but there are concerns that the BDCP could result in the potential for increased exports of water. These statements are unclear and contradictory and should be clarified. The proposed project would result in changes to water rights and could potentially affect other legal uses of water. As explained above, these issues should be fully described and analyzed in the EIR/EIS.	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 2__ Project Objectives and Purpose and Need***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
			Possible Comments to be provided on public draft	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 3__ Description of Alternatives***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	General		Chapter 3 should include a table defining the specific operational assumptions under the various scenarios.	
2	3-155		The description of the objectives for the North Delta Diversion Bypass Flows contained on this page is different than the objectives description contained in Appendix 5A, page B-95. EIR/EIS Chapter 3, page 3-155 states: "The objectives of the north Delta diversion bypass flow criteria include regulation of flows to: (1) maintain fish screen sweeping velocities; (2) reduce upstream transport from downstream channels; (3) support salmonid and pelagic fish transport to regions of suitable habitat; (4) reduce predation effects downstream; and (5) maintain or improve rearing habitat in the north Delta." EIR/EIS Appendix 5A, page B-95 states: "Objectives include flows or the functional equivalent thereof to (1) provide North Delta bypass criteria with adaptive limits, (2) provide for Fall X2, (3) support salmonid and pelagic fish transport to regions of suitable habitat, (4) reduce predation effects downstream, and (5) maintain or improve rearing habitat in the north Delta." Please clarify.	
3	3A-7	All	Chapter 3A-7 was developed in May 2011, and it is not clear whether changes to operations have been made to the modeling since then. Please clarify whether Chapter 3A-7 has been modified to reflect the information contained in the fishery agencies' "Red Flag Letters"?	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 4__ Approach to the Environmental Analysis***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	4-3	32	The descriptions of the CEQA and NEPA baselines are unclear. A table would be helpful to summarize this information.	
2	4-5	7	The No Action Alternative is described, and its use in the NEPA analysis is described, but a corresponding description for the CEQA analysis is missing. Please provide.	
3	4-7	16	The first paragraph of this section appears to contain an error in its description of CEQA and NEPA regulations for assessing cumulative effects. For appropriate revisions, please refer to the Public Resources Code and CEQA Guidelines sections already cited in the paragraph.	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 5__ Water Supply (including water rights)***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	5-38 5-34 5-35 5-36 5-37	15-18 7-38 All All 1-32	CM1, the proposed project, includes three water diversions at Intakes 2, 4 and 5 on the Sacramento River near Hood in the north Delta. DWR's water right permits include only one point of diversion (near Intake 4). DWR may be required to file change petitions to add points of diversion and points of rediversion to its permits. The EIR/EIS does not include a section on DWR's and USBR's existing water rights, proposed changes to those water rights, and any new rights that DWR or USBR may seek to acquire. Such a write-up should be included within the water supply chapter or as an attachment to the document. The description of existing water rights, proposed changes to existing water rights, and any new rights needs to be specific and include (1) the water right and/or claim of water right, (2) the existing and proposed point(s) of diversion, point(s) of rediversion, place(s) of use, beneficial use(s) of water, and schedule to complete beneficial use of water, and (3) whether a petition for change or extension of time has been filed in connection with the water right and its status. To assist in describing the water rights and claim of water rights, the EIR/EIS should include maps that show the above items.	
2	5-34 5-35 5-36 5-37	7-38 All All 1-32	Implementation of CM2 may require water right change petitions on existing permits to add a point of rediversion on the Sacramento River at the Fremont Weir and to change the place of use by adding the Yolo Bypass. This should be coordinated with the State Water Board and addressed in the EIR/EIS or associated documents as discussed above.	
3	5-34 5-35 5-36 5-37	7-38 All All 1-32	According to the Division of Water Rights' records, DWR and USBR have 10 and 32 pending time extension petitions, respectively, for water rights within the Bay-Delta watershed or export areas. All of these petitions have been noticed and protested. It appears that only some of DWR's and USBR's time extension petitions are directly related to the BDCP. Please identify the existing time extension petitions that are directly related to the BDCP as well as their status. In addition, it appears that the existing time extension petitions that are directly related to the BDCP may need to be amended to allow more time for construction and operation of CM1. Normally, the baseline for determining significant effects of a petition for a time extension is the current environmental setting. (Cal. Code Regs., tit. 14, § 15125.) When the baseline is the current environmental setting, it includes the existing facility or ongoing project and whatever impacts it currently has on the environment. Because a time extension may allow construction of new or expanded facilities or application of water to beneficial use beyond what is currently occurring, an extension has the potential to have a significant effect on the environment that must undergo appropriate CEQA review.	

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			The Board will evaluate the environmental impacts associated with approving the time extensions. Specifically, it will evaluate the difference between the amount of water already put to beneficial use and the total amount authorized to be used. An exemption from CEQA may apply in certain situations, but the State Water Board cannot evaluate whether one would apply to DWR's or USBR's permits without more information.	
4	5-34 5-35 5-36 5-37	7-38 All All 1-32	In order to approve petitions to extend the deadlines to complete construction and apply water to beneficial uses specified in water right permits, the State Water Board must make findings regarding diligence pursuant to California Code of Regulations, title 23, section 844, including a finding that due diligence has been exercised, that failure to comply with previous time requirements has been occasioned by obstacles which could not reasonably be avoided, and that satisfactory progress will be made if an extension of time is granted. While not required by CEQA, this information should be provided with any petitions.	
5	5-34 5-35 5-36 5-37	7-38 All All 1-32	While not required pursuant to CEQA, an injury analysis pursuant to Wat. Code, § 1702 is needed before the State Water Board can authorize changes to DWR's or USBR's water rights. It should include information to indicate that a change will not operate to the injury of any legal user of the water involved. Among the water users that may claim injury to their water supply or quality are (1) junior water right holders, including Water Right Term 91 permittees and licensees, (2) western, interior, and southern Delta agricultural users, and (3) western Delta municipal users. Information showing that injury will not occur to these and other legal users of water should be provided with any change petitions.	
6	8-421 App. 5A	All B-40	The EIR/EIS shows the projected increase in Suisun Marsh salinity under the proposed project. Please explain how such changes will reasonably protect fish and wildlife beneficial uses and not injure other legal users of water.	
7	App. 5A App. 5A	B-95 B-104	It is unclear what averaging period is proposed for the bypass flows on the Sacramento River. Without knowing what averaging period will be used, it is not possible to assess the proposed bypass flows. Will diversions be based on the monthly average flow, daily average flow, instantaneous flow, or some other metric? Please explain.	
8	App 5A	B-104 and C-738	Flows at Freeport reverse occasionally at ebb tide under current conditions. If proposed tunnel diversions are based on an average flow rather than instantaneous flow, reverse flows at Freeport would become more common and more extreme in the period from July to November. Additionally, flows at Freeport upstream of the intakes are projected to decrease during that time period, as compared to existing conditions. Please specify what metric (average or instantaneous) will be used in implementation and include an analysis of how the proposed diversions will affect the instantaneous flows at Freeport and, consequently, biological resources, rather than just the monthly average flows.	
9	App. 5A	B-99	The proposed OMR values listed are monthly average flows "for use in modeling," but it is unclear what averaging period would be used for actual operations. This is an important consideration that may affect the protection afforded by this action, so it should be explicitly addressed.	
10	App 5A	B-6 Table B-18	It appears from Table B-18 that all alternatives assume VAMP flow requirements at Vernalis. In the text starting on Pg B-6 this is unclear. Please clarify whether or not VAMP is included in each alternative.	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 6__ Surface Water (including water transfers)***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	6-8	27-31	The EIR/EIS states: "Suisun Marsh is located west of the Delta. Water Right Decision 1485 (D-1485) issued by the [State Water Board] in 1978 established channel water salinity standards and a water quality monitoring program and provided for the recently adopted Suisun Marsh Habitat Management, Preservation, and Restoration Plan (Bureau of Reclamation et al. 2010)." The EIR/EIS should add that the Suisun Marsh criteria are also contained in Revised Water Right Decision 1641 issued in 2000. The EIR/EIS should also clarify that the State Water Board has not taken any action to approve the Suisun Marsh Habitat Management, Preservation, and Restoration Plan to determine whether that plan as implemented provides for the reasonable protection of fish and wildlife beneficial uses.	
2	6-38	8-10 and 22-27	The EIR/EIS states that the State Water Project (SWP)/Central Valley Project (CVP) operations are managed to meet instream flow requirements, water right agreements, and refuge water supply agreements in the Sacramento and San Joaquin valleys. Furthermore, the EIR/EIS discusses alteration of SWP/CVP operations. The document identifies the project proponents to be DWR and the following six water contractors: Alameda County Flood Control and Water Conservation District, (Zone 7), Kern County Water Agency, Metropolitan Water District of Southern California, San Luis and Delta Mendota Water Authority, Santa Clara Valley Water District, and Westlands Water District. The document further states that additional water contractors may become project proponents in the future. If additional water contractors become water proponents, will the EIR/EIS be revised accordingly? Is the USBR considered a project proponent?	
3	6-63	9-13	The EIR/EIS refers to reservoir storage and water transfers. If the proposed project is implemented, DWR may be able to increase the frequency and amount of water transferred using the export pumps. The document should include a quantitative analysis of the maximum amount of water that can be transferred (exported) due to	

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			construction and operation of proposed project. This includes water transfers of project water or other private party transfers. In addition, the document should include information on whether additional water transfers through the CM1's proposed north delta intakes would impact individual water right holders located between the proposed north and existing south Delta water intakes. Most water transfers are temporary, one-year transfers pursuant to Water Code section 1725. If DWR believes that water may be transferred under its rights in consecutive years due to the BDCP, DWR should file a petition for a long-term transfer pursuant to Water Code section 1735.	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 7__Groundwater***

Comment Source: SWRCB
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No.	Page	Line #	Comment	ICF Response
1	7-46, 7-47, 7-48	15-42 All, 1-8	Discharge of dewatered groundwater to surface water poses a threat to surface water quality and is regulated by the Water Boards. The construction of CM1 will require groundwater dewatering operations for the construction of intakes, intake pipelines, and conveyance facilities (tunnels). The groundwater pumping would occur 24 hours per day, 7 days a week. Dewatering requirements were assumed to range from approximately 240 to 10,500 gpm. Groundwater would be treated, as necessary, and discharged to surface waters in accordance with a National Pollutant Discharge Elimination System (NPDES) permit. The EIR/EIS describes the types of construction requiring dewatering and the range of dewatering pumping rates. However, the number of discharge locations and duration of discharges are not discussed. Dewatering discharges are typically considered a low or limited threat to water quality. However, the EIR/EIS should consider the possibility of encountering groundwater that has been polluted by leaking underground fuel storage tanks and spills of pesticides or other toxic or hazardous substances. It may be necessary to treat the water prior to surface water discharge to prevent impacts to water quality. The Water Boards would regulate these surface water discharges under an NPDES permit. The project proponent should plan to submit a Report of Waste Discharge at least one year prior to beginning construction. Based on the proposed discharge rates, the Water Boards may authorize discharge under an individual NPDES permit or Order R5-2008-0082-01, *General Order for Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order).	

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			Application requirements for the Limited Threat General Order are contained in Attachment G of Order R5-2008-0082-01, and can be found on the Central Valley Water Board website at http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2008-0082-01.pdf. In general, the applicant must include USEPA Application Forms 1 and 2D; State Water Board Form 200, including a project map which shows the location of the project, discharge point(s), and receiving water; a full description of the proposed project on official letterhead; blueprints of the proposed treatment system signed by a Registered Engineer or Geologist (if applicable); analysis of the proposed effluent for pollutants listed in Attachment B, Attachment C (if applicable), and any applicable 303(d) listed pollutants for the receiving water if proposing to discharge to an impaired waterbody; an evaluation of reclamation options; public notice requirements; and the appropriate fee. Water quality sampling for all constituents listed in Attachment B and C of the Limited Threat General Order and a sample of the 5-day biochemical oxygen demand (BOD_5).	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 8__Water Quality***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	8-9	23	Potential project related impacts on water quality due to selenium should be further evaluated. The project will result in significant increases of the San Joaquin River flow and subsequent selenium loading into the Delta and Suisun Bay that is listed as impaired by selenium. Yet, the forecasted selenium concentrations for various alternatives (e.g. Table M-10A) indicate no change in levels of selenium in Sacramento River at Mallard Island (0.21 and 0.30 mg/L), when compared to the existing conditions (0.21-0.25 mg/L). However, the transect data for the North San Francisco Bay TMDL (in preparation) indicate that measured selenium concentrations at Mallard Island could be lower than 0.1 mg/L, hence, the existing conditions in the analyzed scenarios are set too high. Moreover, the benchmarks used to evaluate impact of selenium on fish and aquatic birds may not be fully protective of the most sensitive species. For many years now, these concentrations have been questioned by scientists and agency staff as being too high for protection of some species, and especially the benthic fish such as white sturgeon and green sturgeon that are most vulnerable to selenium exposure. This prompted the US EPA to start work on derivation of the site-specific objectives for San Francisco Bay and California. Based on the work to date, it appears that to prevent bioaccumulation of selenium to toxic levels in sturgeon the water column concentrations must be at levels well below 0.25 mg/L that were used in the impact analysis. To the extent possible these potential impacts should be stated and evaluated in the EIR/EIS to allow for future more detailed analyses once the proposed new fish tissue criteria are announced. We intend to work collaboratively with the proponents of the EIR/EIS/S to fully address this issue.	
2	8-17	2-27	8.1.1.7 Water Quality Impairments section of the EIR/EIS/S does not clearly state that Suisun Marsh wetlands are listed on the 2010 303(d) list as impaired for low DO/organic enrichment, mercury, nutrients and salinity. As a result the impacts that are likely to change DO conditions, nutrient concentrations or mercury levels	

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			are not fully realized or considered in the document. Only effects of changes in salinity levels are considered in detail. Please include this information in the document.	
3	8-108	9-23	The EIR/EIS describes the Clean Water Act Section 401 Water Quality Certifications, Clean Water Act Section 404 and Rivers and Harbors Act Section 10109. The project description provided for CM 1 in the BDCP should be consistent with the project description provided in the Clean Water Act Section 404/Rivers and Harbors Act Section 10 and Clean Water Act Section 401 Water Quality Certification application(s). The project description for the BDCP should be expanded to include clarification at the proposed geographical locations(s) for: modification of any transportation and/or utility routes, and/or levee systems to accommodate the construction and implementation of the proposed project; (2) estimated acreage and/or linear feet in impacts to waters of the United States, including, but not limited to, modifications of transportation and utility routes, and/or levee systems; physical project components (i.e., pump intakes, pumping plants, pipelines, tunnels and tunnel alignments, canals, forebays, concrete batch plans, fuel stations, barriers and gates); and operational components; (3) volume (cubic yards) and anticipated frequency of sediment removal activities; and (4) areal extent and anticipated frequency of vegetation removal and revegetation activities.	
4	8-54	15-19	The environmental evaluation for the project anticipates a cumulative adverse impact with respect to mercury contamination. Conservation Measure 12 is designed to reduce adverse impacts caused by Conservation Measures 2, 4, 5, and 10, which are associated with wetland and floodplain habitat restorations. Mitigation measures include, but are not limited to, conforming to the relevant requirements of the Delta Mercury Control Strategy and the Central Valley Regional Water Control Board Basin Plan such as: required participation in efforts to minimize risks to human consumers of contaminated fish, participation in monitoring methylmercury loading from wetlands, and implementing appropriate and site-specific methylmercury control measures. The analyses acknowledge that mercury and methylmercury control measures are still in development, and it assumes that all practical measures will be implemented if reasonable and feasible. The analyses anticipate that not all contributions of methylmercury can be mitigated, and that even after all feasible mitigation measures are implemented, some adverse cumulative impacts may	

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			remain. No adverse impacts with respect with mercury contamination were found in the upstream project areas, however, adjustments to water management in upstream reservoirs may influence mercury transport, methylmercury production, and methylmercury bioaccumulation in reservoirs and downstream of reservoirs. Reservoir creation and operation has been shown to create local hotspots of mercury methylation and bioaccumulation. Some of the factors that have been found to likely influence methylmercury production or fish methylmercury bioaccumulation in California reservoirs include: reservoir depth, temperature, thermal stratification and hypolimnetic anoxia, water level fluctuations, aqueous and sediment inorganic mercury and methylmercury concentrations, chlorophyll-a concentrations, and specific conductivity (Louie et al. 2012; Negrey et al. 2012). Fish mercury levels have been found to be statistically proportional to the amount of land flooded and the ratio of surface area to volume flooded in reservoirs in the United States and Canada (Bodaly et al. 2007; Johnston et al. 1991; Selch et al. 2007). The magnitude of reservoir water level fluctuations have been identified worldwide as an important factor in determining fish mercury levels (Evers et al. 2007; Roulet et al. 2001; Sorensen et al. 2005). A similar relationship has been found in California reservoirs, where a statistically significant positive correlation has been observed between California reservoir fish mercury concentrations and annual mean reservoir fluctuations (Louie et al. 2012). If the magnitude and timing of reservoir releases increase the magnitude of reservoir level fluctuations in project reservoirs, then this could result in increased mercury contamination in Central Valley Project and State Water Project reservoirs. Staff recommends that the EIR/EIS address the potential changes to mercury and methylmercury in the upstream project areas and work with Water Board staff on needed measures to address mercury related concerns. References: Bodaly, D., W. Jansen, A. Majewski, R. Fudge, N. Strange, A. Derksen, and D. Green. 2007. Postimpoundment Time Course on Increased Mercury Concentrations in Fish in Hydroelectric Reservoirs on Northern Manitoba, Canada. Archives of Environmental Contamination and Toxicology, 53: 379-389. Evers, D., Y. Han, C. Driscoll, N. Kamman, M. Goodale, K. Lambert, T. Holsen, C. Chen, T. Clair, and T. Butler. 2007.	

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			Biological Mercury Hotspots in the Northeastern United States and Southeastern Canada. Bioscience, 57(1): 29-43. Johnston, T., R. Bodaly, and J Mathis. 1991. Predicting Fish Mercury Levels from Physical Characteristics of Boreal Reservoirs. Canadian Journal of Fisheries and Aquatic Sciences, 48: 1468-1475. Louie, S., M. Wood, and C. Austin. 2012. Development of a Statewide Mercury Control Program for Reservoirs. Poster Presentation Abstract, 7th Biennial Bay-Delta Science Conference. Sacramento, California., Available at: http://scienceconf.deltacouncil.ca.gov/content/poster-abstracts Negrey, J., W. Heim, M. Stephenson, and K. Coale. 2012. Mercury in California Lakes and Reservoirs: Factors Influencing Bioaccumulation in Black Bass. . Poster Presentation Abstract, 7th Biennial Bay-Delta Science Conference. Sacramento, California., Available at: http://scienceconf.deltacouncil.ca.gov/content/poster-abstracts Roulet, M., J. Guimaraes, and M. Lucotte. 2001. Methylmercury Production and Accumulation in Sediments and Soils of an Amazonian Floodplain – Effect of Seasonal Inundation. Water, Air, and Soil Pollution, 128: 41-60. Selch, T., C. Hoagstrom, E. Weimer, J. Duehr, and S. Chipps. 2007. Influence of Fluctuating Water Levels on Mercury Concentrations in Adult Walleye. Bulletin of Environmental Contamination and Toxicology, 79: 36-40. Sorensen, J. A., L. W. Kellemeyn, and M. Sydor. 2005. Relationship between mercury accumulation in young-of-the-year yellow perch and water-level fluctuations. Environmental Science and Technology 39:9237–9243.	
5	8-146	38	The EIR/EIS states: "For the assessment of Alternatives 1–9, the Sacramento River at Emmaton compliance location is relocated to Three Mile Slough near the Sacramento River. For comparing effects of the alternatives on EC in this portion of the Delta, changes in EC in Three Mile Slough under the alternatives are compared to EC at Emmaton under Existing Conditions and the No Action Alternative." Three Mile Slough is approximately four miles upstream of Emmaton. Using different compliance location for the baseline than for the alternatives provides an	

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			incomplete basis for comparison. Please provide comparable analyses and provide the scientific basis for this proposed change demonstrating that it provides equal or greater levels of protection. The State Water Board suggests using Emmaton as the compliance location in the modeling for all of the alternatives and then proposing separately, with scientific justification, that the compliance point be moved upstream.	
6	8-411 and 8-421	All	Impacts WQ-7 & WQ-11 for preferred Alternative 4 conclude that the BDCP may cause unavoidable adverse impacts to chloride and EC levels in the Delta and Suisun Marsh, which may increase the frequency of D1641 objectives violations and may be detrimental to municipal, agricultural, and fish & wildlife beneficial uses of water. The D-1641 requirements are legally binding for the protection of multiple beneficial uses of Delta water. If violating these standards is an unavoidable impact of the project, then the project proponents will need to work with the State Water Board to (1) demonstrate that the beneficial uses can be adequately protected by other means and (2) amend the Bay-Delta Plan and water rights requirements accordingly in coordination with the change petitions and other needed approvals for the project required from the Water Boards.	
7	App. 8H	All	The San Joaquin River compliance locations at Jersey Point and Prisoners Point are identified as being FWS objectives. The document should note that these objectives are also part of the Bay-Delta Plan and D-1641 and should be identified as such.	
8	8-172 to 8-723	6-42 All	The EIR/EIS should consider storage, management and disposal of wash water from concrete batch plants and associated equipment washing. Concrete wash water typically has very high pH, high salinity, and concentrations of dissolved metals (primarily hexavalent chromium) that could cause significant water quality impacts. If exposed to the environment, the solids that settle from concrete wash water may continue to leach alkalinity, dissolved solids, and/or dissolved metals after the water has been decanted. Although it identifies potential batch plant locations, the EIR/EIS does not provide specific details regarding the volume of concrete that would be used at each batch plant, nor does it discuss how the resulting wastewater and residual solids would be managed or disposed of. Wherever practical, generation of concrete wash water should be minimized and the wash water should be	

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			recycled within the batch plant. It should not be discharged to either surface waters or land for disposal purposes, and short-term settling or storage containment features should be engineered to prevent percolation of the waste. For example, Caltrans' *Construction Site Best Management Practices Manual* standard storm water best management practices (BMPs), specifically BMP WM-8 (Concrete Waste Management), has been found to be adequate to protect surface water quality. With some additional modification to the wash water containment system design and operation, strict adherence to BMP WM-8 would also protect groundwater quality at the batch plant site. Specifically, we recommend the following: 1. Increasing the thickness of the wash water containment sump's polyethylene liner to 40 mils to improve liner durability; 2. Frequent (daily) decanting of liquid from the lined impoundment to a leak-free tank or bin for recycling in the batch plant; and 3. Providing a paved (or plastic-lined) and bermed area for curing waste or rejected concrete until the material has cured in place for at least one week. The Central Valley Water Board would regulate these facilities under Waste Discharge Requirements or a Conditional Waiver of Waste Discharge Requirements. The project proponent should plan to submit a Report of Waste Discharge at least one year prior to beginning this type of construction. In order to support adoption of WDRs or a waiver, the EIR/EIS should disclose (in general terms) the volume of concrete and Portland cement-based grout that the project would utilize for each type of construction; the expected volume of wash water per unit of concrete (e.g., gallons per 100 cubic yards); the methods of wash water containment and disposal that might be utilized; and the method(s) of residual solids handling, storage, and disposal. If recycling the wash water is not a viable option, the EIR/EIS should also discuss the expected chemical character of the waste with respect to pH, total dissolved solids, hexavalent chromium and other dissolved metals; and the methods of containment, treatment, and disposal that might be utilized.	
9	8-172 to 8-723	6-42 All	The EIR/EIS should consider storage, management and disposal of dewatering waste that has contacted uncured concrete or other cementitious materials. The construction of concrete structures involving placement of concrete in-stream or below the water table can generate dewatering waste that is similar in character to	

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			concrete wash water. The EIR/EIS does not provide specific details regarding construction staging areas, the number of and type of subsurface concrete structures, or the volume of concrete that would be used, nor does it discuss how the resulting wastewater and residual solids would be managed or disposed of. Depending on the volume of water generated at each location, it may be possible to neutralize the water and then discharge to land discharge for disposal without causing significant impacts to water quality. Small discharges of this type could be regulated under the State Water Resources Control Board's *Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality* (Water Quality Order 2003-0003-DWQ or subsequent general WDRs order). In general, short-term containment should be provided to allow for pH testing and addition of the minimum required dose of neutralizing agent prior to discharge. If the waste will be discharged to land not owned by the state, the landowner's permission must be obtained. The Executive Officer of the Central Valley Water Board can authorize coverage under the Statewide General WDRs. The project proponent should plan to submit an application for coverage (known as a Notice of Intent) at least 90 days prior to beginning this type of construction. Larger discharges of dewatering waste contaminated by contact with uncured concrete may require additional treatment to reduce the concentration of dissolved metals and/or carefully controlled discharge, and individual Waste Discharge Requirements adopted by the Central Valley Water Board may be needed. The project proponent should plan to submit a Report of Waste Discharge at least one year prior to beginning this type of construction. In order to support coverage under the statewide general WDRs or adoption of individual WDRs or a waiver, the EIR/EIS should disclose (in general terms) the number of underground concrete structures that may require underwater placement on concrete; the expected volume of contaminated dewatering waste per location; the expected chemical character of the waste with respect to pH, total dissolved solids, hexavalent chromium and other dissolved metals; and the methods of containment, treatment, and disposal that might be utilized.	

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10	8-469 8-470 8-473	25-26 35 10-13	The EIR/EIS should consider storage, management and disposal of water from construction dewatering. The EIR/EIS does not provide specific details regarding construction staging areas, the number of and type of excavations or in stream structures that would require dewatering during construction nor does it discuss how the resulting wastewater and residual solids would be managed or disposed of. Dewatering discharges to land often pose little or no threat to groundwater quality. However, the EIR/EIS should consider the possibility that excavation may encounter groundwater that has been polluted by leaking underground fuel storage tanks and spills of pesticides or other toxic or hazardous substances. Depending on the volume of water generated at each location, it may be necessary to treat the water prior to land disposal without causing significant impacts to water quality. Small, short term discharges of uncontaminated groundwater to land may qualify for coverage under the Central Valley Water Board's *Waiver of Reports of Waste Discharge and Waste Discharge Requirements for Specific Types of Discharge within the Central Valley Region* (Resolution R5-2008-0182 or subsequent general waiver). Longer term discharges or those that require treatment prior to discharge could be regulated under the State Water Resources Control Board's *Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality* (Water Quality Order No. 2003-0003-DWQ or subsequent general order). In general, short-term containment should be provided to allow for testing and treatment if required prior to discharge. If the waste will be discharged to land not owned by the state, the landowner's permission must be obtained. The Executive Officer of the Central Valley Water Board can authorize coverage under the Statewide General WDRs, and the project proponent to should plan to submit an application for coverage (known as a Notice of Intent) at least 90 days prior to beginning this type of construction. Very large or long term/permanent dewatering discharges to land may require individual Waste Discharge Requirements adopted by the Central Valley Water Board. The project proponent should plan to submit a Report of Waste Discharge at least one year prior to beginning this type of discharge.	

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			In order to support coverage under the statewide general WDRs, coverage under the low threat waiver, or adoption of individual WDRs, the EIR/EIS should disclose (in general terms) the number and type of excavations that may require dewatering; the expected volume of dewatering waste per location; the expected chemical character of the waste with respect to any known or suspected contaminants; and the methods of containment, treatment, and disposal that might be utilized.	
11	8-469 8-673	41-46 31	The EIR/EIS does not provide details on how much material from the various options under consideration, will be classified as dredge spoils. This designation applies to material removed below the Mean High Water (MHW) tidal datum. Material classified as dredge spoils will require Waste Discharge Requirements (WDR's) for the removal, upland placement (including both temporary dewatering sites and long-term placement or disposal sites) and/or subsequent reuse. Dredged material removed by hydraulic cutterhead suction requires large dewatering ponds, and any discharge of the clarified slurry water will be regulated under the terms of the WDR to prevent water quality impacts to surface waters. Dredged material placement on land must satisfy the criteria of being inert waste, in the placement location. Material not classified as inert requires the installation of liners and/or other impervious barriers according to Title 27 guidelines for the protection of groundwater and/or surface waters. Pre-dredge sediment characterization and placement site soil sampling is required in order to determine if the dredged material meets the criteria of being inert at the placement site location. Material should be tested for leachable constituents, acid generation potential, and other constituents of concern that may be identified as being present. Approval of dredging WDR's by the Central Valley Regional Water Quality Control Board in a public hearing (scheduled approximately every two months), requires submittal of a complete Report of Waste Discharge (ROWD) a minimum of 4-6 months prior to the scheduled Board meeting. Currently no dredging General Order permits are in place to cover new-work projects of this nature.	
12	8-469	23-29	Material will be excavated according to the various options under consideration in the EIR/EIS. There are potential water quality issues at the point of excavation,	

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			and at storage, disposal and reuse areas. Potential waste issues include: (1) Runoff of water from excavated materials to surface waters, which is discussed separately under NPDES Permits; (2) Percolation of water into groundwater. If the percolating water is similar to underlying groundwater, there may not be a water quality issue. However if the excavated material contains saline water or other contaminants, there may be a potential for pollution of underlying groundwater. The chemical and physical properties of the excavated materials will need to be assessed relative to the potential for groundwater impact. Waste Discharge Requirements may be needed to prevent groundwater pollution dependent upon the characteristics of the excavated material and the site conditions at the storage, reuse or disposal area; and if the excavated material has the potential to generate acidic conditions after excavation, the acidic conditions may dissolve metals and other materials in the soils that are normally insoluble, and thus not a groundwater threat. The acid generation potential of excavated materials must be assessed to determine if Waste Discharge Requirements are needed, and whether measures must be taken to prevent groundwater pollution. Dredged material placement on land must satisfy the criteria of being inert waste, in the placement location. Material not classified as inert requires the installation of liners and/or other impervious barriers according to Title 27 guidelines for the protection of groundwater and/or surface waters. Pre-excavation soil characterization and placement-site soil sampling is required in order to determine if the dredged material meets the criteria of being inert at the placement site location. Material should be tested for leachable constituents, acid generation potential, and other constituents of concern that may be identified as being present. Approval of WDR's by the Central Valley Regional Water Quality Control Board in a public hearing (scheduled approximately every two months), requires submittal of a complete Report of Waste Discharge (ROWD) a minimum of 4-6 months prior to the scheduled Board meeting. Currently no General Order permits are in place to cover new-work projects of this nature.	
13	8-108	9-23	USEPA regulations (NPDES, TMDL, Title 27, Non-15, etc.) require that certain types of industrial activity have an NPDES Industrial Stormwater Permit. Such activities	

			include corporation yards, equipment storage and maintenance areas, materials storage areas, and manufacturing facilities, such as concrete batch plants. Whether or not permit coverage is needed depends on the type of activity, size of the facility, and whether those activities have the potential of adding pollutants to stormwater runoff. The remainder of this comment addresses concrete batch plants specifically, but similar comments are applicable to a wide variety of industrial activities that could be part of the project. The draft EIR/EIS notes that temporary concrete batch plants may be used at various locations to support project construction. Storm water runoff from industrial concrete batch plant sites has the potential to carry industrial pollutants such as metals, suspended solids, oil and grease, and high pH water to surface and ground water. Concrete wash water typically has very high pH, high salinity, and concentrations of dissolved metals (primarily hexavalent chromium) that could cause significant water quality impacts. If exposed to the environment, the solids settling from concrete wash water may continue to leach alkalinity, dissolved solids, and/or dissolved metals after the water has been decanted. Batch plants are one of the many types of industrial activities required by federal Clean Water Act to obtain coverage under an NPDES permit for storm water discharges. In California, NPDES permit coverage for industrial sites is available through the State Water Board's *General Industrial Activities Storm Water Permit, Water Quality Order No. 97-03-DWQ* (Industrial General Permit or IGP). Please note that a new Industrial General Permit is in preparation at the State Water Board, and it may include additional or modified requirements than the current permit. Operators of industrial batch plants follow a site-specific Storm Water Pollution Prevention Plan (SWPPP) and monitoring program to identify sources of pollution that affect the quality of storm water discharges through grab sampling and visual observations. The SWPPP should include a description and implementation of best management practices (BMPs) to reduce or prevent pollutants in industrial storm water discharges. Good site management and properly installed BMPs reduce the amount of site related contaminants that will be discharged off an industrial site during rain events. Wherever practical, generation of concrete wash water should be minimized and the wash water should be recycled within the batch plant. It should not be discharged to either surface waters or land for disposal	

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			purposes, and short-term settling or storage containment features should be engineered to prevent percolation of the waste. Containment and disposal of concrete waste and wastewater may be subject to other permit requirements from the Regional Board. Comments on those requirements are provided elsewhere. The EIR/EIS should address how the project proponent will comply with the IGP and how the batch plant wastewater and residual solids will be managed. Application for coverage under the Industrial General Permit is completed by submitting a complete Notice of Intent, site map, and the annual Industrial General Permit fee of $1,359 to the State Water Board. Although a Waste Discharge Identification Number (WDID) is generally issued within two to three weeks after a complete NOI and attachments are submitted, the project proponent should allow adequate time to develop a SWPPP prior to applying for permit coverage.	
14	General		Section 401 water quality certifications are issued by the Regional Water Quality Control Boards, the State Water Resources Control Board's Division of Water Quality, and the State Water Board's Division of Water Rights. Each entity has certification authority as defined by the California Code of Regulations, §3855. •The Division of Water Quality is responsible for issuing water quality certifications for projects which may fall under the jurisdiction of more than one regional board. •The Division of Water Rights is responsible for issuing water quality certifications associated with one or more of the following: 1. An appropriation of water; 2. A hydroelectric facility, and the proposed activity requires a Federal Energy Regulatory Commission (FERC) license or amendment to a FERC license; or 3. Any other diversion of water for domestic, irrigation, power, municipal, industrial, or other beneficial use. •The Regional Boards are responsible for all other projects within their regions for which a discharge may occur. Required items for issuance of a Clean Water Act Section 401 Water Quality Certification are based on Sections 3836 and 3856 of Title 23 of the California Code of Regulations.	

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			The project proponents should note that: (a) there are no waivers for Clean Water Act Section 401 Water Quality Certifications in the state of California; (b) a Clean Water Act Section 401 Water Quality Certification serves as both a certification, in part or in whole, of a federal permit, under Section 401 of the Clean Water Act, and as a Waste Discharge Requirement under the Porter-Cologne Water Quality Control Act; and (c) under Section 401 of the Clean Water Act, the state of California can review and approve, condition, or deny all federal permits that may result in a discharge to waters of the State, including wetlands. The Water Boards will work with the project proponents to assure that the 401 certifications are coordinated.	
15	8A1-19	All	Appendix 8A consists of some tables without titles or reference citations. Please include the source(s) of the information, and which locations or water bodies the tables are referring to.	
16	8-8, 8-9	30-41, 1-33	This Section 8.1.1.4 lists the primary factors that affect water quality within the Delta. Some of the listed factors include land use in the upstream watersheds and Delta, and SWP and CVP operations. Please include other factors that affect water quality, such as non-SWP/CVP diversions	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 9__Geology and Seismicity***

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No.	Page	Line #	Comment	ICF Response
			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 10__Soils***

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No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 11__Fish and Aquatic Resources***

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Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	General		The EIR/EIS should provide an evaluation and comparison of changes to the quality and quantity of open water aquatic habitats and subsequent impacts on target fish populations under the alternatives, including changes in salinity gradients, dissolved oxygen levels and hydrodynamics.	
3	General		State Water Board staff reviewed the comments on the December 2012 Administrative Draft BDCP that were prepared by National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), and the 2012 Red Flag comments on the February 2012 version of the BDCP Effects Analysis, that were submitted by the US Bureau of Reclamation (USBR) and the fishery agencies (California Department of Fish and Wildlife (CDFW), USFWS, and NMFS). Water Board staff support the fishery agencies' comments contained in these documents.	
4	General		The impact analysis does not appear to provide analysis for all decision tree scenarios (H1-H4). For instance, in the fish passage section, only scenarios H1, H3, and H4 were analyzed, while only H3 was analyzed in the water temperature section and upstream habitat section. If the detailed analyses provided in the document brackets the rest of the scenarios, a qualitative discussion should be provided that explains why the existing analyses brackets the impacts associated with the scenarios that did not undergo detailed analysis.	
5	General		The impacts for non-covered fish species appear to be copied from the impact summary for covered fish species. Please describe the basis for this analysis.	
6	General		The analysis assumes a specified construction schedule for assessing impacts to fishery and aquatic resources. Some of the impact analysis conclusions were based on assumptions regarding fish presence during the time of construction. It is not clear whether the analysis evaluates the potential impacts to fishery and aquatic resources associated with delayed construction schedules.	
7	General		The fishery and aquatic resources impact analysis does not appear to analyze scenarios in which conservation measures are not 100% successful.	

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			Section 5.2 of the BDCP describes how the conservation measures were evaluated to determine if biological objectives could be met for covered fish. Table 5.2-8 of the BDCP indicates that out of the thirty-nine biological goals and objectives, only eleven could be assessed for feasibility, and fifteen could only be partially assessed for feasibility. However, the EIR/EIS appears to assume that all of the conservation measures will be successful in meeting biological goals and objectives. The lack of certainty regarding the success of the conservation measures should be a consideration in the impact analysis and significance determinations reported in the EIR/EIS.	
8	General		Significance thresholds are described on pages Part 1-11-117 and Part 1-11-118. These significance thresholds do not contain numeric values; however elsewhere in the text, the document refers to parameters such as "significance criterion", "upper tolerance threshold", and "level of biological significance". These appear to be numeric thresholds, but are not clearly identified. Please summarize the numeric thresholds that are used in the analysis, including the reasoning for the values chosen.	
9	General		Table 3.4.1-3 of the BDCP (pages 3.4-23 – 3.4-24) identifies four uncertainties associated with the North Delta Diversion Bypass Flows. These include: (1) Determine timing and rate of downstream passage by larval delta smelt, and effects on mortality; (2) Determine timing and rate of downstream passage by juvenile salmonids (all Chinook runs and steelhead), and effects on mortality; (3) Determine the effects of altered flows and resultant altered distribution and timing of salinity on dispersal and colonization by invasive species; and (4) Determine the effects of hydrodynamics near the intakes on behavior and energetics of covered fishes. These uncertainties appear to have potential for environmental impacts to aquatic species, but it is unclear whether these issues were examined in the EIR/EIS.	
10	Part 1, pages 11-114		The coldwater fish habitat analysis appeared to only analyze for impacts to fish living in reservoirs, and did not analyze for impacts to fish living downstream that may be dependent on reservoir releases. Please explain.	
11	Part 3, pages		Existing through-Delta (to Chipps Island) survival of juvenile salmon is estimated by the Delta Passage Model to be 16% – 28%, and does not change	

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	11-75 and 11-128		markedly under any of the Alternative 4 decision tree scenarios. However, the BDCP (Table 3.3-1, page 3.3-17) indicates the BDCP Biological Objective for through-delta juvenile salmon survival is approximately 45% (varies somewhat by ESU, river of origin, and planning horizon). Although the BDCP seems to indicate this biological objective can be achieved by utilizing conservation measures 1, 2, 4, 5, 6, 14, 15, 16, 19, and 21, analysis of estimated survival improvements was provided for only conservation measure 1. It is not clear how the biological objective for through-delta juvenile salmon survival will be achieved because no estimates of survival improvements were provided for the other conservation measures.	
12	Part 3, pages 240-241		Significant decreases in the frequency of high spring Delta outflows are predicted under Scenario H3, which could impact sturgeon migration. Scenario H3 does not contain the enhanced spring outflow. However, the discussion of Scenario H4 (which does contain the enhanced spring outflow) states that no additional analyses are necessary because flows will be effectively the same under H4 as H3, except in May and June, when they will be lower under H4. It is unclear how this conclusion was reached, given that these two scenarios have very different spring outflow requirements.	
14	General		A better connection between the water quality chapter and the water quality issues addressed in chapter 11 should be provided. The discussion of temperature in Chapter 11 should identify any water bodies which have been 303(d) listed for temperature. This would include water bodies within the immediate Project area as well as those located in areas where water is delivered. This would be consistent with the information that is contained within the water quality chapter. Although temperature is discussed in Chapter 11, it is important that it is discussed in the same manner as other water quality constituents.	
15	General		The quality and quantity of aquatic habitat should be evaluated in the aquatic resources chapter and evaluated with respect to the impacts of the alternatives. Specifically, an analysis of impacts to open water habitat using 1D or preferably 3D modeling should be provided by evaluating changes in the salinity gradient (X2) and the change in area of preferred habitat for different species.	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 12__Terrestrial Biological Resources***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	General		The aquatic habitat evaluation should be included in the aquatics chapter rather than the terrestrials chapter to allow for a complete evaluation of impacts.	
2	General		The EIR/EIS should provide historical frames of reference for impacts to natural communities in addition to comparisons with existing conditions.	
3	General		Here and other places in the document, aquatic natural community restoration appears to assume 100% success. Is there an assumption of a success rate for any of the restoration projects? If so, it would be helpful to disclose that assumption and detail support for it. If not, a discussion of the success rate among restoration projects for each of the natural communities is appropriate for providing the reader an understanding of the potential for restoration to be successful and reduce impacts.	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 13__Land Use***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 14__Agricultural Resources***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 15__Recreation***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 16__Socioeconomics***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 17__Aesthetics and Visual Resources***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 18__Cultural Resources***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No. 19__Transportation***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.20 __Public Services and Utilities***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	20-29	16	The Methods for Analysis incudes bulleted lists that include some of the sources that were used to collect information, such as GIS data for law enforcement and fire protection facilities, contact with service agencies, aerial photography, and State databases. The State Water Board's eWRIMS water rights database may be useful to the BDCP since the BDCP area includes many water right holders as well as water diverters.	
2	20-116	1-43	The EIR/EIS states that field offices and concrete batch plants may need as much as 47.5 million gallons of potable water. In addition, the document also states that the sites are often in rural areas where public hookups are not always available, although the document describes the trucking of needed water. The source(s) of the potable water and, if applicable, the water rights associated with the source(s) should be identified and potential impacts evaluated.	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.21 __Energy***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	21-15	6	The EIR/EIS assumes that upstream impacts due to project alternatives are zero because upstream hydropower operations are controlled by runoff. The chapter provides little support of the assumption that upstream impacts to hydropower will be null. Changes in release patterns, and therefore generation patterns, could impact hydropower production, even if average annual flows through the powerhouses remain constant. For example shifts if generation from summer to spring represents an impact to generation, even if the volumes remain constant. Please clarify.	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.22 __Air Quality and Greenhouse Gases***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.23 __Noise***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.24 __Hazards and Hazardous Materials***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.25 __Public Health***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.26 __Mineral Resources***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.27 __Paleontological Resources***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.28 __Environmental Justice***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

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BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.29 __Climate Change***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1	2	25	The EIR/EIS mentions that the BDCP analyzes possible sea level rise of up to 55 inches. However, reading the modeling appendices, the amount of sea level rise used in the effects analysis was only 17.7 inches. We understand that 55 inches is a year 2100 projection and that 17.7 inches was chosen instead to represent the modeling baseline, year 2060. However, the EIR/EIS should clarify in Chapter 29 (and also in Chapter 3 where the No Action Alternative is described) that the effects analysis used 17.7 inches of sea level rise rather than 55 inches. Otherwise, the document could mislead readers into thinking that 55 inches of sea level rise was analyzed throughout.	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.30 __Growth Inducement***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

BDCP EIR/EIS Review Document Comment Form

Document: ***Administrative Draft—Chapter No.31 __Other CEQA/NEPA Required Sections***

Comment Source: SWRCB
Submittal Date: 7/5/2013

No.	Page	Line #	Comment	ICF Response
1			Possible comments to be provided on public draft	

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Attachment 1. State Water Board Analysis of Alternatives 4 and 8

Sacramento River and Delta outflows are controlled within the CALSIM II modeling of the BDCP by cold water constraints, North Delta bypass rules, Delta outflow, minimum flow at Freeport and EC requirements. This section focuses on differences in modeling assumptions and results under Alternative 4 and Alternative 8 of the BDCP EIR/EIS. Differences between Alternative 4 and 8 can be broken up into two separate categories; physical and operational which are summarized in the table below. Physically, the two are very similar; the primary difference relating to fisheries is the presence of the operable barrier at the Head of Old River (HORB) in Alternative 4, and absence in Alternative 8. There are many operational differences between the two alternatives including minimum Sacramento River bypass flows, minimum OMR flows, minimum Delta outflow, minimum San Joaquin River inflow and maximum export restrictions listed in the table below.

Summary

Alternative	Conveyance	# North Delta Intakes	Capacity (cfs)	Operating Scenario	Avg Annual Exports	Fall X2[3]	OMR Protection[1]	South Delta Barriers	NMFS SJR E-I Ratio[2]
Existing Cond.	No Improvements	0	NA	NA	5.1 MAF	No	BiOps	Yes	Yes
	Notes: Year 2009 development; Includes all projects ongoing as of Feb 2009 plus the Jun 2009 NMFS BiOp. Does not include Freeport Regional Water Project or CCWD's Victoria Canal Intake (both recently completed)								
No Action	No Improvements	0	NA	NA	4.4 MAF	Yes	BiOps	Yes	Yes
	Notes: Year 2020 development; Full SWP & CVP build-out; Climate change; Sea level rise								
4	Tunnel & Through-Delta	3	9,000	H	4.4 - 5.3 MAF	Maybe	Intermed.	Yes	No
	Alt 4 Notes: Operable Head of Old River Barrier; Gravity fed tunnel, Enhanced Spring Delta outflow (maybe)								
8	Tunnel & Through-Delta	3	9,000	F	3.1 MAF	Yes	High	No	Enhanced
	Alt 8 Notes: Increased Delta outflow; Increased North Delta bypass flow; Coldwater pool management; 55% unimpaired flow at Freeport Jan - Jun[3]								

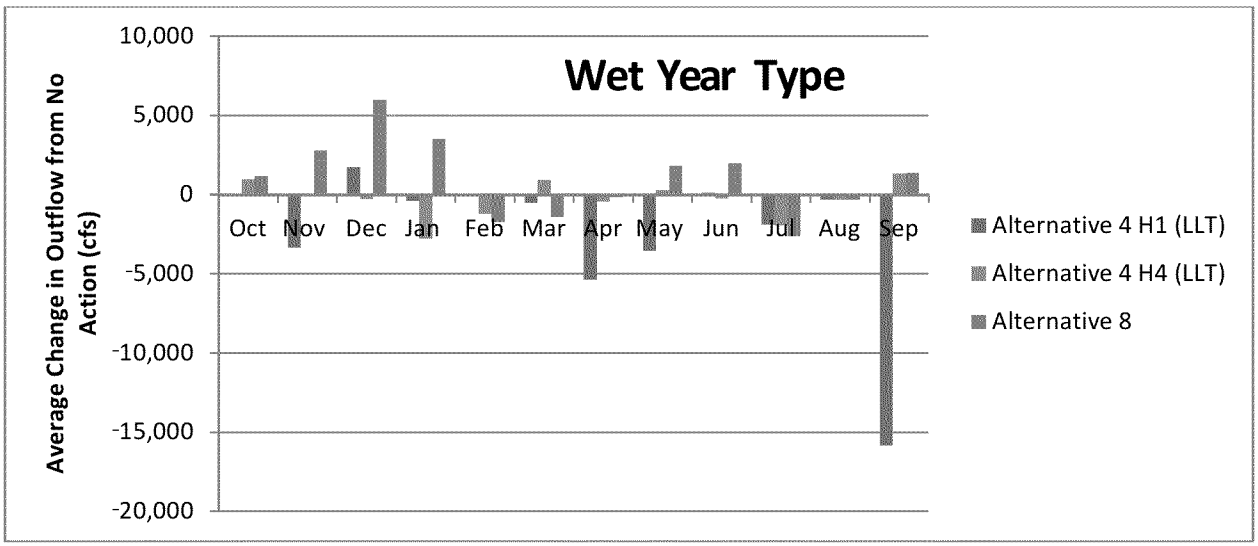
[1] Source: Table C-9-6. Old and Middle River, Monthly Flow (combined flows)
[2] Source: Table C-7-2-16. Sacramento/San Joaquin River Delta, Monthly Outflow Volume
[3] Source: Table C-7-1-1. Sacramento/San Joaquin River Delta, Monthly Outflow Rate

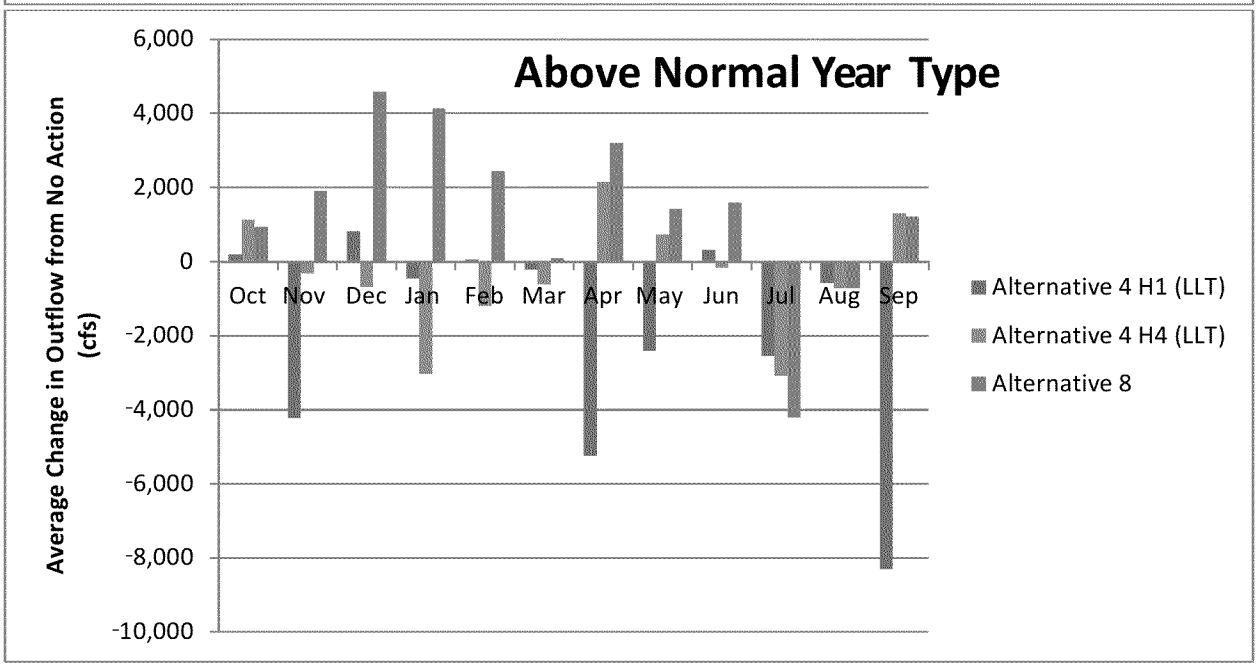
Delta Outflow

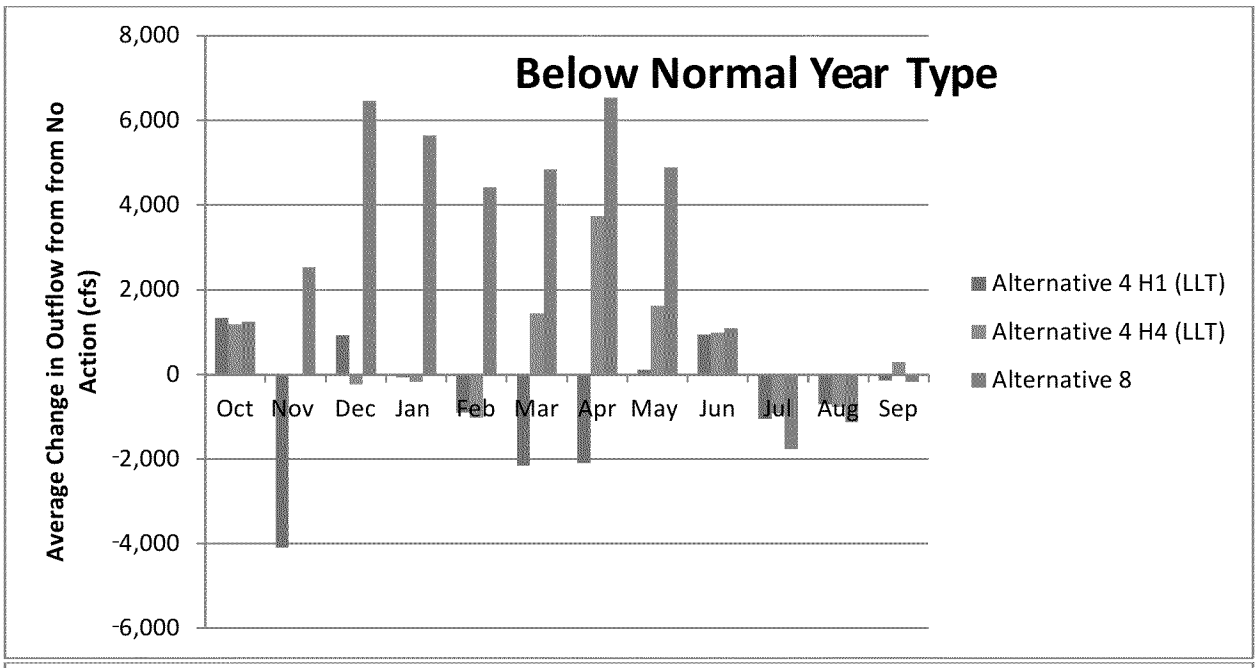
Delta Outflow for Alternative 4 has four different decision tree scenarios (H1-H4) ranging from D-1641 to enhanced spring and fall outflow. Delta outflow for Alternative 8 is based on D-1641 most of the year, plus fall X2 requirements and 55% unimpaired flow at Freeport (capped at 40,000 cfs) from January – June. The discussion here compares the most protective (H4) and least protective decision tree scenario (H1) with outflow for Alternative 8. Decision tree scenario H1 is identical with the current outflow conditions as set forth in D-1641. Decision tree scenario H4 outflow is D-1641 with Fall X2 and an "enhanced" March-May target that ranges from 9,200 cfs to 44,500 cfs based on percent exceedance of forecasted March-May eight river index. A large difference that should be noted is the length of time that the enhanced spring outflows cover; Alternative 8 covers 5 months whereas H4 covers only 3.

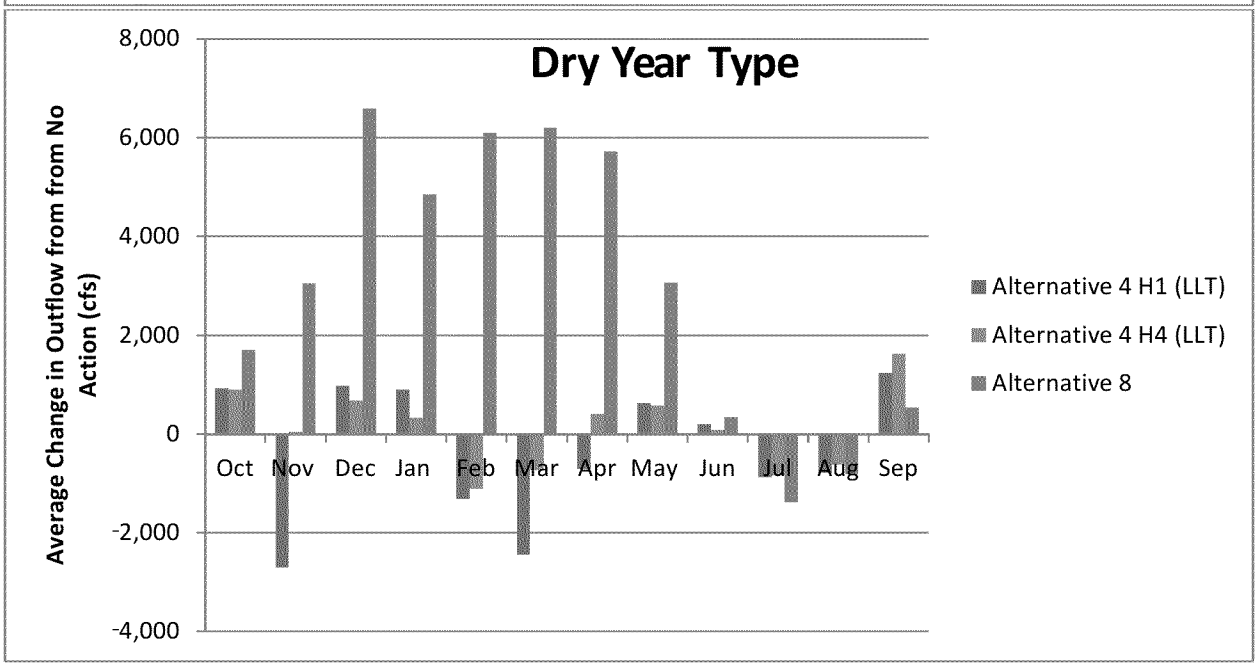
Below are CALSIM II results showing changes from No Action Alternative in average monthly outflow for each year type for scenarios H1, H4, and F. The wet year type shows very similar outflows for each of the scenarios which reflect the fact that the system is controlled in wet years by natural runoff. Unlike wet year types, however, there is a large difference in outflows between scenarios in critical years. Alternative 4 H1 (LLT) results in a decrease in outflow in November, Febuary – April, June – August and particlularly large increase in September and October. In critical year types, spring Delta outflow is lower under all Alternative 4 scenarios than the No Action Alternative which many studies have shown is the time when fishes currently need higher flows the most. The "enhanced" spring outflow only provides a significant increase in outflow in Below Normal year types which comprise of only 17% of the simulation period.

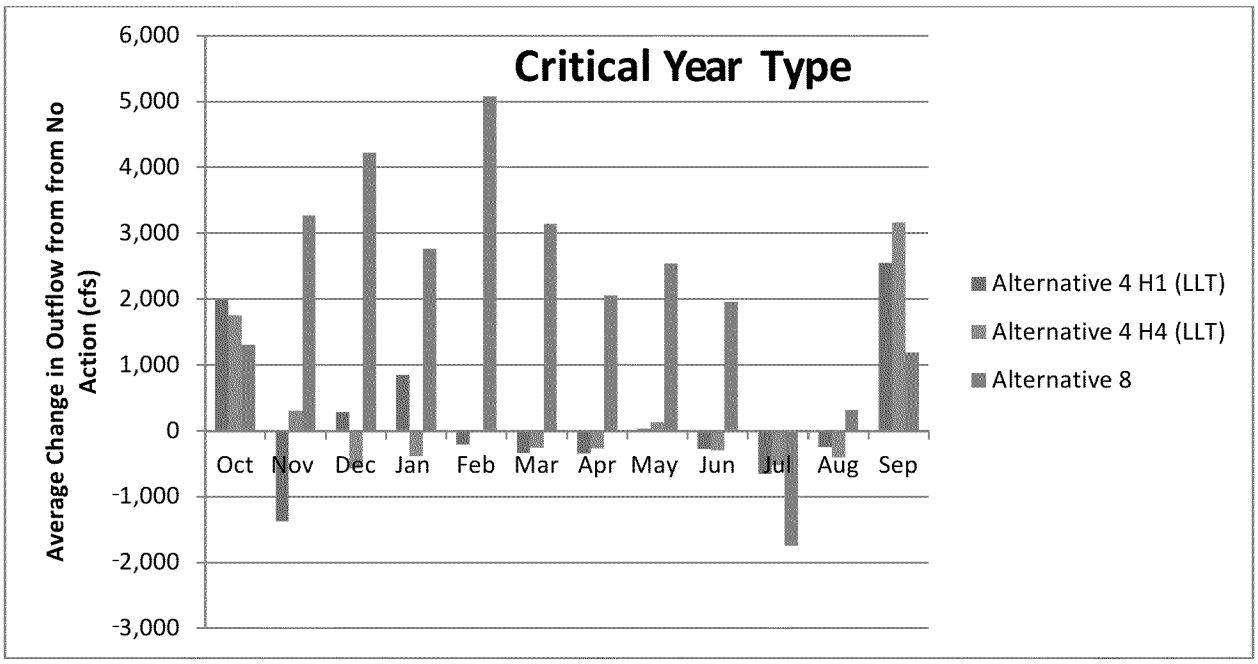
Possible explanations for the increase over No Action during the fall in Alternative 4 in Dry and Critical years could include increased flows to meet temperature requirements in the Sacramento River due to climate change or could be due to North Delta bypass restrictions, more clarification on why this occurs by the authors would be helpful.






Below Normal Year Type
Average Change in Outflow from from No Action (cfs)
8,000
6,000
4,000
2,000
0
-2,000
-4,000
-6,000
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Alternative 4 H1 (LLT)
Alternative 4 H4 (LLT)
Alternative 8


Dry Year Type
Average Change in Outflow from from No Action (cfs)
8,000
6,000
4,000
2,000
0
-2,000
-4,000
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Alternative 4 H1 (LLT)
Alternative 4 H4 (LLT)
Alternative 8



Alternative minus No Action		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Ave
Alternative 4 H1 (LLT)	Full Simulation Period	753	-3,172	1,083	109	-433	-1,148	-3,028	-1,325	257	-1,446	-509	-5,613	-1,206
	Wet	-1	-3,336	1,736	-423	97	-512	-5,353	-3,574	139	-1,910	-308	-15,832	-2,439
	Above Normal	207	-4,231	816	-468	67	-213	-5,242	-2,417	320	-2,552	-570	-8,302	-1,882
	Below Normal	1,339	-4,093	923	-68	-910	-2,167	-2,098	110	942	-1,049	-700	-139	-659
	Dry	929	-2,705	972	902	-1,313	-2,439	-707	628	207	-874	-782	1,242	-329
	Critical	1,987	-1,379	288	852	-205	-332	-345	37	-276	-655	-251	2,549	189
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Ave
Alternative 4 H4 (LLT)	Full Simulation Period	1,130	-10	-160	-1,338	-978	257	867	617	42	-1,487	-527	1,483	-8
	Wet	966	-51	-261	-2,778	-1,222	944	-438	275	-240	-1,949	-308	1,328	-311
	Above Normal	1,132	-315	-693	-3,029	-1,193	-613	2154	729	-168	-3,087	-713	1,314	-374
	Below Normal	1,190	-8	-241	-177	-1,025	1448	3743	1625	984	-920	-766	289	512
	Dry	905	45	678	332	-1,111	-736	409	580	83	-840	-619	1,630	113
	Critical	1,752	306	-571	-389	20	-258	-265	128	-299	-519	-399	3,164	223
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Ave
Alternative8	Full Simulation Period	1,291	2,749	5,742	4145	2650	2204	3091	2668	1415	-2,307	-527	870	2,000
	Wet	1,178	2,796	6,003	3490	-1716	-1441	-167	1827	1989	-2,625	-308	1,358	1,033
	Above Normal	941	1,914	4,583	4137	2449	103	3210	1422	1596	-4,208	-710	1,224	1,388
	Below Normal	1,247	2,530	6,463	5641	4420	4836	6531	4895	1093	-1,760	-1,134	-182	2,881
	Dry	1,711	3,060	6,592	4850	6095	6196	5727	3068	350	-1,376	-809	536	3,000
	Critical	1,310	3,270	4,223	2769	5076	3147	2060	2540	1958	-1,749	313	1,189	2,176

Source: Appendix 5A Modeling, pg C-184 - C-192

Attachment 2 – Example of Tabular Quantitative Comparisons of the Various Alternatives

Alternative	Conveyance	# North Delta Intakes	Capacity (cfs)	Operating Scenario	Avg Annual Exports	Fall X2	OMR Protection	South Delta Barriers	NMFS SJR E-I Ratio
Existing Cond.	No Improvements	0	NA	NA	5.1 MAF	No	BiOps	Yes	Yes
	Notes: Year 2009 development; Includes all projects ongoing as of Feb 2009 plus the Jun 2009 NMFS BiOp. Does not include Freeport Regional Water Project or CCWD's Victoria Canal Intake (both recently completed)								
No Action	No Improvements	0	NA	NA	4.4 MAF	Yes	BiOps	Yes	Yes
	Notes: Year 2020 development; Full SWP & CVP build-out; Climate change; Sea level rise								
1A	Tunnel & Through-Delta	5	15,000	A	5.5 MAF	No	BiOps	No	No
1B	East Canal & Through-Delta	5	15,000	A	5.5 MAF	No	BiOps	No	No
1C	West Canal & Through-Delta	5	15,000	A	5.5 MAF	No	BiOps	No	No
	Alt 1 Notes: None								
2A	Tunnel & Through-Delta	5	15,000	B	5.1 MAF	Yes	Intermed.	Yes	No
2B	East Canal & Through-Delta	5	15,000	B	5.1 MAF	Yes	Intermed.	Yes	No
2C	West Canal & Through-Delta	5	15,000	B	5.1 MAF	Yes	Intermed.	Yes	No
	Alt 2 Notes: Operable Head of Old River Barrier								
3	Tunnel & Through-Delta	2	6,000	A	5.4 MAF	No	BiOps	No	No
	Alt 3 Notes: Same as Alt 1								
4	Tunnel & Through-Delta	3	9,000	H	4.4 - 5.3 MAF	Maybe	Intermed.	Yes	No
	Alt 4 Notes: Operable Head of Old River Barrier; Gravity fed tunnel, Enhanced Spring Delta outflow (maybe)								
5	Tunnel & Through-Delta	1	3,000	C	4.8 MAF	Yes	BiOps	Yes	Yes
	Alt 5 Notes: Reduced tidal restoration (25,000 Acres); No Banks Pumping Plant capacity expansion								
6A	Tunnel Only	5	15,000	D	3.8 MAF	Yes	NA	No	No
6B	East Canal Only	5	15,000	D	3.8 MAF	Yes	NA	No	No
6C	West Canal Only	5	15,000	D	3.8 MAF	Yes	NA	No	No
	Alt 6 Notes: No South Delta diversions								
7	Tunnel & Through-Delta	3	9,000	E	3.1 MAF	Yes	High	No	Enhanced
	Alt 7 Notes: Increased restoration area; Increased North Delta bypass flow; Increased Rio Vista instream flow								
8	Tunnel & Through-Delta	3	9,000	F	3.1 MAF	Yes	High	No	Enhanced
	Alt 8 Notes: Increased Delta outflow; Increased North Delta bypass flow; Coldwater pool management; 55% unimpaired flow at Freeport Jan - Jun								
9	Fortified Through-Delta Only	0	15,000	G	4.4 MAF	Yes	BiOps	No	Weakened
	Alt 9 Notes: Screened intakes at Delta Cross-Channel & Georgiana Slough; Old River separated from Middle River, Victoria Canal,and Clifton Court by operable gates; Modified E:I ratio								