FINAL ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT

FOR THE

BAY DELTA CONSERVATION PLAN/ CALIFORNIA WATERFIX

VOLUME II. RESPONSES TO COMMENTS ON THE DRAFT EIR/EIS AND RDEIR/SDEIS

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Volume II

Responses to Comments on the Draft EIR/EIS and RDEIR/SDEIS

Introduction

Summary of Public Review Process

The BDCP Draft EIR/EIS (2013 Draft EIR/EIS) and the BDCP/California WaterFix Partially Recirculated Draft EIR/Supplemental EIS (2015 RDEIR/SDEIS) have been circulated for public review as required by CEQA and NEPA. The Draft EIR/EIS, which presented environmental analyses for 15 alternatives, including the proposed project under CEQA and the preferred alternative under NEPA, the BDCP (Alternative 4), was released for public review on December 13, 2013 for a 120-day public review period. In response to numerous requests and given the breadth and depth of the documents, the review period was extended to July 29, 2014 to allow for adequate review of the BDCP, Implementing Agreement for the BDCP, and Draft EIR/EIS. During this review period, approximately 2,000 substantive letters/communications amounting to about 18,500 comments[1] were received from federal, state, and local agencies; elected officials; stakeholders; and members of the public. Twelve public meetings were conducted throughout California from December 2013 to February 2014, during which additional comments were received

In April 2015, the California Department of Water Resources and the Bureau of Reclamation announced plans to include three additional, non-habitat conservation plan (HCP) alternatives and propose the California WaterFix project as the proposed project under CEQA and the preferred alternative under NEPA (Alternative 4A), instead of the BDCP (Alternative 4). The environmental analysis of the proposed California WaterFix and the two additional alternatives was circulated in the RDEIR/SDEIS for public review from July 10, 2015 to October 30, 2015. During the review period, approximately 6,300 letters amounting to about 12,500 comments were received from federal, state, and local agencies; elected officials; stakeholders; and members of the public. Two public meetings to receive comments and explain the project and analyses were conducted in Sacramento on July 28, 2015 and Walnut Grove on July 29, 2015.

The Final EIR/EIS responds to all substantive comments made on the Draft EIR/EIS and RDEIR/SDEIS.[2] As required by CEQA, the proposed specific response to a public agency comment will be sent to that particular public agency at least 10 days prior to certification of the Final EIR/EIS.

[1] The comment letters, emails, and other written or transcribed comments were organized into comment tables and given a letter number as seen in the index of commenters provided in Part 2 of Volume II of the Final EIR/EIS.

[2] In addition to comments submitted on the Draft EIR/EIS and RDEIR/SDEIS, many parties also made the same or similar comments in the State Board Water Resources Control Board hearing regarding changes in the lead agencies' water rights request to add new points of diversion for the California WaterFix. Those comments will be addressed in those proceedings. See http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/

With release of this Final EIR/EIS and pursuant to the requirements of NEPA, the announcement of its publication will be noticed in the Federal Register for at least a 30-day period, prior to the Bureau of Reclamation issuing a Record of Decision on the action.

Format of Volume II

This Final EIR/EIS presents all of the comments received on the Draft EIR/EIS and RDEIR/SDEIS during the public review periods along with responses to all of the comments, as required by CEQA and NEPA.

Volume II of this Final EIR/EIS is organized as shown below.

Part 1: Master Responses. This part contains 47 master responses developed to provide responses to important common themes identified in individual comments. Each master response provides a brief summary of the issue or common theme, followed by a generalized response that covers all or a portion of the individual comments received on the Draft EIR/EIS or RDEIR/SDEIS.

Both the Draft EIR/EIS and RDEIR/SDEIS were the subject of multiple comments on similar topics with similar themes. For comments with common themes, master responses were prepared to present a cohesive response to some of the more important issues raised in comments. To help familiarize the reader with important issues raised during public review, master responses are presented in Part 1, preceding presentation of responses to individual comments. Due to the voluminous amount of comments received on the Draft EIR/EIS and RDEIR/SDEIS and specific responses prepared for these comments, it was not possible to coordinate a complete reconciliation of all responses. Therefore it is intended that the master responses in Part 1 are dispositive where there are any conflicts between specific responses to individual comments in Part 2 and other specific responses to individual comments or in conflicts with the master responses.

Part 2: Responses to Comment. Comments and responses are presented in a tabular format organized in chronologic numeric order. As noted above, comment letters, emails, and other written or transcribed comments were assigned an identifying Letter Number as they were received and processed by the lead agencies. Letters received on the 2013 Draft EIR/EIS were given a number starting with "BDCP" as an identifier. This is found most prominently in Appendix A-1 of Volume II. When California WaterFix (Alternative 4A) replaced the BDCP as the preferred alternative, the lead agencies began identifying these letters as DEIRS letters. The lead agencies made efforts to consistently refer to the letters as DEIRS letters, but there may be instances where letters still contain the "BDCP" identifier. Therefore, readers should note that "BDCP" and "DEIRS" are interchangeable when used in front of a letter number. For example, BDCP 3 and DEIRS 3 are the same letter. In addition, the tables which appear in Part 2 will on occasion skip numbers. This is due to several possibilities:

- Where the comment was a request for information, such as a request for an electronic copy of the document, that letter may have been assigned a number, but was not included in this table, since it did not include any substantive comment on the 2013 Draft EIR/EIS or the 2015 RDEIR/SDEIS. These requests have all been responded to.
- Commenters occasionally would send a comment via email and then follow it with a hard copy via US Postal Service. Both letters may have been assigned a number, but only one copy is included in the table for response.

- The comment may have been erroneously sent to the designated email address for public comments on the BDCP/California WaterFix, but was in fact intended for one of the lead agencies regarding a different project.

Indices listing the comment letters by organization, commenter name, and letter number, have been provided and precede the actual comment-response tables. Using these indices, commenters should be able to identify the letter number or numbers associated with their submissions, and then find the comments and responses in the comment-response tables that follow.

The indices are organized by commenter type as follows:

2013 Draft EIR/EIS	2015 RDEIR/SDEIS
• Index 1. Federal Agencies, Federally Elected Officials, and Tribal Governments	• Index 6. Federal Agencies, Federally Elected Officials, and Tribal Governments
• Index 2. State Agencies and State Elected Officials	• Index 7. State Agencies and State Elected Officials
• Index 3. Local Agencies and Local Elected Officials	• Index 8. Local Agencies and Local Elected Officials
• Index 4. Non-Governmental Organizations	• Index 9. Non-Governmental Organizations
• Index 5. Members of the Public, Form Plus Letters, Public Meeting Comments	• Index 10. Members of the Public, Form Plus Letters, Public Meeting Comments
• Indices 11 and 12. Petition Signatories	

All of the comments received on the Draft EIR/EIS and responses to those comments are grouped together first, followed by comments received on RDEIR/SDEIS and responses to those comments.

Part 3: Volume II References. Lists sources cited in the responses to comments.

Appendix A-1: Public Comments on the 2013 Draft EIR/EIS. All of the original comment letters received on the Draft EIR/EIS are presented in this appendix. Each comment letter is numbered for each letter or email, corresponding to the comment letter numbers presented in a tabular format in Part 2, *Response to Comments*.

Appendix A-2. Public Comments on the 2015 RDEIR/SDEIS. All of the original comment letters received on the RDEIR/SDEIS are presented in this appendix. Each comment letter is numbered for each letter or email, corresponding to the comment letter numbers presented in a tabular format in Part 2, *Response to Comments*.

Approach to Responding to Comments

The purpose of public review of the Draft EIR/EIS and the RDEIR/SDEIS is to evaluate the adequacy of the environmental analysis for compliance with CEQA and NEPA. State CEQA Guidelines Section 15151 states the following regarding standards from which adequacy is judged:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among experts. The courts have not looked for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

In similar fashion, NEPA requires sufficient specificity to allow meaningful analysis (Council on Environmental Quality NEPA Regulations, 40 Code of Federal Regulations [CFR] 1502.9). The analysis must be complete and capable of standing on its own merits. In essence, an EIS is considered inadequate if it fails to provide sufficient foundation for making decisions based on environmental factors. Consistent with the rule of reason, courts have held that agencies are not expected to use a "crystal ball" approach in their analysis.[3] An EIS need not be "exhaustive," [4] or consider a problem "from every angle."[5] Nor do courts normally sustain criticism that is considered "overly technical," "hypercritical," or that indulges in "chronic faultfinding."[6]

The purpose of each response to a comment on the EIR/EIS is to address the significant environmental issue(s) raised by each comment, which typically requires clarification of points contained in the draft environmental documents.

State CEQA Guidelines Section 15088, subd. (b) describes the evaluation that CEQA requires in the response to comments:

> The written response shall describe the disposition of significant environmental issues raised (e.g., revisions to the proposed project to mitigate anticipated impacts or objections). In particular, the major environmental issues raised when the lead agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted. There must be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice.

NEPA similarly requires the federal lead agency to assess and consider comments both individually and collectively, and to respond by stating its response in the final environmental document (40 CFR 1503.4).

Case law that guides agency CEQA and NEPA practice holds that the lead agencies are not obligated to undertake every suggestion given them, provided that the agency responds to significant environmental issues and makes a good faith effort at disclosure. State CEQA Guidelines Section 15204, subd. (a) clarifies the responsibilities reviewers:

> In reviewing draft EIRs, persons and public agencies should focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated. […] reviewers should be aware that the adequacy of an EIR is determined in terms of what is reasonably feasible, in light of factors such as the magnitude of the project at issue, the severity of its likely environmental impacts, and the geographic scope of the project. CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters. When responding to comments, lead agencies need only respond to significant environmental issues and do not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIR.

As noted above, approximately 18,500 comments were submitted through letters and other methods on the 2013 Draft EIR/EIS and 12,500 comments on the 2015 RDEIR/SDEIS, for a total of approximately 31,000 comments as organized into tables. The lead agencies reviewed all of the

[3] *Natural Resources Defense Council, Inc. v. Morton*, 458 F. 2d 827 (D.C. Cir. 1972).

[4] *County of Suffolk v. Secretary of Interior*, 562 F.2d 1368 (2d Cir. 1977).

[5] *Sierra Club v. Froehlke*, 345 F. Supp. 440 (W.D. Wis. 1972).

[6] *Life of the Land v. Brinegar*, 485 F.2d 460 (9th Cir. 1973).

comments, and Part 2 in this Volume II responds to all of the comments, as appropriate and described below.

The lead agencies utilized the following guidance for responding to comments identified in each letter:

- Comments had to be related to the issue at hand. Comments not related to the project or to the documents out for comment did not receive specific individual responses. For example, the lead agencies have not responded to comments that are descriptions of the commenting organization, appreciation for the opportunity to comment, and requests for copies of the documents.
- If the letter included an attachment, that attachment had to be commenting on the substantive issues related to the environmental analysis contained in either the Draft EIR/EIS or the RDEIR/SDEIS. If the attachment did not meet this criterion, no specific response was provided, although additional information to assist the commenter is referenced when available.
- Instead of responding to the same form letter repeatedly, an example was selected and the comments in that "Form Master" were reviewed and responded to. The remaining form letters were checked to confirm consistency with the master, counted and the total of each form type received was recorded. Index A provides the list of letters numbers associated with the Form Master letters that were submitted on the 2013 Draft EIR/EIS. Index B provides the list of letter numbers associated with the Form Master letters that were submitted on the 2015 RDEIR/SDEIS. Lists of the Form Master letters are provided in Index A and Index B, respectively.
- Where commenters adopted a form letter as a portion of their comment, but added their own unique comments (referred to as a "Form Plus"), the response to the form letter portion of the comment may be located using Index A or Index B. Only the unique substantive portions of their comment were coded separately. Readers should refer to the responses to the form letter for responses to that portion of their comment.
- Several petitions were received on the 2013 Draft EIR/EIS and the 2015 RDEIR/SDEIS. These petitions were responded to as if they were a form letter. An index of the signatories to the petitions is provided as Indices 11 and 12.
- Comment letters were received on both the 2013 Draft EIR/EIS and the 2015 RDEIR/SDEIS after the close of the public comment period. The lead agencies have reviewed and responded to these late received comments.[7] These comments appear separately from the tables with the other comments timely received during the designated comment period.
- In an effort to facilitate ease of review, the lead agencies intended to refrain from directing the reader to responses to comments outside of the commenter's or commenters' specific letter.

[7] Under CEQA, a lead agency is required to consider comments on the EIR and to prepare written responses, if a comment is received within the public comment period. (Pub. Resources Code, § 21091, subd. (d); CEQA Guidelines, § 15088.) When a comment letter is received after the close of the public comment period, however, a lead agency does not have an obligation to respond. (Pub. Resources Code, § 21091, subd. (d)(1); Pub. Resources Code, § 21092.5, subd. (c)("Nothing in this section requires the lead agency to respond to comments not received within the comment periods specified in this division, to reopen comment periods, or to delay acting on a negative declaration or environmental impact report.").) Although a lead agency is not required to respond to late comments, it may choose to do so. (*Gray v. County of Madera* (2008) 167 Cal. App. 4th 1099, 1110, citing Pub. Resources Code, § 21091, subd. (d)(1); CEQA Guidelines, § 15088; *Gilroy Citizens for Responsible Planning v. City of Gilroy* (2006) 140 Cal.App.4th 911, 925, fn. 10.)

However, several comments referenced, incorporated by reference, or cited to comments sent to the lead agencies by other commenters. In this case, the lead agencies referred the reviewer to review the responses specific to the referenced or cited comment letters. For instance, many comments referenced the Independent Science Board's comments on the Draft EIR/EIS and RDEIR/SDIES. In this case, the lead agencies referred the reader to responses to comments 1448 and 2546, respectively.

Utilizing this process, the lead agencies have made a good faith effort to ensure that all substantive comments have been identified, considered, and responded to within Volume II of this Final EIR/EIS.

Comments Received on the EIR/EIS

As expected for a project of the scale and complexity of the BDCP and California WaterFix, the lead agencies received comments on a broad range of policy and environmental issues. In addition, some comments received during the Draft EIR/EIS public review period included comments solely on the BDCP or the Implementing Agreement and not necessarily on the Draft EIR/EIS. Major topic areas that elicited frequent comments included the decision-making process, alternatives development and screening, hydrology and hydrologic modeling, water quality, water supply, natural resources in general, aquatics, terrestrial biological resources, and restoration activities. It should be noted that where the comments focused on elements of the BDCP that overlap with elements of Alternatives 4A, 2D, or 5A (e.g., CM1 as it comprises the north Delta diversions, tunnels, and supporting facilities), specific responses are presented in Part 2. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA's and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis of financial feasibility), responses are presented generally in the master responses in Part 1 (e.g., Master Response 5). Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA, a response is provided in Part 2 generally referring the commenter to relevant information. (e.g., request of specific revisions to the BDCP related to mapping or references).

Overall, the comments on water issues, including hydrology, water quality, and water supply, common to both the BDCP and California WaterFix, constituted the single largest category of comments and represented about 20% of all the comments received on both the Draft EIR/EIS and the RDEIR/SDEIS. The next most frequent comment was a general comment regarding natural resources; these comments represented about 15% of the comments received. Comments related to specific alternatives and to the alternative development process were also numerous and represented about 8% of the all the comments received on both documents.

Fewer letters were received on the Draft EIR/EIS than on the RDEIR/SDEIS, but the percentage of letters that were form letters was much higher for the RDEIR/SDEIS. In addition, the number of lengthy and detailed letters was higher for the Draft EIR/EIS. For these reasons, even though there are only about 2,000 numbered (nonform) letters on the Draft EIR/EIS and there are more than 6,000 for the RDEIR/SDEIS, the Draft EIR/EIS still received about 6,000 more individual comments for which responses were developed. Approximately 9,500 form letters were received on the Draft EIR/EIS and approximately 20,000 were received on the RDEIR/SDEIS.

Contents

Part 1
Master Responses

The lead agencies developed master responses to provide responses to important common themes identified in individual comments. As a result of the extensive number and range of comments, 47 master responses were developed. Each master response provides a brief summary of the issue or common theme, followed by a generalized response that covers all or a portion of the individual comments received on the Draft EIR/EIS or RDEIR/SDEIS. Individual comment responses presented in Part 2 reference the master responses presented in this part, when appropriate.

Master Response Number	Title	Description
Master Response 1	Environmental Baselines	Explains why the EIR/EIS baselines are appropriate and why the CEQA conclusions can rely in part on the NEPA analysis. Also explains the differences in assumptions for Existing Conditions and the No Action Alternatives under the BDCP alternatives and under the non-HCP alternatives.
Master Response 2	Project- and Program-Level Analysis	Explains how CEQA and NEPA allow project-level analysis to be mixed with program-level analysis, describes how these two types of analysis serve different purposes, and describes how the EIR/EIS and RDEIR/SDEIS successfully achieved these types of analysis.
Master Response 3	Project Objectives and Purpose and Need	Discusses the project objectives and purpose and need, including the adequacy of each and the appropriateness of including conveyance system improvements as part of the project objectives and purpose.
Master Response 4	Alternatives Development	Discusses the alternatives development process and how it is consistent with NEPA, CEQA, and the State CEQA Guidelines. Covers topics including alternatives selection, scoping, and screening. Explains why identifying a preferred alternative is not pre-committal and why developing three new alternatives does not require analyzing other alternatives nor developing a new EIR/EIS.
Master Response 5	BDCP	Provides an overview of the BDCP, including its document structure, and identifies the preferred alternative. Lists common questions or concerns from BDCP commenters and provides responses or directs readers to pertinent information online, in the BDCP, or elsewhere in the Final EIR/EIS. Topics covered include funding, updated effects analysis and modeling, and governance issues.
Master Response 6	Demand Management	Describes why demand management measures—such as water conservation and water storage—were not included in the project alternatives evaluated in the EIR/EIS and identifies areas in the document where these measures are discussed.

Master Response Number	Title	Description
Master Response 7	Desalination	Discusses how a potential project alternative with a desalination component was considered but screened out for further evaluation in the EIR/EIS. Describes the current challenges of desalination technologies, including energy use, environmental effects, and costs.
Master Response 8	Analysis of Project as a Whole	Outlines the legal background under CEQA and NEPA of "piecemealing" or "segmenting" projects and explains how neither occurred during the environmental review process for the California WaterFix. Discusses the reasoning behind this conclusion, including considerations of causation, independent utility, independent benefits, independent purposes and objectives, and regulatory autonomy.
Master Response 9	Cumulative Impact Assessment	Describes the development of the cumulative impacts analysis in the EIR/EIS. Explains how various projects and programs were selected for analysis and how the analysis is consistent with NEPA and CEQA.
Master Response 10	Significant and Unavoidable Impacts	Discusses how and why different impacts were labeled "significant and unavoidable" under CEQA and describes the approach to mitigating those impacts.
Master Response 11	Local Jurisdiction Plans and Policies	Discusses why the California Department of Water Resources and federal agencies are not subject to local land use authority and how the EIR/EIS considers consistency with local plans and policies in relation to the impact analysis.
Master Response 12	Reusable Tunnel Material	Discusses potential reuse of tunnel material and addresses concerns about the odor of reusable tunnel material.
Master Response 13	Public Trust	Provides a general overview of public trust law and its relation to the proposed project. Addresses the specific public trust resource topics that are detailed in the EIR/EIS.
Master Response 14	Water Quality	Addresses assessment methodology; water quality data sources; water quality analyses; and effects related to salinity, dissolved organic carbon, selenium, mercury, pesticides, temperature, and *Microcystis*.
Master Response 15	Effects on National Pollutant Discharge Elimination System Dischargers	Discusses the effects that potential water quality changes associated with the California WaterFix would have on compliance with National Pollutant Discharge Elimination System (NPDES) permits and reclamation permits. Also discusses the effects that changing receiving water flows and quality in the Sacramento River and Delta would have on constituent assimilative capacity and on the ability of NPDES dischargers to comply with their permits.
Master Response 16	Seismic Activity	Discusses the potential for a seismically induced levee failure to affect Delta water exports and the potential for the proposed project to withstand a seismic event.

Master Response Number	Title	Description
Master Response 17	Biological Resources	Provides an overview of the analyses in the Final EIR/EIS of the proposed project's effects on fish and aquatic resources and on terrestrial biological resources. Discusses the proposed operational criteria and their effects on fish and aquatic resources and their adequacy for complying with applicable environmental regulations. Discusses the adequacy of the proposed protection and restoration efforts in reducing project effects on various terrestrial species.
Master Response 18	Agriculture	Discusses the proposed project's impacts on agriculture and the defensibility of the proposed mitigation, mitigation approach, and mitigation ratio under CEQA. Explains why effects on certain lands would not be mitigated, why some impacts are not considered environmental impacts, why it is permissible to count certain easements as mitigation for agricultural impacts, and why it is permissible to use mitigation measures that promote the sustainability of agriculture in the Delta.
Master Response 19	Climate Change and Greenhouse Gas Emissions	Provides an overview of climate change and greenhouse gas (GHG) emission standards and explains how they were incorporated into the EIR/EIS analyses. Discusses the methodology and assumptions used in the impact analyses and the identification of potential project impacts. Describes how the analyses and mitigation comply with NEPA, CEQA, and Delta Reform Act standards and regulations, among others, and how the project alternatives affect the resiliency and adaptability of the Plan Area in the face of climate change.
Master Response 20	Cultural Resources Assessment	Addresses concerns about the adequacy of the analysis of cultural resource impacts. Describes historical resources, unique and nonunique archeological resources, and the application of federal and state legal principles to the EIR/EIS.
Master Response 21	Tribal Issues	Discusses the traditional cultural properties designation and how the concept was handled in the EIR/EIS. Affirms that the literature review, field surveys, and investigations complied with applicable protocols and requirements. Also summarizes Native American consultation and coordination efforts.
Master Response 22	Standards Governing the Adequacy of Mitigation Measures	Describes both the general legal standards for adequate mitigation measures and the specific standards for adequate performance standards within mitigation measures. Distinguishes between the following: 1) project features or environmental commitments; 2) conservation measures and avoidance and minimization measures developed under federal and state endangered species law; and 3) formal CEQA/NEPA mitigation measures considered by the lead agencies in the Draft EIR/EIS, RDEIR/SDEIS, and Final EIR/EIS.

Master Response Number	Title	Description
Master Response 23	Other Stressors	Discusses the many stressors other than the State Water Project (SWP) and Central Valley Project (CVP) that are contributing to the decline of the Delta. Provides a brief history of the Delta and discusses non-SWP/CVP water diversions, nonnative species, predation, Delta salinity, water quality and contaminants, sediment supply, physical alterations to the Delta, land subsidence, pelagic organism decline, methylmercury and selenium, invasive aquatic vegetation, low dissolved oxygen levels, and illegal harvest.
Master Response 24	Delta as Place	Discusses how the BDCP (Alternative 4) and the proposed project (Alternative 4A) meet state policy, as set forth in the Delta Reform Act, to achieve the coequal goals for the Delta "in a manner that protects and enhances the unique cultural, recreational, and agricultural values of the California Delta as an evolving place" (California Public Resources Code Section 29702, subd. (a)). Discusses the Delta Reform Act and Delta Plan provisions regarding "Delta as Place." Explains how the Final EIR/EIS adequately analyzes NEPA and CEQA resources that are related to "Delta as Place."
Master Response 25	Upstream Reservoir Effects	Discusses how upstream operations were modeled in the EIR/EIS and how climate change was incorporated into the modeling. Also describes existing real-time operations processes that would continue to guide future operations under the California WaterFix.
Master Response 26	Area of Origin and Other Legal Water Users	Discusses the general approach to water rights for the proposed project and why the project would not affect water rights of other legal water users nor affect protections granted under area-of-origin laws.
Master Response 27	Environmental Justice	Discusses the environmental justice analyses and coordination in compliance with both federal and state law during the planning process. Also discusses continued outreach that would occur during construction.
Master Response 28	Adequacy of Operational Criteria	Discusses the operational criteria assumed for Alternative 4A. Provides an overview of exports in drier years, how EIR/EIS operational modeling may not match actual operations, and the proposed operating criteria for the new preferred alternative, Alternative 4A.
Master Response 29	Timing of Endangered Species Act Compliance	Describes the timing of environmental review under CEQA and NEPA relative to the release of the Endangered Species Act (ESA) biological assessment and biological opinions and California Endangered Species Act (CESA) Section 2081(b) documents for the proposed project. Also discusses how the lead agencies are complying with ESA and CESA requirements.

Master Response Number	Title	Description
Master Response 30	Modeling Approach and Availability of Newer Versions of the Models	Discusses the modeling approach used for evaluation of the alternatives in the EIR/EIS. Also discusses the availability of different versions of CALSIM II over the planning period and how they were addressed in the environmental review documents.
Master Response 31	BDCP/California Water Fix and 2009 Delta Reform Act	Discusses issues related to the Delta Reform Act of 2009, the Delta Stewardship Council, the Independent Science Board, and the requirements of the Delta Plan. Summarizes the appendices that address the Delta Reform Act and directs readers to pertinent information in the Final EIR/EIS.
Master Response 32	Water Rights Compliance Issues for California WaterFix	Describes the existing water rights for the operation of the SWP and the CVP. Addresses how there would be no change in the permitted quantity, maximum rate of diversion, seasonal pattern or timing, purpose of use, and place of use for SWP and CVP water under the proposed project. Discusses how the only water rights compliance request in front of the State Water Resources Control Board relates to the additional points of diversion that would be added to the water right permits. Also discusses how the proposed project would not result in injury to other legal users of water as a result of modification of water rights.
Master Response 33	Adaptive Management and Monitoring	Describes the Adaptive Management and Monitoring Program to be implemented under the preferred alternative—Alternative 4A—or Alternatives 2D and 5A. Discusses the adaptive management approach and mechanisms to address scientific uncertainties and effects related to operations of the preferred alternative.
Master Response 34	Beneficial Use of Water	Discusses how beneficial use law applies to the proposed project and presents the definitions of beneficial use.
Master Response 35	Local Resource Programs and Water Conservation in Southern California	Summarizes the local resource program investments and conservation achievements within the service area of the Metropolitan Water District of Southern California. Explains why these do not and would not obviate the need for continued exports to the Metropolitan Water District from the Delta under the California WaterFix or one of the other alternatives.
Master Response 36	California WaterFix vs. the Peripheral Canal	Discusses the primary differences between the Peripheral Canal that was rejected by voters in 1982 and the California WaterFix proposal evaluated in the Final EIR/EIS.
Master Response 37	Water Storage	Discusses why the proposed project does not include new water storage facilities and why specific suggested storage components are beyond the scope of the lead agencies' review of the proposed project and alternatives.

Master Response Number	Title	Description
Master Response 38	Length and Complexity of the EIR/EIS	Discusses how the lead agencies adequately presented information in the BDCP, Draft EIR/EIS, RDEIR/SDEIS, and the Final EIR/EIS. Also explains how the approach is fully consistent with the procedural and informational requirements of CEQA and NEPA.
Master Response 39	Public Review Period Duration	Addresses all comments received that requested additional public review opportunities with respect to the Draft BDCP, Draft EIR/EIS, Draft BDCP Implementing Agreement, and RDEIR/SDEIS.
Master Response 40	Adequacy of Public Outreach Activities	Discusses the public outreach efforts conducted by the lead agencies, including the 2013 Draft EIR/EIS and 2015 RDEIR/SDEIS public open house meetings.
Master Response 41	Transparency and Public Involvement	Describes the steps the lead agencies have taken to ensure transparency and public involvement in developing the BDCP and EIR/EIS.
Master Response 42	Responses to Comments on the Draft EIR/EIS and RDEIR/SDEIS	Discusses the Draft EIR/EIS and RDEIR/SDEIS comment response process, including how public comments were considered in the planning process. Summarizes the approach for following up on scoping comments, comments on the Draft EIR/EIS, and comments on the RDEIR/SDEIS. Also presents the numbers of comments received for each review period.
Master Response 43	Water Transfers	Explains how water transfers are evaluated in the Final EIR/EIS and the environmental and administrative process in place to evaluate the impacts of water transfers.
Master Response 44	Decision Tree Approach	Discusses how the decision tree approach was developed and refined.
Master Response 45	Required Project Approvals and Other Related Actions	Discusses the regulatory approvals and permits needed before implementation of the project could occur. Also describes the role of responsible and cooperating agencies related to approval of the California WaterFix and other actions that would be implemented concurrently, but separately, from the California WaterFix.
Master Response 46	Recirculation and Scoping	Describes why a new EIR/EIS and scoping period is not required in consideration of the new alternatives added in 2015 (and first presented in the RDEIR/SDEIS), in response to public and agency comments to consider an alternative implementation strategy. Discusses why new modeling and information presented in the Final EIR/EIS does not require further recirculation.
Master Response 47	Drought and EIR/EIS Modeling	Addresses the sufficiency of the modeling approach used for evaluation of alternatives in capturing drought-related effects.

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Master Response 1: Environmental Baselines

This master response explains why the baselines used in the EIR/EIS are appropriate under CEQA and NEPA and why it is permissible for the CEQA conclusions to rely in part on the NEPA analysis which measures impacts compared to conditions that are expected in the future under the No Action Alternative. It also explains the differences in assumptions for Existing Conditions and No Action Alternatives for the BDCP alternatives and for the non-HCP alternatives including differences in temporal scope and Biological Opinion requirements.

CEQA and NEPA Environmental Baselines

For a detailed discussion on the CEQA and NEPA baselines used in the Final EIR/EIS, please refer to Chapter 4, *Approach to the Environmental Analysis*, Section 4.2.1.1, *CEQA and NEPA Baselines*, and Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*. As explained therein, because CEQA and NEPA have different directives related to using baselines for determining the impacts of proposed projects/actions, the EIR/EIS uses two baselines: one for determining the impacts under CEQA (i.e., *Existing Conditions* as of 2011); and another one for determining the impacts under NEPA[1] (future conditions under the No Action Alternative). As explained below, however, in some instances CEQA impact determinations were informed not only by a comparison of alternatives' impacts against Existing Conditions, but also by additional consideration of a comparison of alternatives' impacts against anticipated No Action conditions. For reasons explained below, such an approach is fully consistent with CEQA.

The CEQA baseline for assessing significance of impacts of any proposed project is normally the environmental setting, or existing conditions, at the time a Notice of Preparation (NOP) is issued.[2]

This directive was interpreted and applied by the California Supreme Court in *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (*Neighbors*) (2013) 57 Cal.4th 439. There, the California Supreme Court reiterated that "[t]he CEQA Guidelines establish the default of an existing conditions baseline even for projects expected to be in operation for many years or decades."[3] According to the California Supreme Court, for such a project, "existing conditions constitute the norm from which a departure must be justified—not only because the CEQA Guidelines so state, but because using existing conditions serves CEQA's goals in important ways."[4] As the California Supreme Court explained, "[a]n EIR stating that in 20 or 30 years the project will improve the environment, but neglecting, without justification, to provide any evaluation of the project's impacts in the meantime does not 'giv[e] due consideration to both the short-term and long-term effects' of the project … and does not serve CEQA's informational purpose well."[5] Although the Supreme Court did not strictly prohibit the exclusive use of a future baseline consisting of anticipated conditions at the commencement or mid-point of project implementation, the court did hold that any sole reliance

[1] The EIS portion of the EIR/EIS often uses the term "NEPA point of comparison" instead of "baseline."

[2] State CEQA Guidelines, § 15125, subd. (a).

[3] *Neighbors*, *supra*, 47 Cal.4th at p. 455.

[4] *Ibid*.

[5] *Ibid*., quoting State CEQA Guidelines, § 15126.2, subd. (a).)

on such a future baseline is only permissible where a CEQA lead agency can show, based on substantial evidence, that an existing conditions analysis would be "misleading or without informational value."[6]

As indicated above, the Final EIR/EIS has not used future conditions as the sole CEQA baseline for impact assessment. Instead, the document treats Existing Conditions as the starting point (and often the end point) for CEQA impact assessment. In some instances, however, the document does take account of projected future conditions, in combination with Existing Conditions, in order to clarify the precise character of anticipated impacts under CEQA. Such an approach has the blessing of the California Supreme Court, as set forth in its *Neighbors* decision:

> A project's effects on future conditions are appropriately considered in an EIR's discussion of cumulative effects and in discussion of the no project alternative. [Citation.] But nothing in CEQA law precludes an agency, as well, from considering both types of baseline—existing and future conditions—in its primary analysis of the project's significant adverse effects.[7]

In fact, the Court emphasized that the paramount goal under CEQA is to have agencies employ "a realistic baseline" that gives the public and decision makers "the most accurate picture practically possible of the project's likely impacts."[8] Thus, "[n]either CEQA nor the CEQA Guidelines mandates a uniform, inflexible rule for determination of the existing conditions baseline. Rather, an agency enjoys the discretion to decide, in the first instance, exactly how the existing physical conditions without the project can most realistically be measured, subject to review, as with all CEQA factual determinations, for support by substantial evidence."[9]

In preparing the CEQA compliance component of the EIR/EIS, the California Department of Water Resources (DWR), as CEQA lead agency, took care to make the document's CEQA impact conclusions as realistic and accurate as possible, consistent with applicable legal principles. Although originally formulated prior to the issuance of the *Neighbors* decision, the CEQA baseline employed in the Final EIR/EIS is consistent with the principles outlined above. Following State CEQA Guidelines Section 15125(a), the CEQA baseline was developed to assess the significance of impacts of the alternatives in relation to the Existing Conditions at the time of the Notice of Preparation (NOP). The Existing Conditions assumptions for the EIR/EIS include facilities and ongoing programs that existed as of February 13, 2009 (publication date of the most recent NOP), that could affect or could be affected by implementation of the BDCP alternatives (refer to Appendix 1D, *Final Scoping Report*, for copies of the NOP).

In some instances, though, certain assumptions were updated within the CEQA lead agency's reasonable discretion. For example, the June 2009 Biological Opinion (BiOp) for salmonid species from the National Marine Fisheries Service (NMFS) was included within the CEQA baseline even though it had not been issued in its final form as of February 2009. Because the December 2008 BiOp for the delta smelt from the United States Fish and Wildlife Service (USFWS) was in place as of February 2009, it made sense to also include the NMFS BiOp, which had been released in draft form prior to February 2009. DWR decided that it would have been anomalous to rely on the most current USFWS BiOp with respect to delta smelt issues, but to ignore the soon to be adopted NFMS BiOp with respect to salmonid issues.

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[6] *Neighbors*, *supra*, 57 Cal.App.4th at p. 457.)

[7] *Id.* at p. 454 [footnote omitted].)

[8] *Id.* at p. 449.

[9] *Ibid.*

Even so, because of the importance of focusing on Existing Conditions, DWR as CEQA lead agency did not assume implementation of all aspects of either BiOp. The assumptions with respect to the BiOps for both the Existing Conditions and the No Action Alternative are explained under *Assumptions for Existing Biological Opinions* in this Master Response. DWR's assumptions with respect to implementation of one particular requirement of the delta smelt BiOp, known as the "Fall X2" salinity standard, are explained here.

In certain water year types, the Fall X2 salinity standard can require large upstream reservoir releases in fall months of wet and above normal years to maintain the location of "X2" at approximately 74 or 81 river kilometers inland from the Golden Gate Bridge. As of spring 2011, when a lead agency technical team began a new set of complex computer model runs in support of the later-published Draft EIR/EIS, DWR determined that full implementation of the Fall X2 salinity standard as described in the 2008 USFWS BiOp was not certain to occur within a reasonable near-term time frame because of a recent federal trial court decision and reasonably foreseeable near-term hydrological conditions. As of that date, in litigation challenging the delta smelt BiOp filed by various water users, which DWR intervened, the United States District Court found that USFWS failed to adequately explain the specific rationale used to determine the locations for Fall X2 and remanded to the USFWS (*San Luis & Delta-Mendota Water Authority v. Salazar* (E.D. Cal. 2010, 760 F.Supp.2d 855). Thus, implementation of Fall X2 was uncertain in the foreseeable future. This uncertainty, together with CEQA's focus on existing conditions, led DWR to the decision to use a CEQA baseline without the implementation of the Fall X2 action in the Draft EIR/EIS. Although the Ninth Circuit Court of Appeals subsequently overturned this District Court ruling in 2014 (see *San Luis & Delta-Mendota Water Authority v. Jewell*, (9th Cir. 2014, 747 F.3d 581), such an outcome was not foreseeable as of 2009 (or 2011) and, more importantly, does not change the fact that, as of that date, the Fall X2 requirement had not been implemented and thus was not reflected in Existing Conditions at the time. Therefore, following State CEQA Guidelines Section 15125(a), DWR properly determined that the appropriate baseline for CEQA purposes was Existing Conditions at the time it issued the NOP. For purposes of NEPA, however, which uses a different method for assessing environmental effects of the action alternatives, the Fall X2 action was included in the NEPA point of comparison, as discussed below.

Consistent with these considerations associated with the CEQA baseline, Existing Conditions for the Final EIR/EIS include continuation of operations of the SWP and CVP by DWR and Reclamation. Assumptions for the Existing Conditions related to operations of the SWP and CVP are described in the *Biological Assessment on the Continued Long-term Operations of the Central Valley Project and the State Water Project* (August 2008) prepared by Reclamation (2008) as modified by certain elements of the June 2009 NMFS BiOp and the December 2008 USFWS BiOp, which would be expected to occur even in the absence of the proposed project. Detailed assumptions for the SWP and CVP operations are represented in hydrological and water quality analytical models, as described in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*. Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, provides additional information on assumptions made for Existing Conditions. Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, provides additional information on assumptions made and how these conditions are defined.

CEQA Conclusions Relying on NEPA Analysis

Although the baselines have been labeled as the CEQA and NEPA baselines, respectively, the CEQA analysis presented in the various resource chapters frequently mentions the NEPA baseline in order to fully explain the results based on the CEQA baseline. Under NEPA, the effects of sea level rise and climate change (e.g., altered precipitation patterns resulting in more rain and less snow than at present) are evident both in the future condition and in the effects of the action alternatives. Under CEQA, in contrast, the absence of sea level rise and climate change in Existing Conditions results in model-generated impact conclusions that include the impacts of sea level rise and climate change in addition to the effects of the action alternatives. As a consequence, a CEQA analysis that reported these conclusions without qualification and explanation would either overstate the true effects of the action alternatives or would misleadingly suggest significant effects that are largely or exclusively attributable to sea level rise and climate change, and not to the action alternatives themselves. To comply with CEQA's requirement to disclose the reasonably foreseeable impacts of the project alternatives, DWR has reported some of the CEQA effects with an explanation regarding the extent to which the impacts of sea level rise and climate change are reflected in the bare impact conclusions as modeled.

To help explain these points, the Final EIR/EIS frequently points the reader to the NEPA conclusions, as those conclusions, which use the No Action Alternative as the baseline for comparison, allow for more of an "apples to apples" comparison, in that the results of both the No Action Alternative and the action alternatives include both sea level rise and climate change. Thus, although the CEQA analysis relies on Existing Conditions as a baseline, the CEQA analysis often points to the NEPA analysis (reflecting an anticipated "future condition") as a way of helping readers to understand the actual project-specific impacts of alternatives vis-à-vis Existing Conditions. This is particularly the case with CALSIM and DSM2 modeling, which focuses on comparisons of 1) the future condition with the project against 2) the future condition without the project (the No Action Alternative) to provide an equivalent level of comparison that isolates the effects of the project from the non-project related effects such as of sea level rise and climate change. Comparisons for the CEQA analyses are also provided for 1) the future condition with the project against 2) the Existing Condition. This approach is fully consistent with CEQA as understood by the California Supreme Court, which in *Neighbors, supra*, 57 Cal.4th at p. 454, held that "nothing in CEQA law precludes an agency…from considering both types of baseline—existing and future conditions—in its primary analysis of the project's significant adverse effects[.]" Although here DWR did not describe its approach as a "dual baseline" approach, it has relied in part on the NEPA baseline in clarifying the results of analyses based solely on the CEQA baseline. The approach used is valid, supported by substantial evidence, and provides the public and decision-makers with a reliable understanding of the project-specific impacts relative to the CEQA baseline. For more information regarding drought please see Master Response 47.

Need for Different Baseline Assumptions for BDCP and Non-HCP Alternatives

As the Final EIR/EIS notes, the lead agencies, in response to comments on the Draft EIR/EIS, decided to revise the project to allow for an alternative implementation strategy and consideration of new alternatives. In general, the strategy presented in the Draft EIR/EIS of a BDCP – a long-term, comprehensive conservation plan for the Delta implemented as a habitat conservation plan/natural community conservation plan (HCP/NCCP) – raised concerns in issuing permits with desired

assurances because of 1) perceived difficulties in assessing the status of species over 50 years given uncertainties such as climate change, 2) perceived difficulties in assessing the benefits over 50 years of conservation measures (CMs), and 3) uncertainties expressed over the ability to implement large-scale habitat restoration, enhancement, and preservation.

To address these and other concerns, the lead agencies decided as a policy matter to consider an alternative implementation strategy and new alternatives associated with that strategy. In this alternative approach, DWR and Reclamation would implement a conveyance-focused project that retains the same proposed new conveyance facilities with appropriate mitigation for impacts of construction and operation. Conservation measures not needed for mitigation would not be implemented as part of the project, but would be continued separately under the umbrella of California EcoRestore or elsewhere and considered and approved on a case-by-case basis. The project would not be implemented as an HCP/NCCP, but rather authorized under Section 7 of the Endangered Species Act and Section 2081 of the California Endangered Species Act. In other words, the alternative approach would not include the BDCP.

The new preferred alternative described in the Final EIR/EIS is Alternative 4A, or the California WaterFix, and would be implemented without the BDCP. Alternative 4A, as well as Alternatives 2D and 5A, represent the non-HCP subalternatives within the alternative implementation strategy. Despite the concerns expressed with the BDCP implementation strategy, the original preferred alternative 4 (i.e., the BDCP) remains a viable and feasible alternative. Indeed, all of the BDCP alternatives from the Draft EIR/EIS (Alternatives 1A–2C, 3, 4, 5, and 6A–9) have been retained and carried forward in this Final EIR/EIS.

Because of fundamental differences between the original BDCP implementation strategy and the alternative, non-HCP/NCCP implementation strategy, analytical and other variations in the evaluation of the original BDCP alternatives and the California WaterFix, non-HCP alternatives are necessary and appropriate. The No Action Alternatives must be different because of two different project time periods – a 50-year permit period the original BDCP alternatives and a shorter period for the non-HCP alternatives. Similarly differences in assumed components of the No Action Alternatives are appropriate because currently contemplated habitat actions that would likely be folded under the umbrella of a BDCP would be implemented independently where there is no BDCP. The specific differences in assumptions are described below.

The lead agencies will ultimately make the policy decision on which implementation strategy to pursue, and then select a corresponding alternative. That is, the lead agencies will compare alternatives of the same implementation strategy against one another. Because of the fundamental differences between the BDCP and non-HCP/NCCP strategies, it is not appropriate or possible to make analytical comparisons of an alternative from one strategy against an alternative from the other.

Timeframes for Evaluation

Differences in the timeframes for the evaluation of the BDCP and non-HCP alternatives are discussed in Section 4.1.1, *Timeframes for Evaluation*. The BDCP alternatives would be implemented over a 50-year period, corresponding to the proposed 50-year lifespan of the incidental take permits. The conservation measures that make up the BDCP alternatives have been designed to accommodate and respond over time to new information and greater scientific understanding of the Delta (adaptive management). Some conservation measures would be implemented immediately upon

completion of environmental approvals, and others would be implemented over time. As described in BDCP Chapter 3, *Conservation Strategy*, the conservation strategy is divided into near-term and long-term implementation stages. Implementation of the conservation measures would generally begin in the first year after project approval, the year in which regulatory authorizations are issued by the federal lead agencies and the California Department of Fish and Wildlife pursuant to the BDCP, and would be completed within 50 years. Because the full project would be implemented over the full 50-year period, the future conditions timeframe for purposes of CEQA and NEPA effects analysis and impact conclusions reliant on physical modeling (primarily CALSIM II and Delta Simulation Model II [DSM2]) is the end of the long-term implementation stage. This timeframe is referred to as the Late Long-Term (LLT) and includes climate change and sea level rise assumptions assumed to be applicable to Year 2060 conditions.

Because a 50-year permit would not be pursued under the non-HCP alternatives, modeling analyses use the near-term period, referred to as the Early Long-Term (ELT) timeframe, which includes climate change and sea level assumptions assumed to be applicable to Year 2025 conditions. However, because the project would continue indefinitely, the analysis also qualitatively examines impacts of the non-HCP alternatives at the LLT timeframe, although no CEQA or NEPA conclusions are made based on the LLT timeframe. Where impacts for the non-HCP alternatives would not differ between the ELT and the LLT timeframes, the qualitative analysis is not specifically called out.

Assumptions for Existing Biological Opinions

The assumptions for Existing Conditions and the No Action Alternative with respect to the June 2009 NMFS BiOp and the December 2008 USFWS BiOp (existing BiOps) are described in detail in Appendix 3D. In general, the operating requirements of the existing BiOps have been included in the Existing Conditions scenario for both the BDCP and non-HCP alternatives. An exception is Fall X2, which as previously explained, is not included in the Existing Condition scenario. But since full implementation of Fall X2 is deemed likely in the future, it is included in the No Action Alternative for both the ELT timeframe (for evaluation of the non-HCP alternatives) and LLT (for evaluation of the BDCP alternatives.) Note that inclusion of Fall X2 varies among the project alternatives. It is not included, for example, in Operational Scenarios H1 and H2 (Alternatives 4 and 4A) or Operational Scenario A (Alternative 1).

For the BDCP alternatives, certain non-operational elements of the existing BiOps Reasonable and Prudent Alternatives (RPAs) were assumed to be included with the proposed project. In general, habitat elements of the RPAs were included with the proposed project as logically being implemented as part of the comprehensive HCP/NCCP for the Delta that is proposed as the BDCP. In order to isolate the environmental effects of these RPA actions, they were not included in the No Action Alternative. Table 3D-6 describes in detail the RPA actions that would be subsumed in the BDCP and not included in the No Action Alternative, which in general includes the Fremont Weir modifications and other improvements in the Yolo Bypass (NMFS RPA Actions I.6.1, I.6.2, and I.7, subsumed under CM2) and tidal habitat restoration (NMFS RPA Actions I.6.2 and FWS RPA Action 6, subsumed under CM4.)

With the introduction and analysis of the new preferred alternative, 4A, as well as other non-HCP alternatives, 2D and 5A, in the 2015 RDEIR/SDEIS (and Final EIR/EIS), the No Action Alternative assumptions were changed with respect to habitat elements of the RPAs. The non-HCP alternatives do not include the RPA habitat components because the BDCP is not included with these non-HCP alternatives. However, the actions would still be implemented as separate projects with or without

implementation of the non-HCP alternatives, and so have been included with the No Action Alternative ELT.

Master Response 2: Project- and Program-Level Analysis

This master response includes discussions on the following subjects.

- *Why it is permissible under CEQA and NEPA for the BDCP alternatives to create a document that mixes project-level analysis for Conservation Measure (CM) 1 with program-level analysis for the other CMs.*
- *How the purposes served by the project-level analysis differ from the purposes served by the program-level analysis.*
- *How the EIR/EIS (Draft EIR/EIS, RDEIR/SDEIS, and Final EIR/EIS) successfully achieved project-level analysis for CM 1 of the BDCP alternatives and legitimately included program-level analysis for proposed large-scale habitat restoration efforts proposed in the BDCP alternatives.*
- *How the RDEIR/SDEIS (and Final EIR/EIS) successfully achieved project-level analysis for all aspects of Alternatives 2D, 4A, and 5D.*

Project-Level vs. Program-Level Analysis

Some commenters expressed concern that the Draft EIR/EIS combines both project-level and program-level analyses for the BDCP alternatives in a single document. Several commenters even suggested that a mixed document including both project-and program-level elements is per se impermissible under CEQA and NEPA. Nothing in CEQA or NEPA, however, prohibits mixing program-level and project-level review in the same document. Rather, under both CEQA and NEPA, lead agencies are afforded substantial discretion to determine what level of analysis is appropriate for a particular project or action. Project-level analysis and program-level analysis each serve different purposes and lead agencies are afforded discretion to craft an EIR or EIS as project-level, program-level, or both, depending on circumstances. In fact, it is a common practice under both CEQA and NEPA for agencies to combine project-level and program-level review in a single document.

Under CEQA, a lead agency is generally not required to use any particular type of EIR to analyze the impacts of a project. Rather, CEQA identifies various types of EIRs and provides the lead agency with discretion to craft the appropriate type of EIR for the project under review see State CEQA Guidelines Section 15160 et seq.). The types of EIRs listed in the State CEQA Guidelines are intended only as examples of the types of documents that can be used to satisfy the requirements of CEQA. In fact, the State CEQA Guidelines explicitly state that the variations included in the Guidelines are not meant to be exclusive, and note that documents can be tailored for different situations and uses depending on circumstances (State CEQA Guidelines Section 15160).[10]

One type of EIR used to fulfill the requirements of CEQA is the "project EIR." A project EIR "examines the environmental impacts of a specific development project" (State CEQA Guidelines Section

[10] / See also *Citizens For Responsible Equitable Environmental Development v. City of San Diego Redevelopment Agency* (2005) 134 Cal.App.4th 598, 605 ["[t]o accommodate [project] diversity, the Guidelines describe several types of EIR's, which may be tailored to different situations"]; *Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1315.

15161). In general, once the project EIR is certified, no further CEQA analysis is required prior to construction or implementation of the project.

Another type of EIR that can be used to fulfill the requirements of CEQA is the "program EIR." Program EIRs are described in State CEQA Guidelines Section 15168. Subdivision (a) of that section explains that a program EIR is an EIR prepared for a series of actions that can be characterized as one large project and are related: 1) geographically; 2) as logical parts in a chain of contemplated actions; 3) in connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or 4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that can be mitigated in similar ways. This broad list covers virtually any situation in which evaluation of environmental impacts, mitigation measures, or alternatives that are common to related activities would be more useful or informative in a single EIR rather than in separate documents.

A program EIR generally establishes a framework for subsequent "tiered" or project-level environmental documents that are prepared in accordance with a program. It is meant to provide a basis for evaluating environmental effects and supporting a reasoned choice among alternatives when site-specific data may not yet be available. The degree of specificity in a program EIR's impact analysis need only be as detailed as the description of the elements in the program (State CEQA Guidelines Section 15146). CEQA specifically encourages tiering from a broader EIR whenever feasible, in part to streamline regulatory procedures and eliminate repetitive discussions of the same issues in successive EIR's (see Cal. Pub. Resources Code Section 21093 ["The Legislature further finds and declares that tiering is appropriate when it helps a public agency to focus upon the issues ripe for decision at each level of environmental review and in order to exclude duplicative analysis of environmental effects examined in previous environmental impact reports"]). This allows subsequent analyses to focus on project-specific impacts and eliminate repetitive discussions of the same issues in successive documents (State CEQA Guidelines Section 15152; Cal. Pub. Resources Code Section 21093).

State CEQA Guidelines Section 15168, subdivision (b), explains that using a program EIR has several advantages. Such a document can 1) provide an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action; 2) ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis; 3) avoid duplicative reconsideration of basic policy considerations; 4) allow the lead agency to consider broad policy alternatives and program wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts; and 5) allow reduction in paperwork. A Program EIR also allows an agency to consider broad programmatic issues early in the planning process. Preparation of a program EIR for this purpose allows the agency to undertake a more comprehensive evaluation of significant environmental effects, including cumulative effects, than it could in a series of individual EIRs of the activities within the program (State CEQA Guidelines Section 15168, subds. (b)(1), (b)(2)). Use of a program EIR also allows the agency to consider broad policy alternatives and develop program-wide mitigation measures at an early stage, before the specific components of the program are proposed for approval.

A program EIR also ensures that an agency can avoid improper "piecemeal" review of a project. Piecemealing occurs when the environmental effects of a project are minimized by breaking a large project into smaller parts and reviewing each component individually in separate EIRs. Indeed, as explained in State CEQA Guidelines Section 15165, "where individual projects are, or a phased

project is, to be undertaken and where the total undertaking comprises a project with significant environmental effect, the lead agency shall prepare a single program EIR for the ultimate project as described in Section 15168" (see Master Response 8, *Analysis of the Project as a Whole*).

Again, however, nothing in CEQA prohibits combining program-level review with project-level review.[11] In fact, the State CEQA Guidelines specifically contemplate that project-level review can occur within a program EIR. For example, Section 15168, subdivision (c), explains that if an agency finds that no new significant environmental impacts that were not previously covered by the program EIR will result from a subsequent activity, the agency can approve the activity as being within the scope of the project covered by the program EIR, and no new environmental document would be required. Thus, as the State CEQA Guidelines suggest, EIRs styled as program EIRs may ultimately include the equivalent of project-level analysis for some elements but not others. Indeed, CEQA is replete with provisions authorizing the sort of "mixed" approach employed by the lead agencies, in which EIRs for certain kinds of projects can combine differing levels of analysis for discrete components of such projects (see, e.g., Cal. Pub. Resources Code Section 21083.3 and State CEQA Guidelines Section 15183 [creates a scheme by which EIRs for general plans, community plans, and zoning actions can completely dispense with some environmental issues while leaving others to be addressed in CEQA documents for site-specific projects]; see also Cal. Gov. Code Section 65457 and State CEQA Guidelines Section 15182 [exempting residential projects consistent with "specific plans" for which EIRs were prepared while not exempting nonresidential projects consistent with the same specific plans]). Accordingly, it was entirely appropriate under CEQA for the Lead Agencies to include both project-level and program-level in the Draft EIR/EIS.

Like CEQA, NEPA does not require a lead agency to use any particular type of EIS to evaluate the environmental effects of an action. Rather, NEPA similarly recognizes that different types of documents may be appropriate depending on the particular circumstances of the action being reviewed.

While, as explained previously, CEQA refers to a document that examines the environmental impacts of a specific development project as a project EIR, under NEPA that type of document is generally referred to as a "site-specific EIS." Like a Project EIR, after a site-specific EIS has been prepared, no further analysis is required prior to construction or implementation of the project.

Another type of document used to satisfy the requirements of NEPA, is a "programmatic EIS." This type of document is similar to a program EIR under CEQA. The NEPA regulations adopted by the Council on Environmental Quality (CEQ) direct agencies to "use program, policy, or plan environmental impact statements and tiering from statements of broad scope to those of narrower scope, to eliminate repetitive discussions of the same issues" (40 Code of Federal Regulations [CFR] Part 1500.4(i)). Agencies are required to prepare statements on broad actions so that they "are relevant to policy and are timed to coincide with meaningful points in agency planning and decision-making" (40 CFR Part 1502.4(b)). The regulations also state that, when preparing statements on broad actions, agencies "may find it useful" to evaluate the proposals in one of the following ways: 1) geographically, including actions occurring in the same general location, such as body of water, region, or metropolitan area; 2) generically, including actions that have relevant similarities, such as common timing, impacts, alternatives, methods of implementation, media, or subject matter; or 3)

[11] / See, e.g., *California Oak Foundation v. Regents of Univ. of Cal.* (2010) 188 Cal.App.4th 227, 271 [court upholds EIR that, despite being labeled as a "project EIR," addressed certain project components in substantially more detail than other components].

by stage of technological development, including federal or federally assisted research, development or demonstration programs for new technologies that, if applied, could significantly affect the quality of the human environment (40 CFR Part 1502.4(c)). Again, like CEQA, NEPA lead agencies are encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (40 CFR Part 1502.20). The regulations authorize tiering for different stages of actions (40 CFR Part 1502.20) and note that tiering is appropriate "when it helps the lead agency to focus on the issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe" (40 CFR Part 1508.28.) The benefits of programmatic EISs and tiering are numerous and similar to the benefits described above for CEQA.

Again, under NEPA, agencies are afforded discretion to determine what type of analysis is appropriate and nothing in NEPA prohibits agencies from mixing programmatic and site-specific elements in a single document. It was therefore entirely appropriate for the lead agencies to mix programmatic and site-specific review in a single document.

In sum, both CEQA and NEPA permit mixing program-level and project-level review in a single document. This is a common practice under both CEQA and NEPA, and was the most useful and informative approach for analyzing the impacts of the project alternatives and each of their individual components. Here, as is explained in detail below, the lead agencies addressed the BDCP alternatives in the Draft EIR/EIS (and Final EIR/EIS) through a combination of project-level and program-level review, with proposed conveyance facilities and their associated operations being addressed at a project level, while the large-scale, long-term habitat restoration and preservation components were necessarily addressed at a program level. In the RDEIR/SDEIS, however, the three new sub-alternatives (Alternatives 2D, 4A, and 5A) were all addressed at a project-level (as discussed below). Because of the reduced amounts of habitat restoration and preservation associated with these new options, as well as the shorter-term schedule for undertaking such efforts, there was no need to include elements of programmatic analysis. These approaches remain in this Final EIR/EIS.

For more information on project-level and program-level review, see Chapter 4, Section 4.1.2. For additional discussion regarding the conservation measures that may require additional environmental review, see Appendix 31A, *BDCP Later CM Activity Environmental Checklist.*

Project-Level Analysis for Conservation Measure 1 of the BDCP Alternatives

A number of commenters have urged that the level of detail included for CM1 of the BDCP alternatives is not sufficient to achieve "project-level" detail under either CEQA or NEPA. However, as represented in the Final EIR/EIS (and included in both the Draft EIR/EIS and the RDEIR/SDEIS), the lead agencies prepared project-level analysis of the construction and operation of CM1 for the BDCP alternatives. While the lead agencies believe the Draft EIR/EIS provided sufficiently detailed information for project-level review of CM1 for the BDCP alternatives, the new preferred alternative and other non-HCP alternatives presented in the RDEIR/SDEIS include an enhanced level of analysis for the elements that made up CM1 for the BDCP alternatives. Each component feature of the water conveyance facilities is analyzed at a resource-specific level, based on complete water conveyance facility project footprints developed by DWR's Division of Engineering. This approach facilitated

both a component-specific, or project-level, analysis of the individual features of the conveyance facilities.

Project-level analysis was also prepared for operations and mitigation requirements associated with the new sub-alternatives. Because of the reduced scope related to the alternative implementation strategy (i.e., no large scale habitat restoration proposed), no programmatic analysis was needed for the non-HCP Alternatives. Chapter 4, Section 4.1.2 explains why the differing levels of review were appropriate for the various components of the project alternatives addressed in that document, all of which were intended to function as habitat conservation plans (HCPs) and natural community conservation plans (NCCPs). As explained in that section, certain components of the project alternatives were evaluated at a program-level of analysis under NEPA and CEQA. The project-specific effects of the large-scale habitat restoration and preservation efforts proposed in connection with those alternatives could not be ascertained, as the locations for such efforts had not been specifically identified at the time the document was released. And the same remains true today. Moreover, in those alternatives, design information for the restoration and conservation strategies for aquatic and terrestrial habitat and other stressor reduction measures in CM2–CM21 was presented at a conceptual level. Accordingly, the analyses in the Final EIR/EIS (and first introduced in the Draft EIR/EIS) address the effects of typical construction, operation, and maintenance activities that would be undertaken for implementation of CM2–CM21 at a program-level of analysis, describing what environmental effects may occur in future project phases. Thus, if any such BDCP alternative is approved for implementation, then additional, project-level environmental review will be required prior to implementation of specific conservation measures other than CM1. For additional discussion regarding the conservation measures that may require additional environmental review, see Appendix 31A, *BDCP Later CM Activity Environmental Checklist*.

Chapter 4, Section 4.1.2 further explains, however, that because design information on the water conveyance facilities and existing facility operational changes was available at a project-level, the CM1 elements of the project alternatives were analyzed at a project-level of detail in the impact analyses. This was also true in the RDEIR/SDEIS. Chapter 3, *Description of Alternatives*, provides a detailed description of the components of CM1, which, in summary, consist of various combinations of the following:

- New physical/structural components to divert and convey water with fish protections.
- New intakes with fish screens to divert water from locations along the Sacramento River in the north Delta, including installation of cofferdams during construction.
- An intermediate forebay and pumping plant for holding the diverted water.
- Conveyance options for carrying the diverted water south, consisting of a new pipeline/tunnel, a new peripheral canal, or new diversion gates and operable barriers on existing Delta channels.
- A new forebay at Byron Tract near Clifton Court Forebay connecting to existing State Water Project (SWP) and Central Valley Project (CVP) facilities.
- Changes in existing SWP and CVP system operations that would affect the following.
    - Operation of the upstream SWP facilities and reservoirs, and associated changes in downstream river reaches.
    - Use of the south Delta intakes.

- Water operations to improve aquatic habitat conditions and continue SWP and CVP Delta exports.

There was sufficient information available on all of the CM1 components to adequately analyze their environmental impacts at a project-level of detail. For example, specific data on the location, design, schedule, and operation of the various components of CM1 have been developed and were available during the environmental review process. Available data included specific and detailed footprints for all alternative CM1 facilities, precise locations of access roads and staging areas, reliable estimates of crew sizes and construction equipment and vehicle use, and construction schedules, as well as employees and equipment required for operations. As explained in greater detail below, this information was sufficient to analyze the effects of implementing the CM1 elements of the project alternatives at the project-level, and the EIR/EIS (including the Draft EIR/EIS and RDEIR/SDEIS) provides sufficiently detailed information to fulfill the requirements of both CEQA and NEPA regarding the level of specificity required for project-level review for proposed conveyance facilities and their operations. The Final EIR/EIS (and RDEIR/SDEIS), moreover, provides project-level analysis for all other aspects of the sub-alternatives addressed therein.

To achieve project-level review in an EIR/EIS, generally referred to as "site-specific" review under NEPA, the document must include sufficient detail so that the environmental consequences of an action can be properly understood and evaluated by both the decision-makers and the public. Both CEQA and NEPA contemplate that such review is necessarily limited by the "rule of reason" and by what can feasibly be achieved under the circumstances of a particular project or action. The level of detail that is reasonable or feasible for a project as large and complex as the BDCP or California WaterFix is, naturally, not the same as what could reasonably be expected for a smaller, less complex project. The requirements of CEQA and NEPA, and court decisions interpreting them, embrace this reality.

Under CEQA, "[a]n EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible" (State CEQA Guidelines Section 15151).[12] The State CEQA Guidelines explain that what is "reasonably feasible" inevitably varies from project to project, based on factors "such as 1) the magnitude of the project at issue, 2) the severity of its likely environmental impacts, and 3) the geographic scope of the project" (State CEQA Guidelines Section 15204).[13] Thus, for complex projects covering large geographic areas, such as the BDCP or California WaterFix, what is "reasonably feasible" is different than what could be reasonably accomplished for smaller projects with relatively simple analysis. Again, as explained in the State CEQA Guidelines, the degree of specificity required in an EIR depends on the type of project being analyzed (State CEQA Guidelines Section 15146). Courts have noted that, regarding the level of detail required for project-level

[12] / See also State CEQA Guidelines Section 15147 ["[t]he information contained in an EIR shall contain summarized technical data, maps, plot plans, diagrams, and similar information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public"].

[13] / See also *Rialto Citizens for Responsible Growth v. City of Rialto* (2012) 208 Cal.App.4th 899, 937.

review, "EIR requirements must be sufficiently flexible to encompass vastly different projects with varying levels of specificity."[14]

NEPA requirements regarding the level of specificity required in an EIS for project-level review generally reflect the CEQA requirements described above. The NEPA process is designed to ensure that the decision-makers and the public will have sufficiently detailed information so that they may consider the significant environmental effects of an action.[15] Accordingly, regardless of the nature of the action, the EIS requirement in NEPA requires that federal agencies prepare a "detailed statement" that discusses the environmental ramifications of a major federal action (42 United States Code Section 4332(2)(c)). Ultimately, within the EIS, an agency must be able to take a "hard look" at the environmental effects of a proposed action.[16]

Although NEPA, like CEQA, naturally requires a higher level of detail for site-specific projects, compared to the analysis for a long-term program or plan, the precise level of detail depends on what is reasonable under the circumstances of the particular action being reviewed.[17] The general principle that "[t]he detail that NEPA requires in an EIS depends upon the nature and scope of the proposed action," has been reiterated by the courts on numerous occasions.[18] A related NEPA principle regarding the specificity required in an EIS is that agencies are generally afforded substantial deference in determining the scope of analysis that is appropriate for a particular action.[19] Thus, under NEPA, the level of detail in an EIS is adequate if it permits the agency and the public to take a "hard look" at the adverse environmental effects of the proposed action. Again, the "rule of reason" standard applies to the determination of whether the level of detail in an EIS is adequate.[20] Under the rule of reason, an EIS must contain "a reasonably thorough discussion of the significant aspects of the probable environmental consequences."[21] This standard requires a

[14] / See *California Oak Foundation v. Regents of University of California* (2010) 188 Cal.App.4th 227, 269; *Al Larson Boat Shop, Inc. v. Board of Harbor Commissioners* (1993) 18 Cal.App.4th 729, 746; *Rio Vista Farm Bureau Center v. County of Solano* (1992) 5 Cal.App.4th 351, 374.

[15] / See, e.g., *Blue Mountains Biodiversity Project v. Blackwood* (9th Cir.1998) 161 F.3d 1208, 1212; *Aberdeen & Rockfish R. Co. v. Students Challenging Regulatory Agency Procedures* (1975) 422 U.S. 289, 330 ["NEPA commands an agency to consider environmental effects before it takes a 'major federal action"].

[16] / See, e.g., *Kleppe v. Sierra Club* (1976) 427 U.S. 390, 410, n. 21; *Strycker's Bay Neighborhood Council, Inc. v. Karlen* (1980) 444 U.S. 223, 229.

[17] / See, e.g., See *Pacific Rivers Council v. U.S. Forest Service* (9th Cir. 2012) 689 F.3d 1012, 1025 ["The required level of analysis in an EIS is different for programmatic and site-specific plans"]; *Friends of Yosemite Valley v. Norton* (9th Cir. 2003) 348 F.3d 789, 800; *Salmon River Concerned Citizens v. Robertson* (9th Cir.1994) 32 F.3d 1346, 1357-1358.

[18] / *'Ilio'ulaokalani Coalition v. Rumsfeld* (9th Cir. 2006) 464 F.3d 1083, 1095; *State of Cal. v. Block* (9th Cir. 1982) 690 F.2d 753, 761; see also *Kern v. U.S. Bureau of Land Management* (9th Cir. 2002) 284 F.3d 1062, 1072 ["Once an agency has an obligation to prepare an EIS, the scope of its analysis of environmental consequences in that EIS must be appropriate to the action in question"]; *Aberdeen & Rockfish R. Co. v. Students Challenging Regulatory Agency Procedures* (1975) 422 U.S. 289, 320.

[19] / *Kleppe v. Sierra Club* (1976) 427 U.S. 390, 413 [agencies have discretion to "intelligently determine the scope of environmental analysis and review specific actions [they] may take"]; *Friends of Yosemite Valley v. Norton* (9th Cir. 2003) 348 F.3d 789, 800 ["[A] reviewing court [must] focus upon a proposal's parameters as the agency defines them"]; *California v. Block* (9th Cir.1982) 690 F.2d 753, 761.

[20] / *Trout Unlimited v. Morton* (9th Cir.1974) 509 F.2d 1276, 1283; *Churchill County v. Norton* (9th Cir. 2001) 276 F.3d 1060, 1071.

[21] / *State of Cal. v. Block* (9th Cir. 1982) 690 F.2d 753, 761; *Salmon River Concerned Citizens v. Robertson* (9th Cir. 1994) 32 F.3d 1346, 1356.

"pragmatic judgment" as to whether the form and content of an EIS "fosters informed decision making and informed public participation."[22]

Consistent with these principles, CEQA mandates that"[t]he description of the project . . . should not supply extensive detail beyond that needed for evaluation and review of the environmental impact" (State CEQA Guidelines Section 15124, subd. (a)).[23] Among the required items in a project description is a "general" description of the project's technical, economic, and environmental characteristics (State CEQA Guidelines Section 15124, subd. (c)). Further, in drafting CEQA, the Legislature declared it to be the policy of the state that "environmental impact reports omit unnecessary descriptions of projects." (Cal. Pub. Resources Code Section 21003, subd. (c)). Courts have even recognized the danger of an EIR including *too much* detail: "engineered drawings may well supply 'extensive detail beyond that needed for evaluation and review of the environmental impact' in violation of Guidelines section 15124."[24] Under CEQA, therefore, an EIR should only include the level of detail necessary to allow the decision-makers and the public to adequately understand and evaluate the environmental impacts of a project.

Similar principles have been recognized in the NEPA context. For example, the CEQ NEPA regulations explain that it is "most important" that "NEPA documents concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR Part 1500.1(b)). The regulations further explain that NEPA's purpose is "not to generate paperwork – even excellent paperwork – but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences" (40 CFR Part 1500.1(c)). Accordingly, the regulations mandate that an EIS shall be "concise, clear, and to the point," and that an agency should "emphasize real environmental issues and alternatives" and strive to reduce the "accumulation of extraneous background data" (40 CFR Part 1500.2(b)). Moreover, the regulations note that agencies should prepare "analytic rather than encyclopedic environmental impact statements" (40 CFR Part 1500.4(b)). These provisions reflect the overall requirement that an EIS should only include the level of detail necessary to allow the agency to take a "hard look" at, and for the public to understand, the adverse environmental effects of a proposed action. Additional information beyond what is necessary to fulfill that requirement is, in fact, disfavored.

Moreover, the amount of detail that can be reasonably and feasibly included in an EIR/EIS for a project such as the California WaterFix, is a function not only of its size and complexity, but of other factors as well, including pragmatic policy considerations. One such policy is that both NEPA and CEQA require environmental review be completed early in the planning process. For example under CEQA, an EIR "should be prepared as early as feasible in the planning process to enable environmental considerations to influence project program and design" (State CEQA Guidelines Section 15004, subd. (b)). Similarly, under NEPA, an agency is required to evaluate the consequences of its action at an early stage in the project's planning process. According to the CEQ NEPA regulations, "[a]gencies shall integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts" (40 CFR Part 1501.2).[25] Therefore, project-

[22] / *State of Cal. v. Block* (9th Cir. 1982) 690 F.2d 753, 761; *Churchill County v. Norton* (9th Cir. 2001) 276 F.3d 1060, 1071.

[23] / See also *California Oak Foundation v. Regents of University of California* (2010) 188 Cal.App.4th 227, 269.

[24] / *Dry Creek Citizens Coalition v. County of Tulare* (1999) 70 Cal.App.4th 20, 36.

[25] / See also *Andrus v. Sierra Club* (1979) 442 U.S. 347, 351.

specific review can be completed at the earliest possible stage that the environmental impacts of a project can be fully understood, regardless of whether precise engineering or design details are later refined.

Another policy consideration, and an important purpose behind the requirements limiting the level of detail required in an EIR/EIS, is that environmental documents are intended to be as "user-friendly" as possible.[26] Again, both CEQA and NEPA emphasize that providing information to the public is an important purpose of an EIR/EIS.[27] In furtherance of this purpose, both NEPA and CEQA contain provisions aimed at preventing an EIR or EIS from becoming overly detailed or technical. For example, both statutes note that an EIR or EIS should normally not consume more than 300 pages, even for "proposals of unusual scope or complexity" (State CEQA Guidelines Section 15141; 40 CFR Part 1502.7). Although the sections of the State CEQA Guidelines and CEQ NEPA regulations recommending page limits are not framed in mandatory terms, and are honored mainly in the breach by lead agencies, these sections still reflect the concern that environmental documents not be so enormous, and so filled with technical details and minutia, as to be inaccessible to public readers and agency decision-makers. In fact, here, numerous other commenters complained that the Draft EIR/EIS was *too detailed*. Although the Draft EIR/EIS (and RDEIR/SDEIS and, necessarily the Final EIR/EIS) is voluminous and exceeds the recommended page limits mentioned above, as was necessary due to the scope and complexity of the proposed project and alternatives, the length of the EIR/EIS is intended to be no greater that was necessary to comply with CEQA and NEPA.

Moreover, for public projects such as the California WaterFix, another relevant policy consideration is the need to avoid unnecessary expenditures of public money. This concern is particularly important where, as here, an EIR prepared under CEQA is combined with an EIS prepared under NEPA. Unlike an EIR, an EIS is required to devote "substantial treatment" to all alternatives discussed in an EIS (see 40 CFR Part 1502.14(b)).[28] If an EIR/EIS was required to include detailed engineering and design work for each alternative beyond what was necessary in order to ascertain environmental impacts, there would be a huge potential for wasted resources.

The EIR/EIS analysis for CM1 and the California WaterFix fulfills the requirements for project-level review under CEQA and NEPA. Not only is a greater level of detail not necessary for the lead agencies and decision-makers, or the public, to fully consider and understand the environmental impacts of CM1 or the California WaterFix, it is also not reasonable, feasible, or even realistic. Interpreting CEQA and NEPA as requiring a greater level of detail would not only be inconsistent with the requirements and overall policies of the statutes, it would impose obligations that are simply impossible to satisfy. As courts have noted, "rules regulating the protection of the environment must not be subverted into an instrument for the oppression and delay of social, economic, or recreational development and advancement."[29]

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[26] / *Dry Creek Citizens Coalition v. County of Tulare* (1999) 70 Cal.App.4th 20, 28.

[27] / See *Northcoast Environmental Center v. Glickman* (9th Cir. 1998) 136 F.3d 660, 666 ["[t]he EIS also ensures that the public is informed about the environmental impact of proposed agency actions"]; State CEQA Guidelines Section 15003, subd. (c) [EIRs are intended "to inform . . . the public generally of the environmental impact of a proposed project"].

[28] / See also CEQ, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations,* Question 5b, 46 Fed. Reg. 18.026 (March 23, 1981) ["The degree of analysis devoted to each alternative in the EIS is to be substantially similar to that devoted to the 'proposed action'"].

[29] / *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 576.

Additionally, a common problem facing large infrastructure projects, and encountered during the preparation of the proposed project, [30] is the unwillingness of potentially affected landowners to cooperate with lead agencies that have requested permission to conduct environmental surveys on their private properties. Where such permission is refused, an EIR may satisfy CEQA standards despite the absence of site-specific information of the kind that can only be obtained through such surveys. [31] In such situations, it is often necessary, and perfectly appropriate, for lead agencies either to rely on environmental laws other than CEQA to assure the reduction or avoidance of significant environmental effects, or to rely on mitigation measures requiring additional analysis after project approval (and the lead agencies' acquisition of the affected private properties). [32] For impact categories for which laws other than CEQA are not available to reduce impacts to less than significant levels, mitigation measures with performance standards are a legitimate substitute for detailed mitigation plans developed prior to project approval (State CEQA Guidelines Section 15126.4, subd. (a)(1)(B)). Performance standards are particularly important for large, complex projects such as the BDCP or California WaterFix.

In light of the foregoing, reviewers of the Draft EIR/EIS and RDEIR/SDEIS should keep in mind the fact that the California WaterFix is one of the largest and most complex infrastructure projects ever undertaken in California. It should be made clear, however, that the forgoing discussion is not meant to imply that that the level of analysis in the Draft EIR/EIS and RDEIR/SDEIS for CM1 or the California WaterFix does not fully address all potential environmental impacts at a site-specific, project-level of detail. Indeed, the level of detail included in the Draft EIR/EIS and RDEIR/SDEIS is exceedingly specific, and the Draft EIR/EIS and RDEIR/SDEIS fully accounted for all potential environmental impacts of CM1 or the California WaterFix.

As noted previously, the EIR/EIS (including the Draft EIR/EIS and RDEIR/SDEIS) include specific data for CM1 and the California WaterFix sufficient to fully analyze all of its potential environmental impacts at a project-level of detail. Each physical and operational component of CM1 under the various alternatives is thoroughly described in Chapter 3, *Description of Alternatives*. The Draft EIR/EIS, RDEIR/SDEIS, and Final EIR/EIS include specific data on the location, design, schedule, and operation for all CM1 components. These data include specific footprints for all proposed CM1 facilities, specific locations for all access roads and staging areas, estimates of crew sizes and construction equipment and vehicle use, and construction schedules, as well as employees and equipment required for operations. This information was used to fully analyze, at the project-level, the effects of implementing the CM1 elements of the project alternatives, and to develop project-specific mitigation for all of the impacts identified. In assessing environmental effects associated with CM1, the Draft EIR/EIS and RDEIR/SDEIS also refer to environmental commitments and other conservation measures that are intended to reduce, avoid, or minimize these effects.

For example, the Draft EIR/EIS and RDEIR/SDEIS explain in detail the alignment and precise locations for the conveyance facilities and related infrastructure, and also the operations of CM1

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[30] / See Appendix 4A, *Summary of Survey Data Collection Efforts by Department of Water Resources to Obtain Information Regarding Baseline Conditions in Areas That Could Be Affected by BDCP*.

[31] / *City of Maywood v. Los Angeles Unified School Dist*. (2012) 208 Cal.App.4th 362, 412 [EIR is adequate despite the lack of survey results from 27 properties whose owners refused to cooperate with the lead agency].

[32] / *Oakland Heritage Alliance v. City of Oakland* (2011) 195 Cal.App.4th 884, 906-912 [court finds that compliance with building code requirements addressing seismic safety issues would function as adequate mitigation]; *City of Maywood v. Los Angeles Unified School Dist.* (2012) 208 Cal.App.4th 362, 409-413 [court reaches same conclusion with respect to compliance with hazardous waste clean-up laws].

under each alternative. The Draft EIR/EIS and RDEIR/SDEIS also include highly detailed "mapbooks" that provide a project-level visualization of the physical areas affected by the water conveyance facilities associated with the project alternatives. The mapbooks were specifically designed to provide the level of detail appropriate to depict the effects of conveyance facilities on various resource areas, specifically agricultural resources (see Chapter 14), land use (see Chapter 13), terrestrial biological resources (see Chapter 12), and recreation (see Chapter 15). The mapbooks depict the exact alignment for each alternative discussed in the Draft EIR/EIS and RDEIR/SDEIS and depict the precise location of the various CM1 features under each alternative. In addition to the text of the Draft EIR/EIS and RDEIR/SDEIS and the mapbooks, the Draft EIR/EIS and RDEIR/SDEIS Appendices contain a wealth of data on CM1. For example, Appendix 3C, *Construction Assumptions for Water Conveyance Facilities*, includes specific information about the timing, nature, and physical extent of those activities necessary to construct the CM1 water conveyance facilities proposed under the project alternatives.

In sum, the information presented in the Draft EIR/EIS and RDEIR/SDEIS, including the mapbooks and appendices, is extremely detailed for a project of this scale and complexity. There is sufficient project-level analysis in the Draft EIR/EIS and RDEIR/SDEIS for the lead agencies and public to fully understand and consider the environmental consequences of CM1. Accordingly, the EIR/EIS is sufficiently detailed to provide project-level review of CM1 under both CEQA and NEPA. In addition, the RDEIR/SDEIS and Final EIR/EIS also provide project-level analyses for the mitigation measures, Environmental Commitments, and avoidance and minimization measures required for Alternatives 2D, 4A (the California WaterFix), and 5D, as these are far less ambitious than, and will be implemented much more quickly than, the large-scale, long-term habitat restoration and preservation components of the BDCP alternatives included in the Draft EIR/EIS.

For further information on project-level and program-level review, see Final EIR/EIS Chapter 4, *Approach to the Environmental Analysis* and Chapter 1, *Introduction*.

Master Response 3: Project Objectives and Purpose and Need

This master response describes the project objectives and purpose and need, including the adequacy of the each and appropriateness to include physical improvements to the conveyance system as part of the project objectives and purpose.

The Sacramento-San Joaquin Delta (the Delta) is a vitally important ecosystem that supports hundreds of aquatic and terrestrial species, many of which are threatened or endangered. Located at the crux of two major watersheds that capture runoff from approximately 40 percent of the land in California, the Delta is also at the core of the state's most important water system, which serves millions of Californians throughout the San Francisco Bay Area, the Central Valley, the Central Coast, and southern California. This water supports agricultural, municipal, and industrial land uses that, taken together, are the source of much of California's financial stability and prosperity. The benefitting areas include farms and ranches from the north Delta to the Mexican border, as well as Silicon Valley, portions of the East Bay, and most of urban southern California.

The Delta is in a state of crisis. Several threatened and endangered fish species, including Delta smelt and winter-run Chinook salmon, have recently experienced the lowest population numbers in their recorded history. Meanwhile, Delta levees and the infrastructure they protect are at risk from earthquake damage, continuing land subsidence, and rising sea level. A major seismic event causing levee failure could cause an interruption of water exports for as long as several months or even years. And the amounts of water available for human use south of the Delta have already decreased significantly in recent years, independent of the drought, due to regulatory actions by the United States Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and the California Department of Fish and Wildlife (CDFW). Applying federal and state endangered species laws, these entities have required the Department of Water Resources (DWR) and the United States Bureau of Reclamation (Reclamation) to substantially alter the manner in which they jointly operate the State Water Project (SWP) and the federal Central Valley Project (CVP).

For both environmental and economic reasons, there is an urgent need to improve and modernize the existing SWP/CVP conveyance system, which was designed and built decades ago. Some of the current systemic problems are related to SWP and CVP Delta water exports using pumps located at the far southern edge of the Delta, near the City of Tracy. Because of their far southerly location and their elevation above sea level, these pumps can create "reverse flows" that pull river water southward (upstream, in effect) towards the intakes reducing the flow downstream towards San Pablo Bay, San Francisco Bay, and, ultimately, the Pacific Ocean. These reverse flows can cause, or contribute to, direct and indirect impacts on fish species such as Delta smelt, which are pulled towards the pumps, where adverse conditions, including the presence of predator species, await them. The reverse flows can also adversely affect salmon migration patterns. To try to reduce these adverse effects on fisheries, regulators have reduced water exports to SWP and CVP service areas. The recent historic drought has only made matters worse.

The ecological problems with the current system could be greatly reduced by the construction and use of new north Delta intake structures with state-of-the-art fish screens. With this future vision in mind, DWR and several state and federal water contractors, in coordination with Reclamation,

proposed a strategy for restoring ecological functions in the Delta while improving water supply reliability in California.

The California WaterFix (referred to in this Final EIR/EIS as Alternative 4A) is DWR's preferred alternative under the California Environmental Quality Act (CEQA) and Reclamation's preferred alternative under the National Environmental Policy Act (NEPA). Alternative 4A addresses the reverse flow problem by focusing on the construction and operation of new north Delta intakes while reducing reliance on South Delta facilities. The habitat restoration for Alternative 4A is commensurate with the footprint impacts associated with these new North Delta facilities and no large scale habitat restoration is proposed. The operation of new conveyance facilities with existing facilities would help reduce threats to endangered and threatened species in the Delta.

Implementing a dual conveyance system, in which water could be diverted from either the north or the south or both, depending on the needs of aquatic organisms, would align water operations to better reflect natural seasonal flow patterns by creating new water diversions in the north Delta equipped with state-of-the-art fish screens. The new system would reduce the ongoing physical impacts associated with sole reliance on the southern diversion facilities and allow for greater operational flexibility to better protect fish. Minimizing south Delta pumping would provide more natural east–west flow patterns. The new diversions would also help protect critical water supplies against the threats of sea level rise and earthquakes.

Although the proposed project includes only those habitat restoration measures needed to provide mitigation for specific regulatory compliance purposes, habitat restoration is still recognized as a critical component of the state's long-term plans for the Delta. Such larger endeavors, however, will likely be implemented over time under actions separate and apart from the proposed project. The primary parallel habitat restoration program is called California EcoRestore (EcoRestore), which will be overseen by the California Resources Agency and implemented under the California Water Action Plan. Under EcoRestore, the state will pursue restoration of more than 30,000 acres of fish and wildlife habitat by 2020. These habitat restoration actions will be implemented faster and more reliably by separating them from the water conveyance facility implementation.

Delta Reform Act

The project objectives and purpose and need statement in this Final EIR/EIS are consistent with the coequal goals for the Delta in the Sacramento–San Joaquin Delta Reform Act of 2009 (Delta Reform Act). One of the primary challenges facing California is how to comprehensively address the increasingly significant conflict between Delta ecological needs while providing more reliable water supplies for people, communities, agriculture, and industry. This challenge must be addressed in decisions by DWR, the CDFW, and the State Water Resources Control Board as they endeavor to strike a reasonable balance between these competing public policy objectives and various actions taken within the Delta, including this proposed project. State policy regarding the Delta is summarized in the Delta Reform Act of 2009, which provides in relevant part:

> "The Legislature . . . finds and declares that the basic goals of the state for the Delta are the following: [¶] (a) Achieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place" (California Public Resources Code Section 29702, subd. [a]).

> Likewise, "it is the intent of the Legislature to provide for the sustainable management of the Sacramento-San Joaquin Delta ecosystem, to provide for a more reliable water supply for the state, to protect and enhance the quality of water supply from the Delta, and to establish a governance structure that will direct efforts across state agencies to develop a legally enforceable Delta Plan" (California Water Code Section 85001, subd. [c]).
>
> The Delta "serves Californians concurrently as both the hub of the California water system and the most valuable estuary and wetland ecosystem on the west coast of North and South America" (California Water Code Section 85002).
>
> "The economies of major regions of the state depend on the ability to use water within the Delta watershed or to import water from the Delta watershed. More than two-thirds of the residents of the state and more than two million acres of highly productive farmland receive water exported from the Delta watershed" (California Water Code Section 85004, subd. [a]).
>
> "Providing a more reliable water supply for the state involves implementation of … new and improved infrastructure, including water storage and Delta conveyance facilities" (California Water Code Section 85004, subd. [b]).

The ecological health of the Delta continues to be at risk, the conflicts between species protection and Delta water exports have become more pronounced, as amply evidenced by the continuing court decisions regarding the intersection of the Endangered Species Act (ESA), the California Endangered Species Act (CESA), and the operations criteria of the SWP and the CVP. Other factors, such as the continuing subsidence of lands within the Delta, increasing seismic risks and levee failures, and sea level rise associated with climate change, serve to further exacerbate these conflicts. Simply put, the overall system as it is currently designed and operated does not appear to be sustainable from an environmental or water supply perspective, and so the proposal to implement a fundamental, systemic change to the current system is necessary. This change is necessary if California is to "[a]chieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem" (California Public Resources Code Section 29702, subd. [a]).

For more information on the Delta Reform Act see Master Response 31.

Project Objectives and Purpose and Need

As stated in Chapter 2, *Project Objectives and Purpose and Need*, DWR's fundamental purpose in planning the proposed project is to make physical and operational improvements to the SWP/CVP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations. The project objectives for the purposes of CEQA are to:

- Address adverse effects to state and federally listed species related to:
  - The operation of existing SWP Delta facilities and construction and operation of facilities for the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the southern Delta.
  - The implementations of actions to improve SWP and/or CVP conveyance that have the potential to result in take of species that are listed under the ESA and CESA.
- Improve the ecosystem of the Delta by reducing the adverse effects to certain listed species of diverting water by siting additional intakes of the SWP and coordinated operations with the CVP.

- Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements.

In addition to the project objectives enumerated above, the project objectives listed below guide the development of the proposed project and alternatives.

- To meet the standards identified in the ESA and the California Fish & Game Code, including the CESA or Natural Community Conservation Planning Act (NCCPA), by, among other things, minimizing and fully mitigating the impacts of take, and, if possible, protecting, restoring, and enhancing aquatic and terrestrial natural communities and ecosystems that support listed and sensitive species within the geographic scope of the proposed project.
- To make physical improvements to the conveyance system in anticipation of rising sea levels and other reasonably foreseeable consequences of climate change.
- To make physical improvements to the conveyance system that will minimize the potential for public health and safety impacts resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the SWP and CVP pumping plants operate in the southern Delta.
- To develop projects that restore and protect water supply and ecosystem health and reduce other stressors on the ecological functions of the Delta in a manner that creates a stable regulatory framework under the ESA and either the CESA or NCCPA.
- To identify new operations and a new configuration for conveyance of water entering the Delta from the Sacramento River watershed to the existing SWP and CVP pumping plants in the southern Delta by considering conveyance options in the north Delta that can reliably deliver water at costs that are not so high as to preclude, and in amounts that are sufficient to support, the financing of the investments necessary to fund construction and operation of facilities and/or improvements.

For the purpose of NEPA, the need for this project is to improve California's water conveyance system to respond to increased demands upon and risks to water supply reliability, water quality, and the aquatic ecosystem. The Delta has long been an important resource for California, providing municipal, industrial, agricultural and recreational uses, fish and wildlife habitat, and water supply large portions of the state. However, by several key criteria, such as declines in populations of several fish species, seismic risk to levees and the Delta infrastructure, continuing land subsidence, and rising sea level, the Delta is now widely perceived to be in crisis. The operations of the CVP are currently constrained in the South Delta. Reclamation can increase its operational flexibility to provide water supply and minimize and avoid adverse effects to listed species by coordinating CVP operation with the proposed new SWP facilities and conveyance.

The federal agency purpose of the proposed action is to improve the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the southern Delta in a manner that minimizes or avoids adverse effects on listed species, supports coordinated operation with the SWP, and is consistent with the project objectives (CEQA) described above which in summary include:

1. Restoring and protecting aquatic, riparian and associated terrestrial natural communities and ecosystems of the Delta, and

2. Restoring and protecting the ability of the SWP and CVP to deliver up to full contract amounts of CVP water, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of applicable state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements.

The Delta has long been an important resource for California, providing municipal, industrial, agricultural and recreational uses, fish and wildlife habitat, and water supply for large portions of the state. However, by several key criteria, such as declines in populations of several fish species, seismic risk to levees and the Delta infrastructure, continuing land subsidence, and rising sea level, the Delta is now widely perceived to be in crisis. Improvements to the water conveyance system are needed to respond to increased demands upon the system and risks to water supply reliability, water quality, and the aquatic ecosystem. CVP operations are currently constrained in the south Delta. Reclamation can increase its operational flexibility to provide water supply and minimize and avoid adverse effects on listed species by coordinating CVP operation with the proposed new SWP facilities and conveyance.

As discussed in this master response, the above-listed objectives and purposes comply with CEQA and NEPA, are sufficiently broad, and appropriately reflect the State of California's intention to advance the coequal goals set forth in the Sacramento-San Joaquin Delta Reform Act of 2009 by providing a more reliable water supply for California, reducing effects of the project on state and federally listed species and improving the Delta ecosystem.

Adequacy of the Project Objectives and Purpose and Need under CEQA and NEPA

The project objectives and statement of purpose and need are presented in Chapter 2, *Project Objectives and Purpose and Need*. As explained below, the project objectives and statement of purpose and need comply with CEQA and NEPA, respectively, in that they are sufficiently broad to have allowed for the evaluation of a reasonable range of project alternatives. The range of alternatives evaluated in the EIR/EIS is sufficient to foster informed decision-making and public participation. Although some commenters disagree with the wisdom of carrying out the project and/or its alternatives, this disagreement does not mean that the project objectives and purpose and need are inadequate under the law. Rather, the lead agencies have acted well within their discretion in defining the project's objectives, purposes, and need, which under state law have been informed by, and are intended to advance, the coequal goals set forth in the Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act).

CEQA and NEPA give lead agencies broad discretion in defining project objectives and purposes and needs. Under CEQA, an EIR must contain a statement of the objectives sought by the proposed project.[33] The project objectives should drive the agency's selection of alternatives for analysis and approval. As stated in the State CEQA Guidelines, "[a] clearly written statement of objectives will help the Lead Agency develop a reasonable range of alternatives to evaluate in the EIR and will aide decision makers in preparing findings or a statement of overriding considerations if necessary. The statement of objectives should include the underlying purpose of the project."[34] Importantly, "CEQA does not restrict an agency's discretion to identify and pursue a particular project designed to meet

[33] State CEQA Guidelines Section 15124, subd. (b).

[34] State CEQA Guidelines Section 15124, subd. (b).

a particular set of objectives."[35] "Although a lead agency may not give a project's purpose an artificially narrow definition, a lead agency may structure its EIR alternative analysis around a reasonable definition of underlying purpose and need not study alternatives that cannot achieve that basic goal."[36]

Similarly, under NEPA, an EIS must "briefly specify the underlying purpose and need to which the agency is responding in proposing alternatives including the proposed action."[37] The lead agency has "considerable discretion" to define the purpose and need of the actions.[38] The courts will uphold the statement purpose and need as long as it is reasonable.[39] Although an agency may not define the purpose of and need for the action in unreasonably narrow terms, the agency is not required to craft a statement so broad that it requires consideration of alternatives that are inconsistent with the overarching purpose of the proposal.[40] Furthermore, where an action is taken pursuant to a specific statute, the statutory objectives of the project serve as a guide by which to determine the reasonableness of objectives outlined in the EIS.[41]

Adequacy of the Breadth of Project Objectives and Purposes

As indicated in the discussion of legal requirements above, under CEQA and NEPA, the project objectives and purposes and need of a project influence the range of alternatives analyzed in an EIR/EIS. Under CEQA, the range of potential alternatives "shall include those that could feasibly accomplish most of the basic objectives of the project" while substantially lessening one or more significant effects.[42] "[A]n EIR need not study in detail an alternative that . . . the lead agency has reasonably determined cannot achieve the project's underlying fundamental purpose."[43] On the other hand, CEQA does not require that alternatives satisfy all of the objectives, only that they feasibly attain most of the basic objectives.[44] Similarly, under NEPA, an agency's choice of "reasonable alternatives" is made in light of the purpose of the federal action.[45] An EIS need not discuss alternatives that are inconsistent with the basic policy objectives of the project.[46]

Here, the project objectives and purpose and need are sufficiently broad to enable the lead agencies to have considered a reasonable range of alternatives to the project. The Draft EIR/EIS and RDEIR/SDEIS combined in this Final EIR/EIS consider 18 action alternatives that meet all or most of the project objectives and project purposes set forth in the statement of purpose and need. For instance, the alternatives range from the construction of one 3,000 cubic feet per second (cfs) intake to five such intake facilities, representing a range of north Delta conveyance capacities from 3,000

[35] *California Oak Foundation v. Regents of University of California* (2010) 188 Cal.App.4th 227, 276–227.

[36] *In re Bay-Delta Programmatic EIR Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1166 (In re Bay-Delta).

[37] 40 C.F.R., § 1502.13.

[38] *Westlands Water Dist. v. U.S. Dept. of Interior* (9th Cir. 2004) 375 F.3d 853, 866 (*Westlands*), citing City of Angoon v. Hodel (9th Cir. 1986) 803 F.2d 1016.

[39] *Ibid*.

[40] *Northwest Ecosystem Alliance v. Rey* (W.D. Wash. 2005) 380 F.Supp. 2d 1175.

[41] *Westlands, supra*, 375 F.3d at p. 866.

[42] State CEQA Guidelines Section 15126.6, subd. (c).

[43] *In re Bay-Delta, supra,* 43 Cal.4th at p. 1165.

[44] State CEQA Guidelines Section 15126.6, subd. (c).

[45] See *City of Carmel-by-the Sea v. U.S. Dept. of Interior* (9th Cir. 1977) 123 F.3d 1142, 1155; *State of Cal. v. Block* (9th Cir. 1982) 690 F.2d 753, 761.

[46] *Pacific Coast Federation of Fishermen's Association v. Blank* (2012) 693 F.3d 1084, 1100.

cfs to 15,000 cfs. The operational rules also include varying requirements for Delta outflow and river flows in the south Delta. The range of alternatives also includes different amounts and types of habitat restoration and enhancement. One alternative includes 40,000 fewer acres of tidal habitat restoration compared to the other alternatives. Another includes 10,000 more acres of seasonably inundated floodplain restoration and 20 more miles of channel margin enhancement compared to the other alternatives.[47] The California WaterFix (Alternative 4A) includes restoration actions required to reduce the potential conveyance facility construction and operational effects, as do Alternatives 2D and 5A. For additional information regarding the sufficiency of project alternatives analyzed in the EIR/EIS, please see Master Response 4, *Alternatives Development*, and Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*.

The project objectives and statement of purpose and need do not commit the lead agencies to any one formulation of the project; rather, the project objectives and statement of purposes and need are sufficiently broad to allow for the evaluation of a reasonable range of project alternatives in compliance with CEQA and NEPA.[48]

Appropriateness of the Inclusion of Project Objectives and Purposes Related to Physical Improvements to the Conveyance System

As discussed above, the project objectives and statement of purposes and need were sufficiently broad to enable the EIR/EIS to evaluate a reasonable range of project alternatives, including the no action alternative. The range of alternatives evaluated in the EIR/EIS is sufficiently varied to foster informed decision-making and public participation regarding the proposed project and its environmental consequences and to permit a reasoned choice among the various alternatives. Furthermore, the No Action/No Project Alternatives do not include the proposed conveyance facilities, thereby allowing the public and decision-makers to understand the environmental differences between constructing and operating the various conveyance facility alternatives and of not constructing or operating these facilities.

CEQA and NEPA give lead agencies broad discretion to identify and pursue a particular objective or purpose. As one California appellate court explained, "CEQA does not restrict an agency's discretion to identify and pursue a particular project designed to meet a particular set of objectives. CEQA simply requires the agency to thereafter prepare and certify a legally adequate EIR that provides the agency and the public alike with detailed information regarding the proposed project's significant environmental impacts, as well as reasonable alternatives that 'would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen [its environmental

[47] See Chapter 3, *Description of Alternatives*. For further discussion regarding the reasonableness of the range of alternatives evaluated in the Final EIR/EIS, please refer to Appendix 3A, *Identification of Water Conveyance Alternatives – Conservation Measure 1* and Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*, Section 3I.5*, California Water Code Section 85320(b)(2)(B) – Reasonable Range of Alternatives*. In addition, please refer to Master Response 4, *Alternatives Development*, and Master Response 31, *BDCP/California WaterFix and 2009 Delta Reform Act.*

[48] See e.g., *California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal.App.4th 957, 989 (rejecting argument that project objectives were too narrow because the project objectives did not "preordain" the respondent city to adopt the proposed project); see also *Citizens Against Burlington, Inc. v. Busey* (D.C. Cir. 1991) 938 F.2d 190, 196 ("an agency may not define the objectives of its actions in terms so unreasonably narrow that only one alternative from among the environmental benign ones in the agency's power would accomplish the goals of the agency's action").

impacts]."[49] Similarly, under NEPA, an agency has "considerable discretion" to define the objectives of its action.[50]

Here, the overarching purpose and primary objective of the project is to achieve long-term compliance with the ESA and CESA with respect to 1) the operation of existing SWP facilities in the Delta and 2) the construction and operation of new conveyance facilities for the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants in the southern Delta. This overarching goal is, in turn, informed by past efforts taken within the Delta and the watersheds of Sacramento and San Joaquin Rivers, including, but not limited to the Delta Vision and the Delta Reform Act.

It is well known that the Delta is in crisis: the ecological health of the Delta continues to be at risk, the conflicts between species protection and Delta water exports have become more pronounced, as amply evidenced by the continuing court decisions regarding ESA and CESA, and their intersection with the operations criteria of the SWP and CVP. Other factors, such as continuing subsidence of lands within the Delta, increased seismic risks and levee failures, and sea level rise associated with climate change, serve to further exacerbate these conflicts.[51] Since the early 1990s, the state and federal governments have undertaken studies and efforts to solve the ecological problems facing the Delta and the mounting and competing pressures over endangered species operations, CVP and SWP operations, and water quality standards. These efforts are described in detail in Appendix 1A, *Primer on California Water Delivery Systems and the Delta*.

In 2006, through Executive Order S-17-06, Governor Schwarzenegger commissioned a Blue Ribbon Task Force to provide series of recommendations concerning the Delta ecosystem and its water supply. The former Governor directed the Task Force to "develop a durable vision for sustainable management of the Delta" with the goal of "managing the Delta over the long term to restore and maintain identified functions and values that are determined to be important to the environmental quality of the Delta and the economic and social wellbeing of the people of the state." The Task Force published its vision, *Our Vision for the California Delta*, in January 2008 and developed the *Delta Vision Strategic Plan* (Strategic Plan) to implement its vision, which was issued in October 2008.

Among the goals of the Strategic Plan was Goal 5: to "build facilities to improve the existing water conveyance system and expand the statewide storage,[52] and operate both to achieve the co-equal goals."[53]

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[49] *California Oak Foundation v. Regents of University of California* (2010) 188 Cal.App.4th 227, 276–277, citing State CEQA Guidelines Section 15126.6, subd. (a); In re Bay-Delta, supra, 43 Cal.4th at pp. 1161–1162; see also *Save San Francisco Bay, supra,* 10 Cal.App.4th at p. 929 (when a particular project features "specific and narrow" objectives, a lead agency is "justified in limiting its review of alternative[s] . . . to those . . . which could feasibly accomplish the project's purpose").

[50] *Friends of Southeast's Future v. Morrison* (9th Cir. 1998) 153 F.3d 1059, 1066 (upholding statement of purpose and need for timber harvesting project because it was not unreasonable; *City of Carmel-by-the-Sea v. U.S. Department of Transportation* (9th Cir. 1997) 123 F.3d 1142, 1156–1157 (upholding a statement of purpose and need that contained a specific level of desired traffic reduction).

[51] Chapter 2, *Project Objectives and Purpose and Need*; see also Appendix 1A, and *Primer on California Water Delivery Systems and the Delta* and BDCP Chapter 2, *Existing Ecological Conditions*.

[52] Statewide water storage projects continued to develop under the CalFed regime. See Appendix 1B, *Water Storage*, and http://www.water.ca.gov/storage.

[53] *Delta Vision Strategic Plan*, Part 2: Detailed Strategies and Action, p. 101 (Delta Blue Ribbon Task Force [2008]).

> To achieve these benefits, the Task Force proposes a dual conveyance facility using a combination of through-Delta and isolated facility improvements. This strategy recognizes the need to maintain flows through the Delta for water supply and ecosystem health, while also accounting for future risks to statewide water supply, such as earthquakes or floods. A dual conveyance system offers extra insurance against such disasters by creating an additional path for water conveyance. Design studies and investments in these facilities should be completed as quickly as is feasible, given the urgency of the need to improve the Delta ecosystem.[54]

The Blue Ribbon Tasks Force's recommendations were considered in structuring the 2009 Delta Reform Act, which also envisions the construction and operations of a new conveyance facility.[55] Indeed, the Delta Reform Act mandates that, in order to be eligible for state funding, a project must evaluate a "reasonable range of flow criteria, rates of diversion, and other operational criteria" and a "*reasonable range of Delta conveyance alternatives*, including through-Delta, dual conveyance, and isolated conveyance alternatives."[56]

In light of this background, and for the reasons described above, as well as in Chapter 2*, Project Objectives and Purposes and Need*, and Appendix 1A, *Primer on the Delta and California Water Delivery Systems*, it is more than reasonable for the lead agencies to have included physical improvements to the conveyance system in the project objectives and statement of purposes and need.[57] The project objectives and statement of purpose and need do not improperly foreclose consideration of alternatives to the proposed project. As discussed in Master Response 8 related to analyzing the whole of a project, the lead agencies were not required to evaluate a statewide solution to California's water problems as the proposed "project" or "action." Rather, the lead agencies have properly defined the proposed project, including its objectives and purposes.

[54] *Ibid*.

[55] Cal. Water Code Sections 85004, subd. (b), 84020, subd. (f), 85089, 85304, 85320.

[56] Cal. Water Code Section 84320, subd. (b)(2)(A)–(B), italics added.

[57] See e.g., *Westlands, supra*, 376 F.3d at p. 866 (where an action is taken pursuant to statute, the statutory objectives "serve as a guide by which to determine the reasonableness of objectives outlined in an EIS").

Master Response 4: Alternatives Development

This master response discusses the alternatives development process for the EIR/EIS and how it's consistent with NEPA, CEQA and State CEQA Guidelines. The topics of discussion include the following.

- *Selection of alternatives.*
- *CEQA and NEPA scoping requirements.*
- *How the Delta Reform Act informed the development of project alternatives.*
- *The legal adequacy of the range of alternatives analyzed in the EIR/EIS and the screening of potential alternatives that did not meet the project purpose and need, project objectives, or that were outside the scope of the project.*
- *How the lead agencies are not pre-committal by identifying a preferred alternative.*
- *Why the development of three new sub-alternatives does not require an analysis of sub-alternatives for every BDCP alternative, nor does it require a whole new EIR/EIS.*

The alternatives and scope of the analysis of the alternatives included in the Draft EIR/EIS, RDEIR/SDEIS, and Final EIR/EIS represent a reasonable range of alternatives in compliance with the requirements of CEQA and NEPA. The lead agencies carefully considered all potential alternatives that were proposed during the scoping process and while the EIR/EIS was being prepared.[58] Although many of the proposed alternatives included meritorious water policy principles, the proposals rejected by the lead agencies did not qualify as appropriate alternatives for various reasons. For example, proposals were rejected because they were inconsistent with the project's objectives and its purpose and need or included components that are beyond the scope of the project. Chapter 3, *Description of Alternatives*, Section 3.2, and Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, thoroughly explain the process used to develop the alternatives, and explain why certain potential alternatives were considered but ultimately rejected by the lead agencies.

Overview: Selection of Alternatives

To satisfy the requirements of CEQA and NEPA, an EIR/EIS must include a reasonable range of alternatives that would meet the purpose and need and all or most of the project's objectives[59] (see State CEQA Guidelines Section 15126.6, subd. (a); 42 United States Code [USC] Section 4332(2)(C)(iii); 40 Code of Federal Regulations [CFR] Parts 1502.14, 1502.13). Accordingly, the

[58] In fact, as a direct result of the extensive public comments and agency input, the water facility and conveyance options proposed as part of the project changed significantly during the planning process in ways that reduce impacts in the Delta communities. Additional unique alternatives that were proposed during review of Administrative Drafts of the BDCP and EIR/EIS were also considered and described. See Chapter 3, *Description of Alternatives*, and Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, of the Final EIR/EIS, and Section 4 of the RDEIR/SDEIS.

[59] See, e.g., *League of Wilderness Defenders-Blue Mountains Biodiversity Project v. U.S. Forest Service* (9th Cir. 2012) 689 F.3d 1060, 1069; *Westlands Water Dist. v. U.S. Dep't of Interior* (9th Cir.2004) 376 F.3d 853, 868; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 566; *Mount Shasta Bioregional Ecology Center v. County of Siskiyou* (2012) 210 Cal.App.4th 184, 196; *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143.

project objectives and the purpose and need statement are the starting points for the state and federal agencies in developing the reasonable range of alternatives to be evaluated in detail in an EIR/EIS (State CEQA Guidelines Sections 15124, subd. (b), 15126.6, subd. (a); 40 CFR Part 1502.13).

As discussed further below, and described in detail in Chapter 2, *Project Objectives and Purpose and Need*, DWR, as the operator of the SWP, identified its fundamental purpose in the proposed project as making physical and operational improvements to the SWP/CVP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP in parts of the Bay Area and south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations. Please also refer to Master Response 3, *Project Objectives and Purpose and Need*, for a discussion of the appropriateness of the project objectives and purpose.

With the project's objectives and purpose and need in mind, DWR and the federal lead agencies undertook an elaborate process to select an appropriate range of alternatives to be analyzed in the Draft EIR/EIS and RDEIR/SDEIS (and presented in the Final EIR/EIS) that fully complied with all applicable legal requirements. This process included numerous public workshops and scoping meetings; extensive input from agencies, stakeholders, and the public; and an extensive multi-level screening process to refine the alternatives to be carried forward for full analysis in the EIR/EIS. As explained in Appendix 3A *Identification of Water Conveyance Alternatives, Conservation Measure 1*, the alternative development process for the EIR/EIS was based upon a number of legal considerations including: 1) the legal requirements for adequate discussions of alternatives in an EIR and EIS, as set forth in CEQA and NEPA respectively, and the regulations and case law interpreting those statutory schemes; 2) the concepts of "potential feasibility" under CEQA and "reasonableness" under NEPA; and 3) the requirements of Water Code Section 85320 from the 2009 Delta Reform Act.

The results of a multi-level screening process reflecting these considerations were further compared to the requirements of the Delta Reform Act and scoping comments related to the definition of potential EIR/EIS alternatives as identified by responsible and cooperating agencies under CEQA and NEPA, respectively (e.g., the State Water Resources Control Board). Finally, the potential alternatives were evaluated to determine if they would require changes in legal rights, including water rights, of entities that are not participants in the proposed project in a way that could not lawfully or practically be accomplished through the mechanism of a habitat conservation plan (HCP)/natural community conservation plan (NCCP) or other authorizations obtained under federal and state endangered species laws. For additional information on the alternatives screening process and the selection of alternatives, see Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, Chapter 3, *Description of Alternatives.*

The process described above resulted in the selection of the 15 action alternatives and 3 additional sub-alternatives that were carried forward for detailed analysis in the Draft EIR/EIS and RDEIR/SDEIS, respectively, (and included in the Final EIR/EIS) in addition to the required No Action/No Project Alternatives (referred to as the "No Action Alternative" for ease of reference). Issuance of 50-year ITPs and an NCCP permit is common to the HCP/NCCPA alternatives in the Draft EIR/EIS, with the exception of the No Action Alternative. The three new sub-alternatives (Alternatives 4A, 2D, and 5A) developed by the lead agencies embody a different implementation strategy that would not involve a 50-year HCP/NCCP approved under Endangered Species Act (ESA) Section 10 and the Natural Community Conservation Planning Act (NCCPA), but rather would achieve incidental take authorization for a shorter period under ESA Section 7 and California Endangered Species Act (CESA) Section 2081(b). As noted previously, the action alternatives

analyzed in the EIR/EIS were developed to meet all or most of the project objectives and purpose and need statement of the proposed project described in Chapter 2, *Project Objectives and Purpose and Need*.

The action alternatives include variations of restoration actions that differ primarily in the location and amount of habitat restoration, water conveyance design features, conveyance capacities, and rules that would determine the operation of conveyance facilities implemented under the project alternatives. For instance, the alternatives range from the proposed construction of one to five intake facilities, representing a range of north Delta conveyance capacities from 3,000 cubic feet per second (cfs) to 15,000 cfs. The operational rules also include varying requirements for Delta outflow and river flows in the south Delta. The range of 15 HCP/NCCP alternatives in the Draft EIR/EIS also proposes different amounts and types of habitat restoration and enhancement. One HCP/NCCP alternative includes 40,000 fewer acres of tidal habitat restoration compared with the other alternatives. Another HCP/NCCP alternative includes 10,000 more acres of seasonally inundated floodplain restoration and 20 more miles of channel margin enhancement compared with the other alternatives. Other proposed conservation measures (CM12–CM21) do not vary among HCP/NCCP alternatives, but they are similarly considered in a conservation package. The preferred alternative, Alternative 4A, will fully mitigate for project impacts resulting from incidental take of state-listed species and is designed to avoid jeopardy or adverse modification of designated critical habitat for federally listed species. This would primarily be achieved through mitigation measures, environmental commitments, and avoidance and minimization measures, that include habitat restoration, although on a much smaller scale than the HCP/NCCP alternatives. Large-scale habitat restoration in the Delta will instead be pursued by a separate program, California EcoRestore. The EcoRestore program is a statewide collaborative effort to move large scale restoration projects forward sooner than projected under the BDCP alternatives. California EcoRestore is set to restore 30,000 acres of habitat in the Delta and Suisun Marsh to benefit state- and federally-listed species over the 2015-2020 time frame. For further information on the various alternatives, refer to Chapter 3, *Description of Alternatives*, and Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*. For more information regarding California EcoRestore please see: http://resources.ca.gov/ecorestore/

CEQA and NEPA Requirements Regarding the Scope of Alternatives

Although the requirements for an alternatives analysis under CEQA and NEPA vary to some degree, neither statute requires that the scope of alternatives included in an EIR/EIS be exhaustive, and lead agencies need not consider every conceivable alternative to a project or action.

CEQA Requirements for "a Reasonable Range of Alternatives"

Under CEQA, the lead agency must consider a reasonable range of alternatives that would feasibly attain all or most of the project objectives but would avoid or substantially lessen any of the significant impacts of the proposed project (State CEQA Guidelines Section 15126.6, subd. (a)). The requirements regarding the selection of alternatives under CEQA are laid out in State CEQA Guidelines Section 15126.6.

Subdivision (a) of that section provides:

> Alternatives to the Proposed Project. An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.

Subdivision (b) provides:

> Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

Subdivision (c) further provides:

> Selection of a range of reasonable alternatives. The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.

And lastly, subdivision (f) emphasizes the "rule of reason" applicable to the selection of alternatives:

> Rule of reason. The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making.

Under these principles, alternatives to be included in an EIR must: 1) be potentially feasible, 2) attain most of the basic objectives of the project, and 3) avoid or substantially lessen any of the significant effects of the project. Under CEQA, a lead agency may structure its alternatives analysis around a reasonable definition of a fundamental underlying purpose, and need not study alternatives that cannot achieve that basic purpose.[60] State CEQA Guidelines Section 15126.6 (a) also explains that an EIR is not required to consider alternatives that are infeasible. CEQA defines "feasible" as capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (California Public Resources Code Section 21061.1; State CEQA Guidelines Section 15364).

[60] / *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings (2008) 43 Cal.4th 1143, 1165*

Because CEQA establishes no legal imperative as to the scope of alternatives to be analyzed in an EIR, there is no set number of alternatives that must be analyzed to fulfill the requirements of CEQA.[61] Rather, as stated in the State CEQA Guidelines and supported by abundant CEQA case law, [62] the range of alternatives required in an EIR is governed by the "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice (State CEQA Guidelines Section 15126.6, subds. (c), (f)).

Furthermore, according to CEQA case law, where the alternatives analyzed in the EIR allow for a wide range of choices with varying degrees of environmental impacts, the document may support the ultimate approval not only of the fully developed alternatives, but also what might be called "hybrid" alternatives whose features and impacts occur within the analytical continuum between the "bookends" created by the least-impacting and most-impacting alternatives, respectively.[63] Although the requirements regarding the analysis of alternatives under NEPA are somewhat broader than what is required under CEQA, the scope of alternatives that are required under NEPA, like CEQA, is not unlimited.

NEPA Requirements for a "Full Spectrum of Reasonable Alternatives"

The Council on Environmental Quality (CEQ) NEPA regulations provide that lead agencies "shall rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated" (40 CFR Part 1502.14(a)). Although the CEQ regulations do not specifically define what constitutes a "reasonable alternative," NEPA guidance documents and NEPA case law indicate that "reasonable alternatives" are those technically and economically feasible project alternatives that are reasonably related to the primary objectives of the project as defined in the purpose and need statement.[64] If there are many possible reasonable alternatives, the guidance and case law clearly permit a focus on a "reasonable range" of project alternatives.[65] Alternatives that cannot reasonably meet the purpose

[61] / See, e.g., *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 566; *Save San Francisco Bay Association v. San Francisco Bay Conservation and Development Commission* (1992) 10 Cal.App.4th 908, 919; *Mann v. Community Redevelopment Agency* (1991) 233 Cal.App.3d 1143, 1151.

[62] / See, e.g., *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 566; *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143; *California Native Plant Soc. v. City of Santa Cruz* (2009) 177 Cal.App.4th 957, 980.

[63] / See, e.g., *Village Laguna of Laguna Beach, Inc. v. Board of Supervisors* (1982) 134 Cal.App.3d 1022, 1028–1029; *California Oak Foundation v. Regents of University of California* (2010) 188 Cal.App.4th 227, 274-277; *Cherry Valley Pass Acres and Neighbors et al. v. City of Beaumont* (2010) 190 Cal.App.4th 316, 353-356.

[64] / CEQ, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, Questions 1a, 2a, 2b, 46 Fed. Reg. 18.026 (March 23, 1981); *League of Wilderness Defenders-Blue Mountains Biodiversity Project v. U.S. Forest Service* (9th Cir. 2012) 689 F.3d 1060, 1069 ["[t]he scope of an alternatives analysis depends on the underlying "purpose and need" specified by the agency for the proposed action"]; *Laguna Greenbelt, Inc. v. U. S. Dep't of Transp.* (9th Cir.1994) 42 F.3d 517, 524-525 ["[t]he range of alternatives that must be considered in the EIS need not extend beyond those reasonably related to the purposes of the project"]; *City of Angoon v. Hodel* (9th Cir.1986) 803 F.2d 1016, 1021–1022; see also 40 CFR Part 1502.13 ["[t]he [EIS] shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action"]; *City of Carmel-By-The-Sea v. U.S. Dep't of Transp.* (9th Cir.1997) 123 F.3d 1142, 1155 ["Project alternatives derive from an Environmental Impact Statement's 'Purpose and Need' section, which briefly defines 'the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.' 40 CFR Part 1502.13. The stated goal of a project necessarily dictates the range of 'reasonable' alternatives and an agency cannot define its objectives in unreasonably narrow terms."].

[65] / CEQ, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, Question 1b, 46 Fed. Reg. 18.026 (March 23, 1981)*; City of Alexandria v. Slater* (D.C. Cir. 1999) 198 F.3d 862.

and need of the proposed federal action do not require detailed analysis. Moreover, "reasonable alternatives" include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply being desirable from the standpoint of the applicant.[66]

Both the Department of the Interior (DOI) (including Reclamation and USFWS) and the Department of Commerce (including NMFS) obtain NEPA guidance from a document issued by the CEQ titled *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*. As noted above, the CEQ guidance indicates that the "range of alternatives" (addressed in Question 1b and referred to in 40 CFR 1502.14) to be included in an EIS includes "all reasonable alternatives, which must be rigorously explored and objectively evaluated." In addition, there must be a discussion of other alternatives, eliminated from detailed study, with a brief discussion of the reasons for eliminating them. The CEQ guidance also states that what constitutes a reasonable range of alternatives depends on the nature of a proposed federal action and the facts of a particular case.[67]

Further, when there are a very large number of potential alternatives, a reasonable number of alternatives covering the full spectrum of reasonable alternatives can be identified for detailed analyses in the NEPA document. As noted earlier in discussing CEQA requirements, such an approach creates what in common practice are known as analytical "bookends," referring to a range of decision-making options (alternatives) consisting of a continuum of choices. In general, alternatives with comparatively low environmental impacts occupy one end of the continuum or range, while alternatives with comparatively greater impacts occupy the other end. In practice, however, even alternatives with minimal impacts in one environmental category might have relatively severe impacts in other categories, while the alternatives ostensibly on the high-impact end of the continuum might be comparatively benign with respect to certain environmental categories. Where specific policy options within the continuum consist of reasonable mid-points between the low bookend and the high bookend, agency decision makers retain discretion to ultimately choose to approve an alternative anywhere within the continuum, provided that the information developed for the various bookends and the mid-points suffices to address the actual projected impacts of the precise option chosen. As with CEQA, the creation of "hybrid" options that are similar, if not identical, to fully developed alternatives is also permissible.

DOI has adopted additional regulations (43 CFR Part 46.415(b)) that state that alternatives to be included in an EIS, in addition to the No Action Alternative, must: 1) be reasonable, 2) meet the purpose and need of the proposed action, and 3) address one or more significant issues related to the proposed action. The statement of purpose and need, in this context, must be related to the underlying statutes that govern the federal action agencies' activities and duties with respect to the proposed action or project. In reviewing federal agencies' interpretation and application of the relevant statutes, courts apply a "reasonableness" standard.

The DOI NEPA regulations further provide that "when there are potentially a very large number of alternatives then a reasonable number of examples covering the full spectrum of reasonable alternatives" will suffice. This approach would allow a lead agency to choose not to evaluate a whole series of alternatives that differ from each other in only comparatively minor respects. The range of reasonable alternatives should represent a wide range of alternatives that the NEPA lead agency

[66] / CEQ, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, Question 2a, 46 Fed. Reg. 18.026 (March 23, 1981).

[67] / CEQ, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, Question 1b, 46 Fed. Reg. 18.026 (March 23, 1981).

would consider. This range could be considered to be similar to a range of alternatives that could be evaluated by a CEQA lead agency, and which could be bounded by bookends representing comparatively lower and higher levels of environmental impacts.

In, the *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, CEQ addressed these same issues in responding to the following question: "How many alternatives have to be discussed when there is an infinite number of possible alternatives?" CEQ explained that for some proposals there may exist a very large or even an infinite number of possible reasonable alternatives. For example, a proposal to designate wilderness areas within a National Forest could be said to involve an infinite number of alternatives from 0 to 100% of the forest. When there are potentially a very large number of alternatives, only a reasonable number of examples, covering the full spectrum of alternatives, must be analyzed and compared in the EIS. An appropriate series of alternatives might include dedicating 0, 10, 30, 50, 70, 90, or 100% of the National Forest to wilderness. What constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in each case.[68]

The DOI NEPA regulations also state that the lead agencies should include consensus-based alternatives consistent with the purpose and need of the proposed project that are proposed by participating persons, organizations, or communities who may be interested in or affected by the proposed project. Any consensus-based alternative must be consistent with the requirements of NEPA, the CEQ regulations, and all applicable statutory and regulatory provisions, as well as DOI written policies and guidance. Any consensus-based alternative, like any other reasonable alternative, must meet the purpose and need of the proposed project to be properly considered for detailed analysis in the EIR/EIS. The DOI NEPA regulations do not define the term "consensus-based alternative" but do state that "consensus-based management" incorporates direct community involvement in consideration of DOI activities subject to NEPA analyses, from initial scoping to implementation of the decision.

Similar to CEQA, the range of reasonable alternatives required under NEPA is analyzed to define the issues and provide a clear basis for choice among the options. Under both CEQA and NEPA, therefore, an EIR/EIS need not consider every possible alternative to a project, but rather a range of reasonable alternatives that will meet all or most of the project objectives and its purpose and need. Moreover, both CEQA and NEPA emphasize that the goal of an alternatives analysis is to provide a range of alternatives that will foster informed decision making and permit a reasonable choice of alternatives.[69]

The Delta Reform Act Provides a Roadmap for Alternatives

The range of possible BDCP alternatives was also influenced by the 2009 Delta Reform Act. In preparing the Draft EIR/EIS (and carried forward in the Final EIR/EIS), the lead agencies chose to include all of the types of alternatives set forth in Water Code Section 85320 as being necessary if, following completion of environmental review and approval of the BDCP, DWR sought to have the BDCP be incorporated into the Delta Plan by operation of law pursuant to that statute. Such an

[68] / CEQ, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, Question 1b, 46 Fed. Reg. 18.026 (March 23, 1981).

[69] / 40 CFR Part 1502.14 [selection of alternatives "provides a basis for choice among options by the decision maker and the public"]; State CEQA Guidelines Section 15126.6, subd. (a) [an EIR must "consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation"].

outcome could only occur if the California Department of Fish and Game (now CDFW) determined that the BDCP meets the requirements of California Water Code Sections 85320 and 85321, including that the BDCP:

- Complies with the requirements for preparation of an NCCP (Chapter 10 [commencing with Section 2800] of Division 3 of the California Fish and Game Code).
- Complies with CEQA (Division 13 [commencing with Section 21000] of the Public Resources Code),[70] including a comprehensive review and analysis of all of the following.
    - A reasonable range of flow criteria, rates of diversion, and other operational criteria required to satisfy the criteria for approval of an NCCP (as provided in subdivision (a) of Section 2820 of the Fish and Game Code), and other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions, which will identify the remaining water available for export and other beneficial uses.
    - A reasonable range of Delta conveyance alternatives, including through-Delta, dual conveyance, and isolated conveyance alternatives and including further capacity and design options of a lined canal, an unlined canal, and pipelines.
    - The potential effects of climate change, possible sea level rise up to 55 inches, and possible changes in total precipitation and runoff patterns on the conveyance alternatives and habitat restoration activities considered in the EIR.
    - The potential effects on migratory fish and aquatic resources.
    - The potential effects on Sacramento River and San Joaquin River flood management.
    - The resilience and recovery of Delta conveyance alternatives in the event of catastrophic loss caused by earthquake or flood or other natural disaster.
    - The potential effects of each Delta conveyance alternative on Delta water quality.
- Has been approved as an HCP pursuant to the federal Endangered Species Act (16 USC Section 1531 et seq.).

Although the roadmap for CEQA alternatives laid out in the Delta Reform Act does not present options that qualify as project objectives, these statutory considerations were nevertheless highly relevant to the identification of alternatives for the Draft EIR/EIS, in that, at the time that document was released, DWR wanted to be able to avail itself of the statutory process for inclusion of the BDCP in the Delta Plan and to secure public funding for the public benefits of conservation measures other than CM1 and mitigation for CM1, which would be funded by the public water agency beneficiaries. Thus, as explained in Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, the range of alternatives for the Draft EIR/EIS (and carried forward into the Final EIR/EIS) was developed in accordance with these provisions. Indeed, in developing the range of alternatives for consideration in the EIR/EIS, the lead agencies were guided by the specific statutory language in the Delta Reform Act that identified project alternatives. Appendix 3A thoroughly discusses the "Range of Alternative Provisions" in the Delta Reform Act. Table 3A-15 of Appendix 3A compares the screening process with the "Range of Alternative Provisions" in the Delta Reform Act.

[70] / Notably, in enacting the Delta Reform Act, the Legislature stated that its legislation "does not amend, or create any additional legal obligation or cause of action under" CEQA. (Cal. Water Code Section 85322.)

This table breaks down the text of Water Code Section 85320, subdivision (b)(2)(A) and (B), into discrete measures of consistency and describes how the measures are met in the EIR/EIS alternatives analysis. The table demonstrates that all of the specific requirements of Section 85320, subdivision (b)(2)(B), involving the "comprehensive review and analysis" of a "reasonable range of Delta conveyance alternatives" were met. The alternatives carried forward for analysis in the Draft EIR/EIS (and into the Final EIR/EIS) thus included through-Delta, dual conveyance, and isolated conveyance alternatives, as well as further capacity and design options of a lined canal, an unlined canal, and pipelines, as expressly contemplated by the statute. The Draft EIR/EIS (and Final EIR/EIS) also considered a wide variety of operational alternatives as required by the Act. For additional information on the Delta Reform Act related to the BDCP alternatives, see Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*.

However, Alternatives 4A, 2D, and 5A, initially described in the RDEIR/SDEIS (and carried forward into the Final EIR/EIS), do not include an HCP/NCCP as a project element. Therefore the proposed project (Alternative 4A) will not be eligible for the mandatory incorporation into the Delta Plan specified in Water Code Section 85320, and instead, if selected, will follow the statutory process to demonstrate consistency with the plan. This process is described in detail in the Final EIR/EIS Appendix 3J, *Alternative 4A (Proposed Project) Compliance with the 2009 Delta Reform Act*.

The EIR/EIS Includes a Legally Adequate Reasonable Range of Alternatives

The alternatives included in the Final EIR/EIS represent a reasonable range of alternatives that meet the requirements of both CEQA and NEPA. The alternatives analyzed include a combination of water conveyance configurations, capacities, and operational criteria; conservation measures that include habitat restoration, conservation targets, and stressor reduction measures; and various avoidance and minimization measures. As noted above, the Final EIR/EIS analyzes in detail a total of 18 action alternatives in addition to two No Action Alternatives (long-term and short-term). In addition to the variations among the alternatives already described earlier in this master response, eight different water conveyance operational scenarios (A through H) were developed for each of the action alternatives included in the EIR/EIS. The water conveyance operations for the proposed project (Alternative 4A) would fall between Operational Scenarios H3 and H4. The criteria in these scenarios included north Delta diversion bypass flow criteria, south Delta OMR flow criteria, south Delta Export/Inflow Ratio, flow criteria over the Fremont Weir into the Yolo Bypass, Delta inflow and outflow criteria, Delta Cross Channel gate operations, Rio Vista minimum instream flow criteria, operations for Delta water quality and residence criteria, and water quality criteria for agricultural and municipal / industrial diversions (see Chapter 3, *Description of Alternatives*) This represents a wide variety of operational scenarios that have varying degrees of impacts.

The broad range of alternatives included in the EIR/EIS, with varying degrees of potential impacts, also reflects the type of "bookend" analysis described above. For example, under the "bookend" approach used by the lead agencies for the operational alternatives, the EIR/EIS evaluated alternatives that ranged from higher export deliveries at one end, and reduced exports and higher outflows to protect fish species at the lower end (see Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, Section 3A.9 and Chapter 3, *Description of Alternatives*, Section 3.2.1.4). By analyzing various alternatives covering the entire spectrum of impacts, the alternatives included in the Draft EIR/EIS, the RDEIR/SDEIS, and the Final EIR/EIS represent an appropriate range of alternatives and will permit the lead agencies to make a reasoned

choice among alternatives. Thus, the range of alternatives included in the EIR/EIS fully complies with CEQA and NEPA.

It is important to understand just how extensive the alternatives analysis is compared with what is typical for projects subject to CEQA and NEPA. Under CEQA case law, courts have commonly upheld EIRs with three or four action alternatives (in contrast with 18 here), and sometimes have upheld EIRs that looked at only "the project" and "no project." [71] NEPA case law similarly demonstrates that the scope of alternatives included in this EIR/EIS is far greater than what is typically required to ensure compliance with NEPA. Federal courts have emphasized that there is no minimum number of alternatives that must be discussed in an EIS; and EISs that analyze far fewer alternatives than what was included in this EIR/EIS are routinely upheld.[72]

Refer to Chapter 3, *Description of Alternatives*, for further information on the various alternatives, including Alternatives 4A, 2D and 5A presented in the RDEIR/SDEIS.

The EIR/EIS Need Not Include Alternatives That Do Not Meet the Project Objectives and Purpose and Need or Are Otherwise Outside of the Scope of the Project

As described above, the selection of alternatives for an EIR/EIS is directly linked to the project's objectives and purpose and need, and an EIR/EIS need not analyze alternatives that would not meet a project's basic goals or objectives. Accordingly, the Draft EIR/EIS, RDEIR/SDEIS, and Final EIR/EIS do not include alternatives that would not meet the purpose and need and most of the basic project objectives or alternatives that are beyond the scope of the project.

For example, the EIR/EIS does not include alternatives that require actions on a statewide basis from a variety of actors such as local governments. Despite their very substantial scope, their habitat benefits, and the large geographic areas they cover and affect, neither the proposed project nor any of the other alternatives in the EIR/EIS are intended to – nor are they required to – function as the

[71] See, e.g., *Mann v. Community Redevelopment Agency* (1991) 233 Cal.App.3d 1143, 1150–1151 [in an EIR for a mixed use project, "four alternatives . . . represent enough of a variation to allow informed decision making"]; *Sequoyah Hills Homeowners Association v. City of Oakland* (1993) 23 Cal.App.4th 704, 712–714 [court upholds EIR for housing project with only three action alternatives]; *Marin Municipal Water District v. KG Land California Corporation* (1991) 235 Cal.App.3d 1652, 1665–1666 [court upholds EIR for water hookup moratorium that included only one alternative other than "no project"]; *Mountain Lion Foundation v. Fish and Game Commission* (1997) 16 Cal.4th 105, 135–136 [California Supreme Court acknowledges that, for an EIR for the delisting of an endangered or threatened species, an alternatives analysis limited to "no project" might suffice]; and *Mount Shasta Bioregional Ecology Center v. County of Siskiyou* (2012) 210 Cal.App.4th 184, 196-200 [court upholds EIR for cogeneration project that screened out all alternatives except "no project"].)

[72] See, e.g., *Laguna Greenbelt, Inc. v. U.S. Dept. of Transp.* (9th Cir. 1994) 42 F.3d 517, 524 [court upholds EIS that includes only two action alternatives in addition to the No Action Alternative]; *Kootenai Tribe of Idaho v. Veneman* (9th Cir. 2002) 313 F.3d 1094 [upholding EIS that considered three action alternatives] *Nw. Envtl. Def. Ctr. v. Bonneville Power Admin.* (9th Cir.1997) 117 F.3d 1520, 1538 [upholding EIS that discussed only two alternatives]; *Tongass Conservation Society v. Cheney* (D.C.Cir.1991) 924 F.2d 1137, 1140–1142 [finding that agency complied with NEPA when thirteen of fourteen alternatives were eliminated as unreasonable and only one alternative was discussed in detail in the EIS]; *N. Buckhead Civic Ass'n v. Skinner* (11th Cir.1990) 903 F.2d 1533, 1541-1143 [finding that an EIS with only two alternatives studied in detail was sufficient]; *Westlands Water Dist. v. U.S. Dept. of Interior* (9th Cir. 2004) 376 F.3d 853, 868 [upholding EIS for a federal water project that considered six alternatives]; *League of Wilderness Defenders-Blue Mountains Biodiversity Project v. U.S. Forest Service* (9th Cir. 2012) 689 F.3d 1060 [EIS for an experimental forest thinning project that analyzed only two action alternatives in detail was reasonable].

equivalent of a statewide plan for dealing with water supply or a comprehensive plan for addressing the numerous challenges facing the Delta. Rather, statewide water issues are comprehensively addressed by DWR every five years through updating the California Water Plan. The California Water Plan is the state's long-term strategic plan for guiding the management and development of water resources. Updated every 5 years, the Plan is developed with extensive stakeholder involvement, from individuals and groups to government agencies, nonprofits, and NGOs that represent multiple disciplines and tribal, regional, and local interests, as well as environmental, agricultural, and urban concerns. The Plan describes current water resource conditions, identifies potential future conditions and the factors driving those changes, recognizes the challenges and impediments to effective solutions, and lays out an extensive list of potential actions that are intended to move California toward more sustainable management of water resources and more resilient water management systems.

Seventeen objectives and over 250 related actions are identified; however, the California Water Plan does not create mandates, prioritize actions, or allocate funding, although funding is discussed. The Plan is intended to inform legislative action as well as planning processes and decision making at all levels of government. The third volume identifies 30 Resource Management Strategies that can be used to help meet the water resource needs of the different regions in the state. A Resource Management Strategy is defined as a "*technique, program or policy that helps local agencies and governments manage their water and related resources*." The strategies are narratives that are written by subject matter experts and include a definition of the strategy, its current use, the potential benefits and costs, implementation issues and recommendations, as well as additional references for more information. Strategies identified in the California Water Plan include actions such as agricultural and urban water use efficiency, conjunctive management of groundwater, desalination, watershed management, forest management, and urban stormwater management. Adapting to new challenges as well as coping with continuing ones requires local agencies and governments to develop diversified portfolios of water resources and management programs that will achieve sustainable uses and benefits while balancing the risks of an uncertain future.

The California Water Plan's strategies are to be considered tools in a toolkit for water managers to choose from, with the understanding that regional and local water managers have the best perspective on which strategy or strategies are most cost-effective and productive for meeting the needs and priorities of their region. Accordingly, the Final EIR/EIS does not include alternatives (including several that were proposed during the scoping process) that are equivalent to a statewide water plan or that required actions beyond the scope of the proposed project. Many of the alternatives proposed for inclusion in the Final EIS/EIR but ultimately rejected because they address issues or apply to regions outside the Bay Delta are nevertheless pertinent to stewardship of California's water resources and thus are appropriate for consideration in other regulatory or legislative contexts. For more information on the California Water Plan, see Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1,* and Appendix 1C, *Demand Management Measures*.

Alternatives focusing on flood preparedness, including an expansion or overhaul of the state's levee system, were similarly rejected as being outside the scope of the project. Like planning for the statewide management of water resources, flood preparedness is addressed in a comprehensive process by which DWR and the Central Valley Flood Protection Board prepare the Central Valley Flood Protection Plan. The Central Valley Flood Protection Plan is a more appropriate venue than the proposed project for policies relating to flood control. Therefore, the EIR/EIS does not include alternatives that focus on flood management because that would be beyond the scope of the project.

The Final EIR/EIS also does not include alternatives that would impose legal obligations on third parties or otherwise infringe on the existing legal rights of such entities or individuals. Thus, the Final EIR/EIS does not include alternatives that could affect or require changes to legal rights, including senior water rights, of entities that are not participants in the proposed project and whose legal rights and entitlements are beyond the regulatory authority and reach of DWR, CDFW or other permitting agencies.

For example, as noted in Appendix 3.A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, several comments received during the scoping process suggested that the EIR/EIS should include alternatives that would achieve increased Delta inflow or outflow through mandatory reductions in existing water diversions occurring upstream in the Delta watershed from parties other than DWR and Reclamation. As explained in Appendix 3A, Section 3A.3.5, these proposed reductions would come from entities that are not seeking ESA and CESA authorization as part of the proposed project process and that possess senior water rights or other entitlements that, as a legal matter, could not be infringed upon by DWR or other permitting agencies in response either to an HCP/NCCP application filed by DWR or through "ESA Section 7 consultation" with Reclamation. Since the potentially affected upstream parties other than DWR and Reclamation are not parties to the project process, their diversions may not be modified through the process of completing the project by DWR and Reclamation. Accordingly, these proposals are not considered reasonable alternatives and were not carried forward for full analysis in the Final EIR/EIS.

Moreover, as noted previously, DWR is not a statewide governing body that can impose a statewide water strategy on different parts of the state. Further, DWR lacks any statutory authority to make and implement localized decisions about water technology investments, to develop and impose investments for new water supply projects that serve particular geographic regions, or to mandate coordinated efforts among local and regional water suppliers. The 2009 Delta Reform Act appropriately recognizes DWR's limited role and does not assign such duties to DWR. The Act's organizational structure makes this apparent. The policy regarding regional water self-sufficiency is contained in an early portion of the Act (Part 1, Chapter 1) that describes the policies of the state and does not mention the BDCP. The BDCP is addressed in later portions of the Act, including Part 4, Chapter 2, in which California Water Code Section 85320 spells out specific criteria that must be met for the BDCP to be incorporated into the Delta Plan by operation of law (see discussion, above).

Furthermore, as noted in the Delta Stewardship Council's Delta Plan, the responsibility for implementing most of the state's water management strategies and achieving the state water objectives lies not only with DWR, but with "over 600 local water agencies, including several privately owned and operated companies, plus wastewater districts, community service districts, and other special districts" (Delta Plan Chapter 3, *A More Reliable Water Supply for California*, page 93). Again, neither DWR nor CDFW, USFWS, or NFMS has the regulatory authority to impose legal duties on any water agencies, local governments, or individuals under the BDCP or the California Water Fix. Accordingly, any alternatives that would require the imposition of legal duties on non-applicants are beyond the scope of the proposed project, and are not considered reasonable alternatives.

The specific proposals that were considered but ultimately rejected by the lead agencies are discussed in Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1.* Appendix 3A thoroughly explains why various proposals were not analyzed in the Final EIR/EIS, including the NRDC Portfolio-Based Proposal, Congressman Garamendi's Water Plan, and other

similar concepts that would require actions that are beyond the scope of the BDCP and California Water Fix.

In addition to proposals discussed in Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1,* several other alternatives have been proposed during the environmental review process (including during the comment period for the Draft EIR/EIS). Like many of the proposals discussed in Appendix 3A, these alternatives included sound principles for water management and had considerable merit from a policy standpoint. For many of the reasons discussed above, however, none of the proposals qualify as an EIR/EIS alternative for the BDCP or California Water Fix. For example, the Sierra Club California Water Committee proposed an "Alternative Approach" to the BDCP in a white paper released in December 2013 (the Sierra Club Proposal). Similar to the Portfolio-Based Proposal discussed in Appendix 3A, the Sierra Club Proposal listed a variety of water management principles including (1) urban water conservation; (2) urban water recycling; (3) agricultural water efficiency; and (4) managing groundwater sustainability. Although these principles may have merit from a water policy standpoint, the Sierra Club Proposal is more akin to a statewide water plan, and its scope is far greater than can be achieved through a Delta-focused HCP/NCCP or the California WaterFix. Notably, the Sierra Club Proposal did not include any water conveyance component. For this reason alone, the Sierra Club Proposal would not fulfill the purpose and objectives of the BDCP or California WaterFix. Because the Sierra Club Proposal would not meet the purpose and objectives of the project alternatives, it is not considered a reasonable or potentially feasible alternative.

Identifying a Preferred Alternative is Not a Pre-Commitment to that Alternative

Under CEQA, a typical draft EIR includes a defined proposed "project," supported by a set of "project objectives,"[73] as well as "alternatives to the proposed project" that would "feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project[.]"[74] These terms juxtapose a proposed "project" against "alternatives to the project," suggesting that CEQA anticipates that a draft EIR will identify the proposed project as compared with the alternatives to the proposed project. [75] The analysis of the alternatives to the proposed project need not be as searching as for the proposed project itself.[76] The fact that CEQA permits a less detailed analysis for the alternatives than for the proposed project strongly suggests that a lead agency has not impermissibly "pre-committed" to a project by developing the preferred alternative

[73] State CEQA Guidelines Section 15124.

[74] State CEQA Guidelines Section 15126.6.

[75] Under NEPA, a federal agency shall "[i]dentify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference." (40 CFR Part 1502.14.) With respect to the BDCP, at the time of the publication of the Draft EIR/EIS, the federal lead agencies had not yet made a decision as to their preferred alternative, choosing to wait until all the alternatives could be evaluated in the Draft EIR/EIS, and public input could be received and considered, before making that determination. Consistent with the CEQ regulations, the NEPA Preferred Alternative has been identified in the Final EIR/EIS.

[76] "The discussion of alternatives need not be exhaustive, and the requirement as to the discussion of alternatives is subject to a construction of reasonableness." (*Residents Ad Hoc Stadium*, *supra*, 89 Cal.App.3d at p. 286.) The discussion of alternatives must include "meaningful detail" supported by "facts and analysis" and not just "bare conclusions." (*Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376, 404, 406.)

to a greater degree than its alternatives (although in this instance, the Final EIR/EIS evaluates the alternatives at an equal level of detail, in exceedance of CEQA's requirements). As the California Supreme Court has stated: "'[i]f having high esteem for a project before preparing an [EIR] nullifies the process, few public projects would withstand judicial scrutiny, since it is inevitable that the agency proposing a project will be favorably disposed to it.'"[77]

The fact that Alternative 4A has been improved to include revised operational criteria and a more environmentally benign conveyance facility alignment than its original formulation does not violate CEQA or NEPA. To the contrary, CEQA and NEPA *encourage* such modifications. As is well recognized, "[t]he CEQA reporting process is not designed to freeze the ultimate proposal in the precise mold of the initial project; indeed, new and unforeseen insights may emerge during investigation, evoking revision of the original proposal."[78] "CEQA compels an interactive process of assessment of environmental impacts and responsive project modifications which must be genuine. It must be open to the public, premised upon a full and meaningful disclosure of the scope, purposes, and effect of a consistently described project, with flexibility to respond to unforeseen insights that emerge from the process. In short, a project must be open for public discussion and subject to agency modification during the CEQA process."[79] Here, the improvements made to Alternative 4A actually show the CEQA and NEPA processes working as they should, in that the revised version of Alternative 4A is more workable than, and environmentally superior to, its original formulation.

Furthermore, CEQA and NEPA require an EIR and EIS to evaluate a broad range of alternatives, which militates against making all of the alternatives very similar.[80] The optimization of Alternative 4A, including the inclusion of revised operational criteria and the improved conveyance facility alignment for that alternative, does not render the other alternatives evaluated in the Final EIR/EIS inadequate. Rather, the inclusion of these features in Alternative 4A fosters informed decision-making and public participation by inviting comparison of these features with the other alternatives evaluated in the Final EIR/EIS lacking these features. Notably, even if the lead agencies ultimately decide to approve one of the other alternatives evaluated in the Final EIR/EIS, the revised

[77] *Save Tara v. City of West Hollywood* (2008) 45 Cal.4th 116, 136–137, quoting *City of Vernon v. Board of Harbor Commissioners* (1998) 63 Cal.App.4th 677, 688.

[78] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 736–737, citing *River Valley Preservation Project v. Metropolitan Transit Development Board* (1995) 37 Cal.App.4th 154, 168, fn. 11; see also *Russell County Sportsmen v. U.S. Forest Service* (9th Cir. 2011) 667 F.3d 1037, 1048 (*Russell County Sportsmen*) ("'When the change to the proposed action is a 'minimizing measure,' . . . the agency 'is not automatically required to redo the entire environmental analysis' [in a supplemental EIS] because a minimizing measure's effects on the environment will usually fall within the scope of the original NEPA analysis " [quoting *Sierra Club v. Van Antwerp* (11th Cir. 2008) 526 F.3d 1353, 1360]); see also 42 USC Section 4321 (the purposes of NEPA include to "promote efforts which will prevent or eliminate damage to the environment").

[79] *Concerned Citizens of Costa Mesa, Inc. v. 32nd District Agricultural Association* (1986) 42 Cal. 3d 929, 936; see also *Russell County Sportsman*, *supra*, 667 F.3d at p. 1048.

[80] Public Resources Code Section 21061; State CEQA Guidelines Section 15126.6, subd. (a); 42 USC Section 4331(b)(3)-(6).

operational criteria and/or the optimized conveyance facility alignment proposed for Alternative 4A, could still be incorporated into such an alternative as it became the approved project.[81]

Finally, nothing about the optimization efforts for Alternative 4A "pre-commits" the lead agencies to that alternative. It is true, as a few comments note, that public agencies must not irretrievably commit to a definite course of action with respect to a project prior to the completion of environmental review. When such a commitment occurs, it can constitute a violation of CEQA and NEPA commonly referred to as impermissible "pre-approval" or "pre-commitment." Neither pre-approval nor pre-commitment, however, has occurred here.

The leading CEQA case on the issue of whether an agency has impermissibly pre-approved or pre-committed is *Save Tara v. City of West Hollywood* (2008) 45 Cal.4th 116 (*Save Tara*). In that case, the Supreme Court declined to establish a bright-line rule to determine when an agency has "pre-approved" a project. Instead, the court applied the "general principle that before conducting CEQA review, agencies must not 'take any action' that significantly furthers a project 'in a manner that forecloses alternatives or mitigation measures that would ordinarily be part of CEQA review of that public project.'"[82]

Similarly, under NEPA, the CEQ regulations prescribe that "[a]gencies shall not commit resources prejudicing selection of alternatives before making a final decision."[83] "An EIS "shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying

[81] See e.g., *California Oak Foundation v. The Regents of the University of California* (2010) 188 Cal.App.4th 227, 274, 276 [court upholds EIR using a "'mix-and-match' approach to alternatives, in which components from different alternatives may be substituted for one another," as such an approach was sufficient to "encouraged informed decision-making and public participation); see also *Village Laguna of Laguna Beach, Inc. v. Board of Supervisors* (1982) 134 Cal.App.3d 1022, 1028–1029 (EIR that discussed housing density alternatives of 7,500, 10,000, 20,000 and 25,000 units was not deficient for failure to discuss intermediate 15,000 unit alternative, the impact of which could be discerned from the alternatives that were included); *Cherry Valley Pass Acres and Neighbors v. City of Beaumont* (2010) 190 Cal.App.4th 316 (rejecting argument similar to that made in *Village Laguna*, explaining that "[w]hen an EIR discusses a reasonable range of alternatives sufficient to foster informed decisionmaking, it is not required to discuss additional alternatives substantially similar to those discussed"); regarding NEPA, see e.g., *Northern Alaska Environmental Center v. Kempthorne* (9th Cir. 2006) 457 3d. 969, 978–979 (upholding EIS's range of alternatives where the preferred alternative adopted by the lead agency included components of another alternative evaluated in the EIS).

[82] *Save Tara*, *supra*, 45 Cal.4th p. 138, quoting State CEQA Guidelines Section 15004, subd. (b)(2)(B); see also *Neighbors for Fair Planning v. City and County of San Francisco* (2013) 217 Cal.App.4th 540, 550–558 (city's predevelopment loan to a proposed community center to cover cost of environmental review and supervisor's introduction of special use district ordinance for the center prior to the certification of the EIR was not an approval of the community center project); *Cedar Fair, LP v. City of Santa Clara* (2011) 194 Cal.App.4th 1150, 1171 (rejecting the view that a "term sheet" setting forth details of a proposed stadium project required CEQA review because the team sheet expressly bound the parties to only continue negotiating in good faith, and recognized that a no project option was still available); *City of Santee v. County of San Diego* (2010) 186 Cal.App.4th 55, 59 ("siting agreement did not as a practical matter preclude any alternatives, mitigation measures, or the alternative of not going forward").

[83] 40 CFR Section 1502.2, subd. (f); see also, e.g., *Wildwest Institute v. Bull* (9th Cir. 2008) 547 F.3d 1162, 1168–1169 (decision of Forest Service to pre-mark trees in preparation for logging during comment period of hazardous fuel reduction project did not irretrievably commit the USFWS to a specific course of action in violation of NEPA; although the Forest Service had developed a tentative schedule designating certain forest areas for harvest, the USFWS retained authority to decide whether any such activities would ever take place on the lands, and the Forest Service's expenditure of funds to pre-mark trees was clearly not so substantial an investment that it limited such choice).

decisions already made."[84] Whether an agency action constitutes an "irreversible and irretrievable commitment of resources turns on whether [the action] 'reserve[s] to the government the absolute right' to prevent the use of the resources in question."[85]

With respect to Alternative 4A, the state and federal lead agencies have not taken any steps that irrevocably commit to that alternative or foreclose on the lead agencies' ability to evaluate or approve other alternatives, or to take no action at all (i.e., opt for the No Action Alternative). To the contrary, Alternative 4A further expands the range of project alternatives studied in the EIR/EIS. Although the lead agencies have put efforts and funds toward refining Alternative 4A for the purpose of environmental review, such predevelopment design and analysis efforts are a component of CEQA and NEPA review, and do not irretrievably commit the lead agencies to approve or construct any one project alternative. Approval of any alternative, or hybrid alternative, is contingent on the lead agencies' review and consideration of the feasibility of each of the alternatives studied in the EIR/EIS. Each of the alternatives evaluated in the EIR/EIS is studied in great detail (more detail than what would be required purely under CEQA), providing ample information concerning the relative merits of each alternative and their various component parts. Therefore, it is possible that the final version of the California WaterFix may differ from Alternative 4A, either because Alternative 4A was refined, because another alternative was determined to be preferable, or because the lead agencies, in response to input, develop a new hybrid alternative with some features from existing alternatives and other features from other existing alternatives.[86]

In summary, nothing about the lead agencies' efforts to optimize Alternative 4A violates CEQA or NEPA. On the contrary, the lead agencies' efforts to improve that alternative demonstrate the effectiveness of the CEQA and NEPA process, in that through public and agency input, the CEQA preferred alternative was modified to lessen its environmental impacts. The fact that Alternative 4A includes optimized features does not render the range of alternatives evaluated in the EIR/EIS inadequate. Rather, the inclusion of the optimized features in Alternative 4A broadens the range of alternatives evaluated in the Final EIR/EIS by introducing components that may have otherwise not been included in the Final EIR/EIS, thereby furthering CEQA's and NEPA's informational goals. Finally, the fact that the agencies have put resources into further refining Alternative 4A does not mean the agencies have pre-approved or pre-committed to that alternative. As one court cogently stated, "CEQA review was not intended to be only an afterthought to project approval, but neither was it intended to place unneeded obstacles in the path of project formulation and development."[87] For these reasons, the lead agencies respectfully disagree with comments on the EIR/EIS alleging that the lead agencies have impermissibly pre-committed to Alternative 4A. The lead agencies' treatment of Alternative 4A complies fully with CEQA and NEPA.

[84] 40 CFR Section 1502.2 at subd. (g).

[85] *Friends of the Southeast's Future v. Morrison* (9th Cir. 1998) 153 F.3d 1059, 1063, citation omitted; see also *National Audubon Society v. Department of the Navy* (4th Cir. 2005) 422 F.3d 174, 204–206 (holding that the Navy did not irretrievably commit resources in advance of decision where the Navy sought to (1) undertake activities preliminary to land acquisition, such as property surveys; (2) purchase land; and (3) apply for permits in advance of construction; although these activities required expenditure of funds, they did not pre-commit the Navy to any particular alternative and "do not include cutting even a single blade of grass in preparation of construction").

[86] Chapter 3, *Description of Alternatives*, Section 3.1.1.

[87] *Save Tara*, *supra*, at p. 137.

Addition of Alternatives 4A, 2D, and 5A Did Not Require a Whole New Draft EIR/EIS

The lead agencies have determined that the addition of Alternatives 4A, 2D, and 5A was properly circulated for public review in the RDEIR/SDEIS and that preparing a completely new Draft EIR/EIS in its entirety with the addition of the non-HCP alternatives would not have served the purposes of CEQA and NEPA to disclose alternatives and analysis revisions for the purpose of public review. The decision to prepare and circulate the RDEIR/SDEIS was made in conformance with CEQA, the State CEQA Guidelines, NEPA and NEPA regulations. See also Master Response 46, *Recirculation/Scoping*.

In accordance with Public Resources Code Section 21092.1 and State CEQA Guidelines Section 15088.5, a CEQA lead agency must "recirculate" a revised Draft EIR *or chapters or portions thereof* for additional comments if, subsequent to the commencement of public review but prior to final EIR certification, the lead agency adds "significant new information" to an EIR. (See Public Resources Code Section 21092.1; State CEQA Guidelines Section 15088.5; *Laurel Heights Improvement Association of San Francisco, Inc. v. Regents of the University of California* (1993) 6 Cal.4th 1112 [*Laurel Heights II*].) State CEQA Guidelines Section 15088.5 provides four examples of disclosure that constitute "significant new information" for purposes of requiring recirculation of a revised EIR.

1. A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
2. A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
3. A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the project, but the project's proponents decline to adopt it.
4. The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

The revised environmental document must be subjected to the same "critical evaluation that occurs in the draft stage," so that the public is not denied "an opportunity to test, assess, and evaluate the data and make an informed judgment as to the validity of the conclusions." (*Sutter Sensible Planning, Inc. v. Board of Supervisors* (1981) 122 Cal.App.3d 813, 822.) Neither NEPA nor the NEPA Regulations adopted by the Council on Environmental Quality (CEQ) use the term "recirculation," but the CEQ NEPA Regulations do require or permit the preparation of a "supplement" to a draft EIS in some circumstances. Such a document must be prepared when either of the two conditions below applies.

1. The agency makes substantial changes in the proposed action that are relevant to environmental concerns.
2. There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 Code of Federal Regulations [CFR] 14 1502.9[c][1]).

A supplement to a draft EIS *may* be prepared "when the agency determines that the purposes of NEPA would be furthered by doing so" (40 CFR 1502.9[c][2]).

The RDEIR/SDEIS was circulated and noticed for public review and comment, and filed in the same manner as the Draft EIR/EIS. No additional scoping was necessary or required under CEQA for the RDEIR/SDEIS and under NEPA for a Supplemental Draft EIS. DWR filed a notice of availability (NOA) with the State Clearinghouse on July 10, 2015 and Reclamation filed the RDEIR/SDEIS with EPA on July 10, 2015 and submitted an NOA to the Federal Register on July 10, 2015 announcing the availability of the document for public review.

Regarding the request to recirculate the entire Draft EIR/EIS because of addition of non-HCP alternatives, the lead agencies did not find it necessary to reissue an entirely new EIR/EIS. As explained above, the new preferred alternative has been optimized and improved based on comments received on the Draft EIR/EIS and Draft BDCP. Although changes made to Alternative 4A do reduce some of the physical and operational effects compared to Alternative 4, it is essentially a sub-alternative to Alternative 4 in that it maintains the conveyance facility alignment as described for Alternative 4 and adjusts certain operational criteria, including the amount of spring-time outflow assumed. These improvements reduce potential environmental effects of Alternative 4A by reducing the physical conveyance facility footprint effects, reducing Delta landowner conflicts associated with use of private property, reducing terrestrial species effects, including to greater sandhill crane on Staten Island, and improving conditions for fish.

One of the differences between Alternative 4 and Alternative 4A is the reduction of habitat restoration, enhancement, and protection measures under Alternative 4A. Because Alternative 4A is not an HCP/NCCP and would not seek incidental take authorization under Section 10 of the ESA and NCCPA, restoration would be implemented only to meet the requirements of CEQA/NEPA, ESA Section 7, CESA, and Section 404 of the Clean Water Act. These measures under Alternative 4A are focused on reducing effects on species of constructing and operating the proposed conveyance facilities versus the goal of the BDCP to contribute to recovery of species. To that end, Alternative 4A proposes sufficient habitat and other measures to offset potential effects of the conveyance facilities.

Furthermore, CEQA does not require recirculation of an entirely new Draft EIR because of changes made to a limited portion of the initial Draft EIR. NEPA requires only that a "supplement" be prepared when appropriate. The lead agencies have determined that to do so would inhibit the public and public agency participation in this case would unduly burden agencies and the public with review of a large document that would require reviewers to expend considerable effort to locate the revised material in the draft document. Instead, the lead agencies chose to partially recirculate the Draft EIR/EIS to aid in focusing the reader on the important changes to the alternatives and environmental analysis as presented in the RDEIR/SDEIS.

Master Response 5: BDCP

This master response includes a description of:

- *The relevance of the Draft BDCP, Draft EIR/EIS evaluated BDCP alternatives, the RDEIR/SDEIS (adding non-BDCP alternatives), and this Final EIR/EIS (including the proposed project, Alternative 4A – The California WaterFix).*
- *Overall response to comments on the Draft BDCP, including Chapter 3, Conservation Strategy, which includes adaptive management, Chapter 5, Effects Analysis, Chapter 6, Plan Implementation, Chapter 7, Implementation Structure, which addresses the draft Implementation Agreement and governance, Chapter 8, Costs and Funding Sources, and Chapter 9, Alternatives to Take.*

The Draft BDCP (referred to as simply the BDCP and which has never been adopted) and the Draft EIR/EIS were released for public review in December 2013. While reviewing comments on the BDCP and Draft EIR/EIS and through continuing discussions with the federal and state fish and wildlife agencies, the lead agencies decided to develop several non-habitat conservation plan/natural community conservation plan (HCP/NCCP) alternatives, along with a number of improvements to the proposed water conveyance facility alignment. Accordingly, Alternative 4 in the Draft EIR/EIS is no longer considered the lead agencies' preferred alternative. As described in the RDEIR/SDEIS and Final EIR/EIS, the preferred alternative is now Alternative 4A, referred to as the California WaterFix, which would not include an HCP or NCCP. With the addition of the preferred alternative 4A in the RDEIR/SDEIS, two other non-HCP alternatives were also described and analyzed – Alternative 2D and Alternative 5A. Instead of the HCP/NCCP, the proposed facilities under these alternatives would secure compliance with the federal Endangered Species Act (ESA) via the interagency consultation provisions contained in Section 7 of the ESA. Similarly, compliance with the California Endangered Species Act (CESA) would be secured via an incidental take permit issued by California Department of Fish and Wildlife (CDFW), pursuant to Section 2081(b) of the California Fish and Game Code. Under the California WaterFix (and other non-HCP alternatives presented in the RDEIR/SDEIS and in this Final EIR/EIS), habitat restoration and preservation would be limited to what is needed to mitigate the impacts of the construction and operation of the proposed water conveyance facility. Thus, the BDCP is associated with the HCP/NCCP alternatives and not with the preferred alternative or the other non-HCP alternatives described and analyzed in the 2015 RDEIR/SDEIS and Final EIR/EIS.

Although Alternative 4A is the CEQA and NEPA preferred alternative, Alternative 4 remains a potentially viable alternative and is being carried forward in the Final EIR/EIS because it represents the original HCP/NCCP alternative compliance approach, and because it provides an important reference point from which the Alternative 4A, 2D, and 5A descriptions and analyses were developed. If the lead agencies ultimately choose the alternative implementation strategy and select Alternative 4A or another non-HCP alternative after completing the CEQA and NEPA processes, elements of the conservation plan contained in the original action alternatives may be utilized by other programs for implementation of the long term conservation efforts.

This master response has been prepared to address comments received on the Draft BDCP documents and related topics such as funding, updated effects analysis/modeling, and governance issues. Note that certain components of the BDCP would still be implemented under the preferred alternative, such as construction and operation of the proposed North Delta Diversions. Comments

on these components are addressed in other master responses and in specific responses to comments. As noted previously, the Draft EIR/EIS alternatives that include the BDCP have been carried forward in the analysis in the RDEIR/SDEIS and in this Final EIR/EIS. Substantive revisions to the Draft BDCP in response to many public comments and feedback from the Delta Science Program independent science review panel are found in Appendix 11F, *Substantive BDCP Revisions*, of this Final EIR/EIS.

As noted in the following section, public review and comment on the Draft BDCP documents serve a purpose separate from CEQA and NEPA and many of the topics addressed in the BDCP are not topics that are the subject of CEQA and NEPA analysis and disclosure. Nonetheless, comments on the BDCP have been addressed and responded to in this master response, as well as in individual responses, even though responses are not required under CEQA and NEPA.

Public Review of Draft BDCP Documents and Relationship to the EIR/EIS

As previously noted, the BDCP is associated with the original alternatives and is not (in many regards) part of the non-HCP alternatives: Alternatives 4A, 2D, and 5A. Consequently, the Draft BDCP documents that were circulated with the 2013 Draft EIR/EIS and carried forward to this Final EIR/EIS are not relevant to Alternatives 4A, 2D, and 5A. The Draft BDCP documents include the BDCP Executive Summary, the BDCP chapters and appendices, and an, Implementing Agreement. Some analysis, such as the effects analysis in Chapter 5, remains relevant to the proposed project, Alternative 4A, and certain elements of conservation measures (CMs) are included in the proposed project. Further explanation can be found in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, Chapters 11, *Fish and Aquatic Resources*, and Chapter 12, *Terrestrial Biological Resources*, of the Final EIR/EIS.

The BDCP (or Plan) sets out a comprehensive conservation strategy for the Sacramento–San Joaquin Rivers Delta (Delta) designed to restore and protect ecosystem health, water supply, and water quality within a stable regulatory framework. The BDCP, if pursued, is intended to result in a permit decision concerning long-term regulatory authorizations under state and federal endangered species laws for the operations of the State Water Project (SWP) and Central Valley Project (CVP). Specifically, the BDCP would serve as an NCCP under the state's Natural Community Conservation Planning Act (NCCPA), and an HCP under Section 10 of the federal ESA. The BDCP is a joint HCP/NCCP, which would support the issuance of permits from CDFW under Section 2835 of the NCCPA, and permits from the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) pursuant to Section 10 of the ESA.

The following summarizes the substantive elements of the BDCP chapters:

- Chapter 1, *Introduction*: Provides background, planning goals, regulatory context, a description of the scope of the BDCP including the Plan Area and covered species, overview of the planning process, and details of how the Plan is organized;
- Chapter 2, *Existing Ecological Conditions*: Provides context through a description of historical ecological conditions in the Delta, as well as a description of existing conditions in both the physical environment and in natural communities;

- Chapter 3, *Conservation Strategy*: Describes the biological goals and objectives and the conservation measures in detail, including the methods and approach. This chapter also describes the adaptive management and monitoring program;
- Chapter 4, *Covered Activities*: Describes activities "covered" by the Plan, meaning activities for which regulatory agencies will make decisions on issuance of permits;
- Chapter 5, *Effects Analysis*: Describes the effects of BDCP implementation on ecosystem processes, natural communities, and covered species;
- Chapter 6, *Plan Implementation*: Describes the timing and phases of conservation measure implementation, plan reporting procedures, regulatory assurances, changed circumstances and remedial measures, approach to addressing unforeseen circumstances, and permit amendment procedures;
- Chapter 7, *Implementation Structure*: Describes the institutional structure and organizational arrangements that will be established to govern and implement the BDCP. This chapter identifies the roles, functions, authorities, and responsibilities of the various entities that will participate in BDCP implementation;
- Chapter 8, *Implementation Costs and Funding Sources*: Outlines implementation cost estimates over the proposed 50-year term of the BDCP, including the costs related to each of its primary components, and also identifies likely funding sources;
- Chapter 9, *Alternatives to Take*: Satisfies an ESA requirement for Section 10 permits by describing alternatives BDCP considered that would either reduce the amount of "take" or increase the level of conservation of listed species; and
- Chapter 10, *Integration of Independent Science in BDCP Development*: Describes the role of independent scientific advice used to guide the development of the BDCP.

The draft Implementing Agreement is an agreement that would be entered into by DWR, CDFW, certain SWP and CVP contractor water agencies, USFWS, and NMFS to govern the implementation of the BDCP. The Implementing Agreement is required by the NCCPA, but is optional under the ESA. (Fish and Game Code Section 2820(b).) The stated purposes of the draft Implementing Agreement are to:

- Clarify the provisions of the BDCP and the processes the Parties intend to follow to ensure successful implementation of the BDCP in accordance with the take authorizations and applicable law;
- Ensure that each of the terms and conditions of the BDCP, the Implementing Agreement, the Permits, and the Incidental Take Statement are properly implemented;
- Set forth the remedies and recourse should any Party fail to perform its obligations;
- Delineate the responsibilities, financial or otherwise (including the commitment and management of resources), among the entities responsible for the financing and/or implementation of the BDCP;
- Satisfy the requirement that an NCCP include an implementation agreement containing provisions described in the NCCPA; and
- Set out the Assurances and Protections provided to the Authorized Entities.

The legal provisions of the draft Implementing Agreement are not the subject of CEQA and NEPA. The draft Implementing Agreement summarizes and incorporates the BDCP, therefore content in the Implementing Agreement on aspects of the Plan is duplicative of the BDCP itself.

The BDCP documents are also intended to satisfy other requirements of the NCCPA and/or ESA, such as requirements that the Plan:

- Contains a monitoring program;
- Contains an adaptive management program; and
- Ensures adequate funding.

As evident from the above, much of the substance of the BDCP documents relates to topics such as governance, funding, and administrative details that are not the subject of CEQA and NEPA. The plan area discussed in BDCP Chapter 5, *Effects Analysis*, is an area that the EIR/EIS does cover. However, the effects analysis of the BDCP is focused on covered species, whereas the EIR/EIS provides broader coverage by presenting a comprehensive analysis of environmental impacts over a full range of resource categories.

Where public comments are focused on the BDCP, an individual response is often provided, although it may note that the comment does not raise CEQA or NEPA issues.

Comments and Responses on Specific BDCP Chapters

The remainder of this master response is structured in accordance with the chapter structure of the BDCP. This structure is appropriate because the great majority of comments received on the BDCP were focused upon the subject matter of particular BDCP chapters. In each of the following subsections, the comments received are summarized, and addressed. If a BDCP chapter or subsection is not listed, comments on that topic were either not received or addressed only in individual comments.

BDCP Chapter 3, Conservation Strategy

BDCP Chapter 3 describes the BDCP conservation strategy. The conservation strategy is specific to the HCP/NCCP strategy and is not applicable to the non-HCP alternatives. The conservation strategy consists of a discussion of the approach and methodology for development of the conservation strategy; the description and basis for selection of biological goals and objectives that constitute the basis for evaluating the effectiveness of the conservation strategy; description of conservation measures that are intended, in aggregate, to achieve the biological objectives; and description of an adaptive management, monitoring, and research program to evaluate and guide the conservation strategy during BDCP implementation.

Comments on BDCP Chapter 3 addressed the biological goals and objectives, the conservation measures, and the adaptive management monitoring and research program. These are addressed in the subheadings below.

Besides these comments, there were many comments received through a comprehensive review of the BDCP prepared by an Independent Review Panel (IRP) convened by the Delta Science

Program;[88] additionally, many other commenters quoted or paraphrased the IRP's comments. In 2014, DWR prepared draft responses to all of the comments issued in the IRP report. That response document, *Delta Science Program Independent Review Panel Report: BDCP Effects Analysis Review, Phase 3* is provided as part of the references to this Final EIR/EIS. As shown in the Delta Science Program response document in Final EIR/EIS Appendix 11F, *Substantive BDCP Revisions*, revisions to the Draft BDCP have been planned that would address many of the comments. In addition, many of the IRP recommendations from the 2014 review have been followed in developing a revised effects analysis for Alternative 4A.

Biological Goals and Objectives

Under the non-HCP alternatives, all biological goals and objectives are void and would not be used to assess biological performance of the preferred alternative (Alternative 4A). The following remarks discuss how the biological goals and objectives would be used if the BDCP were implemented.

Some comments took issue with the global biological goals for delta smelt, longfin smelt, and green sturgeon. As noted in the BDCP, these goals have been established by the USFWS, CDFW, and NMFS. They provide a useful context, though, for Plan-specific objectives related to these species but the non-HCP alternatives are not evaluated to meet those goals.

Other comments took issue with the specific biological goals and objectives for delta smelt and also for both white and green sturgeon. We agree with commenters that it would be desirable to understand these species' biology and the responses of the Delta ecosystem well enough to state these goals more precisely and to more precisely describe how they would be attained. We also observe that there is no consensus regarding the implications of current scientific knowledge; commenters' varied and often conflicting descriptions of stressors to these species are evidence of that. Unfortunately the existing state of scientific understanding is not sufficient to achieve the desired level of certainty in understanding of the species' biology or in prediction of management outcomes. This is why the California WaterFix provides for an adaptive management program to address and reduce these uncertainties, and to implement management solutions, potentially including altered flow criteria (e.g. bypass flow criteria), based on the findings of that program.

Some commenters took issue with biological goals and objectives for plant and wildlife species. These comments were focused, though, on the conservation measures that would have been used to meet those goals, and thus are addressed in the following section on conservation measures.

Conservation Measures

A number of commenters took the view that *CM1 Water Conveyance Facilities* is not a conservation measure, in that it would not contribute to conservation of covered species. The BDCP describes the environmental benefit of the intended conservation outcomes associated with these conveyance facilities in detail that would contribute to conservation of covered species. Some other commenters also stated that *CM22 Avoidance and Minimization Measures* was not a conservation measure, because it served to minimize incidental take but not to contribute to the conservation of covered species. In recognition of this, and because the avoidance and minimization measures apply broadly to the project, the RDEIR/SDEIS and this Final EIR/EIS no longer present avoidance and

[88] Parker et al. 2014, *Delta Science Program Independent Review Panel Report: BDCP Effects Analysis Review, Phase 3*. Available: http://deltacouncil.ca.gov/events/science-program-review/independent-review-draft-bay-delta-conservation-plan-effects-analysi-1, accessed 2016.02.19.

minimization measures as a standalone conservation measure". The RDEIR/SDEIS and the Final EIR/EIS distinguish between "conservation measures" and "avoidance and minimization measures," and do not attribute conservation value to the avoidance and minimization measures. The particulars of the avoidance and minimization measures have been revised consistent with changes in project scope, and comments from fish and wildlife agencies and members of the public (see Master Response 22, *Standards Governing the Adequacy of Mitigation Measures* and Appendix 3B, *Environmental Commitments, AMMs, and CMs*, of this Final EIR/EIS).

Some commenters expressed concern about *CM2 Yolo Bypass Fisheries Enhancement* for various reasons. Note that the new preferred alternative (Alternative 4A), as well as the other non-HCP alternatives, would not implement CM2 and do not propose any actions affecting the Yolo Bypass. Concerns expressed regarding CM2 included potential conflicts with current agricultural and other land uses in the Yolo Bypass, with the role of the Yolo Bypass in flood control, and with other conservation plans, notably the Yolo HCP/NCCP currently in development. Any management actions taken in the Bypass under BDCP would be required to comply with *all* applicable laws, including, for instance, flood control statutes, easements, and land use regulations. The BDCP proponents also worked collaboratively with Yolo County stakeholders to minimize any conflicts with the Yolo HCP/NCCP or other existing or planned conservation efforts. Some commenters also contended that the proposed CM2 would not yield benefits for covered fish species commensurate with those predicted in the BDCP effects analysis. The lead agencies maintain that the forecast benefits are supported by substantial evidence as the benefits are clearly demonstrated by the models and data used in the analysis.

Other commenters remarked on the habitat protection and restoration conservation measures, CM3 to CM12. The most prevalent comment concerned the absence of specific locations for siting of these conservation measures; see Master Response 2, *Project- and Program-Level Analysis*, for an explanation of the need for and validity of using a programmatic approach in the design and siting of these large acreages of restoration. The preferred alternative (Alternative 4A) now uses substantially smaller restoration acreages compared to the original BDCP alternatives, and the restoration actions needed to reduce effects of the conveyance facilities are treated as mitigation measures in the EIR/EIS, requiring a reduced level of detail. Performance requirements for restoration sites, commitments for fish and wildlife agency approval of all restoration sites, and construction of restoration sites prior to impacts from water conveyance facility construction, are all precautions that assure restoration will be sited, approved, and built before other impacts of the preferred alternative.

Some commenters also expressed doubt whether sufficient areas of land would be available to meet the habitat protection and restoration measures described in BDCP. Analyses performed during BDCP development confirmed both that land use in the Plan Area provides sufficient areas of undeveloped or agricultural land to meet BDCP habitat restoration needs, and also, that sufficient land comes on the market on a year-to-year basis to provide a reasonable expectation that those needs could be met via purchase from willing sellers. The preferred alternative (Alternative 4A) now calls for a substantially smaller acreage of habitat restoration relative to that proposed under BDCP, which further simplifies the task of finding a sufficient area of land suitable for restoration.

Many commenters also expressed concern about impacts on certain species related to implementation of CM3 through CM12 (restoration, enhancement and protection measures). See Master Response 17, *Biological Resources*, and Chapter 12, *Terrestrial Biological Resources*, of this Final EIR/EIS with regard to impacts of the preferred alternative on greater sandhill crane, and

other sensitive species. BDCP's effects on these species were described and quantified in the BDCP. Many comments contradicted the statements in the BDCP document, but a few provided new information that warranted incorporation in the analysis. Such new information has been incorporated in the analysis, insofar as the preferred alternative still provides habitat protection and restoration for listed species to the extent needed to mitigate project impacts. The preferred alternative (Alternative 4A), however, covers a much smaller acreage and fewer species relative to BDCP.

Many commenters expressed concerns about *CM4 Tidal Natural Communities Restoration*. The comments generally contended that it would not be feasible to find sufficient lands to implement the proposed restoration (discussed above), or that the proposed restoration would not provide the forecast ecological benefits. The commenters' argument that the forecast ecological benefits would not emerge is founded primarily on uncertainties associated with restoring a large acreage of tidal wetland where specific sites that have not yet been designated or studied; some commenters cited speculative remarks from published sources in support of this contention. Despite this uncertainty, though, all of the fish and wildlife agencies concurred with the BDCP proponents in assuming the likelihood that sufficient lands could be obtained and judging creation of tidal wetland to have net beneficial consequences for aquatic life in the estuary, with likely benefits in particular for BDCP covered fish species, if restoration were implemented as proposed under CM4. Moreover, the current preferred alternative (Alternative 4A) would not implement CM4, and would perform tidal wetland restoration only to the extent needed to mitigate project impacts on existing tidal wetlands. See also the discussion of comments on BDCP Chapter 5, below.

There were also many comments on the "other stressor" conservation measures. A few commenters remarked on the uncertainties associated with *CM15 Localized Reduction of Predatory Fishes*. Indeed, the BDCP acknowledged the uncertainties and described them in detail. No revisions or changes to the discussion of uncertainties are warranted. Despite the acknowledged uncertainties, the fish and wildlife agencies supported implementation of CM15 , and continue to support an analogous program focused on the region of the proposed North Delta Diversions and in Clifton Court Forebay that would be implemented under Alternative 4A. As proposed in the BDCP and also in the preferred alternative, this program would not be assumed to have immediate beneficial consequences for native fish; rather, it would be implemented initially as a research activity, and would only be implemented on a sustaining basis insofar as it can be shown to achieve beneficial results.

Some comments expressed a desire for more information on the implementation and effects of *CM16 Nonphysical Fish Barriers*. In particular, there were many requests to quote lengthy, detailed passages from studies cited in the BDCP. These comments mainly served to demonstrate a point clearly stated in the BDCP: that there are substantial uncertainties about the effects and effectiveness of nonphysical barriers, and that continuing studies are planned in an effort to reduce that uncertainty. Consequently, addition of passages from the cited studies into the BDCP text itself is not warranted. It is noted that although BDCP is no longer the preferred alternative, the use of a nonphysical barrier at Georgiana Slough is part of the preferred alternative (Alternative 4A) and its use and effects are now described in greater detail in this Final EIR/EIS than was the case in the BDCP.

Many commenters remarked on *CM19 Urban Stormwater Treatment*. One of the most common comments was the allegation that CM19 represented unreasonable, unfair, or illegal requirements. These comments are inaccurate. CM19 would be a purely voluntary measure and consequently would not impose any new obligations or requirements on any jurisdiction. Other commenters

suggested that CM19 should be broadened to cover agricultural runoff. Since CM19 would be purely voluntary and would be funded by the BDCP proponents, the decision to focus its work on urban runoff is legitimate; moreover, CM 19 has conservation value for covered species, as described in the BDCP. Accordingly, the BDCP proponents did not choose to alter the scope of CM19. Other commenters took issue with the idea that urban stormwater contains constituents harmful to aquatic life. The literature to the contrary is vast, and examples are cited both in the Draft EIR/EIS and in the BDCP. Other commenters thought that CM19 was not sufficiently quantified, and required hard numbers in terms of performance metrics and resulting effects on water quality. This, however, is not practicable; since CM19 would be a voluntary measure, it is not possible to say what jurisdictions would apply for funding under the program, or what performance measures they would specify in their funding applications. Grants awarded under CM19 would simply go to those jurisdictions that could best show an expectation of measurable water quality improvements. Note, however, that CM19 is no longer an element of the preferred alternative, and no comparable activities are proposed under the preferred alternative.

Several commenters addressed *CM21 Nonproject Diversions*. The comments were generally supportive and recommended useful improvements to the specific provisions of the conservation measure, which generally have been made. Some comments expressed the opinion that take due to non-project diversions is an insignificant factor. Analyses contained within the BDCP, however, indicate otherwise. Note, however, CM21 is no longer included in the preferred alternative (Alternative 4A).

Adaptive Management, Monitoring, and Research

Many commenters addressed the BDCP adaptive management, monitoring, and research program, focusing in most cases on the adaptive management aspects of the program. This program was also a focus of the comprehensive review of the BDCP prepared by an IRP convened by the Delta Science Program;[89] additionally, many other commenters quoted or paraphrased the IRP's comments. The remainder of this section addresses comments that were not provided through the IRP review. The ISB and IRP review of the draft Plan and EIR/EIS have been included in the following locations: for responses to IRP recommendations please see Final EIR/EIS Appendix 11F; responses to the ISB comments are in included in Volume II of the Final EIR/EIS as part of the response to comments from the Delta Stewardship Council letters, coded within the response tables as *DEIRS 1448 and Recirc 2546*.

As a threshold matter, it is noted that although the Adaptive Management and Monitoring Program described in the BDCP is specific to the HCP/NCCP alternatives, an adaptive management program has nonetheless been retained as part of the preferred alternative (Alternative 4A) and the other non-HCP alternatives. While there are similarities, the Adaptive Management and Monitoring Program described in the BDCP should not be confused with the adaptive management program proposed with Alternatives 4A, 2D, and 5A. The latter is described in Final EIR/EIS Chapter 3, *Description of Alternatives*, Section 3.6.4.2. Please also refer to Master Response 33, *Adaptive Management and Monitoring*, which describes revisions to and details of the adaptive management program specific to the non-HCP alternatives (e.g. Alternative 4A) that were made subsequent to the release of the BDCP. Some commenters had specific suggestions for places or variables they thought

[89] Parker et al. 2014, *Delta Science Program Independent Review Panel Report: BDCP Effects Analysis Review, Phase 3*. Available: http://deltacouncil.ca.gov/events/science-program-review/independent-review-draft-bay-delta-conservation-plan-effects-analysi-1, accessed 2016.02.19.

should be subject to monitoring, or for specific studies they thought should be performed. Such comments, when relevant to the preferred alternative (Alternative 4A), have been responded to directly in individual responses to comments. Suggestions for other monitoring, such as would have occurred under BDCP but are no longer incorporated in the non-HCP alternatives, may be incorporated into the BDCP alternatives if one of those alternatives is ultimately selected and approved for the project. Nonetheless, some of the recommended studies may still be performed through the adaptive management proposed under the preferred alternative (Alternative 4A).

Commenters frequently argued the lack of specificity in the proposed monitoring and research actions. To respond to these comments, the lead agencies provided more detail in the Final EIR/EIS. In particular, potential monitoring and research actions have been tied to specific needs as expressed through the biological goals and objectives, or through key uncertainties regarding scientific understanding of Delta ecosystems. However, as noted above, these improvements to the program are included in the adaptive management program proposed under the preferred alternative (refer to Master Response 33 and Final EIR/EIS Chapter 3, *Description of Alternatives*, Section 3.6.4.4 for an overview of this program). That program is subject to direction and implementation by DWR, Reclamation, and the fish and wildlife agencies.

Similarly, comments regarding the structure, governance, funding, and operations of the Adaptive Management Team and the adaptive management program, including all aspects of the program (such as the Supplemental Adaptive Management Fund), are specific to the BDCP alternatives and would only be relevant if one of the BDCP alternatives with those elements were ultimately chosen and approved for the project. Furthermore, these issues do not raise CEQA or NEPA issues.

BDCP Chapter 5, *Effects Analysis*

BDCP Chapter 5 provides the analysis of effects on covered species. This consists of an introduction including the basis of the evaluation, the structure of the BDCP, the regulatory scope of the BDCP and other federal regulatory analyses, and actions evaluated; methods for the analysis; ecosystem and landscape effects; effects on natural communities; effects on covered fish; and effects on covered wildlife and plant species. General comments on BDCP Chapter 5 are discussed in the sections below. Besides these comments, and consistent with the situation noted previously for other BDCP chapters, there were many comments received in a comprehensive review of the BDCP prepared by the IRP convened by the Delta Science Program, with many commenters quoting or paraphrasing the IRP's comments. Please see *Delta Science Program Independent Review Panel Report: BDCP Effects Analysis Review, Phase 3* for a comprehensive response to the IRP's review[90].

For the preferred alternative (Alternative 4A), updated modeling and additional sensitivity analyses are provided in the Final EIR/EIS that include updated modeling assumptions (e.g. less habitat restoration, changing salinity compliance point, spring outflow criteria) to better reflect the Alternative 4A project description. In some cases, the updated modeling is directly incorporated into the impact assessments to provide further support to the impact determinations presented in the RDEIR/SDEIS. In other cases (e.g. EIR/EIS Chapter 11, *Fish and Aquatic Resources*), sensitivity analyses were performed to confirm the RDEIR/SDEIS determinations, which used BDCP H3 and H4 ELT scenarios as surrogates for Alternative 4A operations. Please see Appendix 11E, *Sensitivity Analysis to Confirm RDEIR/SDEIS Determinations for Fish and Aquatic Species Using Updated Model*

[90] http://deltacouncil.ca.gov/events/science-program-review/independent-review-draft-bay-delta-conservation-plan-effects-analysi-1

Outputs for Alternatives 2D, 4A, and 5A Analysis, of the Final EIR/EIS for more information. Also, see Final EIR/EIS Appendix 5F for a comparison of the RDEIR/SDEIS hydrological modeling results versus the updated modeling included in the Final EIR/EIS.

Summary of General Comments on BDCP Chapter 5

A number of commenters asserted that the BDCP failed to demonstrate that the CMs minimized or mitigated adverse effects to the maximum extent practicable, and that the BDCP did not meet the requirements of an HCP/NCCP. Note that with the selection and ultimate approval of the preferred alternative (Alternative 4A) for the project, the BDCP is irrelevant as the regulatory agencies (USFWS, NMFS, and CDFW) will be issuing incidental take permits pursuant to ESA Section 7 and CESA Section 2081; during the course of this permitting process, the regulatory agencies will determine the adequacy of take mitigation through the various mitigation measures discussed in the RDEIR/SDEIS and Final EIR/EIS.

A number of commenters suggested that the BDCP should mitigate for climate change and/or upstream temperature effects. For discussion of climate change, please see Master Response 19, *Climate Change and Greenhouse Gas Emissions*. For discussion of upstream reservoir effects, please see Master Response 25. For discussion regarding treatment of the whole of the action in the EIR/EIS, see Master Response 8, *Analysis of the Project as a Whole*. For discussion regarding treatment of baseline conditions in the EIR/EIS, please see Master Response 1, *Environmental Baselines*.

Summary of Specific Comments on BDCP Chapter 5

Tidal Habitat Restoration Effects

Many comments were received on the proposed extensive tidal habitat restoration and its potential effects on covered species, particularly with respect to uncertainty of whether habitat restoration would benefit covered fishes such as the Delta and longfin smelts. The lead agencies acknowledge that uncertainties exist but these have been factored into the analysis and conclusions on the benefits of tidal habitat restoration to covered fish species. As described in the effects analysis, the BDCP's conclusions considered the input of agency biologists during August 2013 workshops, at which uncertainty about the outcomes of restoration was noted and expressed by providing qualitative conclusion statements in the BDCP Chapter 5 analysis. Analyses of the potential effects of the BDCP's proposed restored tidal habitat on covered fishes such as delta smelt represented a working hypothesis of the relationship between *CM4 Tidal Natural Communities Restoration* actions, environmental attributes (stressors), and biological importance. The analysis identified the main uncertainties in potential outcomes of the BDCP. For example, for delta smelt the principal uncertainties related to the production and export of foodweb materials from restored tidal habitat, and the suitability of restored habitat for occupancy. Reflecting this uncertainty, a suite of monitoring actions were proposed that could be used to assess the effectiveness of tidal habitat restoration. Paramount among these were the assessment of restored habitat use by delta smelt and other covered fish species; a regional food supply study for covered fishes; a study of habitat quality for delta smelt; and a study of habitat extent in the Cache Slough sub-region. The potential for production and export of foodweb items from restored tidal habitats has a number of key uncertainties that prompted the proposal of a number of possible research actions, including: quantifying primary and secondary production (particularly food for covered fishes such as delta smelt) within restored areas (and export to adjacent areas); assessing how hydrodynamic changes

associated with tidal restoration affect flux of organic carbon; and determining the extent and effects that nonnative species (e.g., clams) have on restoration effectiveness. In association with these studies, the BDCP (Section 5.F.6.4 of BDCP Appendix 5.F, *Biological Stressors on Covered Fish*) notes that potential research to reduce uncertainty about invasive mollusk occurrence would include investigation of constraints limiting larval transport, settlement and establishment; the role of nutrients in facilitating invasion; and potential control mechanisms for invasive mollusks.

As noted in the BDCP's analysis of restored habitat, *CM13 Invasive Aquatic Vegetation Control* was proposed to limit colonization of restored habitat and other portions of the Plan Area (the legal Delta and Suisun Marsh) by invasive aquatic vegetation, using an early detection and rapid response program. Potential research to address uncertainty associated with CM13 would have included assessing tidal restoration designs to limit invasive aquatic vegetation and assessing the extent to which BDCO operations have affected Delta hydrodynamics and therefore potential for IAV colonization; additional uncertainties and research needs related to invasive aquatic vegetation were described in Section 5.F.4.4 of BDCP Appendix 5.F, *Biological Stressors*. Knowledge gained from research and monitoring of the issues related to restored tidal habitat would have allowed adaptive management to refine and prioritize restoration actions in order to achieve the BDCP's proposed species-specific biological objectives. Should criteria for success of tidal habitat restoration (e.g., occupation by delta smelt, extent of suitable habitat acreage, production/export of suitable food) not have been met, adaptive management would have allowed implementation of contingency measures such as topographic recontouring of restoration sites.

As described in the above section discussing BDCP Chapter 3, *Conservation Strategy*, the preferred alternative (Alternative 4A) would not implement CM4, and would perform tidal wetland restoration only to the extent needed to mitigate project impacts on existing tidal wetlands. Many of the above points remain relevant to this greatly reduced mitigation effort, as well as for larger-scale restoration efforts in the Delta, such as those proposed under the California EcoRestore program. The California EcoRestore program is a separate program from California WaterFix, which is being implemented to protect, enhance and restore Delta habitat. For updated information regarding EcoRestore, please refer to the webpage at: http://resources.ca.gov/ecorestore. For additional information regarding habitat restoration related to compliance with the Biological Opinions, please see http://www.water.ca.gov/environmentalservices/frpa.cfm

Illegal Harvest and Effects of CM17

Several commenters questioned the effects analysis' assessment of the magnitude of the illegal harvest as a stressor on covered fishes and the potential for *CM17 Illegal Harvest Reduction*, to reduce the effects of the stressor. The lead agencies acknowledge that the effects analysis relied primarily on the best professional judgement of CDFW biologists and law enforcement personnel to assess the importance of illegal harvest and the potential effectiveness of CM17. As described in Section 3.4.17 of BDCP Chapter 3, the main uncertainties associated with CM17 included whether increased enforcement would reduce illegal harvest and whether increased enforcement would have beneficial effects on covered fishes. Through year-round monitoring of the number, type, and distribution of citations and arrests, these uncertainties would have been evaluated by examining changes in the incidence of illegal take of covered species (especially Chinook salmon, steelhead, and sturgeon) and assessment of whether changes in abundance and population dynamics could be attributed to reductions in illegal harvest.

Net Effects Methods

Some comments focused on the BDCP's net effects assessment, with issues ranging from a perceived lack of transparency to broader concerns regarding the appropriateness of the conclusions. The Independent Review Panel also raised concerns regarding the net effects analysis; please see *Delta Science Program Independent Review Panel Report: BDCP Effects Analysis Review, Phase 3* for this discussion. With respect to transparency, commenters were concerned that the opinions provided by the agency biologists during August 2013 were not fully captured in the analysis leading to the net effects conclusions. Although scoring worksheets were provided to the biologists and not all were returned. However, conclusions were not based solely on the worksheets but also based on the discussion at the workshops. The summaries provided in the BDCP aimed to capture the range of opinions regarding importance of attributes and the magnitude and certainty regarding potential effects from the BDCP. The ultimate conclusions of the net effects analysis reflected consideration of the uncertainty in the individual quantitative and qualitative analyses for each species.

Assessment of Biological Goals and Objectives

Commenters remarked that relatively few of the biological goals and objectives could be quantitatively assessed, and for those few, the analyses did not demonstrate that the goals would be attainable (e.g., the analysis did not show attainment of through-Delta survival objectives for juvenile salmonids). Quantitative assessment of all goals and objectives is not possible. As described in the section discussing BDCP Chapter 3, *Conservation Strategy*, the existing state of scientific understanding is not sufficient to achieve the desired level of certainty in understanding of the species' biology or in prediction of management outcomes. For the juvenile salmonid through-Delta survival example, the existing quantitative methods employed in the effects analysis are focused on operational effects, and have limited capacity to quantify the possible outcomes of the variety of conservation measures that were proposed in the BDCP. This results in uncertainty regarding attainment of biological goals and objectives. Uncertainty in management outcomes remains relevant to the preferred alternative and, as discussed in the above section responding to comments on BDCP Chapter 3, *Conservation Strategy*, this is why the preferred alternative includes an adaptive management program to address and reduce these uncertainties, and to implement management solutions, potentially including altered flow criteria, based on the findings of that program. Please see Final EIR/EIS Chapter 3, *Description of Alternatives*, Section 3.6.4.2 and Master Response 33, *Adaptive Management and Monitoring,* concerning adaptive management associated with the non-HCP alternatives.

Reporting of Results of the Modeling Analysis of the BDCP

Several comments focused on the method of reporting results of the effects analysis (for additional discussion of modeling for the BDCP alternatives, and non-HCP alternatives, see Master Response 30, *Modeling Approach and Availability of New Versions of the Models*). Some comments expressed concern that the focus of the analysis was the late long term (50-year) outcomes, given that favorable early long term (25-year) outcomes may be prerequisite to favorable late long term outcomes. It is true that the conclusions of the effects analysis focused primarily on the 50-year potential outcomes, although 25-year outcomes were also reported. The BDCP's 50-year planning horizon led to the focus on the late long term outcomes; with the selection of a preferred alternative that seeks ESA Section 7 consultation and a California Fish and Game Code Section 2081(b) incidental take permit, the focus of the effects analysis is appropriately shifting to the near term and 25-year outcomes, reflecting the greater emphasis on construction and initial operations effects

following completion of construction. Related to this, comments were received expressing concern about the comparison of longfin smelt potential abundance outcomes in future time frames, given the potential for shifts in the estuarine salinity field and Delta outflow as a result of climate change.

A number of commenters thought that reporting of quantitative results in terms of water-year averages is problematic, contending that potentially adverse differences in individual years could be masked by this approach. Given that the quantitative modeling for biological outcomes relied on foundational modeling from a broad-scale planning model (CalSim), the use of water-year averages was appropriate (and remains appropriate for analyses of the preferred alternative and other alternatives in this Final EIR/EIS). In addition to water-year averages, individual years were considered in the form of exceedance plots to provide assessment of broader trends, rather than focusing on specific differences within relatively few years. The effects analysis for the BDCP as well as the analysis of the preferred alternative emphasize that the models are used for comparative purposes and not intended to predict specific outcomes. In addition, reliance on real-time operations, in which operations are adjusted in such a way as to minimize effects on covered fishes, is challenging to model quantitatively. Please also see Master Response 30, *Modeling Approach and Availability of New Versions of the Models*.

Characterization of Ammonia/Ammonium in the Plan Area and Potential BDCP Effects

Several commenters took issue with the characterization of ammonia toxicity and ammonium effects on the foodweb in the Plan Area. The lead agencies have taken into consideration that there is some uncertainty in the potential future effects of reductions in ammonium loading with required wastewater treatment plant upgrades, as well as in the existing toxic effects on covered fishes or their prey. Commenters also suggested that the effects analysis erroneously concluded that restoration activities would not affect ammonia conditions in the Plan Area. Although there was relatively little analysis of potential changes in ammonia conditions from habitat restoration in the BDCP; further examination has been provided in Final EIR/EIS Chapter 8, *Water Quality*, under Impact WQ-2: *Effects on Ammonia Concentrations Resulting from Implementation of CM2–CM21*, which concludes the effect of the BDCP alternatives would be less than significant/not adverse. Note that the magnitude of any effect would be considerably less under the preferred alternative, because of the relatively small extent of habitat restoration required for construction and operation mitigation of proposed facilities, compared to the large extent of restoration proposed under the BDCP. For additional information, please refer to Master Response 14, *Water Quality*, and Chapter 8, *Water Quality*, of the Final EIR/EIS.

BDCP Chapter 6, Plan Implementation

Some comments expressed concern that mitigation would not be implemented prior to the impacts of the activities or projects covered by the BDCP, including the proposed water conveyance facility. Other comments took issue with the federal and state "No Surprises" assurances associated with the federal and state take permits, stating that such assurances were not available to federal agencies.

Conservation Action Schedule

The proposed schedule to implement all of the conservation actions in BDCP is described in BDCP Chapter 6, Tables 6-1 and 6-2. These tables describe the timetable associated with each conservation action, including all habitat restoration. The restoration schedule was designed to ensure that restoration occurs ahead of or at the same time as project impacts.

As described in BDCP Chapter 3, the conservation strategy was designed to account for the time lag expected between impacts and mitigation. The NCCP Act requires that the BDCP maintain rough proportionality between impacts and conservation at all times. This means, for example, that if 10% of the total impacts occur, 10% of the total conservation must also occur. Chapter 6 of the BDCP describes the process by which rough proportionality will be measured and tracked to ensure compliance. Conservation requirements go beyond mitigation, so this means that in most cases, land acquisition and restoration will stay ahead of impacts. Regardless, the amount and types of conservation measures proposed were designed to offset the time lag that may occur between impacts and offsets.

No Surprises Assurances

The No Surprises assurances requested by the BDCP applicants for the BDCP alternatives are described in detail in BDCP Chapter 6. Some commenters pointed out that the federal No Surprises rule does not apply to Reclamation, which is correct. Reclamation would use the BDCP as the basis for a biological assessment to support the issuance of take authorizations from USFWS and NMFS for its actions in the Delta pursuant to Section 7 of the ESA.

Other commenters expressed concern that the No Surprises assurances were too strong and inflexible and would cause species to go extinct. Note that the assurances provided by the No Surprises rule are not absolute. The Permit Revocation rule provides that in instances where a species covered by an HCP is threatened with extinction, assurances may be voided and NMFS or USFWS may revoke the HCP permit (50 Code of Federal Regulations [CFR] 17. 22(b)(8)). This may occur even if a permittee is in compliance with the terms and conditions of the permit. Although NMFS or FWS have never exercised that authority in the history of the ESA, they still have the ability to do so.

BDCP Chapter 7, Implementation Structure

Some comments expressed concerns with the governance structure proposed in the BDCP and suggested additional members, a different organization, or different decision-making authority. Some comments also questioned the purposes of the Implementing Agreement or its 60-day public comment period at the end of the BDCP comment period.

Under non-HCP alternatives (federal ESA Section 7 consultation and a state Section 2081(b) CESA permit), a complex implementation and governance structure is unnecessary and not required. Instead, the entities receiving the federal and state authorizations, DWR and Reclamation, will manage and oversee implementation of the required mitigation associated with those authorizations as is currently done in all similar project authorizations under ESA Section 7 and state Section 2081(b) permits.

Real-time operations (RTO) under the non-HCP alternatives will be available at the head of Old River gate and the north and south Delta diversion facilities. RTO will take into account upstream operational constraints, such as coldwater pool management, instream flow, and temperature requirements, in addition to in-Delta environmental conditions to minimize and avoid potential project effects to fish species. The extent to which real time adjustments that may be made to each parameter related to these facilities shall be limited by the criteria and/or ranges is set out in Table 3-7 in Final EIR/EIS Chapter 3, *Description of Alternatives*. RTO will be implemented to maximize water supply for CVP/SWP, subject to providing the necessary protections for listed species, through the existing decision-making process and related technical work teams. For information on

operational criteria under Alternative 4A, please see Master Response 28, *Adequacy of Operational Criteria*. For a description of the adaptive management program, including the role of the Collaborative Science and Adaptive Management Team, please see Final EIR/EIS Chapter 3, *Description of Alternatives*, Section 3.6.4.4. Also, see Master Response 33, *Adaptive Management and Monitoring,* for additional discussion on the adaptive management program.

Governance

The implementation structure proposed in the BDCP for the BDCP alternatives and described in BDCP Chapter 7, *Implementation Structure*, was the result of many years of negotiation between DWR, Reclamation, the participating state and federal water contractors and the state and federal fish and wildlife agencies. The proposed implementation structure balanced the needs of the fish and wildlife agencies to oversee the implementation of the HCP/NCCP and the needs of the permittees (DWR and the participating water contractors) to direct the day-to-day implementation of the conservation plan. The governance structure also attempted to balance the need to involve stakeholders in the decision-making process while vesting the authority for final decisions with the permit holders and entities funding plan implementation. Table 7-1 of the BDCP clearly outlines the decision-making authority for key decisions to be made throughout plan implementation. As described in this table, the Stakeholder Council would provide input to numerous key decisions. However, final decision-making authority would rest with the Authorized Entity Group (i.e., the permittees plus Reclamation), the BDCP Program Manager, the Permit Oversight Group (which includes state and federal fish and wildlife agencies), or a combination of these groups or individuals.

For the BDCP alternatives, the membership and function of the Adaptive Management Team was designed to vest substantial input with a group of senior managers and scientists to administer the adaptive management and monitoring program. As described in more detail in BDCP Chapter 3, Section 3.6, the Adaptive Management Team would have primary responsibility to develop performance measures and propose modifications to conservation measures or to the biological goals and objectives. The Adaptive Management Team would operate by consensus from a wide range of scientific perspectives to help monitor and improve BDCP implementation.

Many comments on the governance process recommended additional members of the Authorized Entity Group (e.g., Delta landowners) or recommended increased decision-making authority for the Stakeholder Council. Decisions are made by the BDCP Program Manager or the Authorized Entity Group because these entities are responsible for compliance with the federal and state endangered species permits, and they are paying for the mitigation share of BDCP. However, if any alternatives are selected that include the BDCP, the implementation structure would be revisited with these comments in mind. However, the preferred alternative (Alternative 4A) as well as Alternatives 2D and 5A do not include an HCP or NCCP or an Implementing Agreement as required by the NCCPA. On May 30, 2014 the U.S. Department of the Interior and the California Natural Resources Agency released the "Draft Implementing Agreement for the Bay Delta Conservation Plan" (Implementing Agreement, or IA) for a 60-day public review and comment period consistent with state and federal requirements. The Draft Implementing Agreement was posted to the website and available in hard copy at the NMFS and DWR document repositories. The review period closed on July 29, 2014, overlapping with the public review period for the BDCP, which also ended on July 29, 2014. The preferred alternative (Alternative 4A) no longer includes an HCP or a NCCP, so an Implementing Agreement is no longer required. However, public comments received on the draft Implementing

Agreement will help inform changes that may be made to the agreement in the event that a BDCP alternative is ultimately selected and approved for the project.

Many of the comments on the implementing agreement go beyond the purpose and function of an implementing agreement. This is addressed below.

What is the Purpose of the Implementing Agreement?

The NCCPA requires that participants in an NCCP and CDFW enter into an implementing agreement (IA). Although not required by the federal ESA, IAs are routinely executed as part of the ESA Section 10 permitting process for habitat conservation plans. An IA generally describes the roles and responsibilities of the Permittees and the fish and wildlife agencies regarding the implementation of a conservation plan such as the BDCP. IAs also establish the commitments of the parties concerning a range of matters, including conditions for species coverage, implementation of conservation measures and the adaptive management and monitoring program; plan governance; funding; regulatory assurances and protections; compliance requirements and remedies.

What Does the Implementing Agreement Do?

The draft IA defines the obligations of the Department of Water Resources, the participating public water agencies, the state and federal fish and wildlife agencies, State of California, and the United States regarding the implementation of the BDCP. Many key elements of the BDCP are incorporated by reference, such as the conservation strategy, governance structure, implementation schedule, and public funding to be made available by state and federal governments. The draft IA also includes new and supplemental information, including the relationship of the BDCP to future regulatory processes; regulatory assurances that are anticipated to be provided to the Department of Water Resources and the public water agencies; remedies and procedures in the event of a funding shortfall or a failure to comply with the terms of the Agreement, the Plan or the associated permits.

BDCP Chapter 8, Implementation Costs and Funding Sources

Many comments received on costs and funding claimed that the costs of BDCP have been substantially underestimated because either 1) debt service on any public bonds is incorrectly excluded, or 2) the actual costs of construction of the new water conveyance facility will be much higher than estimated due to cost overruns typical of large public infrastructure projects such as the Oakland-San Francisco Bay Bridge. Some commenters expressed a desire for more detail in the cost estimates in order to meet state and federal regulatory standards. Other commenters expressed concern that the cost of property tax revenue replacement was omitted from BDCP. These comments are addressed below.

Accounting for Debt Service

Project costs for BDCP were reported in both 2012 undiscounted dollars and discounted present value dollars. In undiscounted dollars, the cost estimate takes into account any interest that would need to be paid on bonds issued to raise funds, known as “debt service”. As is explained below, cost and funding estimates therefore already account for the interest costs associated with debt financing because of how costs are reported in the BDCP (and for the preferred alternative). Costs are reported in undiscounted current dollars, meaning that costs assume all spending occurs in the reporting year (2013 in the case of the BDCP). Because almost all costs will be incurred in the future, *the undiscounted current dollar estimates are the same as future spending plus interest*. Financing the

project with debt does not add appreciably to the cost of the project provided the cost of financing is close to the discount rate used for the Plan's cost estimates and debt issuance occurs when the funds are needed, both of which are expected to be the case for the preferred alternative. The primary cost of debt financing is associated with the transaction costs of selling bonds. These costs tend to average less than 1 percent of the face value of the debt for large projects. For the Draft BDCP, these financing costs were estimated at approximately $114 million. (Financing costs for the current proposed project are expected to be similar.) Such financing costs will be added to the proposed project cost estimates in the final plan. See below for a more complete explanation of how financing debt works, including a simple example to consider that is analogous to BDCP. This example may help the reader to understand why the cost estimates in BDCP Chapter 8 already account for bond interest.

Understanding Cost and Benefit Estimates in BDCP Planning Documents and How they Related to Debt Service

Depending on the context, cost and benefit estimates may be presented in terms of *undiscounted future value* or *discounted present value*. Future value costs and benefits can be presented with or without expected inflation. If the estimate includes expected inflation, it is termed a nominal dollar estimate. If it excludes expected inflation it is termed a constant dollar estimate. For the purpose of the proposed project, all future value estimates are presented in constant dollars—that is, they are expressed without inflation. Future values differ from present values not only because of inflation. They also differ because a dollar expended or received today typically has more value than a dollar expended or received in the future. That is because a dollar received or expended today could be invested and earn a return in the future. The difference in value between dollars expressed in present value and dollars expressed in future value depends on the time invested and the assumed rate of return. Under the proposed project, future values are discounted into present values using a 3% real rate of return. Expressing future costs and benefits in present value terms is a standard economic approach that is used extensively to evaluate the economic value of large public and private infrastructure projects.

Here we provide explanations of these concepts and illustrate how they relate to one another through a simple example. We also address the question of future interest costs in cases where some of the project is financed with debt.

An Example

Consider a hypothetical plan formulated in 2016 to build a project in 2024. Based on the costs of materials and other prices in 2016 it is estimated this hypothetical project would cost $100 million. This is the estimate of the cost to build the project in 2024 given the purchasing power of a dollar in 2016. Assuming positive inflation between 2016 and 2024 actual cash needed to build the project in 2024 would be more than this amount. Supposing price inflation is expected to average 2% annually over this period, the cash required in 2024 to build the project would be about $117 million. This is referred to as the *undiscounted nominal cost* of the project. The first cost estimate based on 2016 prices is referred to as the undiscounted constant dollar (or real) cost of the project. The undiscounted nominal cost estimate includes expected inflation while the undiscounted constant dollar cost estimate leaves it out.

Note two things. First, a constant dollar estimate must link to a specific reference year. That is to say, a cost expressed in constant dollars is relative to the costs of goods and services for the reference

year. In the case of this example, the reference year is 2016. Second, a constant dollar estimate can be converted to a nominal dollar estimate (and vice versa) if one knows the expected rate of inflation. They are different but related ways of expressing the same cost. Whether to use one over the other depends on the purpose to which it is being put. Constant dollar estimates, for example, are useful for comparing costs across time because relative differences are not obscured by the effects of inflation. Nominal costs are useful for cash flow analysis where it is important to understand how much actual cash will be needed at different points in time. All cost estimates are presented in the BDCP in 2012 constant dollars (the last full year for which inflation data was available prior to publication of the Draft BDCP) to facilitate cost comparisons across the multi-year permit term.

In the hypothetical example, the $100 million 2016 constant dollar estimate and the $117 million nominal cost estimate are both undiscounted future value cost estimates of the project. The present value cost of the project is the amount of money that would need to be invested in 2016 to have on hand enough money to pay for the project when it is built in 2024. Suppose that money invested can earn a return of 5% annually. At this rate of return, investing a little more than $79 million in 2016 would yield $117 million—the nominal cost of the project—in 2024. Given this rate of return, we can say that the present value cost of the project is a bit more than $79 million.

The rate of return is sometimes referred to as the *discount rate* and it plays a key role in determining the present value cost of the project. If the discount rate had been 6% rather than 5%, the needed amount of investment—the present value cost of the project—would decrease to about $74 million. If it had been 4%, the needed amount of investment would increase to about $85 million. In other words, the higher the discount rate the lower the present value cost of a project and vice versa. The choice of discount rate is given close scrutiny for large capital projects because the discount rate has such a large effect on present value calculations.

The discount rate can be thought of as a price.[91] Like other prices it can be expressed in real (i.e. inflation-adjusted) or nominal terms. When it is expressed in nominal terms it includes expected inflation. When it is expressed in real terms it excludes expected inflation. Nominal discount rates can only be applied to nominal costs and real discount rates can only be applied to real (i.e., constant) dollar costs. In this example, the nominal discount rate is 5% and the expected rate of inflation is 2%. This corresponds to a real discount rate of 3% (i.e., 5% minus 2%).[92] Investing $79 million in 2016 at 3% would yield $100 million in 2020, which is the 2024 cost of the project expressed in undiscounted 2016 constant dollars. This illustrates a key point: *Whether future costs are expressed in nominal or constant dollars, the present value cost will be the same.* There is only one present value cost for a given nominal discount rate and expected rate of inflation.

Why does the BDCP go to the trouble of expressing costs and benefits in present value instead of the easier-to-understand undiscounted dollars? Present value enables comparisons of costs and benefits that are expected to occur at different points in the future. Suppose, for example, our hypothetical project would yield $15 million of benefits (in 2016 constant dollars) per year starting in 2025 and that these benefits are expected to persist for 10 years. Can we say the benefits of the project exceed the costs? If we simply sum up the benefits over 10 years we get $150 million. This compares to a cost of $100 million (again in 2016 constant dollars). On the surface, this project looks like a good

[91] It is the price to trade a dollar today for a dollar in the future.

[92] The actual formula for converting a nominal discount rate to a real discount rate is a little more complicated, but subtracting the expected rate of inflation from the nominal rate provides a very close approximation.

investment because the benefits appear to exceed costs by $50 million (50%). However, the problem with this comparison is that all of the cost would be incurred in 2024 while the benefits would not be fully realized until 2034. Simply summing the benefits in our example project for 10 years after project construction overstates their actual value because each of the 10 years of benefits is treated the same. In fact, the economic benefits of the project decline over time when expressed in present value because of the effects of inflation and the declining value of a dollar.

The difference between present value benefit and cost is referred to as the "net present value" of the project. Positive net present value indicates the project has the potential to make us better off economically while negative net present value indicates the project would likely make us worse off economically. The estimated costs and benefits of the BDCP are expressed in terms of present value to facilitate these types of comparisons that are described in BDCP Chapter 9.

Debt Financing

Last, we consider how a decision to finance our hypothetical project with debt would alter our previous cost estimates. If we finance the hypothetical project with debt, we would have to pay interest until the debt is paid off. Suppose we decide to finance the entire hypothetical project with debt by selling a $117 million bond in 2024 ($117 million is the nominal cost estimate of the project and the expected cash needed in 2024 to build it). The bond has a 10-year maturity and pays 5% interest. To repay the bond we would need to make annual principal and interest payments of a bit over $15 million per year starting in 2025 and ending in 2034. Over 10 years we would have paid out close to $152 million, which is $35 million more than the nominal cost of the project in 2024. Does this mean our cost estimate should be increased by $35 million? The answer is no. Consider the $15 million payment made in 2034. The value of this payment in 2020 is not $15 million but something lower. Given our discount rate of 5%, the value of this payment in 2024 is only about $9.2 million. Similarly, the value in 2024 of the payment made in 2033 is only about $9.7 million. If we discount all the other payments back to 2024 and sum them all up we will see they total $117 million, which is the nominal cost of the hypothetical project. Similarly, if we discounted the principal and interest payments back to 2016 and summed them up they would total a bit more than $79 million, the present value cost of the project. Thus, the decision to finance the project with debt does not alter its cost.

This last result depends on three important assumptions we have made in our hypothetical project. The first is that the interest rate we must pay on the bond is the same as (or at least very close to) the discount rate we use to calculate present value. This was the case for the BDCP, which used a nominal discount rate of 5%, which is very close to the state's current borrowing cost.[93]

The second assumption is that we could sell the bond in the same year in which we need the funds for the project. If we had to sell the bond well in advance of when we need the money for the project then there could be some additional interest cost. This additional cost would be partly offset by our ability to invest the bond proceeds until we need the money for the hypothetical project. However, it is likely such investments would yield a lower rate of return than the interest cost of the bond and thus there would be some additional cost. This was not anticipated to be a significant cost for the

[93] Interest paid by California on recently sold General Obligation Bonds is reported by the State Treasurer's Office (www.buycaliforniabonds.com/bcb/yield.asp). Sales of Various Purpose General Obligation Bonds on or about October 22, 2013, with long maturities (more than 10 years) have paid interest between 4.875 and 5.000 percent.

BDCP because the state and other entities that would issue bonds to finance their portion of the project costs generally have the ability to sell their bonds close to when the funds are needed.

Third, our hypothetical example assumed no up-front cost to sell the bond. This is generally never the case. In reality there are legal fees and underwriting costs associated with selling bonds that represent a real cost of issuing the debt. A recent study by the California Debt and Investment Advisory Commission found issuance costs to average about 0.74% of a bond's face value for bonds of $75 million or more. Additionally, certain types of bonds (such as revenue bonds) require reserves be set aside for collateral, which means this money would not be available for other purposes.[94] For our example hypothetical project, the legal and underwriting costs would add a bit less than $1 million to the nominal cost of the project in 2024 and a bit more than $0.5 million to its present value cost. The amount of BDCP costs to be financed with debt was not determined, but we can consider the upper-bound of what legal and underwriting costs might be. For example, the estimated capital costs for the BDCP was approximately $15.4 billion in 2012 dollars. Assuming this cost is financed entirely with debt, the cost for legal and underwriting services would be about $114 million ($15.4 billion x 0.74%).[95]

Cost Estimates are Provided at an Appropriate Level of Detail

Some commenters expressed a desire for more detail on the cost estimates in the BDCP. Chapter 8 of the BDCP outlines the planning-level cost estimates for the project to satisfy the federal and state regulatory requirements for the BDCP alternatives. The federal ESA requires that HCPs specify "the applicant will ensure that adequate funding for the plan will be provided" for conservation actions that minimize and mitigate impacts on covered species (United States Code [USC] 1539(a)(2)(A)). The NCCPA similarly requires that NCCPs contain "provisions that ensure adequate funding to carry out the conservation actions identified in the Plan" (California Fish and Game Code 2820(a)(10)). The level of detail provided for the cost estimate in BDCP Chapter 8 was designed to meet these regulatory standards.

If a BDCP alternative is ultimately selected and approved for the project, these estimates would be refined and further developed as the design of the water conveyance facility and other elements of the plan are advanced. Note that for the non-HCP alternatives, there is no requirement under ESA Section 7 to provide cost or funding assurances. Under the CESA, issuance of a permit under Section 2081[b] requires that the applicant ensure adequate funding to implement mitigation measures required by the permit before a permit may be issued. Additional detail regarding funding for the Section 2081 permit may be found in the DWR's 2081 [b] permit application dated October 2016, which can be found at the following link:

> http://cms.capitoltechsolutions.com/ClientData/CaliforniaWaterFix/uploads/CWF_2081b_10716.pdf.

At the time of preparation of the Draft BDCP, the water conveyance facility design was approximately 10% complete. A 10% level of design is typical of infrastructure projects at the public draft stage of the environmental review process. Large investments in the final engineering designs cannot be made until the environmental clearance and related environmental permits are obtained.

[94] The reserves could potentially be invested. Such investments would need to be a very low risk and easy to sell (and thus low returning) and would not be expected to fully defray the opportunity cost of not being able to use the funds for other purposes.

[95] The nominal future value amounts, of course, would be much larger.

It is common that projects are redesigned through the environmental review process, so waiting to complete final engineering design until after the environmental process is completed saves very costly engineering changes.

The detailed cost estimate for the facility was developed to take into account this preliminary level of design. The cost estimate in the BDCP has a range of minus 10% to plus 30% (i.e., costs could be 10% lower or 30% higher than estimated). Cost uncertainties may result from not fully completed project designs at the time of permitting, unforeseen and unpredictable conditions, or uncertainties within the defined project scope. To account for these uncertainties, the cost estimates include standard contingencies of 20–30% and in some cases are as high as 50% where cost uncertainties are highest.

In summary, the cost estimate in BDCP Chapter 8 is at an appropriate level of detail and accuracy for a planning level estimate for the ESA Section 10 and NCCPA endangered species permits from the state and federal governments which are proposed for any alternative that includes BDCP.

Why Large Cost Overruns are Not Likely

Some commenter's expressed concern over the potential for large cost overruns for BDCP similar to what was experienced in building the San Francisco-Oakland Bay Bridge in California or the "Big Dig" transportation project in Boston, Massachusetts. Commenters are correct that any large infrastructure project has the potential for cost overruns. However, the estimates of the cost of building and operating the proposed water conveyance facility have been designed to minimize these risks by including cost contingencies (see above). Furthermore, the organizational structure of the team that would manage construction of the conveyance facility will be designed to further minimize this cost overrun risk. One of the most important factors for a project of this scope to adhere to cost estimates is to ensure that the cost estimate itself is accurate and accounts for cost uncertainty. The cost estimate of construction of the water conveyance facility is based on a Class 3 cost estimate that incorporates a conservative 35% contingency to reflect the current level of project design. During project implementation it will be important to further minimize risks of cost overruns through a combination of risk management, clear and frequent communication, and clear lines of authority for quick decision-making.

The issue of conveyance system construction costs and potential for cost overruns, while not a CEQA or NEPA subject, is an issue that is common to both the BDCP alternatives and the non-HCP alternatives. Continued planning and engineering work since the release of the Draft EIR/EIS has further minimized the potential for large construction cost overruns. On January 15, 2016, DWR released the draft Agreement between DWR and the participating public water agencies that spells out many of the organizational and decision-making safeguards that would be put into place during project implementation to minimize the risks of cost overruns. This proposed governance structure and safeguards would be implemented in DWR's Design and Construction Enterprise (DCE), established in June 2014 for the sole purpose of designing and constructing the proposed water conveyance facility. In particular, Exhibit B-1 of the Agreement documents the organizational structure, functions, and roles proposed for the managers of the DCE. Section E of Exhibit B-1 describes specific program controls relating to budget, schedule, quality, contracting, and risk.

Property Tax Revenue Replacement

The BDCP included funding to cities, counties, Reclamation Districts, and other local jurisdictions within the BDCP plan area to replace revenue lost from land acquisition for the project. This revenue replacement, called "Property Tax and Assessment Revenue Replacement" is a requirement of the Delta Reform Act (Water Code Section 85089(b)) and described in BDCP Chapter 8, Section 8.2.3.23, on pages 8-51 and 8-52. The cost of lost property taxes and other local assessments was estimated in order to replace all local tax revenue to Reclamation Districts that would otherwise be lost when private land is acquired in fee title by DWR, Reclamation, or other public agency acting on their behalf.

Although the non-HCP alternatives including the preferred alternative (Alternative 4A) no longer include the BDCP, property tax and assessment revenue replacement remains a requirement and therefore part of the new project.

BDCP Funding Sources

Some commenters state that the proposed water conveyance facility should not be paid for by taxpayers. Some commenters have asserted that the funding program for the BDCP is speculative and relies too much on uncertain funding from the federal government and two voter-approved water bonds, and therefore does not meet the "assured funding" regulatory standard. Funding for the BDCP alternatives would be by both the participating state and federal water contractors whose ratepayers (businesses and residents) receive water from the project and the public generally. Conveyance construction and mitigation requirements would be funded entirely by the water contractors (i.e. by both the participating state and federal water contractors whose ratepayers (businesses and residents) receive water from the Delta and not the public generally). Broader large scale habitat restoration of the BDCP alternatives would include additional funding from the state and federal governments. Note that for the preferred alternative (Alternative 4A) and the other non-HCP alternatives, funding would be provided entirely by the participating state and federal water contractors whose ratepayers (businesses and residents) receive water from the project. The following addresses funding issues associated with the BDCP alternatives.

Funding for Proposed Water Conveyance Facility

As described in BDCP Chapter 8, the entire cost of the proposed water conveyance facility would be paid by the participating state and federal water contractors whose ratepayers receive water from the Delta. These costs include all construction, operation and mitigation costs for the direct and indirect effects of the water facility construction and operation. Taxpayers would not pay for any part of the proposed water conveyance facility.[96] The BDCP would be funded through a "beneficiary pays" principle, meaning the cost will be borne by those who receive the benefit. The beneficiaries of the BDCP water conveyance facilities (Conservation Measure 1) include certain municipal, industrial, and agricultural water users served by the SWP and CVP. As such, the cost of the construction and operation of the new water facilities, as well as for mitigation necessary to address impacts to terrestrial and aquatic species associated with construction and operation, would be paid by participating state and federal water contractors.

[96] For the preferred alternative, Alternative 4A, and the other non-HCP alternatives, all costs for the project including the construction, operation, and mitigation of the water conveyance facility would be paid by participating state and federal water contractors, not taxpayers.

Funding Assurances are Consistent with State and Federal Regulatory Requirements

The history of the state water contractors meeting their obligation to reimburse the costs of construction and operation of the SWP provides evidence that this funding is feasible. For example, the SWP has contractual arrangement whereby SWP customers, in exchange for receiving SWP water supply, reimburse the capital and operational costs of the SWP. Both state law and the water contracts require the SWP customers to levy a tax in the event that they cannot make their payments to DWR. This is why DWR has a very strong credit rating (AA+, AAA, or Aa1 depending on the credit rating entity). The CVP contractors have a similar history evidencing assured funding for their share of the project costs. The new water facility would likely be underpinned by a similarly strong contractual arrangement with the water customers.

The remaining costs of the BDCP (approximately one-third of total costs) would be paid for by a combination of state and federal funds. All of these public costs are associated with the conservation (non-mitigation) portion of BDCP that implements conservation actions to contribute to species and ecosystem recovery. Of the projected state funding as of 2013 ($4.1 billion), the vast majority is expected to come from general obligation bonds that would need to be passed by a majority of the state's voters. Thirteen similar water bonds have been approved by California voters since 1960, a frequency of one every 4 years, on average (see Table 8-47 in BDCP Chapter 8; the last bond was passed in 2014, after the Draft BDCP was released). Based on this history, DWR and Reclamation believe that subsequent water bonds that would partially fund the BDCP are also likely to be issued during the 50-year permit term. The last bonds before publication of the Draft BDCP passed in 2006 with a combined total of $9.5 billion. In today's dollars the value of the two bonds passed in 2006 would be approximately $11.6 billion. The water bond passed by voters in 2014 was $7.12 billion.

Federal funding is based on a combination of competitive grants (an estimated $285 million, or 8% of federal funding for BDCP), annual funding from the Central Valley Project Improvement Act (CVPIA) Restoration Fund ($100 million, or 3%), and annual appropriations for California Bay-Delta Restoration, formerly known as CALFED ($3.2 billion, or 89%). The BDCP was expected to secure grants from at least nine different federal programs described in Chapter 8 of the BDCP; the conservative assumptions used to estimate funding from each of these programs is also described in the chapter. DWR and Reclamation understand that grant funding is competitive and is not guaranteed. However, the Plan identifies grant sources for which BDCP is expected to be highly competitive based on the overlap in grant program goals with BDCP, the importance of BDCP to state and federal ecosystem restoration goals, and the fact that BDCP actions would be associated with an approved HCP and NCCP. Proposed restoration projects that are linked to approved regional conservation strategies (like BDCP) are expected to rank higher than projects not linked to such strategies.

The BDCP acknowledges that additional federal authorizations are likely to be needed to provide increased federal funding throughout the 50-year permit term (see Chapter 8, Section 8.3.6.2, of the BDCP). For example, additional federal authorization may be needed to increase annual appropriations under existing laws such as the CVPIA or the CALFED Bay-Delta Authorization Act. Alternatively, new legislation may be needed. This assumption is based on similar large-scale restoration programs in areas of national ecological significance similar to the Delta (e.g., Chesapeake Bay, Platte River, Missouri River, Colorado River) in which new federal authorization allowed funding these restoration program (see BDCP Chapter 8, Table 8-58 for details).

The funding strategy described in BDCP Chapter 8 is not a guarantee of state or federal funds. State and federal funding sources cannot be guaranteed. For example, federal appropriations vary over

time based on political factors and the federal budget process. However, the estimates of funding sources describe reasonably likely funding sources that will pay for all costs. If a project alternative was selected that included BDCP, the federal and state governments would sign the Implementing Agreement. The IA would commit them to providing their share of BDCP funding identified in a final version of Chapter 8 and subject to legal limitations (see Section 13.0 of the 2014 public draft Implementing Agreement). The IA would therefore provide a real and tangible commitment to provide the state and federal funding identified in a final version of Chapter 8. This approach is consistent with all other approved HCPs and NCCPs and meets the ESA and NCCP Act standards to provide "assured funding."

BDCP Chapter 9, Alternatives to Take

The comments on BDCP Chapter 9 included concerns over the economic costs of the project that were used to evaluate take alternatives, claiming that costs were too high and did not justify the benefits. Some comments said that take alternatives should have considered a wider range of alternatives. Other comments questioned the use of the baseline scenarios in the analysis that differed from the baselines used in the EIR/EIS.

Note that BDCP Chapter 9 specifically addresses a requirement of the federal ESA. The federal ESA requires that that Section 10 permit applicants specify in HCPs that the alternatives to the taking of federally listed threatened and endangered species were considered and why those take alternatives are not being proposed (50 CFR 17.22[b][1][iii][C]). The state NCCP Act has no such analytical requirements. The alternatives to take requirement is not a requirement of CEQA or NEPA and is separate and apart from the CEQA and NEPA requirements for consideration of project alternatives, although the same or similar alternatives may be used. The following addresses issues raised on BDCP Chapter 9.

Economic Costs and Benefits of BDCP

As described in Chapter 9, Section 9.3 of the BDCP, take alternatives were evaluated against five criteria:

1. Does the take alternative reduce take of covered species?
2. Does the take alternative increase conservation benefit to covered species?
3. Is the take alternative consistent with the BDCP overall goal to provide "a comprehensive conservation strategy for the Sacramento-San Joaquin River Delta designed to restore and protect ecosystem health, water supply, and water quality within a stable regulatory framework"?
4. Is the take alternative practicable in terms of costs, logistics, and technical feasibility?
5. Are there additional significant and unavoidable adverse effects to other resources (i.e. besides covered fish and wildlife species and their habitat)?

The economic costs and benefits of the project proposed in the BDCP are evaluated in Chapter 9 of the BDCP to help inform the practicability criteria (criterion 4) and specifically its cost practicability.

The economic costs and benefits of the BDCP are discussed more fully in the Statewide Economic Impact Report published as a draft by DWR in 2014. Note that this report is not part of the EIR/EIS.

The Range of Take Alternatives

The USFWS and NMFS *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1996) provides guidance for the analysis of take alternatives. Specifically, the HCP Handbook identifies two types of take alternatives that are typically considered in HCPs: take alternatives that would result in take levels below those anticipated for the proposed actions, and take alternatives that would cause no incidental take, thereby eliminating the need for an incidental take permit.

As described in BDCP Chapter 9, most of the take alternatives were developed using the EIR/EIS alternatives as a basis. An extensive process to develop and screen alternatives was used for the EIR/EIS, as described in the 2013 Draft EIR/EIS and summarized in BDCP Chapter 9, Section 9.1.3. This alternative selection process focused on the identification of alternatives that reduced the scope and intensity of potential environmental effects, including adverse effects on covered fish and wildlife species. Because the alternatives screening process was consistent with the goals of take alternatives, it was appropriate to start with the Draft EIR/EIS alternatives when developing the BDCP take alternatives.

Some comments claim that a wider range of take alternatives should have been evaluated than those based almost entirely on the EIR/EIS alternatives. The take alternatives largely mirrored the EIR/EIS alternative selection process because that process was so extensive and rigorous and because the take alternatives could benefit from the extensive analysis already conducted for the EIR/EIS alternatives. Some commenters claimed that take alternatives should have been considered that did not include a water conveyance facility. As with the EIR/EIS alternatives, such take alternatives were rejected because they did not meet the project objectives and purpose and need. See Master Response 4, *Alternatives Development*, for a discussion of the adequacy of the alternatives selection process in the EIR/EIS.

Baseline in BDCP Chapter 9

The baseline used in the cost comparison of the take alternatives in BDCP Chapter 9 was called the Existing Conveyance High-Outflow Scenario. Economic outcomes under the BDCP are compared to the conditions assumed to exist if the BDCP were not implemented. For purposes of the analysis, the BDCP and each take alternative are evaluated in relation to continued operation of existing water conveyance (i.e., south Delta facilities). This future scenario assumes that BDCP operational constraints to protect aquatic species would eventually be imposed on the existing water operations, even if the BDCP was not implemented. This scenario provides a reasonable comparison point for purposes of the alternatives to take analysis that assumes environmental regulations and restrictions will continue to strengthen under a regulatory regime without the No Surprises assurances available with BDCP (i.e., under future ESA Section 7 consultations). This baseline scenario also assumes that some conservation actions proposed as part of BDCP are implemented anyway, including most of Conservation Measure 2 (Yolo Bypass Fisheries Enhancement) and portions of several other conservation measures. This baseline scenario can be different than the scenario evaluated in the EIR/EIS because of the different purposes of the analysis. Just as the CEQA and NEPA baselines differ in the EIR vs. the EIS, the baseline scenario for the take alternatives was designed to support the take alternatives analysis that is unique to ESA requirements.

Master Response 6: Demand Management

This master response describes why demand management measures, such as water conservation and water storage, were not included in the project alternatives evaluated in the EIR/EIS and references areas in the document where these are discussed.

Appendix 1C, *Demand Management Measures*, provides an overview of water use efficiency programs being implemented to reduce water demand throughout the state. Demand management measures include urban best management practices, agricultural efficient water management practices, and groundwater management. Water recycling, stormwater management, and desalinization are considered alternative sources of water supply and are discussed in Section 1C.4 of Appendix 1C. The use and combination of these water management measures and alternative sources of supply help local and regional water suppliers reduce their reliance on water from the Delta.[97] See also Master Response 35, *Local Resource Programs and Water Conservation in Southern California.*

Demand management is not being included as a project alternative in the Final EIR/EIS because it is implemented by local water suppliers and communities, is outside the Plan Area, and is not directly controlled by the state. Furthermore, demand management alone will not feasibly meet the environmental and water supply objectives of the proposed projector the legal objective of long-term Endangered Species Act compliance. Rather, the scope and purpose of the proposed project is much more limited. As explained in Chapter 2, *Project Objectives and Purpose and Need*, the fundamental purpose of the proposed project is to make physical and operational improvements to the State Water Project (SWP) system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and Central Valley Project south-of-Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations.[98]

Demand management is a tool that will continue to be used by water agencies and individual water users as part of an integrated water management approach to water supply reliability regardless of whether and how the proposed project is implemented. Based on existing regulatory mandates[99] as well as economic and environmental imperatives, state, regional, and local efforts will continue to improve water use efficiency over that already achieved during the past few decades. Additionally, the Governor's Executive Order B-37-16 requires state agencies to develop a draft framework by January 10, 2017 for making water conservation a California way of life.

Likewise, although the development of improved regional and local water supply efforts is beyond the scope of the proposed project, Appendix 1B, *Water Storage*, provides an overview of the potential for additional water storage in California. Appendix 1B explains that water storage is a critically important tool for managing California's water resources, but is not a topic that must be addressed in this Final EIR/EIS for the proposed project. Although the physical facilities

[97] For more information regarding the Delta Plan and policy of reduced reliance, please refer to Master Response 31, *BDCP/California WaterFix and 2009 Delta Reform Act*, and Appendix 3I, *Alternative 4A (Proposed Project) Compliance with the 2009 Delta Reform Act*.

[98] See Chapter 2, *Project Objectives and Purpose and Need*, for additional background regarding the project objectives and purpose; for the list of the project objectives under CEQA Section 2.3, *Project Objectives*. For the Statement of Purpose and Need pursuant to NEPA, Section 2.4, *Purpose Statement*.

[99] Part 2.55 and Part 2.8 of Division 6 of the California Water Code.

contemplated by the proposed project, once up and running, would be part of an overall statewide water system of which new storage could someday also be a part, the proposed project is a stand-alone project for purposes of CEQA and NEPA, just as future storage projects would be.

Moreover, the California Department of Water Resources (DWR) is not the statewide regulatory body that can impose a statewide water strategy. DWR also lacks statutory authority to make and implement localized decisions about water technology investments, to develop and impose investments for new water supply projects that serve particular geographic regions, or to mandate coordinated efforts among local and regional water suppliers. Therefore, the proposed project cannot require local entities to construct or manage desalination plants or other water facilities.

Also, DWR has no binding authority to regulate how individual water suppliers and users manage their demands. Therefore, DWR cannot impose demand management measures requiring increased water conservation in export areas because such measures would, in part, require actions by non-applicant third parties.

In sum, actions by third parties would not meet the purpose and need and objectives of the proposed project. Accordingly, the proposed project need not include non-applicant, third party actions, such as desalination plants or demand management measures requiring increased water conservation in export areas.

Master Response 7: Desalination

This master response discusses how a potential project alternative with a desalination component was considered and ultimately screened out as one of the project alternatives evaluated in the EIR/EIS. In addition, this master response describes the current challenges of desalination technologies, including energy use, environmental effects, and cost of producing potable water from desalination.

Appendix 1C, *Demand Management Measures*, was included in the Draft EIR/EIS. This appendix was first available for public review when it was presented as part of the Draft EIR/EIS. Appendix 1C references the California Water Plan and information for statewide conservation and water supply diversity within local jurisdiction planning and development, including water reuse and desalination. Desalination is the process of removing salt and other minerals from seawater to make it suitable for drinking or irrigation. While the vast Pacific Ocean does appear to be an endless water supply, desalination projects face high costs and environmental challenges that limit its ability to meet the project objectives and purpose and need. Although desalination is already a part of California's overall water portfolio and will likely become a bigger part with the passage of time, the technology will not be capable within a reasonably foreseeable timeframe to create a reliable water source for California consistent with the alternatives in the EIR/EIS. Desalination is one strategy used in California to develop new supplies, yet it is not the primary solution for the state's water shortage due to many factors, including limited capacity and technology, high costs and energy demands, and regulatory uncertainty.

While the proposed project does not include desalination as a project component, nothing about the proposed project precludes water agencies from pursuing desalination projects to supplement water supplies they receive from the State Water Project (SWP) and Central Valley Project (CVP). These supplemental projects, in fact, would help facilitate state policy, as found in the 2009 Delta Reform Act, to "improve . . . regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts."[100]

As explained in Appendix 1C, Section 1C.4, *Alternative Water Supplies*, "[m]unicipal recycled water and desalination are two potential sources of water that can augment local water sources. Other water management options can also augment local supplies. Utilizing recycled, desalinated, and other water supplies does not necessarily reduce water consumption on a per capita basis, but it does enable water suppliers to more efficiently use different types or qualities of water for appropriate uses. However, if recycled water resources are developed in the future to offset demands that are currently being met with potable water, or is used to develop new areas that would have used potable water, then the use of recycled water can support reduction in a water supplier's per capita potable water demand. Both recycled and desalinated water are resources California water suppliers are utilizing and will continue to use in future years. Increased use of alternate water supplies outside of the Delta watershed by SWP or CVP contracting agencies directly benefits these agencies." Even if the state increased desalination projects, the proposed project is still necessary to make SWP and CVP water deliveries more consistent and reliable, and to improve Delta ecological conditions.

[100] California Water Code Section 85021.

The Lead Agencies Previously Rejected a Potential Alternative with a Desalination Component

In considering what alternatives to address in detail in the EIR/EIS, the state and federal lead agencies did consider an alternative with a desalination component in the West Delta, as described in Appendix 3A, Section 3A.7, *Results of Initial Screening of Conveyance Alternatives*. This potential alternative was described as *Isolated Conveyance with Diversion from the San Joaquin River near Antioch and Desalination Facilities, a Tunnel between the Desalination Facilities and the SWP and CVP Pumping Plants, and Abandonment of Existing South Delta Intakes*. It was eliminated from further evaluation for a variety of reasons, including the location and high energy usage of the proposed desalination plant.

This desalination alternative would have required a relatively large facility, with a very substantial footprint, and with all of the attendant environmental impacts. As an example, a desalination facility located along the San Joaquin River shoreline and designed to produce up to 15,000 cubic feet per second (cfs) could extend over 3 miles and could be several square miles in size. A desalination facility designed to produce 9,000 cfs would be of similar size. The sheer size of these facilities could result in substantial impacts on land use, given the generally dense existing development in the affected areas. In addition, a desalination facility of this size would add unreasonable ongoing costs in comparison to other options and would result in substantial energy usage, contrary to statewide goals. Absent the development of practicable "green" power sources that could replace fossil fuel inputs, a desalination alternative of this magnitude is expected to generate substantial greenhouse gas emissions that could undermine California's ability to meet its legislative mandate under the California Global Warming Solutions Act of 2006 to reduce the state's 2020 greenhouse gas emissions to 1990 levels. Other alternatives in contrast, would convey fresh water that would not need to be desalted prior to transport. Furthermore, the ability to divert water in the west Delta near Antioch could be limited due to the presence of delta smelt, as described for Initial Screening Conveyance Alternative B6 in Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*. Presence of protected delta smelt and longfin smelt in the west Delta during the period when high flows would occur in the Sacramento River could restrict the amount of water diverted through a west Delta intake. The lead agencies determined that this in-Delta desalination facility was not a feasible aspect of the proposed project.

Current Desalination Projects in California

The majority of desalination projects in California treat brackish groundwater as it is less salty and cheaper to treat than seawater. According to *California Water Plan Update 2013*, groundwater desalting plants are generally designed to reclaim groundwater of impaired use and are located in urban areas from the San Francisco Bay Area to San Diego. Currently, there are at least 20 operating groundwater desalting plants, 19 of which are located in southern California. Plant capacities range from 500,000 gallons to 10 million gallons per day (or 11,200 acre-feet per year). Up to an additional 20 plant expansions or new facilities are planned to be constructed before 2040.[101]

[101] Department of Water Resources. "California Water Plan, Update 2013." Public Review Draft 2013: Chapter 10 – Desalination (Brackish and Seawater). Page 10-14. 2013.

Supply and Capacity

Today, desalination in California creates an estimated 84,000 acre-feet of potable water a year, mostly through treatment of brackish groundwater. In comparison to combined yield of all desalination projects, the proposed project would facilitate delivery of, on average, 4.9 million acre-feet per year. As the California Coastal Commission documented in 2004, the capacity for seawater desalination is limited in the state.[102] Expansion of desalination projects to produce a level of potable supply comparable to the proposed project is not feasible.

One challenge for expansion of desalination facilities is that currently, desalinated water is most cost-effective for urban coastal areas that have already implemented efficient best management practices and conservation measures. According to the National Research Council in 2008, brackish groundwater desalination facilities face significant challenges as there are few, if any, cost-effective environmentally sustainable technologies available for inland locations.[103] Another barrier to increasing inland brackish groundwater desalination is depleting groundwater supplies. Further stress on those supplies can cause greater subsidence, and increased pumping could adversely affect water quality and supplies in adjacent lakes and aquifers.

Desalination Technology

The processes, technologies, and methods used to achieve a desired level of salt removal in water include a wide range of products and systems. Currently the most utilized desalination technologies or processes are either thermal or membrane separation. Membrane separation includes reverse osmosis, which is the most commonly used approach. There are two products from reverse osmosis treatment: the permeate (desalted water) and reject brine (ultra-salty wastewater). Although reverse osmosis is a rapidly maturing technology, this process produces on average 50 percent potable water and 50 percent brine wastewater. The brine is unusable and must be disposed of consistent with environmental regulations and standards. Larger scale desalination projects would necessarily create larger amounts of waste, the disposal of which would be cost prohibitive.

Desalination processes and technology can be effective on a smaller, local scale. Small-scale desalination projects can be cost effective for local water agencies that have exhausted other alternatives and conservation measures, or during drought conditions. Furthermore, mobile desalination units have become a key aspect of emergency response and preparedness planning efforts. For example, a private company has developed units which can be deployed to "respond to almost any type of water emergency from high bacteria, water borne disease to brackish water flood and desalination."[104] After disasters, both natural and manmade, clean drinking water can become scarce, and these units can be used to develop new supplies as infrastructure is repaired and supplies are restored. On a larger scale, however, desalination has many limitations including the environmental and ecological considerations, energy use and cost, and regulatory uncertainty for seawater facilities.

[102] California Coastal Commission. "Seawater Desalination and the California Coastal Act." Page 7. 2004.

[103] The National Academies, National Research Council. "Report in Brief, Desalination: A National Perspective." Page 3. 2008.

[104] PureSafe Water Systems, Inc. "Emergency Management Portfolio: Introduction to the Water Purification First Response Unit by PureSafe." Page 1. 2013.

Environmental and Ecological Barriers

The safe disposal of the concentrated brine produced by desalination plants presents a major environmental challenge because it is saltier and denser than the waters into which it is discharged.[105] The brine discharge tends to sink to the bottom of the water body and slowly spread. Even small changes in salinity can affect certain aquatic species. In some inland areas in California, the inability to properly dispose of the brine waste can limit the application of brackish groundwater desalination.[106] The environmental impact of this brine discharge is still being studied, but it has been found to have negative effects. For example, in Australia the Perth Seawater Desalination Plant, which became operational in 2006, discharges 1,500 feet offshore in order to minimize the impacts to the coast. However, monitoring efforts have shown decreasing dissolved oxygen levels on the ocean bottom. These levels fell below the limit set by the operating permit twice in 2008; only two years after operations began.[107] More study is needed to adequately identify all contaminates in desalination brines and to mitigate the impacts of discharge.

In addition to water quality issues, ecological impacts associated with desalination includes the mortality of fish and other aquatic life.[108] According to the *California Desalination Planning Handbook* in 2008, "perhaps the primary ecological concerns related to seawater desalination facilities are impingement and entrainment of aquatic organisms associated with water intakes."[109] Many factors can contribute to the impacts of impingement and entrainment, such as the water depth at the intake, velocity of the water associated with the intake, and the location and type of intake. Because protecting fish is one of the major considerations and drivers of the proposed project adding a desalination alternative or desalination component to an existing alternative was determined to be potentially inconsistent with the protection of fish and aquatic resources.

Energy Use

Removing salt from brackish or seawater remains an expensive process, partially due to how energy intensive it is. This process consumes more energy per gallon than most other water supply and treatment options. Under standard fixed conditions, desalination plant operation on average requires 15,000 kilowatts per million gallons produced (kWh/MG).[110] The actual energy use could be higher when operating conditions are not ideal, as energy costs fluctuate. These desalination processes on average use more than the SWP, which averages in the 7,900 to 14,000 kWh/MG range. Energy use contributes to 50 percent of the cost of desalination, which is important to note as the California Public Utilities Commission estimates that electricity prices will rise at least 16.7 percent in inflation-adjusted dollars from 2008 to 2020.[111] Therefore, the high energy cost of desalination

[105] Cooley, Heather, Ajami, Newsha, and Heberger, Matthew; Pacific Institute. "Key Issues in Seawater Desalination in California: Marine Impacts." Page 21. 2013.

[106] California State University, Sacramento, Center for Collaborative Policy. "California Desalination Planning Handbook." Prepared for the Department of Water Resources. Page 19. 2008.

[107] *Ibid*. Page 21.

[108] State Water Resource Control Board. "Addressing Potential Water Quality Problems Associated with Desalination Plants." 2013.

[109] California Desalination Planning Handbook. Page 18.

[110] Cooley, Heather and Heberger, Matthew; Pacific Institute. "Key Issues for Seawater Desalination in California: Energy and Greenhouse Gas Emissions." Page 4-5. 2013.

[111] California Public Utilities Commission. "33% Renewable Portfolio Standard: Implementation Analysis Preliminary Results." Page 22. 2008.

will continue to increase. This high energy usage also contributes to higher greenhouse gas emissions, which present challenges for CEQA compliance, as well as undermining other state initiatives such as the California Global Warming Solutions Act of 2006 passed to reduce greenhouse gases to 1990 levels by 2020.

To exceed a 50 percent recovery requires increasing the pressure of the system, and in practical terms, increasing the cost and energy consumption. The desalination industry has made great strides in developing more energy efficient technology. There are some examples of desalination plants powered by renewable energy sources. Using renewable energy also presents challenges. Desalination plants using membrane technology, such as reserve osmosis, require continuous sources of energy, whereas solar and wind energy, or other clean sources, can fluctuate daily and seasonally. During their severe drought in the early 2000s, the Australian government made a massive investment to increase seawater desalination plants. Several large-scale Australian desalination facilities purchased renewable energy certificates from new offsite renewable energy projects; however, this does not necessarily mean the facilities are carbon neutral because this energy may have been generated with or without these desalination plants.[112] Critics in Australia argue that there are cheaper alternatives to these plants, such as increasing conservation measures, as well as better management of groundwater reserves and water catchments.[113] Recycling of wastewater has also been suggested as a cheaper alternative. In addition, experts have noted that Australia's costs for desalination are among the world's highest ($1.75 to $2 per cubic meter of desalinated water produced), partly because the county's strict environmental standards (similar to those in California).[114] This high cost, and less demand since the recent drought in Australia has led to four of the six plants built since 2006 being placed on standby.

Nuclear powered desalination plants have been suggested in many comments as an alternative energy source. This is a questionable and risky approach, and one that is not permitted under California law as it exists today. California law currently disallows the construction of any additional "nuclear fission thermal powerplant requiring the reprocessing of fuel rods." Such powerplants are prohibited until, if ever, the California Energy Commission 1) determines that "the United States through its authorized agency has identified and approved, and there exists a technology for the construction and operation of, nuclear fuel rod reprocessing plants" and 2) reports these conclusions to the Legislature."[115]

Cost to Produce Desalinated Water

The cost per acre-foot of water produced through desalination processes is currently significantly higher than the cost per acre-foot of water from the SWP and CVP, even with the estimated increases attributable to the proposed project. The cost of water provided by the proposed project depends on factors including the source of water, transport facilities, and energy requirements. For the agricultural customers of the CVP, prices range from $100 per acre-foot to more than $400 per acre-foot. The Metropolitan Water District of Southern California, which buys water from the SWP for urban users, estimates that the cost of the proposed project would translate into about $5.00 extra per household, per month in its service area.

[112] Cooley, Heather and Heberger, Matthew; Pacific Institute. "Key Issues for Seawater Desalination in California: Energy and Greenhouse Gas Emissions." Page 24. 2013.

[113] Onishi, Norimitus. "Arid Australia Sips Seawater, but at a Cost." The New York Times. 2010.

[114] *Ibid*.

[115] California Public Resources Code Section 25524.1.

According to the Pacific Institute in 2012, recent estimates for desalination plants proposed in California range from $1,900 to more than $3,000 per acre-feet of water they produce.[116] Although improvements in technology have helped bring the cost in some areas down to the lower end of the range, desalination costs remain high, and it is unlikely that there will be any major breakthroughs that will reduce these cost in the near to mid-term, especially considering the anticipated increase in electricity prices. Desalination is especially unlikely to be cost effective for producing agricultural supplies in non-coastal areas.

Desalination can be subject to what is known as "demand risk," which is the "risk that water demand will be insufficient to justify continued operations of the desalination plant due to availability of less expensive water supply and management alternatives."[117] The high cost of desalination compared to other means of increasing water supplies has resulted in many desalination plants across the world being placed on standby or operated below capacity. In addition to the four out of six plants placed on standby since 2006 in Australia, there are two such examples in the United States. A facility in Santa Barbara, California, which was completed in 1992 during a drought, was eventually decommissioned because the cost was too high to warrant operation during non-drought periods.[118] The Tampa Bay Desalination Plant in Florida is currently operated considerably below capacity, because demand is less than expected and other less expensive supplies exist.[119] Although the real cost of water from the new conveyance facilities would be determined by numerous factors, it is estimated as much less than the average cost of water produced from desalination projects. It is important to note that the proposed project would not increase the overall volume of Delta water exported; it would make the deliveries more predictable and reliable, while restoring an ecosystem in steep decline.

Regulatory Uncertainty

Another challenge with increasing desalination projects in California is regulatory uncertainty regarding the permitting process for seawater desalination facilities. Seawater and estuarine desalination facilities require obtaining coastal development permits from both the local jurisdiction, if it has a certified Local Coastal Program, as well as from the Coastal Commission.[120] In addition desalination facilities can require permits and approvals at the state level from the State Lands Commission, State Water Resources Control Board (State Water Board), Regional Water Resource Control Board, California Energy Commission, California Department of Fish and Wildlife, California Public Utilities Commission, and the Department of Public Health. Federal permits for such desalination facilities could also be required from the U.S. Coast Guard, U.S. Army Corps of Engineers, National Marine Fisheries Service, and the U.S. Fish and Wildlife Service.

Currently, the State Water Board regulates brine discharges from desalination facilities through the issuance of National Pollutant Discharge Elimination System permits that contain conditions protective of aquatic life. In addition, on May 6, 2015, the State Water Board adopted an amendment to the Water Quality Control Plan for the Ocean Waters of California to address effects associated

[116] Cooley, Heather and Ajami, Newsha; Pacific Institute. "Key Issues for Desalination in California: Cost and Financing." Page 5. 2012.

[117] Cooley, Heather and Ajami, Newsha; Pacific Institute. "Key Issues for Desalination in California: Cost and Financing." Page 7. 2012.

[118] *Ibid*. Page 22.

[119] *Ibid*. Page 7.

[120] California Desalination Planning Handbook. Page 49.

with the construction and operation of seawater desalination facilities (Desalination Amendment). The Desalination Amendment supports the use of ocean water as a reliable supplement to traditional water supplies while protecting marine life and water quality. The Desalination Amendment, for the first time, provides a uniform, consistent process for permitting of seawater desalination facilities statewide. In doing so, it provides direction for regional water boards when permitting new or expanded facilities and provides specific implementation and monitoring and reporting requirements. The Office of Administrative Law approved the Desalination Amendment on January 28, 2016. The United States Environmental Protection Agency approved the portions of the Desalination Amendment that implement the federal Clean Water Act on April 7, 2016. Therefore, the Desalination Amendment is now fully in effect creating an additional regulatory hurdle for desalination projects in California.

Master Response 8: Analysis of Project as a Whole

This master response outlines the legal background under CEQA and NEPA regarding piecemealing and explains how no piecemealing or segmentation has occurred during the environmental planning process for California WaterFix. The master response contains detailed discussions on the reasoning behind this conclusion, including considerations regarding causation, independent utility, independent benefits, independent purposes and objectives, and regulatory autonomy related to the proposed project and other activities not considered as part of the proposed project.

Some commenters asserted that the lead agencies should have considered, as part of the project, a more comprehensive, statewide solution to the state's water supply and demand problems, including increased north- and/or south-of Delta storage projects,[121] demand management measure strategies (DMMs),[122] and/or other statewide or regional water planning efforts (e.g., desalination, recycled water, treatment of contaminated aquifers). The commenters generally suggested that the co-equal goal of water supply reliability established by the Delta Reform Act of 2009 requires that the lead agencies consider, in addition to the proposed project, other measures to secure water supply reliability throughout the state. Such comments frequently asserted that the lead agencies have "piecemealed" (CEQA term) or "segmented" (NEPA term) the project by defining the project as the California WaterFix or BDCP, for purposes of the Draft EIR/EIS and RDEIR/SDEIS, rather than proposing a more comprehensive, statewide solution to California's water supply reliability problems, of which the proposed project would be one component.

The goal of reliable water supply is likely the goal of any water planning project in the state. The proposed project is not the sole project in California tasked with solving this present and the ongoing dilemma of ensuring reliable water supplies in California. Instead, the proposed project is focused on the conveyance facility improvements necessary for the SWP to address more immediate water supply reliability needs in conjunction with ecosystem improvements to significantly reduce reverse flows and direct fish species impacts associated with the existing south Delta intakes. Although the proposed project, if approved, would be a critically important tool for managing California's water resources, it is not a statewide solution to California's water supply reliability problems. Nor does the law require it to be, as detailed in this master response.

Some commenters have argued that environmental documentation for the lead agencies' federal and Endangered Species Act (ESA) and California Endangered Species Act (CESA) responsibilities has been piecemealed or segmented from the proposed project. Please see Master Response 29, *Timing of Endangered Species Act Compliance*, in response to these arguments. As explained in the Final EIR/EIS, companion documents that are integrated with the EIR/EIS provide the environmental documentation necessary for the ESA and CESA compliance and therefore there is no segmentation.

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[121] Water storage is addressed in Appendix 1B, *Water Storage*. In addition, see Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, Section 3A.11, *Conveyance Proposals Identified in 2012 and 2013*, which explains why the Portfolio-Based Proposal, which was proposed by the Natural Resources Defense Council, and called for increased south-Delta storage and increased DMMs, is not a potentially feasible project alternative. See also Master Response 31, *BDCP/California WaterFix and 2009 Delta Reform Act*, for a discussion of the project's relationship to the policy on improving self-reliance for water set forth in the Delta Reform Act of 2009 (Senate Bill No. 1, Seventh Extraordinary Session, also known as "SBX7 1"). Please also see Master Response 37, *Water Storage*.

[122] DMMs are addressed in Appendix 1C, *Demand Management Measures*

Some commenters have argued that environmental documentation for California EcoRestore has been piecemealed or segmented from the proposed project, The non-HCP alternatives, Alternatives 4A, 2D, and 5A, however, represent an alternative implementation strategy consistent with meeting the project objectives and purpose and need, relative to all alternatives presented in the Final EIR/EIS, and their impacts are analyzed in the Final EIR/EIS along with the impacts of Alternative 4 and the other original BDCP alternatives. Thus, the Final EIR/EIS contains the environmental analysis for the entire extent of the program regardless of the implementation strategy chosen. That is, the environmental effects of conservation actions that are now contemplated under California EcoRestore or elsewhere have been evaluated as components of the original BDCP alternatives.

To the extent that comments argue piecemealing or segmentation other than water planning projects, these are even less related to the proposed project and therefore, no piecemealing or segmentation has occurred.

The remainder of this master response focuses on water planning projects.

Legal Background

"CEQA forbids 'piecemeal' review of the significant environmental impacts of a project."[123] Instead, CEQA mandates "that environmental considerations do not become submerged by chopping a large project into many little ones—each with minimal potential impact on the environment—which cumulatively may have disastrous consequences."[124] Thus, the State CEQA Guidelines define "project" broadly as "the whole of an action which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment."[125] Furthermore, "[t]he lead agency must consider the whole of the action, not simply its constituent parts, when determining whether it will have a significant environmental effect."[126] At the same time, CEQA requires that "[a]n accurate, stable and finite description" of the project be established "early enough in the planning stages of [the] project to enable environmental concerns to influence the project's program and design, yet late enough to provide meaningful information for environmental assessment."[127] As one court described, "[r]econciling these requirements is problematic when a project lays the foundation for subsequent—but perhaps uncertain—activity."[128]

These issues are addressed in the California Supreme Court's landmark decision in *Laurel Heights Improvement Association v. Regents of University of California* (1988) 47 Cal.3d 376 (*Laurel Heights I*). In that case, the court set aside an EIR for failing to analyze the impacts of the reasonably foreseeable second phase of a multi-phased project. Specifically, that case involved a plan by the University of California, San Francisco, to move its pharmacy school's research units to a new building, of which only about one-third was initially available to the university. Although the EIR

[123] *Berkeley Jets Over the Bay Committee v. Board of Port Commissions* (2001) 91 Cal.App.4th 1344, 1358 (*Berkeley Jets*).

[124] *Bozung v. Local Agency Formation Com*. (1975) 13 Cal.3d 263, 283–284 (*Bozung*).

[125] State CEQA Guidelines, § 15378, subd. (a). (The State CEQA Guidelines are found at California Code of Regulations Title 14, § 15000 et seq.)

[126] State CEQA Guidelines, § 15003, subd (h).

[127] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 738 (*Kings County Farm Bureau*); *Planning and Conservation League v. Castaic Lake Water Agency* (2009) 180 Cal.App.4th 210, 234–235 (*PCL*).

[128] *PCL*, *supra*, 180 Cal.App.4th at p. 235.

acknowledged that the university would eventually occupy the remainder of the building once that space became available, the EIR only analyzed the environmental effects related to the initial move. The court concluded that the EIR should have analyzed both phases and violated CEQA for omitting the expansion plans.[129]

In so holding, the court provided a test to determine whether an EIR must include an analysis of the environmental effects of a potential future expansion of a proposed project or other action: the EIR must consider the future action (including a later phase or expansion of the initial project) if: "(1) it is a reasonably foreseeable consequence of the initial project and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects. Absent these two circumstances, the future expansion need not be considered in the EIR for the proposed project. Of course, if the future action is not considered at that time, it will have to be discussed in a subsequent EIR before the future action can be approved under CEQA."[130] Regarding the first circumstance, the court elaborated: "We do not require prophesy . . . . Nor do we require discussion of specific future activity that is merely contemplated or a gleam in the planner's eye."[131]

Applying the standard articulated by the Supreme Court in *Laurel Heights I*, the California courts have found that there may be improper piecemealing when, for example, the purpose of the reviewed project is to be the first step toward future development,[132] or when the project legally compels or practically presumes completion of another action.[133] On the other hand, "two projects may properly undergo separate environmental review under CEQA (i.e., no piecemealing) when the projects have different proponents, or can be implemented independently."[134] Thus, State CEQA Guidelines Section 15165 provides that "[w]here one project is one of several similar projects of a

[129] *Laurel Heights I*, *supra*, 47 Cal.3d at pp. 303–306.

[130] *Id.* at p. 396.

[131] *Ibid*.

[132] *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App4th 1209, 1233 (*Banning Ranch*); see e.g., *Laurel Heights I*, *supra*, 47 Cal.3d at p. 398, 253 (university planned to occupy entire building eventually); *Bozung*, *supra*,13 Cal.3d at pp. 269–270 (city annexed land so it could rezone it for development); *City of Carmel-by-the-Sea v. Board of Supervisors* (1986) 183 Cal.App.3d 229, 244 (*City of Carmel-by-the-Sea*) (county rezoned land as "a necessary first step to approval of a specific development project"); *City of Antioch v. City Council* (1986) 187 Cal.App.3d 1325, 1337 (*Antioch*) (negative declaration wrongly issued; "the sole reason" city approved road and sewer construction was "to provide a catalyst for further development"); see also *id*. at p. 1336 ("[c]onstruction of the roadway and utilities cannot be considered in isolation from the development it presages").

[133] *Banning Ranch*, *supra*, 211 Cal.App.4th at p. 1223; *Nelson v. County of Kern* (2010) 190 Cal.App.4th 252, 272 (EIR for reclamation plan should have included mining operations that necessitated it); *Tuolumne County Citizens for Responsible Growth, Inc. v. City of Sonora (*2007)155 Cal.App.4th at p. 1231 (home improvement center "cannot be completed and opened legally without the completion of [a] road realignment"); *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 732, 32 Cal.Rptr.2d 704 (EIR for residential development should have included sewer expansion that was a "crucial element[ ]" of development).

[134] *Banning Ranch*, *supra*, 211 Cal.App.4th at p. 1223; *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 99 (*CBE*) (refinery upgrade and construction of pipeline exporting excess hydrogen from upgraded refinery were "independently justified separate projects with different project proponents"); *PCL*, *supra*,180 Cal.App.4th at p. 237 (water transfer had "significant independent or local utility" from broader water supply agreement, and would be implemented with or without it); *Sierra Club v. West Side Irrigation District* (2005) 128 Cal.App.4th 690, 699 (*West Side Irrigation*) (two water-rights assignments to city were "approved by different independent agencies" and "could be implemented independently of each other); *Plan for Arcadia, Inc. v. Arcadia City Council* (1074) 42 Cal.App.3d 712, 724 (shopping center EIR could exclude road work the city had 'long before' decided would be needed due to new freeway).

public agency, but is not deemed a part of a larger undertaking or larger project, the agency may prepare one EIR for all projects, or one for each project, but shall in either case comment upon the cumulative effect."

Similarly, under NEPA, agencies are prohibited from artificially breaking up large projects, the overall effects of which may be environmentally significant, into several smaller, less significant actions—a violation of NEPA known as "segmentation."[135] The policy against segmentation is manifested in NEPA's requirement that agencies consider connected actions together.[136] Connected actions are actions that are "closely related and therefore should be discussed in the same impact statement."[137] Actions are connected if they: "(i) [a]utomatically trigger other actions which may require environmental impact statements; (ii) [c]annot or will not proceed unless other actions are taken previously or simultaneously; [or] (iii) [a]re interdependent parts of a larger action and depend on the larger action for their justification."[138] As with CEQA, the courts employ the independent utility test to determine whether an action under NEPA meets this definition of connected actions.[139] Under the test, "[w]hen one of the [actions] might reasonably have been completed without the existence of the other, the . . . [actions] have independent utility and are not 'connected' for NEPA's purposes."[140] In such cases, the actions need not be considered in the same EIS.

Here, CEQA and NEPA do not require the lead agencies to have analyzed the proposed project in combination with future storage projects, DMMs, and/or other statewide or regional water solutions as part of a single project in a single EIR/EIS. There are at least five reasons why this is true: 1) the proposed project and other statewide and/or regional water planning efforts are not reasonably foreseeable consequences of one another; 2) the proposed project has significant independent utility, including independent benefits, independent purposes and objectives, and relative regulatory autonomy; 3) the proposed project has different project proponents than other statewide, regional, and local water planning efforts, and would be implemented by different agencies; 4) the proposed project has a distinct geographic scope that would not significantly overlap with north- and south-of-Delta water planning efforts; and 5) the risk of aggregating impacts is either not present or is minimized with respect to the proposed project and other future water planning efforts. Each of these reasons is discussed more fully below.

Lack of Causation

Under the California Supreme Court's holding in *Laurel Heights I*, an EIR must include an analysis of the environmental effects of a future action (including a later phase or expansion of the initial project), if "it is a reasonably foreseeable consequence of that initial project."[141] Similarly, under

[135] 40 C.F.R. § 1508.25; *Great Basin Mine Watch v. Hankins* (9th Cir. 2006) 456 F.3d 955, 969 (*Great Basin*) ("[t]he purpose of [the prohibition on segmentation] is 'to prevent an agency from dividing a project into multiple "actions," each of which individually has an insignificant environmental impact, but which collectively have a substantial impact' [Citation]"].)

[136] *Wetlands Action Network v. U.S. Army Corps of Engineers* (9th Cir. 2000) 222 F.3d 1105, 1118 (*WAN*) (disapproved on other grounds in *Wilderness Soc. v. U.S. Forest Service* (2011) 630 F.3d 1173, 1178).

[137] 40 C.F.R. § 1508.25(a)(1).

[138] *Ibid*.

[139] *WAN*, *supra*, 222 F.3d. at p. 1118.

[140] *Great Basin*, *supra*, 456 F.3d at p. 969.

[141] *Laurel Heights I*, *supra*, 47 Cal.3d at p. 396.

NEPA, segmentation has not occurred where "each of the two projects would have taken place with or without the other."[142] Here, future storage projects, DMMs, and the other potential future water planning efforts identified by the commenters are not reasonably foreseeable consequences of the proposed project. And the proposed project is not a reasonably foreseeable consequence of such efforts. Nothing in the proposed project ties the implementation of future storage projects or DMMs to the implementation of the proposed project. The projects simply do not preordain one another.

While the proposed project, if approved, would be a key component of California's overall water supply and planning strategy, the proposed project can also occur without other statewide and/or regional water supply efforts, even those that could, in some sense, be complementary to the proposed project. Implementation of the proposed project would not be contingent on the implementation of other statewide and regional water management strategies, and such strategies would not be contingent upon implementation of the proposed project. Although the proposed project and future storage projects, DMMs, and other supply and demand efforts may complement one another, they are not reasonably foreseeable consequences of each other requiring evaluation as a single project in a single EIR/EIS.[143]

Even without other statewide, regional, and local water supply planning efforts, the proposed project could still be implemented and would still serve the important purpose of providing a basis to secure ESA and CESA authorization. Likewise, even if the proposed project is not adopted or implemented, the state, regional, and local water planners, managers, and stakeholders could still undertake other efforts to improve water supplies. Indeed, regardless of whether the proposed project is implemented, the State of California, the United States Government, and various regional and local water agencies and other public agencies will still have to sustain investment in innovation and infrastructure to meet the water challenges the state and its residents and businesses face and will continue to face. [144] In short, the proposed project does not *cause* the need to devise other water supply strategies, and such strategies do not *cause* the need for the proposed project. They are not reasonably foreseeable consequences of one another.

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[142] *Great Basin*, *supra*, 456 F.3d at p. 969; *Trout Unlimited v. Morton* (9th Cir. 1974) 509 F.2d 1276, 1285 (the independent utility test evaluates whether "it would be irrational, or at least unwise, to undertake the first [action] if subsequent [actions] were not also undertaken"; compare *Thomas v. Peterson* (9th Cir. 1985) 735 F2d 754, 758 (logging project and road to facilitate the logging had to be considered in a single EIS because the timber sales could not proceed without the road, and the road would not be built but for the contemplated timber sales).

[143] See, e.g., *Banning Ranch*, *supra*, 211 Cal.App.4th at pp. 1225–1226, in which a residential project was not a reasonably foreseeable *consequence* of a proposed park project. Although the proposed park would provide for an access road that would be used in the residential project, the access road was only a "baby step" toward the residential project. Compare *Bozung*, *supra*, 13 Cal.3d at pp. 269–270 (annexing land for rezoning and development constituted a "first step" in a chain of causation leading to the development); *City of Carmel by-the-Sea* (county rezoned land as "a necessary first step to approval of a specific development project); *Antioch*, *supra*, 187 Cal.App.3d at p. 1337 (road and sewer was "catalyst" for future development"); and *Laurel Heights I* (initial relocation into one-third of the building).

[144] See e.g., Draft California Water Plan Update 2013, Chapter 2, Imperative to Invest in Innovation & Infrastructure, available at http://www.waterplan.water.ca.gov/docs/cwpu2013/2013-prd/Vol1_Ch02_ImperativeToInvest_PubReviewDraft_Final_PDFed_wo_JW.pdf for a discussion of the reasons it is a critical time for California to invest in water infrastructure and innovation. See also Appendix 1C, *Demand Management Measures*, Section 1.C.1, *Introduction*, p. IC-2,(explaining that "[d]emand management is a tool that will continue to be used by water agencies and individual water users as part of an integrated water management approach to water supply reliability regardless of whether and how the BDCP is implemented").

Independent Utility

In addition to not causing the implementation of future state and regional water planning efforts, and such efforts not causing the implementation of the proposed project, the lead agencies' decision to focus their analysis on the proposed project is justified in light of the proposed project's significant independent utility. Under CEQA and NEPA, even if two or more projects are arguably part of or related to a larger undertaking (e.g., California's various efforts to secure more reliable water supplies in the face of population growth, climate change, sea level rise, and regulatory reductions in existing water supplies), an agency may consider it a stand-alone project in a single EIR/EIS.

Here, the proposed project is just one element of the state's long-range strategy to meet anticipated future water needs of Californians in the face of expanding population and the expected effects of climate change. The proposed project is not a comprehensive, statewide water plan like the California Water Plan, but is instead aimed at addressing many complex and long-standing issues related to the operations of the SWP and CVP in the Delta, including reliability of exported supplies, and improvement of the Delta ecosystem for ESA- and CESA-listed species. Although the proposed project would be a key component of California's water future, the proposed project would have significant independent utility, in terms of its benefits (e.g., environmental, regulatory, water supply reliability), its purposes and objectives, and its relative autonomy from other statewide and regional water supply and demand planning efforts.[145] These factors are discussed below.

Independent Benefits

The proposed project is intended to contribute significantly to the recovery of covered fish and wildlife species while securing reliable water supplies from the Delta. If approved, the proposed project would result in numerous benefits independent of other statewide or regional water planning efforts. These independent benefits include, but are not limited to, the following:

- *Improved Delta ecosystem*: the proposed project would improve the natural flow patterns through the Delta. The improved operational flexibility made possible by the new north Delta intake facilities would allow for greater seasonable variability and improve conditions for listed fish species. Minimizing south-Delta pumping would also provide for a more natural east-west flow pattern.
- *Improved security of water supplies from levee failures and climate change*: the proposed project would partially isolate water deliveries from increasingly stressed Delta levees, while using state-of-the-art fish screens and water project operating rules that accommodate fish spawning and migratory patterns. The new water delivery facilities would allow water to reach the CVP and SWP pumps even in the event of major levee failure in the Delta. The proposed project

[145] See, e.g., *PCL*, *supra*, 47 Cal.3d at pp. 234–238 (EIR for a water transfer authorized by a clause in a statewide contract that was undergoing separate environmental review had independent utility based on its benefits to the water agency's service area and its ability to be implemented with or without the amendments to the statewide contract); *Northwest Resource Information Center, Inc. v. National Marine Fisheries Service* (1996) 56 F.3d 1060, 1068–1069 (holding river flow improvement measures and juvenile salmon transportation program were not "connected actions" within the meaning of NEPA; although both actions were intended to benefit endangered species of salmon, each program could exist without the other and would benefit salmon standing alone); see also *Sylvester v. U.S. Army Corps of Engineers* (9th Cir. 1989) 884 F.2d 394, 400 (declining to require a single EIS covering both a resort complex and a golf course where "[e]ach could exist without the other, although each would benefit from the other's presence").

would also enable the capture of large amounts of winter flood flows at times of minimal ecological risk. A more reliable facility for moving water through the Delta would also enhance operational flexibility to improve the state's ability to respond to drought and rising sea levels.

- *Improved water supply reliability*: the proposed project would retrofit, modernize, and add greater flexibility to existing state and federal water projects' supply system. The proposed project would reduce reliance on the south-Delta pumping facilities by creating new water diversions in the north Delta equipped with state-of-the-art fish screens. Further, as the Delta ecosystem improves in response to the implementation of the proposed project environmental commitments, water operations would become more reliable.

Independent Purposes and Objectives

In proposing the proposed project, the California Department of Water Resources (DWR) is not attempting to solve all of the state's water supply challenges or to address directly the need for continued investment by the state and other public agencies in conservation, recycling, desalination, treatment of contaminated aquifers, and other measures to expand supply and storage. Rather, DWR's fundamental purpose in proposing the proposed project is to make physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south-of-Delta, and water quality, consistent with statutory and contractual obligations.[146]

Although the purposes and objectives of other statewide and regional water planning efforts could overlap, to a degree, with the proposed project's purposes and objectives, particularly with respect to enhanced water supply reliability, the purposes and objectives of such other efforts would not be identical to those of the proposed project, which largely track the co-equal goals of the 2009 Delta Reform Act.[147] For example, north- and south-of-Delta storage projects and DMMs, would not feasibly meet both the environmental objectives of the proposed project (including ecosystem

[146] See Chapter 2, *Project Objectives and Purpose and Need,* for additional background regarding the project objectives and purpose; for the list of the project objectives under CEQA, see Section 2.3, *Project Objectives*. For the Purpose Statement pursuant to NEPA, see Section 2.4, *Purpose Statement*.

[147] CEQA requires the "project description" for an EIR to include a "statement of objectives sought by the proposed project" and "include the underlying purpose of the project" (State CEQA Guidelines, § 15124, subd. (b)). "CEQA does not restrict an agency's discretion to identify and pursue a particular project designed to meet a particular set of objectives." (*California Oak Foundation v. Regents of University of California* (2010) 188 Cal.App.4th 227, 276.) The project objectives should, however, drive the agency's selection of alternatives for analysis and approval. (State CEQA Guidelines, § 15124, subd. (b) ["A clearly written statement of objectives will help the Lead Agency develop a reasonable range of alternatives to evaluate in the EIR"].) "Although a lead agency may not give a project's purpose an artificially narrow definition, the lead agency may structure its EIR alternative analysis around a reasonable definition of underlying purposes and need not study alternatives that cannot achieve that basic goal." (*In re Bay-Delta etc.* (2008) 43 Cal.4th 1143, 1166.) Similarly, under NEPA, an EIS must "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." (40 C.F.R. § 1502.13; see also 40 C.F.R. § 1502.10, subd. (d) [recommended format of an EIS includes description of purpose and need for action].) An agency may not define the purpose and need for the action in unreasonable terms. On the other hand, it need not craft a statement so broad that it requires consideration of alternatives that are inconsistent with the overarching purpose of the proposal. (*Northwest Ecosystem Alliance v. Rey* (W.D. Wash. 2005) 380 F.Supp. 2d 1175; see e.g., *Fronds of Southeast's Future v. Morison* 153 F3d. 1059, 1067 [upholding purpose statement for timber harvesting because it permitted the agency to evaluate a wide range of action alternatives; discussing cases].) Here, the lead agencies' objective and purposes meet these requirements in that they are sufficiently broad enough to allow the lead agencies to evaluate a reasonable range of alternatives under CEQA and a wide range of action alternatives under NEPA.

restoration and reduction of effects on listed species) and the water supply objectives. Nor would such efforts meet the legal objective of ESA and CESA compliance.

Regulatory Autonomy

As discussed in the *Lack of Causation* section, the proposed project does not preordain other statewide and regional water supply planning efforts; and such efforts do not preordain the proposed project. Instead, the proposed project is relatively autonomous from other statewide and regional planning efforts. It could be implemented with or without such efforts, and such efforts could be undertaken even if the proposed project is not implemented. The proposed project would have the important independent benefits, purposes and objectives described above, while other future water planning efforts would also support their own independent benefits (e.g., increased water reliability for the water agency proponents, modernized infrastructure, and job creation).

Related to the issue of independent utility, and as noted in the *Legal Background* section, the courts have held that two projects may undergo separate environmental review (i.e., no piecemealing and segmentation) when the projects have different proponents.[148] Here, the proposed project is being proposed by DWR and the U.S. Bureau of Reclamation (Reclamation). Neither the lead agencies nor the collective group of water contractors that would pay for the construction of the proposed water conveyance facilities have the authority to act as regional governing bodies for the purposes of setting local and regional water policy.[149] Although DWR and/or Reclamation would very likely be among the agency proponents of certain proposed future water storage projects, the regional or local water contractors and other stakeholders involved those projects would not necessarily be the same as those of the proposed project. And, with respect to DMMs, these measures are implemented by local water suppliers and communities outside the Plan Area and not directly, or even indirectly, controlled by the state.[150] As the Delta Plan notes, the responsibility for implementing most of the state's water management strategies and achieving the state water objectives lies not only with DWR, but with "over 600 local water agencies, including several privately owned and operated companies, plus wastewater districts, community service districts, and other special districts."[151]

[148] See *Banning Ranch*, *supra*, 211 Cal.App.4th at p. 1226 (park project and residential project had different project proponents); *CBE*, *supra*, 184 Cal.App.4th at p. 99 (refinery upgrade and construction of pipeline exporting excess hydrogen refinery were "independently justified separate projects with different project proponents"); *West Side Irrigation Dist.*, *supra*, 128 Cal.App.4th 690, 699 (two water-rights assignments to city were "approved by different agencies").

[149] See Master Response 31, *BDCP/California WaterFix and 2009 Delta Reform Act*, for additional information concerning the role of DWR in implementing the state's policies for the Delta and water planning, generally.

[150] See Appendix 1C, *Demand Management Measures*.

[151] Delta Plan, Chapter 3, A More Reliable Water Supply for California, page 93.

Geographic Scope

The Delta is a unique place distinguished by its geography, legacy communities, rural and agricultural setting, natural resources, and mix of economic activities.[152] The Delta is also characterized by unique environmental challenges, such as the pelagic organism decline and other "stressors" that are distinctive to the Delta. The geographic scope of the proposed project encompasses the Sacramento-San Joaquin Delta, as defined in California Water Code Section 12220, Suisun Marsh, Suisun Bay, and the Yolo Bypass. The study area analyzed in the EIR/EIS is larger than the proposed project because some of the environmental effects would extend beyond the boundaries of the Plan Area.[153] Nevertheless, while the study area is large, it does not encompass every region in California.[154] While the study area may physically intersect with other future water supply planning efforts in some respects, the geographic scope of the proposed project would also differ in significant ways from that of other statewide, regional, and local water planning efforts.

As a result of the distinct geographic scope of the study area, other future water supply efforts would be unlikely to have environmental impacts similar to those of the proposed project or that could be mitigated in similar ways, so as to justify their environmental review in a single document.[155] In particular, while the study area includes the SWP and CVP Service Areas (which, taken together, encompasses a large portion of the state[156]), the environmental impacts associated with the proposed project in the export areas are indirect effects that, depending on the EIR/EIS alternative, are primarily related to increased or decreased water deliveries to SWP/CVP contractors, contributing, ultimately, either to additional population growth or reductions in planted acreage in their service areas. The impacts would not be direct, footprint-related impacts for which detailed environmental review is possible.[157] In contrast, the direct environmental effects of, for example, a new water storage facility would be highly specific to that facility's proposed location.

As a practical matter, it would be difficult, if not impossible, to analyze the environmental impacts of the proposed project and those of other statewide and regional water efforts in a single environmental review document. The EIR/EIS itself is an extremely voluminous document[158] and would become much more so if it had also analyzed other major projects with very different footprint impacts and different timelines for implementation. Even if all such projects could be

[152] See, e.g., California Water Code Section 12981, subdivision (b), which states: "[t]he Legislature . . . finds and declares that the delta's uniqueness is particularly characterized by its hundreds of miles of meandering waterways and the many islands adjacent thereto"; see also the Delta Plan (DSC 2013), which recognizes several values that make the Delta a distinctive and special place, including its geography of low-lying islands, shipping channels, tidal influences, rural heritage, agricultural economy, maritime ports, and recreational opportunities.

[153] The area analyzed in the EIR/EIS consists of the following three geographic regions, as shown in Figures 1-3 through 1-9 of the Draft EIR/EIS: Upstream of the Delta; Delta (i.e., the Plan Area and Areas of Additional Analysis), and SWP and CVP Service Areas (i.e., the export service areas).

[154] See Chapter 4, *Approach to Environmental Analysis*, Section 4.2.1.2, *Definition of Study Area*.

[155] See State CEQA Guidelines, § 15168, subd. (a), explaining that a "program" EIR is an "EIR which may be prepared on a series of actions that can be characterized as one large project and are related either: (1) *Geographically*, (2) As logical parts in the chain of contemplated actions, (3) In connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or (4) As individual activities carried out under the same authorizing statutory or regulatory authority and having *generally similar environmental effects that can be mitigated in similar ways*." (Italics added.)

[156] See Chapter 1, *Introduction*, Figure 1-4, Project Area.

[157] See Chapter 30, *Growth Inducement and Other Indirect Effects*.

[158] See Master Response 38, *Length and Complexity of the EIR/EIS*.

analyzed in a single EIR/EIS, the document would be so disjointed and complex as to yield little practical value.[159] For the reasons discussed herein, however, because the proposed project is not the "same" project within the meaning of CEQA or NEPA as other water reliability planning efforts, there is no requirement to analyze the projects together in single EIR/EIS.

Risk of Aggregating Impacts

For the reasons demonstrated above, the first prong of the *Laurel Heights I* test—whether the future action is "a reasonably foreseeable consequence" of the initial action—has not been met with respect to the proposed project in relation to other future water storage projects, DMMs, and other water reliability planning efforts. Rather, the future water planning efforts are not a reasonably foreseeable consequence of the proposed project and vice versa. Each has independent utility. Because the first prong of the *Laurel Heights I* test is not met, there is no need to reach the second part of the inquiry.

Nevertheless, it is worth noting that the second prong of the *Laurel Heights I* test—whether "the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects"—is not met either. [160] This part of the test focuses on the concern underlying the piecemealing principle: the risk that, by "chopping a large project into many little ones"[161] the agency will commit itself to a larger undertaking without appreciating the full magnitude of the environmental effects.

This risk is either not present or has been and will be substantially minimized with respect to the proposed project and its relation to other water planning efforts. This is because the EIR/EIS evaluates the cumulative impacts associated with the proposed project in combination with probable future projects (CEQA term) and reasonably foreseeable future actions (NEPA term). Any projects that were not required to be included in the cumulative impacts analysis under NEPA and CEQA because they are not reasonably foreseeable at this time will undergo environmental review under federal and state law wherein the environmental effects of such projects will be considered and minimized.

Cumulative Impacts

To the extent that the proposed project is arguably part of a larger effort to enhance water supply reliability throughout the state, the EIR/EIS fulfills its disclosure and mitigation duties, ensuring that the combined effects of these various projects are not ignored. State CEQA Guidelines Section 15165 directs that "[w]here one project is one of several similar projects of a public agency, but is not deemed a part of a larger undertaking or a larger project, the agency may prepare one EIR for all projects, or one for each project, but shall in either case comment upon the cumulative impact." Similarly, NEPA requires an EIS to consider the impacts of the proposed action together with "other past, present, and reasonably foreseeable future actions."[162] The EIR/EIS meets these requirements.

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[159] See e.g., *Stand Tall on Principles v. Shasta Union High School Dist.* (1991) 235 Cal.App.3d 772, 782 (stating that an EIR evaluating "all potential sites in a site selection process" may "prove too cumbersome and yield little of value given its lack of focus")

[160] *Laurel Heights I*, 47 Cal.3d at p. 396.

[161] *Ibid*.

[162] 40 C.F.R. § 1508.7.

Specifically, where other projects are "probable future projects" within the meaning of CEQA[163] or "reasonably foreseeable future actions" within the meaning of NEPA (e.g., the Los Vaqueros Reservoir Expansion Project, the Davis-Woodland Water Supply Project, the San Joaquin River Restoration Project[164]), the EIR/EIS evaluates whether the combined effects of such projects and the proposed project would result in cumulatively significant impacts and, if so, whether the proposed project's contribution to such impacts would be cumulatively considerable.[165] Where the proposed project's contribution to a significant cumulative impact would be cumulatively considerable, the EIR/EIS recommends mitigation measures to substantially reduce or avoid the impact. In this way, the EIR/EIS ensures that incremental impacts, which may be minimal with respect to the individual project, but which cumulatively, have significant adverse consequences, are addressed and mitigated for. On the other hand, CEQA and NEPA do not require the EIR/EIS to evaluate the impacts of the proposed project in combination with speculative future projects that are not advanced enough in the planning stage to provide for meaningful environmental review,[166] such as the potential future north- and south-of-Delta storage projects.[167]

[163] See State CEQA Guidelines, § 15355, subd. (b).

[164] For a complete list of reasonable foreseeable probably projects, see Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, Attachment 3D-A, *Description of Programs, Projects, and Policies considered for Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Analysis for the BDCP EIR/EIS*. Projects analyzed in the cumulative conditions analysis are identified in the table with a "Yes" under the "Cumulative" column.

[165] See Chapter 5, *Water Supply*, Section 5.3.5; Chapter 6, *Surface Water*, Section 6.3.5; Chapter 7, *Groundwater*, Section 7.3.5; Chapter 8, *Water Quality*, Section 8.3.5; Chapter 9, *Geology and Seismicity*, Section 9.3.5; Chapter 10, *Soils*, Section 10.3.5; Chapter 11, *Fish and Aquatic Resources*, Section 11.3.6; Chapter 12, *Terrestrial Biological Resources*, Section 12.3.5; Chapter 13, *Land Use*, Section 13.3.5; Chapter 14, *Agricultural Resources*, Section 14.3.5; Chapter 15, *Recreation*, Section 15.3.5; Chapter 17, *Socioeconomics*, Section 16.3.5; Chapter 17, *Aesthetics and Visual Resources*, § 17.3.5; Chapter 18, *Cultural Resources*, Section 18.3.7; Chapter 19, *Transportation*, Section 19.3.5; Chapter 20, *Public Services and Utilities*, § 20.3.5; Chapter 21, *Energy*, Section 21.3.5; Chapter 22, *Air Quality and Greenhouse Gases*, Section 22.3.5; Chapter 23, *Noise*, Section 23.3.5; Chapter 24, *Hazards and Hazardous Materials*, Section 24.3.5; Chapter 25, *Public Health*, Section 25.3.5; Chapter 26, *Mineral Resources*, Section 26.3.5; Chapter 27, *Paleontological Resources*, Section 27.3.5; Chapter 28, *Environmental Justice*, Section 28.5.5.

[166] See State CEQA Guidelines, § 15145; *Save Round Valley Alliance v. County of Inyo* (2007) 157 Cal.App.4th 1437, 1450–1451 ("[W]hen future development is unspecified and uncertain, the EIR is not required to include speculation about future environmental consequences of such development"); *National Parks*, *supra*, 42 Cal.App.4th at p. 1515 (same); *Laurel Heights I*, *supra*, 47 Cal.3d 376, 398 ("We do not require prophesy. … Nor do we require a discussion in the EIR of specific future action that is merely contemplated or a gleam in the planner's eye"); State CEQA Guidelines, § 15064, subd (a)(3) ("A change which is speculative or unlikely to occur is not reasonably foreseeable"); see also *Kleppe v. Sierra Club* (1976) 427 U.S. 390, 400–401 (EIS not required for a program which is merely "contemplated," rather than proposed).

[167] See Appendix 1B, *Water Storage*, Section 1B.1, for a discussion of future north- and south-of-Delta water storage projects. As explained therein, although new storage projects are the subject of ongoing discussions, and may well someday be formally proposed and subjected to environmental review, such projects have not reached the stage of planning that would make them "probable future projects" for the purposes of CEQA or "reasonably foreseeable actions" for the purposes of NEPA. See also, CalFed Surface Storage Investigation Progress Report 2010 (DWR 2010) (explaining the status of the five surface storage sites that were included in the CalFed Surface Storage Program Record of Decision for further study and consideration [i.e., Sites Reservoir, additional storage in the upper San Joaquin River watershed, expansion of Los Vaqueros Reservoir, expansion of Shasta Lake, and In-Delta storage project). The full report is available here: http://wwwdwr.water.ca.gov/storage/docs/Progress%20Report%202010/a_Full%20Report_Surface%20Storage%20Progress%20Report.pdf (as of January 9, 2013.) State funding for the surface storage program has been suspended since 2006.

In addition to analyzing cumulative impacts, the EIR/EIS analyzes the environmental impacts associated with reduced water supply from the Delta that would occur under some of the proposed project alternatives analyzed in the EIR/EIS.

For additional information regarding cumulative impacts, please see Master Response 9, *Cumulative Impact Assessment*.

Statutory and Regulatory Protections

As additional projects related to the California water system are proposed, they will be required to comply with various environmental protection statutes and regulations (including CEQA), which would ensure that their environmental effects are considered and generally minimized where feasible. Regulatory and permitting requirements, for example, would require that future surface storage investigations consider potential effects to stream flow regimes, water quality, stream geomorphology, fish and wildlife habitat, and the risk of dam failure during seismic and operational events. Compliance with CEQA would ensure the significant adverse environmental impacts of future projects are disclosed, and reduced or avoided through the implementation of feasible mitigation measures or feasible alternatives. Furthermore, compliance with CEQA and ESA would require assessment of other projects' consistency with this proposed project, thereby helping to assure that other future projects would not impede this proposed project's habitat goals and objectives. Compliance with NEPA would also ensure that the Federal agencies carefully consider information concerning the impacts of the future actions on the environment, including the environmental effects and impacts of such future actions, reasonable alternatives to them, possible mitigation measures for any negative environmental impacts that will result from them, and the cumulative e impacts of the actions combined with other past, present, or foreseeable future actions. Thus, through compliance with CEQA and NEPA, the combined impacts of this proposed project and other potential future projects would be analyzed and addressed.

Conclusion

Meeting California's future water supply needs will be a challenge, not just for DWR, but for all water suppliers throughout the state. No quick or singular fix will satisfy California's future water demand. The California WaterFix, however, would substantially advance the co-equal statutory goals of the Delta Reform Act of water supply reliability and Delta ecosystem protection, and would also advance other policy objectives reflected in other various federal, state, and local laws and regulatory planning documents. It is not the purpose of the proposed project to attain the specific goals and objectives of all water supply management programs affecting California. For the reasons discussed in this master response, future storage projects, DMMs, and other water planning efforts are not reasonably foreseeable consequences of the proposed project; and, conversely, the proposed project is not a reasonably foreseeable consequence of such efforts. Furthermore, the proposed project has significant utility independent of any such efforts: the proposed project would result in independent benefits, has impendent purposes and objectives, and is autonomous from other water planning efforts.

With regard to North of Delta Off-Stream Storage, please see Master Response 37, *Water Storage*. Notably, however, certain other future storage projects would be pursued by different governmental entities and DWR has no legal authority to dictate how individual water suppliers and users manage their demands. The geographic scope of the proposed project would also differ in many significant

respects from future north- and south-of-Delta storage projects. As a result, the environmental consequences and mitigation measures would not likely overlap with those of the proposed project.

Lastly, even if other storage projects were a consequence of, and lacked independent utility from, the proposed project, which is not the case, this EIR/EIS does not prejudice the public or public agency decision-making because the EIR/EIS evaluates the cumulative impacts of the proposed project in combination with other reasonably probable future projects and reasonably foreseeable future actions. To the extent that future water planning efforts, including future surface storage projects, are not reasonably probable or reasonably foreseeable, CEQA and NEPA do not requires such projects to be analyzed as part of the cumulative impacts analysis. Such projects, however, if and when they are proposed, will be required to comply with all applicable statutory and regulatory environmental protections, including CEQA, NEPA, ESA, CESA, and various permitting requirements, thereby ensuring that their environmental effects are considered and, where required, minimized. For each of these reasons, the lead agencies were not required to analyze future storage projects, DMMs, or other similar efforts as part of the "project" or "action" evaluated in the EIR/EIS.

Master Response 9: Cumulative Impact Assessment

This master response describes the development of the cumulative impacts analysis in the EIR/EIS. The master response explains how various projects and programs were selected for inclusion in the analysis and how the analysis is consistent with NEPA and CEQA requirements.

Both CEQA and NEPA require the assessment of cumulative impacts as part of the environmental review process. Under CEQA, "cumulative impacts refer to two or more effects that when considered together are considerable or which compound or increase other environmental impacts" (State CEQA Guidelines, Section 15355). The CEQA guidelines go on to state that the types of projects that should be considered in a cumulative impact analysis are "closely related past, present, or reasonably foreseeable probable future projects" (State CEQA Guidelines, Section 15355; see also State CEQA Guidelines, Section 15130, subd. (b)(1)(A)). The state lead agencies need not provide a discussion of the cumulative impacts at the same level of detail as provided for the impacts attributable to the project alone (State CEQA Guidelines, Section 15130, subd. (b)).

NEPA also provides guidance regarding treatment of cumulative impacts and how to determine the types of projects that should be considered in the impact analysis. The NEPA regulations adopted by the Council on Environmental Quality (CEQ) indicate that a cumulative impact is an impact on the environment that results from the incremental impact of a particular action when added to other past, present, or reasonably foreseeable future actions, regardless of the entity undertaking such action (CEQ NEPA Regulations Part 1508 Section 1508.7). Additional guidance is provided by the Bureau of Reclamation (Reclamation) NEPA handbook, which, similar to CEQA, indicates that past, present, and reasonably foreseeable projects should be included, although an exhaustive analysis of past projects is not required (US Department of Interior 2012). The Reclamation NEPA handbook also indicates that it is the agency's discretion as to how the cumulative impact assessment is incorporated into the NEPA document (US Department of Interior 2012).

The purpose of the cumulative impact analysis is to assess the impacts of a proposed action in combination with a group of actions or projects with similar or overlapping impacts. Neither CEQA nor NEPA, however, require that all impacts on all resources be combined and a finding be made about an overall impact on the environment. One of the purposes of the CEQA and NEPA documentation, though, is to provide decision makers and the public with enough information to adequately consider the combined impacts of the project.

Cumulative impacts were considered in the Draft EIR/EIS, the RDEIR/SDEIS, and this Final EIR/EIS. The lead agencies agreed to conduct the analysis using the "list" approach, which allowed for development of a list of projects unique to each resource topic. The cumulative impact assessment is included at the end of each resource chapter in this Final EIR/EIS. The discussion includes a summary table of closely related projects and programs that were included in the cumulative impact analysis for that particular resource. The summary table identifies the lead agency, project, and its status, and describes the project and the impacts on the resource in question.

Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, provides detail on the approach and projects used in the cumulative impact assessment. The appendix includes a comprehensive list of all potential projects that were considered in the preparation of the EIR/EIS and if those projects were considered as part of the description of existing conditions, as part of the No Action Alternative, or as part of the cumulative

analysis. This master list of projects was created by reviewing other project-level and program-level environmental compliance documents that share some of the characteristics of either the BDCP or California WaterFix or generally share the same potential impact footprint affecting a particular environmental resource. The total number of projects included on the list exceeds 160. For the cumulative impact assessment, technical staff responsible for conducting resource assessments reviewed and updated this list and selected projects that may result in an impact on a resource that also could be effected by the proposed project or alternatives.

The list of projects vary from resource topic to resource topic. As an example, the list of cumulative projects developed for the cultural resources assessment was different than the list developed for the water quality assessment, as each of the projects selected have common impact mechanisms that would result in an impact on cultural resources or water quality, but not both. It should be noted that frequently the scopes of many projects were broad enough to encompass many resource topics and were included in multiple cumulative impact assessments.

It should also be noted that some of the hydrologic modeling project-level results are somewhat cumulative in nature because the input to these models must make allowances for use of water outside boundaries of the project alternatives. This was important to correctly estimate future with- and without-project hydrologic conditions depending on the impact horizon (early long-term and late long-term). Although the amount of water supplied by the alternatives would not change, upstream demand would be expected to change during the duration of the project. In the case of the CALSIM modeling, this includes increased demand based on the level of buildout estimated under each relevant county's general plan. As indicated above, this method of incorporating increased water demand into the CALSIM II modeling meets Reclamation's guidance on how to incorporate the cumulative analysis into the NEPA documentation. As indicated in the methodology sections of some resource chapters, the results of the hydrologic impact analysis were used as the foundation for some of the impact assessments included in the chapters on water supply, surface water, water quality, groundwater, aquatic resources, recreation, and energy. In essence, the elements of these impact assessments that relied on the hydrologic impact assessment as the foundation for their unique assessments are also cumulative in nature. After applying this approach on a project-level basis, it was then applied on a cumulative project-level basis.

Once a list of projects was developed for each resource topic, a "two-step" process of determining potential significance of a cumulative impact was applied, as endorsed by CEQA case law: 1) The cumulative analysis first determines if the effects of the proposed project, in combination with those of other past, present, and probable future projects, would be *cumulatively significant*—that is, if a significant cumulative impact exists. 2) If the answer is yes, the analysis then determines whether the proposed project's incremental effect is *cumulatively considerable* and thus significant in and of itself (See *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 120; see also State CEQA Guidelines Section 15064[h][1]).

The cumulative impact assessments are located at the end of Chapters 5 through 28. Each chapter includes a table listing the projects considered as part of the impact analysis followed by an analysis of cumulative impacts framed by the impact topics addressed within each alternative considered. The cumulative impact analysis includes an assessment of the combined impacts of the alternatives with the projects included in the cumulative impact projects table. Each impact discussion includes both NEPA effects and CEQA impacts conclusions and proposes mitigation to reduce significant impacts.

Master Response 10: Significant and Unavoidable Impacts

This master response discusses how and why different impacts were labeled "significant and unavoidable" under CEQA, and the approach to lessen the impacts with feasible mitigation measures.

Under CEQA, an agency may not approve a project with significant environmental impacts if there are *feasible* mitigation measures available which would substantially lessen those impacts (Public Resources Code Section 21081, subd. (a); State CEQA Guidelines Section 15092, subd. (b); see *Santa Clarita Organization for Planning the Environment v. City of Santa Clarita* (2011) 197 Cal.App.4th 1042, 1052-1053). Thus, for every significant impact identified in an EIR, the agency must adopt all feasible mitigation measures that would substantially reduce the impact. Even with all feasible mitigation, however, the level of some impacts may still be higher than the threshold of significance identified in the EIR. In CEQA parlance, these types of impacts are called "significant and unavoidable." Finding an impact significant and unavoidable triggers additional CEQA requirements at the time of project approval. Before approving any project with significant and unavoidable impacts, a public agency's decisionmaker(s) must make explicit findings stating the agency's reasons for approving the project notwithstanding such impacts. These reasons constitute the statement of overriding considerations that is intended to demonstrate the balance struck by the decisionmaker(s) in weighing the benefits of a proposed project against its environmental risks (Public Resources Code Section 21081, subd. (b); State CEQA Guidelines Sections 15092, subd. (b)(2)(B), 15093).

The significant and unavoidable impacts identified for the proposed project and alternatives in the EIR/EIS are not "unmitigated." Feasible mitigation is provided where appropriate, notwithstanding the fact that the mitigation may not be sufficient to reduce the impact to a less-than-significant level. For the proposed project, there are generally two categories of significant and unavoidable impacts identified in the EIR/EIS. One category consists of impacts that, despite all feasible mitigation, will remain significant and unavoidable (i.e., they cannot feasibly be mitigated to a level below the threshold of significance identified in the EIR/EIS). Again, significant and unavoidable does not mean that mitigation is not required. In fact, the EIR/EIS includes mitigation measures for most of the significant and unavoidable impacts. For more information regarding significant and unavoidable impacts please see Chapter 31, *Other CEQA/NEPA Required Sections, including Mitigation and Environmental Commitment Impacts, Environmentally Superior Alternative, and Public Trust Considerations*.

The second major category of significant and unavoidable impacts consists of impacts that have the potential to be mitigated to less-than-significant levels should a particular third party, such as an individual or governmental agency, cooperate with the project proponents as recommended in the mitigation measure. This latter category of impacts is conservatively characterized as significant and unavoidable only because the California Department of Water Resources (DWR), as the CEQA lead agency, could not be certain that these other parties will cooperate as proposed. DWR is hopeful and optimistic that such cooperation will occur when needed, but DWR does not have the authority to unilaterally impose legal obligations on third parties. Should such cooperation indeed materialize, however, the identified mitigation measures will reduce the impacts to less-than significant-levels.

For example, several of the traffic mitigation measures described in Chapter 19, *Transportation*, are contingent on DWR reaching agreements with local transportation agencies to make the necessary improvements to mitigate for significant impacts (e.g., Mitigation Measure TRANS-1a; Mitigation Measure TRANS-1b; Mitigation Measure TRANS-1c; Mitigation Measure TRANS-2a; Mitigation Measure TRANS-2b; Mitigation Measure TRANS-2c). Because these agreements require that agencies other than DWR take specific actions and it is not certain that these agencies will be willing to enter into mitigation agreements and make such improvements prior to an impact occurring, most traffic impacts are conservatively deemed significant and unavoidable. Because such agreements would benefit these other agencies and the public they serve, DWR is optimistic that the agencies will be willing to enter into the agreements. If the agencies cooperate as expected, nearly all traffic impacts will be mitigated to a less-than-significant level, as demonstrated in Chapter 19. Thus, the number of significant and unavoidable impacts identified in Chapter 19, *Transportation*, is much higher than what is actually likely to occur. Nevertheless, it is consistent with the informational purposes of CEQA and NEPA to identify the impacts as significant and unavoidable to foster public participation and informed decision making.

As another example, Chapter 20, *Public Services and Utilities*, indicates that Impact UT-6: Effects on Regional or Local Utilities as a Result of Constructing the Proposed Water Conveyance Facilities is significant and unavoidable. Mitigation Measures UT-6a, UT-6b, and UT-6c are available to reduce the impact to a less-than-significant level. If coordination with all appropriate utility providers and local agencies to integrate with other construction projects and minimize disturbance to communities is successful under Mitigation Measure UT-6b, the impacts could be less than significant. But because such coordination cannot be guaranteed at this time, the Final EIR/EIS conservatively concludes that the impact will be significant and unavoidable.

There are also instances where the ability of the identified mitigation measures to reduce impacts below the level of significance was uncertain when the Draft EIR/EIS and RDEIR/SDEIS were published. In these instances, the impacts are conservatively labeled significant and unavoidable. In other words, "significant and unavoidable" simply means that the lead agencies could not be certain that the proposed mitigation will succeed in mitigating an impact to a level below significance. For instance, the Final EIR/EIS describes Impact AQ-24: Generation of Criteria Pollutants from Implementation of Environmental Commitments 3, 4, 6–11 under Alternatives 4A, 2D, and 5A, and notes that construction and operational emissions associated with the restoration and enhancement actions would result in a significant impact if the incremental difference, or increase, relative to existing conditions exceeds the applicable local air district thresholds. The Final EIR/EIS recognizes that the impact would vary according to the equipment used in construction of a specific Environmental Commitment, the location, the timing of the actions called for in the Environmental Commitment, and the air quality conditions at the time of implementation. The Final EIR/EIS explains that Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to reduce emissions below applicable air quality management district thresholds given the detail available for these Environmental Commitments, even though those restoration actions would be approximately one-tenth the acreage of habitat included in Alternative 4 (BDCP). Therefore, for effects of Environmental Commitments 3, 4, and 6–11, the EIR/EIS conservatively concludes that the impact is significant and unavoidable even though the mitigation provided could potentially reduce these impacts to a less-than-significant level.

The Final EIR/EIS also takes a conservative approach and labels certain impacts significant and unavoidable when there is uncertainty regarding whether an environmental impact will occur. For example, Chapter 20, *Public Services and Utilities*, describes potential impacts on Public Services and

Utilities as a result of implementing Environmental Commitments 3, 4, and 6–11 under Alternatives 4A, 2D, and 5A (Impact UT-8). The Final EIR/EIS explains that implementation of Environmental Commitments 3, 4, and 6–11 probably would not require alteration of, or the construction of new facilities due to an increased demand for public services and utilities. And construction and operation activities associated with the proposed Environmental Commitments would result in a less-than-significant impact on solid waste management facilities based on the capacity of the landfills in the region and the waste diversion requirements set forth by the State of California. At this stage of project planning, it is not possible and would be speculative to identify the precise locations and details regarding construction or operations (i.e., water consumption and water sources associated with Environmental Commitments) for these facilities and programs. Therefore, the need for new or expanded water or wastewater treatment facilities and the potential to disrupt utilities in the study area is unknown. Mitigation Measures UT-6a, UT-6b, and UT-6c would reduce the severity of impacts on utilities; however, it remains uncertain whether this impact would even occur, let alone be reduced to a less-than-significant level if it does. In light of the uncertainty, the EIR/EIS conservatively concludes that the impact would be significant and unavoidable.

As the foregoing examples demonstrate, the Final EIR/EIS takes a conservative approach regarding the level of significance identified for many impacts. Labeling an impact significant and unavoidable does not mean that adverse effects would definitely occur; rather, such labeling often indicates that such effects cannot be ruled out on the basis of current knowledge. After expressly recognizing the uncertainty of some impacts and mitigation, the Final EIR/EIS conservatively concludes that certain impacts are significant and unavoidable. By taking this conservative approach, the Final EIR/EIS likely overstates the project's actual environmental impacts.

Nevertheless, the number of significant and unavoidable impacts has no bearing on whether a project should or should not be approved under CEQA. Indeed, even seemingly environmentally benign or modest projects often have at least some significant and unavoidable impacts. This point is illustrated by *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, which involved an EIR for a proposed zoning ordinance that would allow boutique wineries in rural San Diego County by right (as opposed to requiring a discretionary zoning permit). The subject ordinance imposed many restrictions on the wineries, including minimum local grape requirements, parking requirements, and prohibitions on parties and amplified music. Despite these restrictions, the county's EIR identified 22 significant unavoidable environmental impacts on air quality, biological resources, cultural resources, hydrology and water quality, noise, transportation and water supply. (*Id*., at p. 7.)

In fact, although the precise number varies amongst different projects, it is not at all unusual for projects to have a "high" number of significant and unavoidable impacts (see, e.g., State Clearing House Nos. 2007032157 [EIR for specific plan project showing 64 significant and unavoidable impacts]; 2007122069 [EIR for general plan update showing 27 significant and unavoidable impacts]; 2008032052 [EIR for bicycle plan showing 44 significant and unavoidable impacts]; 2006091071 [EIR/EIS for transmission line project showing 52 significant and unavoidable impacts]; 1999062020 [EIR for specific plan project showing 67 significant and unavoidable impacts]). This seeming abundance of significant unavoidable effects in these projects does not mean that they are environmentally devastating. Rather, the number of such effects may well represents nothing more than legally conservative approaches to impact analysis and characterization, as allowed under CEQA and encouraged by the courts of this state.

Taking such a conservative approach, however, does not undermine the informational purposes of CEQA and NEPA, nor does it indicate that impacts characterized as significant and unavoidable will not be mitigated to the extent feasible. Instead, it presents decision makers and the public with a reasonable "worst case" scenario, and requires the CEQA lead agency to balance the potential significant and unavoidable environmental impacts against project benefits to reach an informed decision as documented in its findings and, if approved, statement of overriding considerations.

Master Response 11: Local Jurisdiction Plans and Policies

This master response discusses why the California Department of Water Resources and federal agencies are not subject to local land use authority and how the EIR/EIS considers consistency with local plans and polices in relation to the impact analysis.

Generally, state and federal agencies such as the California Department of Water Resources (DWR) and the U.S. Bureau of Reclamation (Reclamation), as well as some local or regional agencies involved with the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, are not subject to local land use regulations.[168] Therefore, although the proposed project strives for consistency with local general plans and other local land use regulations to the extent feasible, given the project's objectives and purpose and need, the proposed project cannot in many instances, and need not, as a legal matter, be consistent with local enactments. As CEQA and NEPA require an agency to analyze direct or indirect physical effects on the environment, inconsistencies with local plans, by themselves, do not amount to significant environmental effects under CEQA or adverse environmental effects under NEPA.

As explained in Chapter 13 *Land Use*, California Government Code Section 65300 et seq. establishes the obligation of California cities and counties to adopt and implement general plans. A general plan is a comprehensive, long-term document that describes plans for the physical development of a city or county and of any land outside its boundaries that, in the city's or county's judgment, bears relation to its planning (California Government Code Section 65300). The general plan addresses a broad range of topics or "elements," including, at a minimum, land use, circulation, housing, conservation, open space, noise, and safety. In addressing these topics, the general plan identifies the goals, objectives, policies, principles, standards, and plan proposals that support the city's or county's vision for the area.

General plans are important because they serve as the basis for many local land use decisions.[169] For instance, local zoning, subdivisions, capital improvements, development agreements, and numerous other land use actions can generally only be approved when they are consistent with the local jurisdiction's general plan. An action, program, or project is considered to be consistent with a general plan if, considering all its aspects, the action, program, or project will further the goals, objectives, and policies of the plan and not obstruct their attainment.[170] Because many local actions must be consistent with general plans, general plans play an important role in local land use planning and local decision-making.

[168] / See, e.g., *Hall v. Taft* (1956) 47 Cal. 2d 177, 183; *Town of Atherton v. Superior Court* (1958) 159 Cal.App.2d 417 and *Lawler v. City of Redding* (1992) 7 Cal. App. 4th 778, 784.

[169] / See *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 570-571.

[170] / See *Pfeiffer v. City of Sunnyvale City Council* (2011) 200 Cal.App.4th 1552, 1562-1563; *Friends of Lagoon Valley v. City of Vacaville* (2007) 154 Cal.App.4th 807, 815.

State and federal agencies, such as DWR and its federal counterparts, however, are generally immune from local regulation and land use controls based on the doctrine of sovereignty and therefore are typically not bound by city and county general plans or local ordinances.[171] The concept of sovereignty involves a hierarchy of governmental authority that has the federal government at its apex, then moves downward to state government, and follows to local governments, such as cities and counties. (The supremacy of the federal government in this scheme is set forth in the "supremacy clause" of the United States Constitution (Article VI, Clause 2).[172]) State and federal agencies, such as DWR and Reclamation, therefore, are not bound by local general plans, regulations, or ordinances because cities and counties lack legal authority over state and federal agencies, as higher sovereigns.

The state can waive its right to be free from local regulation, but only if it consents through statute or provision of the California Constitution.[173] Because the state's immunity from local regulations is an extension of the concept of sovereign immunity, the consent to waive immunity must be expressly stated.[174] There has been no waiver of immunity or consent to local control for DWR operations generally or for the proposed project specifically.

The same general concept of immunity also applies to regional [pans. Some commenters suggested that the proposed project does not adequately address consistency with the Land Use and Resource Management Plan for the Primary Zone of the Delta (LURMP) adopted by the Delta Protection Commission (DPC). As explained in Chapter 13, *Land Use*, the DPC adopted the LURMP for the Primary Zone of the Delta on February 23, 1995, as required by the Delta Protection Act of 1992 (Public Resources Code Section 29700 et seq.). An updated LURMP became effective on November 6, 2010. The LURMP contains numerous policies aimed at protecting the Delta. These policies are required by law to be incorporated into the local general plans of the counties with jurisdiction over portions of the Primary Zone of the Delta, as defined by the Delta Protection Act (Public Resources Code Section 29763). Where someone believes that a local planning decision is inconsistent with the LURMP, such a decision can be appealed to the DPC for a determination of consistency with the LURMP (Public Resources Code Section 29770).

There is nothing in the law, however, that makes the LURMP binding on state agencies, such as DWR, or any federal agencies. In fact, the Delta Protection Act expressly states that the DPC is not authorized to "exercise any jurisdiction over matters within the jurisdiction of, or to carry out its powers and duties in conflict with, the powers and duties of any other State agency" (Public Resources Code Section 29716). Because DPC's authority is limited to local jurisdictions in the Primary Zone of the Delta, DWR and Reclamation are not bound by the LURMP. And again, state and federal agencies are not bound by policies in a city or county general plan, including the policies incorporated into a general plan pursuant to the Delta Protection Act.

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171 / See, e.g., *Hall v. Taft* (1956) 47 Cal.2d 177, 183; *Town of Atherton v. Superior Court* (1958) 159 Cal.App.2d 417; *Lawler v. City of Redding* (1992) 7 Cal.App.4th 778, 784; *Laidlaw Waste Systems, Inc. v. Bay Cities Services, Inc.* (1996) 43 Cal.App.4th 630, 635; *Bame v. City of Del Mar* (2001) 86 Cal.App.4th 1346, 1356; *City of Orange v. Valenti* (1974) 37 Cal.App.3d 240, 244; *Rapid Transit Advocates, Inc. v. Southern Cal. Rapid Transit Dist.* (1986) 185 Cal.App.3d 996, 1001.

172 / See also *United States v. City of Pittsburg, California,* 661 F.2d 783 (9th Cir. 1981); 68 Ops.Cal.Atty.Gen. 310 (1985).

173 / See *Laidlaw Waste Systems, Inc. v. Bay Cities Services, Inc.* (1996) 43 Cal.App.4th 630, 635; *Bame v. City of Del Mar* (2001) 86 Cal.App.4th 1346, 1356.

174 / See *City of Orange v. Valenti* (1974) 37 Cal.App.3d 240, 245; *Laidlaw Waste Systems, Inc. v. Bay Cities Services, Inc.* (1996) 43 Cal.App.4th 630, 635; *Bame v. City of Del Mar* (2001) 86 Cal.App.4th 1346, 1356.

Refer to Chapter 13, *Land Use*, Section 13.3.4.2 for further information on LURMP's policies pertaining to the proposed project (Alternative 4A).

Although the DWR and Reclamation are not required to comply with local regulations or other local land use controls, including general plans and the LURMP, the EIR/EIS nevertheless identifies relevant local land use plans, policies, and regulations that are adopted for the purpose of avoiding or mitigating an environmental effect and analyzes whether the proposed project and alternatives are consistent with them. Such analysis is consistent with the directive of State CEQA Guidelines Section 15125, subdivision (d), which requires EIRs to "discuss any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans," and with the inquiry, in the sample Initial Study checklist found in Appendix G to the Guidelines, which asks whether a proposed project would "[c]onflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect" (State CEQA Guidelines, Appendix G, Sample Questions, Section X, Land Use and Planning). Analysis of potential inconsistencies with local plans is also consistent with the principle that, among the factors relevant under NEPA to the "intensity" of environmental impacts is "[w]hether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment" (40 Code of Federal Regulations Part 1508.27[b][10].)

As previously stated, potential inconsistencies with local enactments, and particularly those not binding on the state or federal governments, however, do not per se translate into adverse environmental effects under either CEQA or NEPA. The mere fact of inconsistency (a "paper" phenomenon) is not by itself an adverse effect on the environment. Such paper inconsistencies sometimes indicate, though, that a proposed physical activity might harm the environmental resource intended to be protected by the plans, policies, or regulations at issue. Potential adverse effects on such resources (e.g., biological or cultural resources) are addressed in separate chapters of this Final EIR/EIS, where the extent and significance of such effects are addressed.

To the extent that constructing Alternative 4A would result in incompatibilities with land use designations, goals, and policies designed to avoid or reduce environmental effects, these potential incompatibilities are described in Chapter 13, *Land Use*, Section 13.3.4.2, under Impact LU-1. The relationship between plans, policies, and regulations and impacts on the physical environment is discussed in Section 13.3.1, *Methods for Analysis*. As discussed in Section 13.3.2, *Determination of Effects*, to the extent that alternatives are incompatible with such land use designations, goals, and policies, any related environmental effects are discussed in other resource-specific chapters.

Master Response 12: Reusable Tunnel Material

This master response discusses potential reuse of tunnel material and addresses the concern of reusable tunnel material odor.

Potential Reuse of RTM

Construction of the proposed conveyance facility tunnels under Alternative 4 or 4A would result in approximately 31 million cubic yards of reusable tunnel material (RTM). The Final EIR/EIS identifies the potential for reuse of these materials, but for purposes of impact analyses has assumed that the locations for RTM storage are permanent because no specific use of RTM has been identified and reuse of RTM is not required for implementation of the project. Nevertheless, environmental commitments have been incorporated into project alternatives that describe the conditions for reuse of RTM to avoid and reduce potential environmental effects (see Appendix 3B, *Environmental Commitments, AMMs and CMs*, Section 3B.2.18, *Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material*).

While additives used to facilitate tunneling will be nontoxic and biodegradable, it is possible that some quantity of RTM will be deemed unsuitable for reuse. In such instances, the material will be disposed of at a site approved for disposal of such material. In the case of RTM, such requirements are anticipated to apply to less than 1% of the total volume of excavated material (or 270,000 cubic yards). It is anticipated that up to 99% of the total volume could be suitable for beneficial reuse following draining/drying and physical and chemical characterization. A preliminary laboratory study was done by the California Department of Water Resources (DWR) to assess the geotechnical and chemical characteristics, and the plant suitability properties of mixtures of soil samples from the proposed tunnel depths and three different soil conditioners. Based on the results of the geotechnical tests it was determined that RTM may be suitable for strengthening Delta levees identified for maintenance and repair, as structural fill for construction of the proposed water conveyance facilities, and as fill on subsiding Delta islands. Chemical characterization of the laboratory RTM samples showed no indication that RTM would require handling as hazardous waste material, and that RTM could meet conditions acceptable for unrestricted land uses. However, additional risk assessment studies would need to be done if RTM were to be considered for use where people would be in contact with the soil, either directly (e.g., through skin contact) or indirectly (e.g., as airborne particulate, or as leachate in surface or drinking water). The planting suitability test results indicated that the conditioner products do not appear to pose a significant threat to planting suitability.

Prior to construction, draining, and chemical characterization of RTM, DWR shall identify sites for RTM reuse to the greatest extent feasible, in connection with construction activities, habitat restoration and protection activities, as well as potential beneficial uses associated with flood protection and management of groundwater levels (see Appendix 3B, *Environmental Commitments, AMMs and CMs*, Section 3B.2.18, *Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material*). DWR will undertake a thorough investigation to identify sites for the appropriate reuse of material and, based on the properties of the material and in consultation with other interested parties, DWR will identify the specific site for that material.

Material applied to reduce the localized effects of subsidence will be placed on lower elevation lands and lands adjacent to levees, in order to minimize effects on agricultural practices and improve levee stability. The material may be left in place and used as stockpile to assist in flood response. The feasibility of these approaches to reuse will depend upon the suitability of the material for each purpose based on testing of relevant properties. Site-specific factors such as local demand for materials and the ability to transport the materials would also be important considerations in assessing options for reuse. To the extent that the reuse of the materials for these purposes may lead to adverse environmental effects, such effects shall be addressed through site-specific environmental documents prepared under NEPA and CEQA, possibly including environmental documents for proposed habitat restoration projects where the materials can be used within such projects.

DWR will consult relevant parties, such as landowners, reclamation districts, flood protection agencies, federal and state agencies with jurisdiction in the Delta, and counties, in developing such site-specific spoil, RTM, and dredged material reuse plans. Where DWR determines that it is appropriate that materials be used to prepare land at elevations suitable for project-related restoration or protection of habitat, DWR will develop site-specific plans for transporting and applying the materials to restoration work sites.

Depending on the selected reuse strategies, however, implementation of spoil, RTM, and dredged material reuse plans could also result in beneficial effects associated with flood protection and response, habitat creation, and depth to groundwater in areas where the ground level is raised.

RTM and associated decant liquid will undergo chemical characterization by the contractor(s) prior to reuse or discharge, respectively, to determine whether it will meet National Pollutant Discharge Elimination System (NPDES) and the Central Valley Regional Water Quality Control Board requirements. Should RTM decant liquid constituents exceed discharge limits, these tunneling byproducts will be treated to comply with NPDES permit requirements. Discharges from RTM draining operations will be conducted in such a way as to not cause erosion at the discharge point. If RTM liquid requires chemical treatment, chemical treatment will ensure that after treatment RTM liquid will be nontoxic to aquatic organisms.

RTM Odor

As described in Chapter 22, *Air Quality and Greenhouse Gases,* Section 22.3, the anaerobic (without oxygen) decomposition of organic material by soil bacteria can generate malodorous gases such as hydrogen sulfide. Hydrogen sulfide is commonly described as having a foul or “rotten egg” odor. Although RTM will be excavated from depths as great as 150 feet below the ground surface where oxygen is lacking, it is unlikely that it will be malodorous when managed and stored in the RTM storage areas. DWR’s recent preliminary geotechnical tests indicate that soils in the Plan Area are predominately comprised of sand, silt and clay, with a variety of inorganic materials that are not anticipated to result in malodors. The majority of test results for organic constituents and volatile organic compounds were below the method detection limits, indicating that organic decomposition of exposed RTM will be relatively low (URS 2014). Moreover, drying and stockpiling of RTM will occur under aerobic conditions, which will further limit any potential decomposition and associated malodorous byproducts.

Master Response 13: Public Trust

This master response discusses topics related to the public trust doctrine, specifically a general overview of public trust law and its relation to the proposed project, and public trust obligations. This response also generally addresses the specific public trust resource topics that are described in detail in the EIR/EIS.

General Overview

The guiding principle of California's water law and policy is contained in Article X, Section 2 of the California Constitution. This section requires that all uses of the state's water, including public trust uses, be both reasonable and beneficial.[175] It places a significant limitation on water rights by prohibiting the waste, unreasonable use, unreasonable method of use, and unreasonable method of diversion of water.[176] In administering resources subject to the public trust, state agencies must act "with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare."[177]

National Audubon Society v. Superior Court (1983) 33 Cal.3d 419 is the seminal case articulating the common law public trust doctrine in California. There, the Supreme Court held that the state, as represented by the State Water Resources Control Board (State Water Board), holds the waters of the state in trust for the benefit of all Californians, and therefore "[t]he state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible."[178] Public trust resources include "environmental and recreational values."[179] But the doctrine does not require state agencies with public trust obligations to give greater weight to public trust values than other competing uses of such resources. It determined that to protect the "prosperity and habitability of much of" California, the State Water Board has the discretion to "grant nonvested usufructuary rights to appropriate water even if diversions harm public trust uses."[180] Accordingly, in the *State Water Resource Control Board Cases* (2006) 136 Cal.App.4th 674, 778, the court held that the State Water Board was required to balance competing interests to determine what level of protection for public trust resources was "feasible." Similarly, in *Carstens v. California Coastal Comm*. (1986) 182 Cal.App.3d 277, 293, the court held that the Coastal Commission properly took the public trust into account consistent with the public trust doctrine and Coastal Act requirements when it issued permits for a nuclear power plant that blocked public access to a beach, given competing interests. In *Center for Biological Diversity v. Cal. Dept. of Forestry and Fire Protection* (2014) 232 Cal.App.4th 931 , 953, the court held that the public trust doctrine did not require the state to oppose a permit for timber harvest. And in *Colberg, Inc. v. State of California ex rel. Dept. Pub. Wks*. (1967) 67 Cal.2d 408, 419, the court held that the state can choose to advance one public trust interest over another.[181] Indeed, evaluating a project's

[175] *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 446 (*National Audubon*).

[176] CA Water Plan Update 2009, page 1.

[177] California Constitution, Article X, Section 2.

[178] *National Audubon*, *supra*, 33 Cal.3d at p. 446.

[179] *Id*. at p. 425.

[180] *Id*. at p. 426.

[181] *Colberg, supra*, at pp. 418-420.

environmental impacts under CEQA has been held to be "sufficient 'consideration' for public trust purposes."[182]

In summary, what constitutes feasible protection for public trust resources is a determination made by the responsible state agency after balancing public trust and competing interests and considering its statutory authority and responsibilities. To the extent that the California Department of Water Resources (DWR) has a duty to take public trust values into account before it approves a project, it has done so through the process of designing and studying the impacts of the proposed project, as documented in large part by this EIR/EIS. Other agencies, such as the State Water Board and the California Department of Fish and Wildlife (CDFW), have the duty to take public trust values within their statutory roles into account when issuing permits for the proposed project, processes that rely on the Final EIR/EIS, but which also have different statutory requirements not relevant to DWR's decision-making.

Proposed Project Consideration of Public Trust

In addition to retrofitting, modernizing, and adding greater flexibility to the state's water system, the proposed project, California WaterFix, would align water operations to better reflect natural seasonal flow patterns by creating new water diversions in the north Delta equipped with state-of-the-art fish screens, thus reducing reliance on the south Delta diversion facility. California WaterFix will also provide flexibility to improve natural flow patterns through the Delta, which benefits sensitive fish species that use the Delta for all or part of their life cycles.

The proposed project represents an appropriate response to reduced and unreliable water supply, as a balance against relevant environmental considerations, in accord with the public trust doctrine. The Draft EIR/EIS, the RDEIR/SDEIS, and the Final EIR/EIS fully analyze the environmental impacts of the proposed project and other project alternatives designed to restore and protect water supply while preserving and enhancing the health of the Delta for the benefit of fish and wildlife. Because the proposed project provides reliable water supplies to avoid the need to obtain supplemental water, it offers significant environmental benefits by minimizing the degradation of air quality associated with fallowed land and the adverse impacts caused by increased groundwater pumping (such as increased soil salinity, land subsidence, higher energy demand, and depletion of groundwater reserves) that currently occur. After balancing the benefits of the proposed project against adverse environmental impacts, the public trust doctrine supports its adoption.

A hallmark of the public trust doctrine is that water-related projects must provide benefits to the public and not sacrifice public benefit for private or purely local advantage.[183] By implementing measures for increased efficiency and reliability of water delivery, California WaterFix meets the constitutional requirement that water resources be put to beneficial use to the fullest extent of which they are capable.

In addition to the constitutional obligations in administering resources subject to the public trust, the California Supreme Court in the *National Audubon* decision recognized two distinct public trust doctrines: the common law doctrine; and a public trust duty derived from statute.[184] Actions by state

[182] *Citizens for East Shore Parks v. Cal. State Lands Comm*. (20 1 1) 202 Cal.App.4th 549, 576-577.

[183] The Public Trust Doctrine, State Lands Commission, page 9.

[184] *Environmental Protection Information Center v. California Dept. of Forestry and Fire Protection* (2008) 44 Cal.4th 459, 515.

agencies involving the planning and allocation of water resources implicate the common law "public trust doctrine."[185] The doctrine "is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust."[186] The "traditional triad" of public trust values is navigation, commerce, and fishing on navigable waters.[187] The doctrine could extend to actions on non-navigable tributaries of navigable waters that adversely affect those navigable waters.[188] The protection of recreational and ecological values "is among the purposes of the public trust."[189]

The *National Audubon* court, as well as subsequent courts' decisions related to public trust, cited early common law to support the state's responsibilities:

> The public trust doctrine, which is traceable to Roman law, rests on several related concepts. First, that the public rights of commerce, navigation, fishery, and recreation are so intrinsically important and vital to free citizens that their unfettered availability to all is essential in a democratic society. "An allied principle holds that certain interests are so particularly the gifts of nature's bounty that they ought to be reserved for the whole of the populace . . . . Finally, there is often recognition, albeit one that has been irregularly perceived in legal doctrine, that certain uses have a peculiarly public nature that makes their adaptation to private use inappropriate. The best known example is found in the rule of water law that one does not own a property right in water in the same way he owns his watch or his shoes, but that he owns only an usufruct—an interest that incorporates the needs of others. It is thus thought to be incumbent upon government to regulate water uses for the general benefit of the community and to take account thereby of the public nature and the interdependency which the physical quality of the resource implies."[190]

Importantly, the public trust doctrine does not operate as an absolute protection of the resources that come under its ambit. Under the doctrine, the state has an "affirmative duty" to protect public trust uses *whenever feasible*."[191]

> [B]oth the public trust doctrine and the water rights system embody important precepts which make the law more responsive to the diverse needs and interests involved in the planning and allocation of water resources. To embrace one system of thought and reject the other would lead to an unbalanced structure, one which would either decry as a breach of trust appropriations essential to the economic development of this state, or deny any duty to protect or even consider the values promoted by the public trust.[192]

Thus, "[a]s a matter of practical necessity, the state may have to approve appropriations despite foreseeable harm to public trust uses. In so doing, however, the state must bear in mind its duty as trustee to consider the effect of the taking on the public trust," and "to preserve, so far as consistent with the *public interest*, the uses protected by the trust."[193]

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[185] *National Audubon, supra,* 33 Cal.3d at p. 446.

[186] *Id.* at p. 441.

[187] *Id*. at p. 434.

[188] *Id.* at p. 437.

[189] *Id*. at p. 435.

[190] *Zack's Inc. v. City of Sausalito* (2008) 165 Cal.App.4th 1163, 1175–1176 (*Zack's*), quoting Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 Mich. L.Rev. 471, 484–485, citations, paragraph breaks, and footnotes omitted.

[191] *National Audubon*, *supra*, 33 Cal.3d at p. 446, italics added.

[192] *Id.* at p. 445.

[193] *Ibid.,* emphasis added.

Although the legal principles are well established, "[t]here is no set 'procedural matrix' for determining state compliance with the public trust doctrine."[194] In general, however, "evaluating project impacts within a regulatory scheme like CEQA is sufficient 'consideration' for public trust purposes."[195] Notably, CEQA requires the imposition of all *feasible* means of reducing the severity of significant environmental effects, including those on water-related resources, including fish, and on wildlife species and their habitats.[196] Where governmental action authorizes the *private* use of public trust resources, however, CEQA compliance without more may not be enough; specific findings separately addressing public trust considerations may be necessary.[197]

Regarding the statutory public trust doctrine, two examples of statutes that impose a public trust duty are Fish and Game Code Sections 711.7 and 1801. Subdivision (a) of Section 711.7 provides that "fish and wildlife resources are held in trust for the people of the state by and through the [D]epartment [of Fish and Wildlife]." Section 1801 declares that it is "the policy of the state to encourage the preservation, conservation, and maintenance of wildlife resources under the jurisdiction and influence of the state," and sets forth several objectives consistent with that policy. Among them are "[t]o provide for economic contributions to the citizens of the state, through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the state, individually and collectively, through regulated management." Notably, though, the general policy set forth in Section 1801 "is not intended [to] . . . provide any power to regulate natural resources or commercial or other activities connected therewith, except as specifically provided by the Legislature." To find such authority, courts will look to the statutes protecting wildlife to determine if DF[W] or another government agency has breached its duties in this regard. One such statute is Fish and Game Code Section 2081, which authorizes the issuance of incidental take permits for endangered and threatened species.

Further the State Water Board is responsible for the protection of resources, such as fisheries, wildlife, aesthetics, and navigation, which are held in trust for the public. The State Water Board must consider these responsibilities when planning and allocating water resources, and protect public trust uses whenever feasible. The State Water Board must consider these public trust values in the balancing of all beneficial uses of water, in accordance with the Water Rights Mission[198] Statement and Water Code Section 1253.[199] For the California WaterFix, the State Water Board will be considering a change in points of diversions under Water Code Section 1701 for DWR and the Bureau of Reclamation's water rights permits in a separate water rights proceeding. As part of that proceeding, the State Water Board will consider conservation of the public interest or public trust

[194] *San Francisco Baykeeper, Inc. v. State Lands Commission* (2015) 242 Cal.App.4th 202, 234 (*SF Baykeeper*), quoting *Citizens for East Shore Parks v. California State Lands Commission* (2013) 202 Cal.App.4th 549, 576 (*Citizens for East Shore Parks*).

[195] *Citizens for East Shore Parks*, *supra*, 202 Cal.App.4th at pp. 576-577, citing *National Audubon*, *supra*, 33 Cal.3d at p. 446, fn. 27, and *Carstens v. Coastal Commission* (1986) 182 Cal.App.3d 277, 289-291.

[196] California Public Resources Code, § 21002; State CEQA Guidelines, §§ 15002[a][3], 15021[a][2].

[197] *SF Baykeeper*, *supra*, 242 Cal.App.4th at pp. 241-242 [leases authorizing a private lessee to mine sand from the San Francisco Bay].

[198] "[The State Board's] Mission is to establish and maintain a stable system of water rights in California to best develop, conserve, and utilize in the public interest the water resources of the State while protecting vested rights, water quality and the environment."

[199] Water Code §1253: "The board shall allow the appropriation for beneficial purposes of unappropriated water under such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest the water sought to be appropriated."

uses along with its determination of whether the proposed change will injure any other legal user of water or unreasonably affect fish, wildlife, or recreational uses of water. (*Id.*) This EIR/EIS contains the information and analyses that will be used in that separate proceeding to demonstrate that the project conserves public trust uses.

Here, California WaterFix and the action alternatives in the Final EIR/EIS all involve proposals by which DWR and the Bureau of Reclamation – both *public* agencies – would add new points of diversion and alter the system operations by which they provide water to other *public* agency customers. This EIR/EIS, then, sets forth sufficient analyses for allowing DWR, as lead agency, to consider the impacts on public trust resources and to allow both CDFW and the State Water Board, as CEQA responsible agencies, to satisfy their own obligations under both the common law public trust doctrine and the statutory public trust doctrine.

Compliance with CEQA, with its mandate to mitigate significant environmental effects to the extent feasible,[200] tends to ensure compliance with the public trust doctrine, at least with respect to public projects involving public use of public trust resources.[201] This is because the public trust doctrine gives the state an affirmative duty to project public trust uses "whenever feasible."[202]

Throughout the CEQA/NEPA process, DWR as CEQA lead agency has gone to considerable lengths to develop environmental commitments, conservation measures, avoidance and minimization measures, and mitigation measures intended to reduce otherwise "significant environmental effects" to less-than-significant levels whenever feasible. These include effects on the following public trust resources: surface water; water quality; fish and aquatic resources; terrestrial biological resources; in-water recreational resources; and in-river transportation. In this EIR/EIS, these topics are addressed in Chapter 6, *Surface Water*, Chapter 8, *Water Quality*, Chapter 11, *Fish and Aquatic Resources*, Chapter 12, *Terrestrial Biological Resources*, Chapter 15, *Recreation*, and Chapter 19, *Transportation*.

Most of the potential impacts at issue can be avoided or minimized and mitigated to less-than-significant levels, thereby resulting in protection of the public trust resources at issue. Some potential environmental resource impacts, however, will remain significant and unavoidable. The existence of such impacts is also consistent with the public trust doctrine in that there are no *feasible* means by which such impacts can be mitigated to less-than-significant levels. With respect to Alternative 4A, some impacts are considered significant and have been identified and analyzed in the applicable resources chapter.[203]

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[200] California Public Resources Code, § 21002; State CEQA Guidelines, §§ 15002[a][3], 15021[a][2].

[201] *Citizens for East Shore Parks*, *supra*, 202 Cal.App.4th at pp. 576-577, citing *National Audubon*, *supra*, 33 Cal.3d at p. 446, fn. 27; *Carstens v. Coastal Commission* (1986) 182 Cal.App.3d 277, 289-291; *SF Baykeeper*, *supra*, 242 Cal.App.4th at pp. 241-242 [leases authorizing a private lessee to mine sand from the San Francisco Bay].

[202] *National Audubon*, *supra*, 33 Cal.3d at p. 446.

[203] Impact WQ-14: Effects on mercury concentrations resulting from implementation of Environmental Commitments 3, 4, 6–12, 15, and 16 (Chapter 8, *Water Quality*, Sections 8.2.3. and 8.2.4); Impact AQUA-201: Effects of water operations on entrainment of non-covered aquatic species of primary management concern (striped bass and American shad) (Chapter 11, *Fish and Aquatic Resources*, Sections 11.3.4 and 11.3.5); Impact REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities (Chapter 15, *Recreation*, Sections 15.3.3 and 15.3.4); and Impact REC-3: Result in long-term reduction of recreational navigation opportunities as a result of constructing the proposed water conveyance facilities (Chapter 15, Sections 15.3.3 and 15.3.4).

Public Trust Obligations

The discussion in the *General Overview* section describes DWR's public trust obligations. State agencies, such as DWR, have an affirmative duty to protect public trust uses whenever feasible. The obligation extends to protection of the traditional triad of public trust uses (navigation, commerce, and fishing), plus the protection of recreational and ecological values.

DWR analyzed impacts on these public trust uses in the various chapters of the DEIR/DEIS, RDEIR/SDEIS, and this Final EIR/EIS and proposed mitigation measures for potentially significant and unavoidable impacts. For impacts on navigation, see Chapter 15, *Recreation*, and Chapter 19, *Transportation*. For impacts on commerce, see Chapter 13, *Land Use*, Chapter 14, *Agricultural Resources*, Chapter 15 and Chapter 19. For impacts on fishing, see Chapter 11, *Fish and Aquatic Resources*, and Chapter 15. For impacts on recreation, see Chapter 15. For impacts related to ecological values, see Chapters 11 and 12.

Effects on Navigation, Commerce, and Fishing

As stated previously, DWR, as a state agency, has an affirmative duty to protect the traditional triad of public trust uses (navigation, commerce, and fishing), plus the protection of recreational and ecological values. DWR analyzes impacts on these public trust uses in the EIR/EIS and proposes mitigation measures for potentially significant impacts. For impacts on fishing, see Chapter 11, *Fish and Aquatic Resources*, and Chapter 15, *Recreation*. For impacts related to ecological values, see Chapter 11 and Chapter 12, *Terrestrial Biological Resources*. The EIR/EIS identifies effects on mercury concentrations resulting from habitat restoration activities and effects of water operations on entrainment of non-covered aquatic species as significant and unavoidable impacts. These negative impacts, however, are tradeoffs associated with overall ecological improvements associated with the project, which will reduce the extent of reverse flows in the southern Delta and include substantial amounts of in-water habitat restoration.

Compliance with the Delta Reform Act (Water Code Sections 850861(c)(1) and 85023)

Please see Master Response 31, *BDCP/California WaterFix and 2009 Delta Reform Act*. See also Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*, and Appendix 3J, *Alternative 4A (Proposed Project) Compliance with the 2009 Delta Reform Act*.

Water Quality Impacts

DWR analyzes impacts on water-quality-related public trust uses in Chapter 5, *Water Supply*, Chapter 6, *Surface Water*, Chapter 7, *Groundwater*, and Chapter 8, *Water Quality*. The EIR/EIS identifies effects on mercury concentrations resulting from habitat restoration activities as a significant and unavoidable impact. This impact, however, is a tradeoff associated with overall ecological improvements associated with the project, which will include an improved diversion system with operating criteria to protect and enhance fish habitat. See also Master Response 14, *Water Quality*.

Recreation, Navigation & Boating

DWR analyzes impacts on recreation in Chapter 15 and transportation in Chapter 19, and proposes mitigation measures for significant and unavoidable impacts. The EIR/EIS identifies reduction of recreation opportunities and experiences and recreational navigation opportunities as a result of constructing the proposed water conveyance facilities as significant and unavoidable impacts. Long-term recreation mitigation, however, should improve recreational access. Mitigation measures, in combination with environmental commitments and avoidance and minimization measures, would reduce some construction-related impacts on recreation, navigation, and boating by compensating for effects on wildlife habitat and species; minimizing the extent of changes to the visual setting, including nighttime light sources; managing construction-related traffic; and implementing noise reduction and complaint tracking measures.

Master Response 14: Water Quality

A number of comments were received regarding the assessment methodology and water quality data sources for the EIR/EIS. Other comments questioned the water quality analyses and effects related to salinity, dissolved organic carbon, selenium, mercury, pesticides, temperature and Microcystis*. This master response addresses these topics.*

Because of the length of this master response, a short outline is presented to facilitate review of specific components of this response.

1. *Assessment Methodology and Data Sources*
    a. *Qualitative Assessments in Delta Region*
    b. *Qualitative Assessments in the Upstream of Delta Region*
    c. Qualitative Assessments in the San Francisco and San Pablo Bays
    d. *Water Quality Setting Data*
2. *Modeling for RDEIR/SDEIS and Final EIR/EIS - Alternatives 4A, 2D, and 5A*
3. *Salinity Effects Analysis*
4. *Contra Costa Water District and Antioch Intakes Water Quality Analysis*
    a. *Modeling Data Averaging Periods*
    b. *Delta Assessment Locations*
    c. *Los Vaqueros Reservoir*
    d. *CCWD Chloride Goal*
5. *Selenium Effects Analysis*
6. *Mercury Effects Analysis*
7. *Pesticides Effects Analysis*
8. *Temperature Effects on Drinking Water*
9. *Antidegradation Analysis*
10. Microcystis *Analysis*
    a. *Adequacy of the Assessment in the Upstream of Delta Region*
    b. *Adequacy of Assessment in the Delta Region*
    c. *Potential for Harmful Microcystin Levels in the San Francisco Bay*

Assessment Methodology and Data Sources

Multiple comments were received regarding the scope and adequacy of the water quality assessment presented in Chapter 8, *Water Quality*. Comments stated that constituents assessed qualitatively in the Delta should have been assessed quantitatively, that the constituent assessments conducted for the Upstream of the Delta region should have been conducted using quantitative

methods, and that more detailed assessment between Emmaton and Veterans Bridge should have been provided. Multiple comments were also received indicating that additional data should have been compiled for the affected environment/environmental setting and to support the assessment presented in Chapter 8, *Water Quality*.

Commenters also raised issues regarding the analysis regarding water quality impacts and the feasibility and/or level of detail related to proposed Best Management Practices (BMPs), mitigation measures and Environmental Commitments.

Qualitative Assessments in Delta Region

Comments stated that additional quantitative models should have been used or developed for those constituents assessed qualitatively for the Delta region. To the extent that a constituent assessment could be conducted quantitatively, using models currently developed and validated for the Delta, those tools were utilized for the water quality assessment. For some constituents, the state of the science is such that quantitative models do not exist and cannot be developed in a way that would provide reliable, meaningful results that would allow for evaluating the effects of changing source water fractions in the Delta due to the alternatives.

Commenters stated that dissolved oxygen should have been modeled. The variables that affect dissolved oxygen concentrations are numerous and include atmospheric reaeration rates, sediment oxygen demand rates, and biochemical oxygen demands of constituents in the water column. Further, dissolved oxygen rates vary daily in response to photosynthesis and respiration of algae and plants, and temperature also affects the saturation level. The fact that there are numerous variables contributes to the difficulty in applying a numerical dissolved oxygen model in this assessment. Each of these variables would have to be known, some of which are also assessed qualitatively (e.g., nutrient-related parameters, oxygen demand). While there has been work to calibrate DSM2-QUAL for dissolved oxygen modeling, work remains to allow for its use. Because the factors that affect dissolved oxygen are known, the assessment of the alternatives focused on considering how the alternatives would affect these factors in a qualitative manner and identified whether changes to these factors would contribute to a lowering of dissolved oxygen concentrations.

Similarly, for turbidity and total suspended solids (TSS), known factors that affect levels of these parameters, including river inflow rates and channel velocities, sediment loading, were considered relative to the potential for the alternative to affect these factors in an adverse direction. For turbidity and TSS, a qualitative analysis considering how the project alternatives would affect these sources and transport processes was the best available information from which to identify potential water quality changes associated with the project alternatives.

For other constituents, qualitative methods based on flow changes, sources and transport processes can fully assess potential impacts of the project on the constituent, and thus quantitative models would not add useful information to the assessment. For example, for trace metals, a qualitative assessment using historical monitoring data, which accounts for existing sources and transport processes, assesses the potential water quality changes without the need for a quantitative fate and transport model.

In summary, quantitative models are not always necessary or useful in determining effects of a project. The water quality assessment used the best available models when there was a need to use

those models to assess effects of the project alternatives, and did not use quantitative models when they were not available or necessary.

Qualitative Assessments in the Upstream of Delta Region

Similarly, the qualitative methodology used for the upstream of the Delta water quality assessment is sufficient for the purposes of the EIR/EIS given the nature of the types of changes this region is expected to experience as a result of the project alternatives. The primary effects of the alternatives on water bodies in the Upstream of Delta region are reservoir storage and releases, and thus river flows. Consideration of reservoir storage and river flow ranges under the alternatives relative to baseline conditions, and consideration to upstream sources of constituents of concern, provided the most effective assessment approach relative to the information available.

Regarding effects on the Sacramento River from Emmaton upstream to Veterans Bridge, this reach is addressed by both the assessment for the Upstream of the Delta assessments and the Delta Region assessments. The Upstream of the Delta assessments address the reach from Veterans Bridge down to Freeport/Hood. This reach is outside the domain of DSM2, and thus was addressed qualitatively. The Delta Region assessment addresses effects downstream of Freeport/Hood to Emmaton. This reach was assessed quantitatively or qualitatively, depending on constituent (see first part of response above), with modeling results provided for the Sacramento River at Emmaton.

Qualitative Assessments in the San Francisco and San Pablo Bays

Since completion of the Draft EIR/EIS, analyses of alternatives' effects on areas downstream of the Plan Area in the San Francisco and San Pablo bays was included in the RDEIR/SDEIS and this Final EIR/EIS in Chapter 8, *Water Quality*, and Chapter 11, *Fish and Aquatic Resources*. Impacts on sediment transport and turbidity were specifically analyzed in Chapter 11, Impact AQUA-218, and indicate that Alternative 4A would have a less-than-significant impact on aquatic habitat in the bay downstream of the Plan Area.

Water quality impacts on San Francisco Bay is analyzed in Chapter 8, Impact WQ-34. As stated therein, no substantial changes in DO, pathogens, pesticides, trace metals, turbidity or TSS, and *Microcystis* are anticipated in the Delta due to the implementation of Alternative 4A, relative to Existing Conditions, therefore, no substantial changes to these constituents' levels in the Bay are anticipated. Changes in Delta salinity would not contribute to measurable changes in Bay salinity, as the change in Delta outflow would be two to three orders of magnitude lower than (and thus minimal compared to) the Bay's tidal flow and thus, have minimal influence on salinity changes. Changes in nutrient load, relative to Existing Conditions, are expected to have minimal effect on water quality degradation, primary productivity, or phytoplankton community composition. As with Alternative 4, the change in mercury and methylmercury load (which is based on source water and Delta outflow), relative to Existing Conditions, would be within the level of uncertainty in the mass load estimate and not expected to contribute to water quality degradation, make the Clean Water Act Section 303(d) mercury impairment measurably worse or cause mercury/methylmercury to bioaccumulate to greater levels in aquatic organisms that would, in turn, pose substantial health risks to fish, wildlife, or humans. Similarly, based on Alternative 4 estimates, the increase in selenium load would be minimal, and total and dissolved selenium concentrations would be expected to be the same as Existing Conditions, and less than the target associated with white sturgeon whole-body fish tissue levels for the North Bay. For more information regarding updated selenium analysis please see Chapter 8, Section 8.3.1.7, *Constituent-Specific Considerations Use in the*

Assessment. These analyses described above indicate that potential effects on water quality in the San Francisco and San Pablo bays would be less than significant.

For more information on the *Microcystis* analysis, please see discussion below.

Water Quality Setting Data

The data sets compiled for the setting and assessment were selected based on availability, scope of analyses addressed, locations addressed, and period of record. The setting presents a comprehensive description of existing conditions complete with citations to current literature and data summaries. Additional data would not contribute to an appreciably altered characterization of existing conditions. The data that were compiled were of sufficient quantity and quality to characterize conditions for all constituents of concern to all beneficial uses that would be affected by the project alternatives throughout the study area and support the qualitative and quantitative assessments. Collection of additional field data is not part of the scope of the setting nor was it necessary given the extent of data that was available.

Modeling for RDEIR/SDEIS and Final EIR/EIS – Alternatives 4A, 2D, and 5A

Comments were received regarding the modeling approach employed in the RDEIR/SDEIS. These comments were concerned with:

1. The use of water quality modeling results for Alternatives 4A, 2D, and 5A based on assumptions inconsistent with the definition of the alternatives, and
2. the concurrent use of sensitivity analyses results to interpret the modeling results and resulting water quality impacts.

The comments were focused primarily on the water quality impact assessments for salinity-related parameters bromide (Impact WQ-5), chloride (Impact WQ-7), and electrical conductivity (WQ-11).

The water quality assessment in the RDEIR/SDEIS found that Alternatives 4A, 2D, and 5A would result in less-than-significant impacts on water quality for all parameters assessed except for mercury and electrical conductivity (EC). Impacts on EC would be less than significant with implementation of the proposed mitigation. The impact conclusions are based on modeling results available at the time the RDEIR/SDEIS was prepared, which included the assumption of 25,000 acres of tidal habitat restoration and implementation of Yolo Bypass enhancements, neither of which are components of Alternatives 4A, 2D, and 5A. The modeling also assumed Threemile Slough as a compliance location, even though the alternatives descriptions had the compliance location at Emmaton. Further, the Montezuma Slough Salinity Control Gate was not operated (i.e., open for the entire simulation) whereas the alternatives' description has the gate operated, consistent with the No Action Alternative. Hence, sensitivity analyses were relied upon to interpret how the operation of the Salinity Control Gate, removal of restoration areas, and Emmaton as the compliance location would change water quality relative to that shown in the modeling results. Commenters noted that "full DSM2 runs" of the alternatives should have been done to fully evaluate the water quality impacts that would occur, and that water quality impacts based on this modeling coupled with sensitivity analyses are speculative. While additional modeling is provided for the Final EIR/EIS, as discussed below, the water quality impact determinations in the RDEIR/SDEIS were not speculative. Rather, the impact analyses were based on thorough review of the modeling available, as well as

applicable sensitivity analyses, and were made based on the experience and professional judgment of water quality experts relying on the available data and modeling results. Where the modeling showed differences from the alternative definitions, explanations for expected differences in the water quality data evaluated were included to describe how professional judgment was used in the analysis.

Nevertheless, for the Final EIR/EIS, additional modeling for Alternatives 4A, 2D, and 5A is provided that removes the tidal habitat restoration and Yolo Bypass enhancements, includes Emmaton as the compliance location, and includes operation of the Montezuma Slough Salinity Control Gate. Final EIR/EIS appendices supporting Chapter 8, *Water Quality*, have been revised to show the updated modeling results, specifically Appendix 8D, *Source Water Fingerprinting Results,* Appendix 8E, *Bromide*, Appendix 8F, *Boron*, Appendix 8G, *Chloride*, Appendix 8H, *Electrical Conductivity*, Appendix 8I, *Mercury*, Appendix 8J, *Nitrate*, Appendix 8K, *Organic Carbon*, Appendix 8L, *Pesticides*, and Appendix 8M, *Selenium*. Based on the results of the updated modeling, the water quality impact conclusions presented in the RDEIR/SDEIS were confirmed, as presented in the Final EIR/EIS in Chapter 8, *Water Quality*. Alternatives 4A, 2D, and 5A would result in less-than-significant impacts on water quality for all parameters assessed except for mercury and EC. Mitigation for addressing periods of EC degradation at Emmaton was refined based on the updated modeling results. As explained in the following section, the revised analysis supports the determination that the impacts of Alternatives 4, 4A, 2D, and 5A on EC will be less than significant with mitigation.

Salinity Effects Analysis

A number of commenters asserted that there were deficiencies in the water quality assessment of the project alternatives effects on EC and chloride (i.e., salinity) in the Draft EIR/EIS. Commenters noted one or more of the following issues with the assessment:

- The frequency of exceedance of water quality objectives increased substantially under the project, relative to the baselines;
- The Draft EIR/EIS failed to include alternatives and modeling that met water quality objectives, or actions and commitments to avoid or mitigate significant adverse impacts for EC and chloride;
- Despite the Draft EIR/EIS acknowledging shortcomings in the modeling approach, modeling results are misinterpreted to provide predictions of actual future conditions and imply that whether or not BDCP (or California WaterFix) is implemented, the SWP and CVP will violate applicable salinity standards in the Delta;
- The acknowledgment of modeling shortcomings implies that some portion of the changes in chloride and EC identified for project alternatives are due to modeling artifacts or conservative modeling assumptions rather than actual project impacts, but the assessment does not attempt to differentiate between these; and
- Relocation of the Emmaton compliance location to Three Mile Slough near the Sacramento River would represent a serious degradation of Delta water quality, and this action is not assessed independent of the project.

Numerous additions and improvements to the water quality assessment of EC and chloride were made in the RDEIR/SDEIS and this Final EIR/EIS in response to these and other related comments.

In the Draft EIR/EIS, all project alternatives studied at that time (1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9) were found to have significant and unavoidable impacts on EC and chloride in the Delta. These impacts were due in part to apparent exceedances of Bay-Delta Water Quality Control Plan (WQCP) water quality objectives shown in the modeling results at several locations under Existing Conditions, the No Action Alternative, and BDCP alternatives. It was known that there are several factors related to the modeling approach that may result in modeling artifacts that show objective exceedance when, in reality, no such exceedance would occur. Appendix 8H, *Electrical Conductivity*, Section 8H.1, of the of the Draft EIR/EIS (now Section 8H.2 in the Final EIR/EIS) described some of these factors, but did not include an evaluation of how many of these exceedances were thought to be a result of these factors and how many were expected to be actual project impacts. Furthermore, in the Draft EIR/EIS, mitigation measures for EC and chloride called for additional modeling efforts to determine if impacts could be avoided or mitigated.

To address some of these issues, additional sensitivity analyses and other analyses were conducted to evaluate whether exceedances identified in the Draft EIR/EIS were modeling artifacts (and thus would not occur) or were potential project alternative-related impacts (which could occur). Based on the findings of these analyses, coupled with the original analyses in the Draft EIR/EIS, results of the EC and chloride assessments were qualified, and the impact determinations were revisited. Additionally, because these efforts shed light on why certain exceedances were occurring, it was possible to revise mitigation measures to better address the causes of the exceedances. All alternatives assessed in the Draft EIR/EIS (Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9), remained significant and unavoidable for chloride and EC. Although the impacts remain significant and unavoidable, the magnitude of the impacts would be substantially less than was indicated in the Draft EIR/EIS.

Regarding exceedances of the Sacramento River at Emmaton EC objective for protection of agricultural beneficial uses (which is a maximum 14-day running average of mean daily EC and applies April 1 through August 15, but varies in the specific numeric threshold by water year type and season) identified in the Draft EIR/EIS, assuming the EC compliance location at Emmaton instead of Threemile Slough greatly decreased exceedances of this objective at Emmaton to levels similar to those occurring under the No Action Alternative. Based on this finding, the project description for Alternative 4 was modified to remove the change in compliance point for the Emmaton EC objective. Previously, the project descriptions for all action alternatives included a change in compliance point from Emmaton to Threemile Slough. The revised version of Alternative 4 maintains, and does not propose to change the existing compliance point at Emmaton, while all other action alternatives assessed in the Draft EIR/EIS (Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, and 9) still include the proposed change to Threemile Slough. With this change, Alternative 4 no longer results in a significant impact with respect to the Bay-Delta WQCP EC objective exceedance at Emmaton, while all other alternatives assessed in the Draft EIR/EIS result in significant impacts due to EC objective exceedance at Emmaton.

The three new alternatives—Alternatives 4A, 2D, and 5A— maintain the existing compliance point at Emmaton, and thus, for the reasons discussed above, would not result in significant impacts due to EC objective exceedance at Emmaton. Also, Alternatives 4A, 2D and 5A would have less water quality effects in the western Delta related to EC, and would have fewer exceedances of the fish and wildlife EC objective between Prisoners Point and Jersey Point, such that it was feasible to introduce mitigation that would prevent significant impacts related to EC increases. After introduction of these mitigation measures, Alternatives 4A, 2D, and 5A were determined to result in less than significant impacts for EC. Finally, Alternatives 4A, 2D, and 5A would not result in substantial degradation in

the western Delta due to increased chloride concentrations, thus, the effects on chloride were determined to be less than significant.

Additional discussion of these EC and chloride analyses is included in Section 2.2.1 of the RDEIR/SDEIS, and Chapter 8, *Water Quality*, and Appendix 8H, *Electrical Conductivity*, of this Final EIR/EIS.

Contra Costa Water District and Antioch Intakes Water Quality Analysis

Some commenters asserted that there were deficiencies in the water quality assessment of the project alternatives on EC, chloride, and/or bromide (i.e., salinity), and organic carbon in the Draft EIR/EIS and/or RDEIR/SDEIS, specifically in regard to effects on drinking water intakes of Contra Costa Water District (CCWD) or City of Antioch. Commenters noted one or more of the following issues with the assessment:

- Effects at Antioch and CCWD intakes were underestimated because of coarse averaging periods (monthly, long-term, annual), and commenters assert that assessing impacts on a 15-minute or daily basis provides a more accurate representation of effects on the intake, and results in a greater level of effect than disclosed in the Draft EIR/EIS and RDEIR/SDEIS. Related, longer averaging periods are inappropriate because improvements during periods when water quality is high do not offset degradation of water quality during periods when the quality is low.
- The analysis only included two of CCWD's four intakes, and thus impacts on CCWD cannot be completely understood from the analysis.
- Modeling simulated CCWD operations, including Los Vaqueros Reservoir storage, but this information was not used in the water quality assessment.
- The project reduces the periods of time when there is good water quality in the Delta (e.g., periods when chloride concentrations at CCWD's intakes are less than 50 and 65 milligrams per liter [mg/L]), which causes a significant adverse impact on CCWD's delivered water quality and operation of the Los Vaqueros Reservoir. The Draft EIR/EIS fails to disclose impacts on CCWD's Los Vaqueros Reservoir.

Modeling Data Averaging Periods

Regarding use of 15-minute or daily data for assessment purposes, Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, Section C under *Appropriate Use of Model Results* states:

> Due to the assumptions involved in the input data sets and model logic, care must be taken to select the most appropriate time-step for the reporting of model results. Sub-monthly (e.g. weekly or daily) reporting of model results is inappropriate for all models and the results should be presented on a monthly basis.

The models contain various assumptions and limitations that preclude use of daily or sub-daily modeling results for most assessments, particularly those that compare modeling results to specific thresholds. A detailed description of modeling limitations can be found in Appendix 5A as well as in Chapter 8, *Water Quality*, Sections 8.3.1.1 and 8.3.1.3. Given the models used and the associated limitations in interpreting the output, utilizing a shorter time step than monthly average for assessing water quality changes at the City of Antioch and CCWD's intakes would not result in a

more accurate assessment of effects of the project on salinity-related parameters (i.e., EC, chloride, bromide) or organic carbon. While there would be days within a month in which parameter concentrations/levels at a given location would be higher than the monthly average at that location (just as there would be days when it is lower), given the modeling limitations, comparing alternatives and baselines based on the monthly average at those locations is considered appropriate for the purposes of NEPA and CEQA.

Delta Assessment Locations

Regarding comments that the analysis only included two of CCWD's four intakes, and thus impacts on CCWD cannot be completely understood from the analysis, impacts on salinity were assessed at various locations throughout the Delta. Locations were chosen such that the assessment of changes under the alternatives relative to baselines would be representative of changes in various portions of the Delta as a whole. Some commenters have asserted that the chosen locations are not representative of other locations, in some cases by showing time-series plots of a water quality constituent concentration at the two locations and highlighting the differences. Water quality in the Delta does vary spatially and temporally. It is obvious that there are many locations in the Delta that would not have identical water quality to the chosen locations for assessment. However, assessment was done on a comparative basis (i.e., alternatives as compared to baselines). Given the purposes of the assessment, the effects of the project at the locations assessed are considered representative of the effects of the project in various portions of the Delta as a whole. Thus, although CCWD's four intakes vary in their instantaneous water quality, effects of the project on water quality at the two intakes assessed are considered representative of degree and direction of salinity changes at the other intakes.

Los Vaqueros Reservoir

Regarding use of modeling for Los Vaqueros Reservoir impacts, modeling conducted for the alternatives includes a representation of CCWD operations and Los Vaqueros Reservoir. However, the representation is a simplification and was not optimized for CCWD operations and intake options. The water quality assessment evaluated chloride levels relative to the Bay-Delta WQCP chloride objectives. Objectives that apply at Contra Costa Pumping Plant #1 ensure that the municipal and industrial beneficial use of surface water in the west Delta is protected, relative to salinity. Los Vaqueros Reservoir is not a named water body in the Basin Plan and does not contain surface water beneficial uses. Furthermore, the alternatives would not cause direct effects in Los Vaqueros Reservoir; rather, effects would be indirect and due to CCWD diversion of water from the Delta into the reservoir. Therefore, the assessment did not directly assess effects to Los Vaqueros Reservoir, but did assess effects of the project alternatives on surface water near CCWD intakes that divert water into the reservoir.

CCWD Chloride Goal

CCWD has a goal of 65 mg/L chloride in water delivered to customers. This goal is not a state or federal water quality objective. Arguments made in some comments imply that any increases in chloride represent an impact on the beneficial use of water in Los Vaqueros Reservoir, but small increases in chloride concentrations when chloride is < 100 mg/L typically do not adversely affect the municipal and industrial beneficial use of the surface water body. Adverse effects to the municipal and industrial beneficial use may occur when water quality objectives are exceeded (which was assessed via comparison of the modeling results to Bay-Delta WQCP objectives), or

when substantial water quality degradation occurs, such that exceedance is more likely and beneficial uses may be impacted. The chloride analysis include an assessment of degradation on a monthly average basis for the entire period modeled and the drought period modeled. This analysis evaluated use of assimilative capacity relative to the Bay-Delta WQCP objective of 250 mg/L that applies year-round, which is the California Department of Public Health secondary maximum contaminant level applicable to drinking water at the tap. Adverse impacts were identified where degradation would result in substantially increased risk for adverse effects to municipal and industrial beneficial uses, including at Antioch and CCWD Pumping Plant #1. Thus, the Draft EIR/EIS, RDEIR/SDEIS, and this Final EIR/EIS disclose adverse effects associated with chloride degradation where they would occur.

Finally, for chloride, project alternatives evaluated in the Draft EIR/EIS (Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9) were considered to have significant and unavoidable impacts in the Delta due in part to water quality degradation occurring in the western Delta, and for some alternatives, exceedance of the 150 mg/L chloride objective. Various analyses and improvements to the assessment were added, as described in Section 2.2.1 of the RDEIR/SDEIS and as incorporated into this Final EIR/EIS. Alternatives 2D, 4A, and 5A did not show significant impacts for chloride from substantial degradation or objective exceedance in the western Delta, and thus impacts for chloride are considered less than significant for these alternatives.

Selenium Effects Analysis

A number of commenters asserted that there were deficiencies in the water quality assessment of the project alternatives effects on selenium. Commenters noted one or more of the following issues with the assessment:

- The Draft EIR/EIS failed to consider the effects of the project alternatives on selenium concentration and loading to San Francisco Bay.
- The Draft EIR/EIS underestimated the increases in selenium concentrations and loads in the Delta associated with the project alternatives.
- The Draft EIR/EIS relied on inappropriate regulatory standards.
- The Draft EIR/EIS did not provide sufficient context for the North San Francisco Bay selenium total maximum daily load (TMDL), and either inappropriately assumed future refinery effluent selenium concentrations, and/or relied on these decreases to offset increases in selenium concentrations from the Delta.
- The Draft EIR/EIS did not adequately address changes in residence time and the potential effects on selenium bioaccumulation.

The assessment of selenium was updated in the RDEIR/SEIS and this Final EIR/EIS to address these issues. As noted above, some commenters asserted that the Draft EIR/EIS failed to consider the effects of the project alternatives on San Francisco Bay. The western seaward boundary of the BDCP Plan Area has been delineated at Carquinez Strait. There are no actions in the BDCP or California WaterFix proposed to occur in the bays seaward of the Plan Area. Thus, the water quality analysis focused on assessing the alternatives' effects on water quality in the upstream of the Delta Region, within the Plan Area, and in the SWP/CVP Export Service Areas. However, public and agency comments raised questions regarding water quality effects of the alternatives in the bays seaward of Carquinez Strait. Because net flows move seaward from the Delta toward the bays, water quality

constituents present in the Delta water column could potentially be transported seaward. New screening and assessment of water quality constituent effects in San Francisco Bay were conducted in response to these concerns. These new assessments, which are reflected in the RDEIR/SDEIS and this Final EIR/EIS analysis, did not identify any new adverse or significant impacts or any substantial increase in the severity of previously identified impacts, except in the case of selenium. For Alternatives 6A–9, projected increases in selenium loading and concentrations in North San Francisco Bay were considered adverse (under NEPA) and significant and unavoidable (under CEQA), while Alternatives 1A–5A, including Alternatives 4A and 2D, were considered not adverse and less than significant. This is consistent with findings for the assessment of selenium in the Delta, in which the same conclusions were reached for the same alternatives. The driving factor for the adverse impacts under Alternatives 6A–9 in both the western Delta and the North Bay is modeled increases in selenium concentrations and loading, leading to potentially higher body burdens of selenium in certain species.

As noted above, some commenters asserted that the Draft EIR/EIS underestimated the increases in selenium concentrations and loads in the Delta associated with the project alternatives. Section 2.2.2 of the RDEIR/SDEIS describes changes made relative to the Draft EIR/EIS, which have been carried forward into this Final EIR/EIS. The relevant portion of this section that addresses this issue reads:

> Modeling for selenium (water concentrations and bioaccumulation modeling) was updated on the basis of a review and update of Delta source water concentrations of selenium. Public comments on the Draft EIR/EIS indicated that the source water concentrations for both the Sacramento River and San Joaquin River were likely biased high (i.e., the modeling approach used concentrations for both rivers that indicated more selenium than is currently actually present in the rivers). This bias was due to inclusion of older monitoring data that used higher detection limits (on both rivers), as well as to the decrease of selenium concentrations on the San Joaquin River that has occurred over time. The source water concentrations for the Sacramento River, San Joaquin River, Yolo Bypass, and San Francisco Bay were reevaluated and re-derived using the most recent data available, and the water concentration and bioaccumulation modeling was updated based on these updated source water concentrations. Results showed that there was generally a greater increase from Existing Conditions and No Action concentrations to the concentrations under the alternatives than previously predicted (i.e., the relative effect of the project was greater). However, the absolute values of all of the estimated concentrations for Existing Conditions, the No Action Alternative, and all Project Alternatives were lower than modeled previously in the Draft EIR/EIS, and thus were lower relative to thresholds of concern and water quality criteria used in the assessment.

As noted above, some commenters asserted that the Draft EIR/EIS relied on inappropriate regulatory standards. Section 2.2.2 of the RDEIR/SDEIS describes changes made relative to the Draft EIR/EIS which have been carried forward into this Final EIR/EIS. The relevant portion of this section that addresses this issue reads:

> Numeric thresholds used in the selenium assessment were also updated. Current ambient water quality criteria are based on waterborne selenium concentrations, but EPA released draft water quality criteria for the protection of freshwater aquatic life from toxic effects of selenium in May 2014. The draft criteria include tissue-based concentrations, which are most closely associated with reproductive effects. The criteria also include water concentrations, which are to be used when fish tissue data is not available. The draft criteria have not been finalized, but they represent the most current science on numeric thresholds protective of beneficial uses. Accordingly, these draft criteria were used in the updated assessment. Specifically, the whole-body fish tissue threshold was lowered from 9 mg/kg to 8.1 mg/kg. Additionally, the criterion against which water concentration changes were compared was lowered from 2 µg/L to 1.3 µg/L, which is the EPA draft criterion for lentic (i.e., still or slow-moving) water bodies.

As noted above, some commenters asserted that the Draft EIR/EIS did not provide sufficient context for the North San Francisco Bay selenium TMDL, and either inappropriately assumed future refinery effluent selenium concentrations, and/or relied on these decreases to offset increases in selenium concentrations from the Delta. Chapter 8, *Water Quality,* Section 8.1.3.15, has been revised to state that the primary selenium loading to the North Bay and the Suisun Bay area is from the Delta and oil refineries in the vicinity of Carquinez Strait. Text was added regarding the methods of assessment of San Francisco Bay selenium, in Chapter 8, Section 8.3.1.8*,* that states:

> Selenium levels in the North Bay have declined gradually since the early 1990s before the North Bay was first 303(d) listed (Tetra Tech 2008). This was due in part to the fact that petroleum refineries, which were a major source of dissolved selenium to the North Bay at that time, implemented controls by 1999 that decreased selenium in their discharges by up to 66% (Tetra Tech 2008).

Text was also added in Section 8.3.1.8 and in the assessment of Conservation Measure (CM) 2–CM21 provided in Impact WQ-26 in Chapter 8, which states:

> The San Francisco Bay Water Board is conducting a TMDL project to address selenium toxicity in the North San Francisco Bay (North Bay), defined to include a portion of the Delta, Suisun Bay, Carquinez Strait, San Pablo Bay, and the Central Bay (State Water Resources Control Board 2011).The North Bay selenium TMDL will identify and characterize selenium sources to the North Bay and the processes that control the uptake of selenium by wildlife. The TMDL will quantify selenium loads, develop and assign waste load and load allocations among sources, and include an implementation plan designed to achieve the TMDL and protect beneficial uses.

Language regarding the expectation that point sources in North San Francisco Bay would be reduced under the TMDL was removed. The assessment did not rely on these decreases, but was stating the expectation based on a reasonably foreseeable change in water quality at the early and late-long-term time steps. However, because the language implied that these point sources were the primary source of selenium in the North Bay (which they are not—the Delta is the primary source), and because the TMDL is still under development, the language was removed.

As noted above, some commenters asserted that the Draft EIR/EIS did not adequately address changes in residence time and the potential effects on selenium bioaccumulation. Section 2.2.2 of the RDEIR/SDEIS describes changes made relative to the Draft EIR/EIS, which have been carried forward into this Final EIR/EIS. The relevant portion of this section that addresses this issue reads:

> An expanded discussion of residence time in the Delta and its effect on selenium bioaccumulation in the Delta was added in response to agency comments. Increased water residence times could increase the bioaccumulation of selenium in biota, thereby potentially increasing fish tissue and bird egg concentrations of selenium. However, if increases in fish tissue or bird egg selenium were to occur due to residence time changes alone, the increases would likely be of concern only where fish tissues or bird eggs are already elevated in selenium to near or above thresholds of concern. That is, where biota concentrations are currently low and not approaching thresholds of concern, changes in residence time alone would not be expected to cause them to then approach or exceed thresholds of concern. Based on the analysis, the most likely area in which biota tissues would be at levels high enough that additional bioaccumulation due to increased residence time from restoration areas would be a concern is the western Delta and Suisun Bay for sturgeon. Nevertheless, estimates of residence time increases in these areas are small enough that they are not expected to substantially affect selenium bioaccumulation in the western Delta.

As noted in Section 2.2.2 of the RDEIR/SDEIS:

> The changes discussed above did not result in any changes to the impact conclusions. Alternatives 6-9 remain adverse (under NEPA) and significant and unavoidable (under CEQA) due to modeled

substantial increases in fish tissue concentrations for sturgeon in the western Delta, while Alternatives 1–5 remain less than significant.

Refer to Chapter 8, *Water Quality*, Section 8.1.3.15 in Appendix A for updated existing selenium concentrations in the affected environment and a description of the EPA draft criteria. Refer to Section 8.3.1.7 in Appendix A for the updated source water concentrations used in the modeling and updated thresholds used in the assessment. Refer to Impact WQ-25 in Sections 8.3.3.1 through 8.3.3.16 in Appendix A for the selenium assessment updated based on the new modeling. Further details on the updates can be found in Appendix 8M, *Selenium*, in Appendix A.

Finally, some commenters asserted that the Draft EIR/EIS erred in making an assumption that selenium loading to, and concentrations in, the San Joaquin River would decrease over time as a result of the TMDL, Grassland Bypass Project, and Basin Plan objectives. Additionally, some commenters asserted that selenium loading would increase as a result of greater water deliveries to the San Joaquin River watershed, and thus greater agricultural irrigation drainage would occur. The analysis of Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9 was conducted at the late long-term time step, and analysis of Alternatives 2D, 4A, and 5A at the early and late long-term time steps, both of which would be after implementation of the project. Just as climate change and sea level rise were assumed at this time step, other reasonably foreseeable changes in water quality were included in the assessment. The TMDL and Basin Plan limit the amount of selenium that can be discharged to the San Joaquin River, which in turn will require San Joaquin Valley agricultural dischargers to reduce selenium loading in their drainage. If selenium concentrations in discharges cannot come into compliance with the limits set forth in these regulations, the discharges will be prohibited. In either case, selenium loading to the San Joaquin River is expected to decrease at the early and late long-term time steps, relative to Existing Conditions. Thus, although there is uncertainty over whether treatment technologies will be cost effective, and therefore whether selenium concentrations in drainage water can be reduced, the current regulatory framework can be reasonably expected to result in decreasing loads of selenium to the San Joaquin River, relative to Existing Conditions. Furthermore, project alternatives are not expected to substantially increase the long term average amount of water exported from the Delta or delivered to the San Joaquin River watershed, relative to Existing Conditions or the No Action Alternative. Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, Section C, provides these data for alternatives assessed in the Draft EIR/EIS and Alternatives 4A, 2D, and 5A. Therefore, it is not expected that the project would result in greater amounts of irrigation drainage water entering the San Joaquin River. Finally, selenium concentrations in the water exported to the San Joaquin Valley is expected to decrease as a result of the project alternatives, as described in Chapter 8, *Water Quality*, in the *SWP/CVP Export Service Areas* sections of the Impact WQ-25 discussions.

Mercury Effects Analysis

A number of commenters asserted that there were deficiencies in the water quality assessment of the project alternatives on mercury in the Draft EIR/EIS. Commenters noted one or more of the following issues with the assessment:

- The assessment did not introduce mitigation for potential effects on mercury of restoration activities;
- The assessment did not adequately characterize or quantify the potential effects on mercury of restoration activities;
- The assessment did not evaluate compliance with the Delta Methylmercury TMDL.

The assessment performed for CM2–CM22 for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9 was qualitative, and indicated that increases in methylmercury could occur as a result of restoration activities. Restoration activities under these alternatives would include approximately 75,000 acres of restoration, including (generally) 65,000 acres of tidal restoration and 10,000 acres of floodplain restoration, including Yolo Bypass improvements. Specific mitigation measures to address the potential increases in methylmercury were not proposed, because *CM12 Methylmercury Management*, already included commitments to do everything practicable to minimize conditions that promote production of methylmercury in restored areas and subsequent introduction to the foodweb. Due to uncertainties as to the effectiveness of CM12, the conclusion was that CM2–CM22 could have a significant and unavoidable effect on mercury.

Alternatives 4A, 2D, and 5A differ from the other alternatives (1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9) in their evaluation of effects on mercury from other Environmental Commitments (Environmental Commitments 3, 4, 6, 7, 9–12, 15, and 16). These three alternatives contain substantially less tidal restoration acreage than the other alternatives. Thus, although the potential types of effects on mercury resulting from implementation of the Environmental Commitments under Alternatives 4A, 2D, and 5A would be generally similar to those described for the other alternatives, the magnitude of effects on mercury and methylmercury at locations in the Delta related to habitat restoration would be considerably lower.

It is not expected that the level of tidal restoration proposed under Alternatives 4A, 2D, and 5A would cause fish tissue concentrations to increase, at a measurable level, outside of the immediate localized area of the tidal restoration sites. However, habitat restoration has the potential to increase water residence times and increase accumulation of organic sediments that are known to enhance methylmercury bioaccumulation in biota in the vicinity of the restored habitat areas. Fish tissue concentrations in the Delta already frequently exceed the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins objective of 0.24 mg/kg for trophic level 4 fish in the Delta. The proposed tidal restoration may cause or contribute to increased fish tissue concentrations at a local level, though the magnitude of the increase is not quantifiable. The Basin Plan also includes methylmercury allocations for wetlands for various areas of the Delta. Because the proposed tidal restoration acreage is very small, it is possible that, relative to the allocations, the increased loading would be very small. However, it is still unknown how and if the allocations can be attained. The Basin Plan also requires that for many areas of the Delta (i.e., those needing reductions in methylmercury), proponents of wetland restoration projects shall (a) participate in Control Studies, or implement site-specific study plans, that evaluate practices to minimize methylmercury discharges, and (b) implement methylmercury controls as feasible. Design of restoration sites would be guided by Environmental Commitment 12, which requires development of site-specific mercury management plans as restoration actions are implemented to minimize methylmercury production. The effectiveness of minimization and mitigation actions implemented according to the mercury management plans is not known at this time, although the potential to reduce methylmercury concentrations exists based on current research.

Although this would constitute a potential environmental impact, these increases would not be expected to cause injury to downstream water rights holders or other downstream water users, because effects would be localized to the restoration sites. Nor would such localized impacts adversely affect any other downstream beneficial users.

Additionally, Alternatives 2D, 4A, and 5A do not include Yolo Bypass improvements. As with the other alternatives, specific mitigation measures were not proposed for mercury in the Draft EIR/EIS,

RDEIR/SDEIS, or this Final EIR/EIS, because all practicable activities are included as part of the project in Environmental Commitment 12, which references CM12.

The discussion of CM12 in Chapter 3, *Description of Alternatives*, Section 3.6.2.2, contains a full description of activities, including commitment to produce and implement project-specific mercury management plans for each restoration project. This description also describes that these plans will be prepared in conjunction with the Central Valley Regional Water Quality Control Board Methylmercury TMDL program. The section also states the following:

> Because methylmercury is an area of active research in the Delta, each new project-specific methylmercury management plan would be updated based on the latest information about the role of mercury in Delta ecosystems or methods for its characterization or management. Results from monitoring of methylmercury in previous restoration projects would also be incorporated into subsequent project-specific methylmercury management plans. This program would be developed and implemented within the context of Methylmercury TMDL and Mercury Basin Plan Amendment requirements. In each of the BDCP project-specific methylmercury management plans developed under CM12, relevant findings and mercury control measures identified as part of TMDL Phase I Control Studies will be considered and integrated into restoration design and management plans. CM12 would also be implemented to meet any requirements of the U.S. Environmental Protection Agency (EPA) or the California Department of Toxic Substances Control actions.

Quantification of the effects or range of effects of restoration activities was not conducted both because of lack of site-specific information, and because research is ongoing regarding these activities and their effects on mercury. That is, quantification of effectiveness and performance is not possible generally, but can only be performed on a site-specific basis and with appropriate monitoring data to inform the site-specific evaluation. Although studies have been performed which provide useful information on the effects of restoration on methylmercury production, and also which provide insight into potential management strategies, application of the findings of these studies to the restoration areas proposed under the project is not possible without site-specific information on restoration areas. Further, as current and future research is conducted, it is expected that a more comprehensive understanding of how to design and manage restored areas, and thus further minimize the effects of restoration on mercury will be possible. Project-Specific Mercury Management Plans for each restoration project proposed under Environmental Commitment 12 or CM12 allow for the latest research and for site-specific information to be incorporated into the assessment and design.

Given the limitations regarding quantification of effects on mercury, a specific evaluation of achieving Delta methylmercury TMDL load allocations for various subareas was not feasible. As described above, the Basin Plan language implementing the TMDL states that in those areas of the Delta needing reductions in methylmercury, proponents of wetland restoration projects either "(a) participate in Control Studies, or implement site-specific study plans, that evaluate practices to minimize methylmercury discharges, and (b) implement methylmercury controls as feasible." Design of restoration sites will be guided by CM12 or Environmental Commitment 12, which requires development of site-specific mercury management plans as restoration actions are implemented to minimize methylmercury production. Actions proposed under the project are and will be in full compliance with the Delta Methylmercury TMDL and Basin Plan Amendments implementing it.

Pesticides Effects Analysis

Numerous comments were received regarding the characterization of existing pesticide conditions and method of assessment. Comments on the characterization of existing pesticide conditions focused on data that should have been or not been used to characterize existing conditions in Chapter 8, *Water Quality*, Section 8.1, *Environmental Setting/Affected Environment*. The comments on the pesticides assessment focused on whether the assessment should have been quantitative, instead of qualitative, and that discussion of concentrations and bioaccumulation were needed.

With regard to the characterization of existing pesticides conditions please see the discussion of data sources above. With regard to the pesticides assessment, the project condition with implementation of the alternatives at 2060 precludes the ability to perform a quantitative assessment for pesticides. As explained in the "Pesticides" sub-section of the Section 8.3.1.7, *Constituent-Specific Considerations Used in the Assessment*, while data availability was one consideration of the analysis, another primary consideration was the dynamic state of the pesticide market. It is unknown which pesticides and practices will be in use upon implementation of the proposed project, and data availability regarding current application rates will not resolve this unknown. Therefore, the assessment uses best available information and assesses conceptually the major mechanism of change that the project alternatives will affect and can be reasonably foreseen, which is changes in river flows and source water fractions in the Delta, and thus dilution. Hence, the pesticides assessment in Impacts WQ-21 and WQ-22 were performed qualitatively, based on quantitative changes in flow and source water fractions. Because the assessment was qualitative, the discussion addressed whether concentrations of pesticides, as a class of constituents, would increase or decrease, but could not provide specific concentration changes for specific pesticides. Also, because the assessment was qualitative, and due to the inability to predict future pesticide conditions at the project implementation timeframe, specific information regarding pesticide interactions (e.g., synergistic or additive effects) were not a component of the assessment.

Comments stated that the modeled increases in San Joaquin River fraction and increase in residence time, which is accounted for in the modeled source water fractions, at certain Delta locations would mix with local municipal, industrial, and agricultural inputs of pesticides. Discharges from these sources are not a component of the project alternatives or otherwise being conducted by the project proponents. These discharges come from individual entities that are regulated through the state's various NPDES regulatory programs and toxicity that may be caused by these discharges containing pesticides is addressed through that program.

In response to comments related to the combined effects of water conveyance facilities and the conservation measures or Environmental Commitments, these concurrent effects on pesticides are addressed in the RDEIR/SDEIS and this Final EIR/FEIS, in Section 8.3.3.21, *Concurrent Effects of the Action Alternatives*.

Temperature Effects on Drinking Water

A number of comments were received regarding the potential for the temperature changes identified in the Draft EIR/EIS and RDEIR/SDEIS for the American River and Sacramento River to affect municipal and domestic water supply uses.

As noted by the commenters, the effects of temperature changes in the Draft EIR/EIS and RDEIR/SDEIS focused on effects to aquatic life, because of all the beneficial uses of the waters in the

affected environment, aquatic life uses were identified as the uses that would be most sensitive to the projected changes in temperature that would occur with the project alternatives. This was not to conclude that other uses (e.g., MUN, recreation, irrigation) are not affected by water temperature. Rather, it was concluded that aquatic life uses would be *most sensitive* to the changes due to the project alternatives, because these other uses are typically not precluded by small changes in seasonal water temperature that would occur due to the project alternatives.

Temperature can be a factor in disinfection byproduct (DBP) formation in drinking water supplies. There are other factors that can affect the degree to which DBPs are formed, including chlorine dose and contact time, and the duration of time the water spends in the distribution system. In its *Initial Distribution System Evaluation Guidance Manual for the Final Stage 2 Disinfectants and Disinfection Byproducts Rule, Appendix A, Formation of Disinfection Byproducts* (2006), the U.S. Environmental Protection Agency (EPA) notes that because the formation rate of DBPs increases with increasing temperature, the highest levels may occur in the warm summer months. EPA also notes that water demands are often higher during summer months, resulting in lower water age within the distribution system, which helps to control DBP formation. Furthermore, high temperature conditions in the distribution system promote the accelerated depletion of residual chlorine, which can mitigate DBP formation and promote biodegradation of haloacetic acids (HAAs). Therefore, higher temperatures in diverted surface waters do not necessarily translate to higher DBPs in the delivered water supply.

Temperature changes relative to Existing Conditions, which reflects the combined effects of the project alternative, climate change, and increased water demands, and relative to the No Action Alternative, which reflects the effects of the project alternative, are provided in Appendix 11D, *Sacramento River Water Quality Model and Reclamation Temperature Model Results Utilized in the Fish Analysis*, for the Sacramento River at Hamilton City and American River at Watt Avenue. Results relative to the No Action Alternative, which show the project alternative effects, show both increases and decreases in river temperature due to the project alternatives of relatively low magnitude, with most monthly average temperature changes being in the range of -0.5–+0.5°F, though a few alternatives in some months would result in increased monthly average temperatures of up to 1.4°F. Thus, while the modeling results may show large increases in monthly average temperatures in the Sacramento and American rivers in some months relative to Existing Conditions, those changes are primarily due to climate change and the warming ambient air temperatures. The project alternatives would cause relatively small increases and decreases in river temperatures.

The temperature increases relative to the No Action Alternative, and thus due to the project alternatives, in the American River would occur primarily in the months of July through September, though slight increases of 0.1°F would occur under some alternatives in April, November, and December. Similarly, for the Sacramento River, the temperature increases would occur primarily in the months of July through September, though slight increases of 0.1°F would occur under some alternatives in April, October, and December. The summer months, when the greatest temperature increases would occur, also correspond to the period of highest water use.

In the Journal AWWA (American Water Works Association), Westerhoff et al. (2000) published *Applying DBP models to full-scale plants*, in which an empirical model was developed relating raw temperature, along with dissolved organic carbon, bromide, pH, chlorine dose and contact time to total trihalomethane (TTHM) formation according to the equation:

$$TTHM = 0.0412\ [TOC]^{1.10}[Cl_2]^{0.152}[Br^-]^{0.068}\ [Temp]^{0.61}[pH]^{1.60}[Time]^{0.26}$$

TTHM (in micrograms per liter, µg/L) is a function of chlorine dose (Cl_2 in mg/L), bromide concentration (Br^- in µg/L), water temperature (degrees Celsius), pH, and contact time between the chlorine and water (hours). At temperatures between 68 and 82°F, a 0.5°F increase in temperature would result in a 0.6–0.8% increase in TTHM concentration. Conversely, a 2°F increase in temperature would result in a 2.5–3.4% increase in TTHM concentration, and a 4°F increase would result in a 5–7% increase in TTHM concentration. Based on this model, a substantially larger increase in temperature than what would occur due to the project alternatives would be necessary for there to be a noticeable increase in TTHM concentrations in delivered water supply, particularly considering the other variables involved.

Finally, one comment refers to information in the 2013 American River Sanitary Survey as evidence that higher river temperatures would contribute to higher DBP concentrations. While temperature is known to be a factor in DBP formation, the 2013 American River Sanitary Survey is not definitive evidence of a relationship between higher surface water temperature and DBP formation in the American River basin. The 2013 American River Sanitary Survey anecdotally indicates that San Juan Water District TTHM concentrations in recent years are related to higher Folsom Dam release temperatures, through time-series plots and a general comparison of average TTHM concentrations over a period and average temperature over the same period. However, there is no formal correlation analysis presented to confirm that there is indeed a significant relationship between TTHM concentration and dam release temperature, or the extent of the relationship relative to other factors. Information in the American River Sanitary Survey is insufficient to conclude that the small increases (or decreases) in temperature identified in the EIR/EIS relative to the No Action Alternative (and thus due to the project alternatives) would contribute to adverse (or beneficial) effects to drinking water.

Based on this discussion it is concluded that this Final EIR/EIS appropriately considered aquatic life uses to be the beneficial uses most sensitive to the temperature changes that would occur due to the project alternatives. No changes to the analysis related to this issue have been made.

Antidegradation Analysis

Several comments on the Draft EIR/EIS and RDEIR/SDEIS state that the discussion of potential water quality effects of BDCP and California WaterFix implementation is inadequate with respect to the federal and state antidegradation policies. Three common themes addressed in the comments include: 1) inadequate regulatory background setting provided; 2) inadequate analysis of degradation effects; 3) and/or incomplete analysis of project alternative-related effects relative to all provisions of the federal and state antidegradation policies. These issues are addressed sequentially in this response.

First, regarding the descriptions of the federal and state antidegradation policies, the descriptions of the federal antidegradation policy (Chapter 8, *Water Quality*, Section 8.2.1.3) and the state policy (Section 8.2.2.6) are sufficient for the purposes of the EIR/EIS analysis. Moreover, the descriptions summarize the key provisions of the policies verbatim, but admittedly do not include introductory or other information provided in the policy documents. The adequacy of the policy descriptions is directly related to the methods of assessment of degradation, which are described below in response to other aspects of the comments.

Regarding the second theme (adequacy) and third theme (completeness) of the comments regarding the assessment of degradation per se, the degradation assessment methods are described in Chapter

8, Section 8.3.2, *Effects Determinations*. As described, degradation was assessed via reduction of assimilative capacity with respect to regulatory objectives. The potential for each alternative to cause water quality degradation was addressed for each constituent of concern identified in Chapter 8, *Water Quality*. For those constituents with modeling results available, degradation was evaluated from the quantitative use of assimilative capacity relative to that occurring under existing conditions and the No Action Alternative. The comparison to the No Action Alternative allowed for identifying effects solely due to the alternative, separate from climate change. For constituents assessed qualitatively, the potential for degradation considered the degree to which that constituent could be increased by the alternative, and whether current conditions were degraded (i.e., Clean Water Act section 303(d) listings). Moreover, for constituents regulated by narrative regulatory water quality objectives, only a qualitative analysis of potential degradation is possible.

Thirdly, regarding completeness of the constituent degradation analyses, the comments generally suggest that impact determinations for constituents addressed in Chapter 8 should be based on consistency with the federal and state policies. However, the project proponents disagree with this assertion. In California, consistency with the federal and state antidegradation policies falls to the Regional and State Water Boards in considering point-source discharge and certain water rights permits. The State Water Board has interpreted the state antidegradation policy to incorporate the federal antidegradation policy in situations where the policy is applicable. (SWRCB Order WQ 86-17.) However, the application of federal antidegradation policy to nonpoint source discharges such as the California Water Fix is limited.[204] For the California Water Fix, application of antidegradation policy will be considered by the State Water Board with respect to DWR's and Reclamation's application to change the points of diversion in their water right permits. The water quality degradation analysis presented in the EIR/EIS is but one part in the subsequent application of the policy. As noted in many of the comment letters, antidegradation policy addresses both the amount of water quality lowering that would occur and determination of whether lowered water quality is necessary to accommodate economic or social development in the area and consistent with maximum benefit to the State. Water development and water conservation projects may be considered to be important social and economic developments that justify a lowering of water quality (see Water Code Section 13000). Similarly, environmental protection may constitute important social development, justifying a change in water quality, even if no other social or economic benefits to the community are demonstrated (see Letter from William R. Attwater to Regional Water Board Executive Officers, Federal Antidegradation Policy [Sept. 7, 1987]). Where there are two conflicting uses, the quality of water for one use may be reduced where the change improves water quality for the other, in appropriate circumstances (see 40 CFR Section 131.11(a)(1)). This latter analysis is outside the scope of CEQA and NEPA and necessarily requires evaluation of economic value and social issues associated with the existing beneficial uses, and the economic costs and changes in these conditions that may occur as a result of lowered water quality.

[204] 40 Code of Federal Regulations (CFR) 131.12(a)(2) requires that the "State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control." The EPA Handbook, Chapter 4, clarifies this as follows: "Section 131.12(a)(2) does not mandate that States establish controls on nonpoint sources. The Act leaves it to the States to determine what, if any, controls on nonpoint sources are needed to provide attainment of State water quality standards (See CWA Section 319). States may adopt enforceable requirements, or voluntary programs to address nonpoint source pollution. Section 40 CFR 131.12(a)(2) does not require that States adopt or implement best management practices for nonpoint sources prior to allowing point source degradation of a high quality water. However, States that have adopted nonpoint source controls must assure that such controls are properly implemented before authorization is granted to allow point source degradation of water quality."

Furthermore, such socio-economic evaluation is stipulated in the federal and state policies to consider these issues via "intergovernmental coordination", "public participation", and "the State's planning processes". The evaluation of socio-economic changes is not the purview of the water quality analysis, which is rightfully focused on providing the numerical and qualitative assessment of only the potential for implementation of the project alternatives to degrade existing water quality with respect to regulatory water quality objectives and beneficial uses. The socio-economic evaluation must be conducted based on the results of the EIR/EIS and the later stages of regulatory agency review and permitting of changes to the CVP and SWP water rights orders, or other regulatory actions.

Microcystis Analysis

Commenters raised several concerns with the discussion and assessment of the effects of the project alternatives on *Microcystis* blooms and associated toxicity in the affected surface water bodies. Based on public comments received on the Draft EIR/S, new Impacts WQ-32 and WQ-33 were added to the assessments of Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9 in Chapter 8, *Water Quality*, and included with the assessments of Alternatives 4A, 2D, and 5A in Section 4 of the RDEIR/SDEIS. Common themes in the comments on the *Microcystis* assessment included:

1. Adequacy of the assessment in the upstream of Delta region.
2. Adequacy of the assessment in the Delta region.
3. Potential for harmful microcystin levels in the San Francisco Bay.

Adequacy of the Assessment in the Upstream of Delta Region

Impact WQ-32, which addresses water quality impacts due to *Microcystis*, addresses the upstream of Delta region, as well as the Delta and SWP/CVP export service areas. As described in Impact WQ-32, *Microcystis* bloom development is limited upstream of the Delta due to high water velocity and low residence times. Further, *Microcystis* blooms upstream of the Delta have only been documented in eutrophic lakes such as Clear Lake. Large reservoirs upstream of the Delta are typically characterized by low nutrient concentrations, where other phytoplankton outcompete cyanobacteria, including *Microcystis*. Thus, bloom development is limited in watersheds of the eastern tributaries (Cosumnes, Mokelumne, and Calaveras Rivers), and the San Joaquin River upstream of the Delta. The Sacramento River and American River are also characterized by high water velocity and low residence times, providing inadequate conditions for the development of *Microcystis* blooms. High water velocity and low residence times are not expected to change under the No Action Alternative (early long-term [ELT] and late long-term [LLT]) or the project alternatives. Thus, any modified reservoir operations under the project alternatives are not expected to promote *Microcystis* production upstream of the Delta, relative to Existing Conditions and the No Action Alternative (ELT and LLT).

Adequacy of Assessment in the Delta Region

Commenters have suggested that the assessment of *Microcystis* does not properly link acknowledged alternative-related increases in residence times in the Delta to a worsening of the *Microcystis* problem. The assessment of *Microcystis* for all the project alternatives considers the degree to which the alternative would change in residence time as a factor in making a significant impact determination for the alternative. For Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7,

8, and 9, modeled long-term average residence time data was available from which to determine the overall magnitude and direction of the change in residence time. Reductions in residence time contributed to the significant impact calls for these alternatives and the provision of Mitigation Measures WQ-32a and WQ32b.

Commenters are concerned that under Alternatives 4A, 2D and 5A there would be increases in residence time that would cause increased *Microcystis* production in the Delta, and with the adequacy of the assessment conducted to determine impacts in the Delta region. At the time of preparation of the RDEIR/SDEIS, Delta residence time modeling data was not available for Alternatives 4A, 2D, and 5A. Thus, a qualitative assessment was conducted to determine anticipated changes to residence times. This qualitative assessment considered how climate change, restoration activities, and changes in flows that may occur from the alternatives would affect water quality in the Delta. Residence time modeling completed for Alternative 4 was used as a basis for the qualitative assessment. Impact conclusions were then based on the qualitative assessment. Residence time modeling for Alternative 4A and the No Action Alternative has since been conducted for the Biological Assessment for the California WaterFix. The quantified changes in residence times within Delta sub-regions allows for more definitively determining the overall magnitude and direction of the change in residence time. However, modeling was not available for Alternatives 2D and 5A. Thus, there is some uncertainty regarding the degree to which operations and maintenance of Alternatives 2D and 5A would affect water residence times in the Delta.

In response to comments, and based on *Microcystis* life history strategy to outcompete other algal species and the inhibitory effect of flow and turbulence on its ability to do so, maximum daily channel velocities (which creates channel turbidity and turbulence) also were assessed using DSM2 velocity output for a number of locations throughout the Delta. The supplemental evaluation of residence time and flow velocities has been incorporated into the *Microcystis* assessment for Alternative 4A in Impact WQ-32 of the Final EIR/S. The evaluation of flow velocities shows little to no effects on peak daily velocities under Alternative 4A compared to the No Action Alternative at each location assessed. This indicates that areas of the Delta that are currently turbid will remain turbid and vertical mixing of the water column will be similar under Alternative 4A and the No Action Alternative. As described in Impact WQ-32 of the Final EIR/EIS, *Microcystis* cannot effectively retain its buoyancy or outcompete other faster growing phytoplankton in turbid, turbulent waters. Therefore, based on Alternative 4A maintaining similar to equivalent peak daily flow velocities in Delta channels (and turbidity and turbulence conditions), Alternative 4A would not be expected to substantially increase the frequency or geographic extent of *Microcystis* blooms in the Delta, relative to what would occur under the No Action Alternative.

To ensure project operations do not create increased *Microcystis* blooms in the Delta, water flow through Delta channels would be managed through real-time operations, particularly the balancing of the north and south Delta diversions. By operating the south Delta pumps more frequently during periods conducive to increased *Microcystis* blooms, residence times could be substantially reduced when necessary.

Commenters are concerned that under Alternatives 4A, 2D, and 5A there would be warmer temperatures that would cause increased *Microcystis* production in the Delta. As described in BDCP Appendix 5F, *Biological Stressors on Covered Fish*, climate warming, not water operations, will determine future water temperatures in the Delta. Thus, Alternatives 4A, 2A, or 5D are not expected to contribute to *Microcystis* bloom formation, relative to the No Action Alternative (ELT and LLT),

because water residence time, peak daily flow velocities, and water temperatures are not projected to notably change throughout the Delta due to project operations.

Finally, commenters are concerned that under Alternatives 4A, 2D, and 5A there would be reduced turbidity that would cause increased *Microcystis* production in the Delta. As described in Chapter 8, *Water Quality*, Section 8.3.1.7 and in the discussion of Impact WQ-29: Effects on TSS and Turbidity Resulting from Facilities Operations and Maintenance, changes in TSS and turbidity levels within the Delta under the project alternatives could not be quantified, but are expected to be similar to Existing Conditions and the No Action Alternative (ELT and LLT). Thus, no substantial changes to water clarity that would substantially affect *Microcystis* levels are anticipated.

The potential effects of all the project alternatives on *Microcystis* bloom formation potential in the Delta, and impacts on human health, has been fully assessed in Final EIR/EIS Chapter 8, *Water Quality*, in Impacts WQ-32 and WQ-33 and in Chapter 25, *Public Health*, in Impacts PH-8 and PH-9. The assessments recognize the potential impacts on drinking water uses and human health. Hence, Mitigation Measure WQ-32 is provided to address the significant impacts identified for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9; Alternatives 4A, 2D, and 5A would not have significant impacts related to *Microcystis*.

Potential for Harmful Microcystin Levels in the San Francisco Bay

The assessment of *Microcystis* in San Francisco Bay in Impact WQ-34 in Chapter 8, *Water Quality*, acknowledges the presence of microcystin in the bay, and also acknowledges the potential for it to be transported in from the Delta inflow. The potential for increased *Microcystis* blooms and microcystin concentrations due to the project alternatives must be considered separate from the effects of climate change and associated temperature increases that would contribute to increased blooms. Potential increases in *Microcystis* blooms in the Delta are not expected to affect San Francisco Bay for three reasons: 1) the amount of dilution available in San Francisco Bay to dilute downstream transport of Delta-derived *Microcystis* and associated microcystins, 2) *Microcystis* is intolerant to San Francisco Bay salinity, and 3) high Delta outflows that could potentially transport *Microcystis* primarily occur during the winter and spring runoff season when the environment of San Pablo Bay (the only embayment of San Francisco Bay that would have low enough salinities to possibly support *Microcystis* blooms) is unsuitable for *Microcystis* growth. Nevertheless, Mitigation Measures WQ-32a and WQ-32b, which are provided for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9 due to the potential impacts of CM2 and CM4 discussed in Impacts WQ-32 and WQ-33, would be available to lessen the effects in the Delta, which would further reduce any potential for effects in San Francisco Bay.

Master Response 15: Effects on National Pollutant Discharge Elimination System Dischargers

This master response covers the effects that potential changing water quality associated with the California WaterFix would have on compliance with discharge requirements in National Pollutant Discharge Elimination System (NPDES) permits and reclamation permits. It also covers the effects that changing receiving water flows and quality in the Sacramento River and Delta would have on constituent assimilative capacity and the ability of NPDES dischargers to comply with their permit requirements.

The concerns were expressed regarding future changing Delta water quality for salinity-related constituents (total dissolved solids, boron, chloride, and sodium) and the ability for the water supply diverters in the central Delta (e.g., City of Brentwood) to meet limitations for these parameters in their reclamation permits, and the ability to meet chloride limitations in wastewater treatment plant NPDES permits. The concern is that higher levels of these salinity-related parameters in the source water supply will contribute to higher levels in the discharge wastewater and reclamation water. The Final EIR/EIS identified significant impacts on the salinity-related parameters chloride and electrical conductivity (EC) for certain alternatives and introduced mitigation for those parameters. The Final EIR/EIS also explains that the California Department of Water Resources (DWR) and U.S. Bureau of Reclamation (Reclamation) monitor Delta water quality conditions and adjust operations of the SWP and CVP in real time, which will further assist in achieving compliance with Delta water quality objectives. The non-HCP alternatives – Alternatives 4A, 2D, and 5A – that did not propose large-scale habitat restoration were found to have lesser effects on chloride and EC in the Delta when compared with the original BDCP alternatives, and significant impacts on EC associated with the non-HCP alternatives will be less than significant after mitigation. (Master Response 14, *Water Quality*, provides a more detailed explanation of the effects of the action alternatives on Delta salinity.) Therefore, DWR and Reclamation, through the identification of potentially significant impacts and proposed mitigation measures for these alternatives, acknowledge and, if the proposed project is approved and implemented, will implement mitigation measures to address the higher levels of salinity-related parameters that are of concern, so as to minimize the impacts on Delta municipal water suppliers, and thus municipal wastewater dischargers. Another concern was from NPDES dischargers, where adverse changes might affect receiving water quality, both generally and relative to specific constituents, and this affect could in turn effect permit requirements and compliance. For example, Ironhouse Sanitary District raised a concern regarding changing receiving water quality for the salinity-related parameter EC and its effects on Delta discharges to legally discharge into Delta receiving waters. As described above, the Final EIR/EIS has introduced mitigation to reduce impacts on this parameter and explains that DWR and Reclamation will adjust operations real time to achieve compliance with EC and chloride objectives.

Flow and temperature changes were another concern. Chapter 11 addresses effects of flow and temperature changes on aquatic biological resources, which are the beneficial uses being protected from the thermal effects of NPDES discharges. Where significant impacts were identified, mitigation, where feasible, was proposed.

Other NPDES discharger concerns with general adverse changes in water quality are addressed via the effects criterion/threshold of significance #3 (long-term degradation of water quality) in Chapter 8, *Water Quality*, Section 8.3.2.3. The water quality assessment evaluated use of assimilative capacity and if degradation would not occur or was infrequent and of low magnitude, such changes were considered less than significant. Conversely, substantial degradation, and thus use of assimilative capacity, which is of concern to NPDES dischargers that have dilution credit granted for constituent-specific limitations, was identified as a significant impact and mitigation to lessen the degradation was introduced.

The Sacramento Regional County Sanitation District (Regional San) expressed concern that the project could change flows in the Sacramento River flows such that the ability of their wastewater treatment plant to discharge to the river could be impaired. Regional San's wastewater treatment plant is required to maintain a minimum of 14:1 ratio between the river flow below Freeport and the plant's treated effluent discharge rate. When river flow rates drop such that the 14:1 ratio cannot be maintained, Regional San must divert the treated effluent to on-site emergency storage basins until river flow rates return to levels that allow discharge.

Modeling shows that Alternative 4A may increase reverse flows in the lower Sacramento River at Freeport, relative to the NAA, based on certain low flow conditions and flood tides. These reverse-flow events at Freeport have the potential to cause Regional San to limit discharges and hold treated effluent in its storage basins until downstream river flow resumes and thus river discharge can resume. The Final EIR/EIS addresses this potential effect in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, Section 3B.3.6, *Develop North Delta Intake Operations Protocols to Reduce Reverse Flow Effects at Regional San Outfall*. In consideration of tides and river flows, DWR, in consultation with Regional San, will develop a rule curve and/or operating protocols for the north delta diversions that will account for peak flow periods within the tidal fluctuations of the Sacramento River to ensure that Regional San operations will remain consistent with existing storage capabilities and thus not adversely impact Regional San's SRWTP operations.

Comments on NPDES Dischargers also raised issues regarding compliance with state and federal antidegradation policy. Please see Master Response 14, *Water Quality*.

Another consideration is regarding effects of the proposed project and alternatives on water quality, and associated effects on beneficial uses as evaluated through the thresholds of significance. However, disposal of wastewaters is not a beneficial use that is protected through establishment of water quality objectives/criteria. Nevertheless, the water quality assessment addresses NPDES discharger concerns regarding substantial changes in Sacramento River and Delta water quality, to the extent that the project alternatives would create significant reductions in assimilative capacity and mitigation is available to reduce those impacts. And, while some discharger concerns are specific and related to identified substantial and mitigated changes in water quality (e.g. changes in salinity-related parameters), others were non-specific. These non-specific concerns presume that changes in Delta water quality will lead to increased regulations. In actuality, for some dischargers, changes in Delta water quality will have no effect on discharge compliance, because the discharge limitations are based on meeting water quality criteria at the point of discharge (i.e., no mixing zone or dilution credit is granted, thus, degradation and changes in assimilative capacity are irrelevant). Some NPDES dischargers may have constituent-specific limitations based on dilution credit and, thus, assimilative capacity is relevant, but most of those constituents are not anticipated to change appreciably due to the project alternatives (e.g., metals, dissolved oxygen, turbidity) or at all because the constituent is not present in the ambient environment (e.g., trihalomethane compounds).

Regarding these non-specific concerns, the water quality assessment presented in the EIR/EIS for constituents of concern to NPDES dischargers (e.g., metals, dissolved oxygen, nutrients, turbidity, pesticides), indicate that water quality changes are anticipated to be less than significant, and for those that would be significant, mitigation has been provided to reduce those impacts.

Master Response 16: Seismic Activity

This master response discusses the potential for a seismically induced levee failure to affect Delta water exports and the potential for the proposed project to withstand a seismic event.

Water supply deliveries to State Water Project (SWP) and Central Valley Project (CVP) export areas currently cease when water is not suitable for export. Increased salinity levels may result in water being not suitable for export at the Banks and Jones Pumping Plants (which divert SWP and CVP water from the Delta into the California Aqueduct and the Delta Mendota Canal), and could require that these plants temporarily stop diverting water to the SWP and/or CVP. Other Delta water quality constituents such as bromide and total organic carbon and can also be important in determining whether the water is suitable for export.

One of the main sources of concern related to operation of the export pumps is the potential for Delta levee failure, either induced by earthquakes or other means, that would result in increases in salinity and other water quality constituents in the vicinity of the export pumps and that would require suspension of water supply exports. This risk of earthquake induced levee failure is described in detail in Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies*.

As indicated in Appendix 3E, when a Delta levee is breached, the island protected by the levee may be inundated and water quality in the surrounding waterways may be greatly affected. Repairing the levee, dewatering a flooded island, and flushing brackish water from the Delta can take a substantial amount of time based on past experience. In the case of catastrophic Delta levee failure, studies included in the California Department of Water Resources' (DWR's) *Delta Flood Emergency Preparedness, Response and Recovery Plan* indicate that failure of 20 or more Delta islands could require several years to restore salinity concentrations necessary for municipal water quality needs at the export pumps. Given this potential water supply interruption risk, even though it may be considered a moderate risk, the resulting effects of an earthquake induced levee failure could have devastating effects on SWP/CVP water supply exports. Because of the potential for water supply interruption to adversely affect the California economy, the SWP conveyance system must be updated to address these potential threats.

The California WaterFix (Alternative 4A) is proposed to improve water supply reliability and the Delta ecosystem. One of the benefits of a new conveyance system that diverts water from intakes in the northern portion of the Delta is to create a redundant water diversion system that could be operated in conjunction with the current SWP/CVP export pumping system should water quality conditions in the south and west Delta necessitate shutting down the intakes to the Banks and Jones pumping plants. The proposed new water conveyance facilities would be designed to withstand earthquake induced ground shaking. DWR will design and construct the conveyance facilities to meet all relevant codes and standards, such as the California Building Code and the U.S. Army Corps of Engineers' *Engineering and Design – Earthquake Design and Evaluation for Civil Works Projects* and Division of Safety of Dams' *Guidelines for use of the Consequence Hazard Matrix and Selection of Ground Motion Parameters*. Conformance with these codes and standards is an environmental commitment by DWR to ensure risk of conveyance facility failure from a seismic event is minimized.

Assuming the new conveyance facilities survive a seismic event in or near the Delta that results in levee failures and salinity intrusion near the SWP/CVP pumps, SWP exports could continue at some level by operating the California WaterFix conveyance facilities independent from the existing diversion facilities. Because the water diverted and transported from the north Delta diversion facilities is separated from water diverted in the south Delta, freshwater from the new north Delta intakes could still be delivered to Clifton Court Forebay and exported by the Banks pumping plant to the California Aqueduct in the event of a seismic induced levee failure in the Delta. Although there are emergency protocols that may allow for different procedures, it's important to note that without special dispensation, California WaterFix operations would still be required to operate under federal and state regulations (e.g. Biological Opinions, Fish and Game Code Section 2081(b), State Water Resources Control Board Decision D-1641) and operating criteria in the event of a levee failure situation. Any deviations from project operating criteria would have to be approved by the applicable regulatory agencies.

A question was raised as to whether California WaterFix could improve response to salinity intrusion in the Delta as part of a seismic event. While response to salinity intrusion is not proposed as part of the project, the new conveyance facilities could add to the options available to manage an emergency response to salinity intrusion in the south and west Delta. It would be speculative however to estimate a specific response to salinity intrusion as the specific levee failure circumstances would dictate the appropriate response.

Master Response 17: Biological Resources

This master response provides an overview on the analyses in the Final EIR/EIS of the proposed project's effects on fish and aquatic resources (Chapter 11) and on terrestrial biological resources (Chapter 12). The master response includes a discussion on the proposed operational criteria and their effects on fish and aquatic resources and their adequacy for meeting the requirements of the various applicable environmental regulations. For terrestrial biological resources, this master response discusses the adequacy of the proposed protection and restoration in reducing project effects on various terrestrial species.

Approach for Addressing Project Effects on Aquatic Species

Development of the preferred alternative, including project location, design, phasing and operations was an iterative process involving numerous experts spanning the fields of engineering, hydrology, fish biology, water operations, climate change and more. This process included development of preliminary project elements, many of which were designed to address stressors associated with existing water infrastructure and operations (e.g. reverse flows in the Old and Middle River corridor), as well as assessment of likely implications for how the system would respond and methods to analyze and interpret potential effects to listed fish species and habitat function (see Section 11.3.2.2 in Chapter 11, *Fish and Aquatic Resources*, for a description of the methodology used to reach impact conclusions related to water operations). Based on these analyses, refinements were made to the project and appropriate methods to avoid, minimize, and mitigate potential effects to fish were developed (see Section 3.5.18 in Chapter 3, *Description of Alternatives*, for a description of the proposed project, Alternative 4A).

The predominant approach for assessing project effects on aquatic species and their habitats involved the use of physical models (e.g. CALSIM II) designed to estimate how future hydrology (i.e. based on climate change projections and future water demand) as well as existing regulations and operational criteria would interact to drive operations and water flow both with and without the proposed project (see Sections C.40–C.78 in Section C, *CALSIM II and DSM2 Modeling Results*, of Appendix 5A, for modeling outputs for various hydrological parameters under Alternative 4A and the No Action Alternative). Biological models were then used to estimate potential species responses to the modeled changes in flow and diversion patterns as shown through the physical modeling. Potential effects were identified by comparing modeled outputs from the proposed project to that of the No Action Alternative. Relative differences between the alternatives would then be analyzed and interpreted based on published literature where available and expert opinion, predominantly in the form of fish and wildlife regulatory staff (see Chapter 11, Section 11.3.2, *Methods of Analysis,* and Section 11.3.3, *Determination of Effects*) Additional expert input regarding project design, effects analyses, and determinations has also been gathered through several efforts, most notably multiple independent science review panels.

Following this general approach, best available science was evaluated and applied to assess effects of the proposed project on State and federally listed fish species and to make modifications where necessary and appropriate. Additional information on methods used to assess potential impacts to the listed fish, organized by region, is provided below:

Delta Effects

Several methods were used to analyze project effects (related to both construction and operations) within the Delta common to all species, but had variable species and habitat implications based on timing of presence and biological differences among the listed fish. These included physical models to assess changes to flow patterns, salinity, water temperature, sediment input (and implications for turbidity), and prevalence of *Microcystis* (see Section 8.3.1.7 in Chapter 8, *Water Quality*, for a discussion on the *Microcystis* evaluation). Further analyses, and greater detail can be found within the sections referenced above, particularly Section 11.3.2. In addition, Table 11-18 in Chapter 11 summarizes how the various methods for evaluating entrainment, flow, turbidity, and temperature were applied to determine the level of significance and to determine if a change was adverse or not. Table 11-16 describes the methods used to assess the effects of flow and related parameters and the benefits and limitations of each method.

- **Delta Smelt:** The aforementioned physical models were used to assess habitat effects for various life stages (e.g. water temperature for spawning and egg incubation, fall abiotic habitat index for larval and juvenile delta smelt rearing habitat) given published information on life-stage specific biological needs of delta smelt. Additionally, several methods were used to analyze delta smelt entrainment at the existing south Delta and Barker Slough diversions as well as the proposed north Delta diversions (e.g. proportional entrainment loss regression, DSM2 particle tracking, screening effectiveness analysis).
- **Longfin Smelt:** Multiple longfin smelt life-stage specific habitat analyses were addressed using the Kimmerer et al. 2009 winter-spring X2 abundance correlation. Implications of this line of analysis were among the main drivers for developing spring operation criteria to maintain outflows consistent with existing conditions. Entrainment at north and south Delta diversions, as well as at the Barker Slough pumping plant was analyzed with a variety of methods including DSM 2 particle tracking and salvage density.
- **Chinook Salmon (Winter and Spring-Run):** Chinook salmon life-history dictated that Delta analyses focused on potential rearing effects during juvenile and migration effects during juvenile and adult life stages. Through Delta migration conditions and survival were assessed with a variety of methods including the Delta Passage Model (e.g. building off of studies showing flow-survival relationships for emigrating smolts) and entrainment was analyzed using the salvage density approach.
- **Central Valley Steelhead:** Similar to Chinook salmon, in Delta analyses focused on migratory conditions and entrainment using several methods including flow changes and the salvage density method, respectively.
- **Green Sturgeon:** Effects on entrainment were analyzed using the salvage density method and through Delta migration conditions were assessed using changes to outflow.

Upstream Effects

The preferred alternative proposes construction of new facilities associated with water conveyance in the Delta (e.g. north Delta intakes, Head of Old River Gate) along with proposed operating criteria for those facilities. Although the project does not propose new reservoir operations, CALSIM II modeling indicated potential upstream changes could occur associated with dual conveyance and, since many of the listed fish species utilize habitat in upstream river reaches and tributaries, analyses of potential upstream effects were conducted. These analyses incorporated best available

information with regard to our understanding of species specific needs, including temperature survival thresholds, and habitat suitability estimates. Descriptions of the upstream methods/models (including limitations and benefits) and there application to species effects evaluations can be found in Tables 11-16 through 11-18.

- **Chinook Salmon (Winter and Spring-Run):** Potential upstream effects to Chinook salmon spawning, rearing and migration conditions were analyzed using modeled flow and temperature changes. Additional analyses on egg incubation habitat included assessment of reservoir storage, redd dewatering and scouring analyses, as well as the U.S. Bureau of Reclamation egg mortality model. Fry and juvenile rearing habitat was further analyzed using methods such as Weighted Usable Area (WUA), SALMOD, and assessment of stranding risk.
- **Central Valley Steelhead:** Potential effects to spawning and egg incubation habitat were analyzed using the same or similar methods to Chinook (e.g. flow changes, water temperature, red scour, etc.) as were effects to early rearing habitat and migratory conditions (e.g. WUA, flow changes, etc.).
- **Green Sturgeon:** Changes in upstream flows and water temperatures were predominantly used to assess effects on spawning, egg incubation, and early rearing habitat as well as migratory conditions.

In many cases project effects were determined likely to provide benefits to species (e.g. reduced entrainment at south Delta diversions, improved migration and rearing along San Joaquin corridor).Where potential impacts were identified, measures to avoid, minimize, and mitigate those impacts were developed (e.g. lower salmon survival in the north Delta intake reach of the Sacramento River resulting in real-time modifications to diversion rates). For a summary of potential effects and impact conclusions under the proposed project, please see Chapter 11, *Fish and Aquatic Resources*, Section 11.0.2.16. In addition, Figure ES-10 in the Executive Summary of the Final EIR/EIS provides a comparative quantitative and qualitative summary of potential impacts across all project alternatives. Overall, the proposed project was determined to have no significant or adverse impacts to any of the listed fish species.

Development of Operational Criteria and the Effects on Fish and Aquatic Resources

Extensive efforts were taken to identify both mechanisms (e.g. entrainment, in water construction, etc.) and degree of effects likely to occur in coordination with experts and regulatory agency staff. Methods to analyze effects of the project were vetted and applied to determine potential aquatic species biological impacts and responses. These included direct effects (e.g. take associated with impingement at the north Delta diversion screens) to all listed fish, as well as physical changes that are likely to affect habitat availability and quality. Based on these analyses project modifications as well as avoidance, minimization, and mitigation measures were developed and committed to. In particular, dual conveyance and new operational criteria were developed to offset existing issues associated with CVP and SWP operations (such as flow reversals and subsequent migratory fish impacts) as well as potential effects of new diversions on the Sacramento River.

The operational criteria proposed for Alternative 4A, the preferred alternative, is a culmination of several years of evaluation and coordination with the fish and wildlife agencies to develop appropriate criteria specific to the CVP and SWP Delta operations, based on the best-available scientific information. The proposed criteria are intended to meet the requirements of both ESA and

CESA. ESA requires minimizing and mitigating impacts to listed species and their designated critical habitats, and CESA requires that projects fully mitigate for incidental take of listed species.

The proposed criteria minimize and mitigate effects in the following ways:

- New North Delta Diversion (NDD) operational criteria are based on the general timing of fish migration (December through June), and real-time fish and hydrologic pulses, with minimal diversions during the periods of salmon and steelhead migration. Furthermore, proposed bypass flow rules and maintenance of sweeping velocities across the intake screens were developed with the fish agencies to minimize effects to fish in the vicinity of the new diversions as well as further downstream. Additional adjustments can be made during real-time operations using the transitional criteria, which will be based on the potential for fish exposure during real-time monitoring.
- New south Delta diversion criteria are based on the current FWS and NMFS Biological Opinions (2008, 2009), which included RPAs to mitigate and minimize effects of Delta operations on fish, although the proposed criteria includes additional restrictions. Additionally, Alternative 4A includes a permanent operable gate at the head of Old River, which would be operated to promote survival of out-migrating steelhead and Chinook salmon from the San Joaquin River. In wetter years, Alternative 4A operating criteria would allow more pumping at the NDD facilities and less in the south Delta, promoting a more positive flow pattern in the interior Delta. Overall entrainment of all listed fish species, and associated predation, would be reduced in the south Delta.[205]
- Alternative 4A also includes a new spring outflow criteria to avoid a reduction in overall abundance for longfin smelt. Additionally, the operational criteria include the continuation of the Fall X2 RPA, designed to maximize fall rearing habitat for delta smelt, and the continued compliance with the Biological Opinions pertaining to the Suisun Marsh Salinity Control Gates, the Delta Cross Channel, and compliance with the State Water Resources Control Board's Bay-Delta Water Quality Control Plan (D-1641).

Development of the operational criteria required consideration of the entire Delta, while also acknowledging other processes and authorities that govern operations. An important process is the State Water Resources Control Board update to the Bay-Delta Water Quality Control Plan. This update process is separate from the California Department of Water Resources' and the U.S. Bureau of Reclamation's request for a change in their water rights to add new points of diversion associated with the California WaterFix. 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 (Delta outflows, Sacramento River inflows, Suisun Marsh salinity, Delta Cross Channel Gate closure, export limits, reverse flows). 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.

[205] The magnitude of entrainment reduction in the south Delta varies among the species and life stages analyzed in the EIR/EIS.

As evidenced by the State Board process, other considerations outside of SWP and CVP operations, and operations outside the Delta, are relevant to Delta flow criteria. As such, the criteria proposed for Alternative 4A focus directly on SWP and CVP facilities while designed to not affect other criteria that are not within the SWP and CVP authority or obligation. To the extent new criteria are adopted in the updated Bay-Delta Plan that become an obligation of the SWP and CVP, the California WaterFix will need to comply with those criteria.

In addition to the prescriptive and real-time operational criteria, Alternative 4A integrates adaptive management strategies that would begin immediately and be periodically evaluated and modified based on information from monitoring programs and other sources; these strategies aim to improve understanding of the relationship between delta smelt and Fall X2 and longfin smelt and spring outflow and other flow/salinity relationships to improve operational criteria over time. The adaptive management program would also be used to inform screen design and restoration activities in the Delta.

Adequacy of Mitigation for Terrestrial Species

Commenters have questioned mitigation of the impacts of the proposed project on terrestrial biological resources and whether the mitigation approach satisfies legal requirements. CEQA requires that agencies adopt feasible mitigation measures to substantially lessen or avoid otherwise significant adverse environmental impacts (Public Resources Code Section 21081(a); State CEQA Guidelines Sections 15002(a)(3), 15021(a)(2), 15091(a)(1)). In fashioning mitigation measures, agencies are not required to adopt specific mitigation for certain types of projects but, instead, are guided by the "rule of reason." *San Franciscans for Reasonable Growth v. City and County of San Francisco* (1st Dist. 1989) 209 Cal.App.3d 1502, 1526; *Concerned Citizens of South Central Los Angeles v. Los Angeles Unified School District* (2d Dist. 1994) 24 Cal.App.4th 826, 841. NEPA does not include the same requirement to mitigate where possible; instead, NEPA requires discussion of mitigation measures to ensure fair evaluation of environmental consequences (40 Code of Federal Regulations Parts 1502.14(f), 1502.16(h)).

Chapter 12, Section 12.3.2.5, *Methods Used to Consider Mitigation*, describes mitigation of the proposed project impacts on terrestrial biological resources. The general approach is that the EIR/EIS first identifies whether the potential environmental effects of each project alternative, whether permanent or temporary, are adverse and potentially significant. If so, the EIR/EIS then considers whether avoidance and minimization measures (AMMs) and the conservation measures/environmental commitments built into the alternatives would lessen the significant adverse environmental effects (in addition, the environmental effects related to the application of the AMMs is considered in Chapter 31 *Other CEQA/NEPA Required Sections, including Mitigation and Environmental Commitment Impacts, Environmentally Superior Alternative, and Public Trust Considerations*). Section 3.3.2.2, *Non-HCP Alternative Environmental Commitments*, in Chapter 3 explains how the restoration and protection acreages for Alternative 4A were developed. Appendix 12D, *Feasibility Assessment of Conservation Measures Offsetting Water Conveyance Facilities Construction Impacts on Terrestrial Biological Resources*, sets forth the assessment of near-term conservation measures in the BDCP and their ability to offset the effects of facilities construction.

With respect to effects on natural communities, the Final EIR/EIS compares the water conveyance facilities' effects with the total natural community protection and restoration commitments contained in the proposed project. If these goals meet or exceed the typical project-level mitigation requirement, and if the project includes a commitment to timely conservation actions that address

any loss in habitat value , the conservation actions have been considered sufficient to offset the effect. The analysis for special-status wildlife and plants is similar to that for natural communities, except that effects are described in terms of modeled habitat lost. This approach reasonably ensures that significant adverse environmental effects are substantially lessened or avoided.

Appendix 12D, *Feasibility Assessment of Conservation Measures Offsetting Water Conveyance Facilities Construction Impacts on Terrestrial Biological Resources*, contains mitigation ratios to determine the sufficiency of the project conservation measures/environmental commitments as CEQA and NEPA mitigation. CEQA does not require the use of specific mitigation ratios (see *Del Mar Terrace Conservancy, Inc. v. City County of the City of San Diego* (4th Dist. 1992) 10 Cal.App.4th 712, 741 (citing *San Franciscans for Reasonable Growth*, *supra*, 209 Cal.App.3d at 1526)). The mitigation ratios in Appendix 12D take into account several factors typically used during project-level evaluations, including the sensitivity and rarity of natural communities, the importance of natural communities as habitat for the covered species, threats to the natural community and the need for preservation to alleviate those threats, and the level of certainty in the success of restoration efforts. These mitigation ratios reflect and are consistent with the professional judgment and scientific knowledge of qualified biologists, and are considered reasonable.

Greater Sandhill Crane

During the public review period of the proposed project and its associated EIR/EIS, commenters questioned whether AMMs will be effective at avoiding significant adverse effects on greater sandhill crane in the Plan Area.

AMM20 Greater Sandhill Crane specifically addresses avoidance and minimization measures for greater sandhill crane. AMM20 was extensively revised in the RDEIR/SDEIS for the proposed project (Alternative 4A) to modify the scope and provisions of the AMM. Appendix 3B, *Environmental Commitments, AMMs, and CMs*, contains an updated version of AMM20. In addition to AMM20, the proposed project also includes commitments to implement *AMM1 Worker Awareness Training*, *AMM2 Construction Best Management Practices and Monitoring*, *AMM3 Stormwater Pollution Prevention Plan*, *AMM4 Erosion and Sediment Control Plan*, *AMM5 Spill Prevention, Containment, and Countermeasure Plan*, *AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material*, *AMM7 Barge Operations Plan,* and *AMM30 Transmission Line Design and Alignment Guidelines*. Each of the AMMs is described in detail in Appendix 3B, *Environmental Commitments, AMMs, and CMs*.

Under AMM20, construction will be minimized during the sandhill crane wintering season to the extent possible. Any construction activities that are carried out will be scheduled around the arrival of the cranes in the wintering grounds and the loudest construction activities that only need to occur for a limited period of time (e.g., pile driving) will occur outside of the wintering season to the extent practicable.

Beyond construction timing considerations, AMM20 includes performance standards to ensure no take of greater sandhill crane, as defined by Section 86 of the California Fish and Game Code, associated with new facilities (see State CEQA Guidelines Section 15126.4(a)(1)(B); *Endangered Habitats League v. County of Orange* (2005) 131 Cal.App.4th 777, 793-794; *Sacramento Old City Association v. City Council of Sacramento* (1991) 229 Cal.App.3d 1011, 1028-1029). AMM20 requires that all activities related to the new facilities be designed to avoid direct loss of crane roost sites. Avoidance of crane roost sites would be accomplished either by siting activities outside of identified

roost sites or by relocating the roost site if it consisted of cultivated lands (wetlands would not be relocated). Relocated roost sites would be established one wintering season prior to construction activities affecting original roost sites. Therefore, there would be no net loss of crane roosting as a result of water conveyance facility construction once the facilities were fully designed. Finally AMM20 also addresses foraging habitat, requiring that the final design of new facilities minimize construction-related loss to the extent practicable by minimizing noise effects and enhancing foraging habitat to avoid loss of foraging values that could otherwise result from unavoidable noise-related effects. In addition, actions will be taken to avoid and minimize potential lighting and visual effects, such as routing truck traffic from roost sites, limiting the use of nighttime lights, directing lights away from the sky and roost sites, and installing visual barriers to block nighttime light sources from roosting areas. The mitigation and performance standards outlined above will be achieved through a combination of protective measures, more specifically set forth in Appendix 11F of the Final EIR/EIS.

Staten Island

Commenters were concerned about the substantial amounts of construction activity proposed within Staten Island, prime habitat for the greater sandhill crane. Consistent with public comment, the lead agencies substantially modified Alternative 4A by removing tunnel launch facilities, large reusable tunnel material storage areas, a barge landing site, and high voltage power lines that were originally going to be on Staten Island. These design changes also reduce the overall construction time on Staten Island. The avoidance and minimization measures for greater sandhill crane are also an important component of reducing project impacts on greater sandhill crane. AMM20 *Greater Sandhill Crane* contains specific performance standards for Staten Island which address construction activities and avoidance and minimization measures designed to ensure protection of sandhill crane and important foraging and wintering habitat. For a complete description of all the avoidance and minimization measures relating to the greater sandhill crane see AMM20 in Appendix 3C, *Environmental Commitments, AMMs, and CMs*.

Vernal Pool Crustaceans

For Alternative 4A, the Final EIR/EIS contains several measures to ensure that any adverse effects on federally listed vernal pool crustaceans (vernal pool fairy shrimp, Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool tadpole shrimp) are mitigated to less than significant. These measures include the following to compensate for permanent and temporary effects on vernal pool crustacean habitat:

- Restore vernal pool complex and alkali seasonal wetland suitable for vernal pool crustaceans to achieve no net loss of wetted acreage (Environmental Commitment 9, Resource Restoration and Performance Principle VP/AW2).
- Increase size and connectivity of protected vernal pool complexes and alkali seasonal wetlands in the greater Byron Hill area (Resource Restoration and Performance Principle VP/AW3).
- Protect/restore up to 150 acres of existing vernal pool/alkali seasonal wetland complex (Environmental Commitment 3) in the greater Byron Hills area, primarily in core vernal pool recovery areas identified in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (U.S. Fish and Wildlife Service 2005) (Resource Restoration and Performance Principle VP/AW1).

- Provide appropriate seasonal flooding characteristics for supporting and sustaining vernal pool and alkali seasonal wetland complex species (Resource Restoration and Performance Principle VP/AW4).

The Final EIR/EIS also includes AMM12 *Vernal Pool Crustaceans* and AMM30, which specifically address avoiding and minimizing effects on vernal pool crustacean habitat. AMM12 would also ensure that no more than 20 wetted acres of vernal pool crustacean habitat are indirectly affected by alterations to hydrology resulting from adjacent habitat restoration activities, in particular tidal restoration. *AMM30 Transmission Line Design and Alignment Guidelines* would ensure that transmission lines avoid removal of wetted acres of vernal pools and alkali seasonal wetlands wetted acres of aquatic habitats to the maximum extent feasible. The Final EIR/EIS also includes commitments to implement *AMM1 Worker Awareness Training*, *AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention Plan*, *AMM4 Erosion and Sediment Control Plan*, *AMM5 Spill Prevention, Containment, and Countermeasure Plan*, *AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material*, and *AMM10 Restoration of Temporarily Affected Natural Communities*, which serve to avoid and minimize effects to vernal pool crustacean habitat.

Valley Elderberry Longhorn Beetle

Under Alternative 4A, the Final EIR/EIS contains several measures to ensure that any adverse effects on valley elderberry longhorn beetle are mitigated to less than significant. These measures include the following to compensate for permanent and temporary effects on valley elderberry longhorn beetle habitat:

- Mitigate impacts on elderberry shrubs consistent with USFWS conservation guidelines (U.S. Fish and Wildlife Service 1999a) for the species and planting shrubs in high-density cluster (Resource Restoration and Performance Principle VELB1).
- Site elderberry longhorn beetle habitat restoration with drainage immediately adjacent to or in the vicinity of occupied habitat (Resource Restoration and Performance Principle VELB2).
- Restore up to 251 acres of valley/foothill riparian (Environmental Commitment 7).
- Protect 103 acres of valley/foothill riparian (Environmental Commitment 3).

The Final EIR/EIS also includes *AMM15 Valley Elderberry Longhorn Beetle*, which requires surveys for elderberry shrubs within 100 feet of any ground disturbing activities, the implementation of avoidance and minimize measures for any shrubs that are identified within this 100-foot buffer, and transplanting shrubs that can't be avoided. Other AMMs that would avoid and minimize effects on this species include *AMM1* W*orker Awareness Training*, *AMM2* C*onstruction Best Management Practices and Monitoring*, *AMM3 Stormwater Pollution Prevention Plan*, *AMM4 Erosion and Sediment Control Plan*, *AMM5 Spill Prevention, Containment, and Countermeasure Plan*, and *AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material.*

Delta Green Ground Beetle

The Final EIR/EIS includes Mitigation Measure BIO-42, *Avoid Impacts on Delta Green Ground Beetle and its Habitat*, which avoid and minimize effects on delta green ground beetle. This measure requires that for restoration and protection actions in the Jepson Prairie area that the area be assessed for delta green ground beetle habitat, surveys conducted in areas of suitable habitat, the

avoidance of occupied habitat, and ensuring that conservation plans are not in conflict with the recovery goals for delta green ground beetle in the USFWS's 2005 *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (U.S. Fish and Wildlife Service 2005).

Callippe Silverspot Butterfly

The Final EIR/EIS includes Mitigation Measure BIO-43, *Avoid and Minimize Loss of Callippe Silverspot Butterfly Habitat*, which would avoid and minimize take of this federally listed species. This measures requires that, as part of the development of site-specific management plans on protected grasslands in the Cordelia Hills and/or Potrero Hills, project proponents will implement several measures to ensure that take is avoided and minimized. These measures include an assessment of habitat suitability for the species, surveys, and the development of a management plan for the species.

California Red-Legged Frog

Under Alternative 4A, the Final EIR/EIS includes several measures to ensure that any adverse effects on California red-legged frog are mitigated to less than significant. Alternative 4A would include the following Environmental Commitments and associated Resource Restoration and Performance Principles to benefit California red-legged frog.

- Protect and improve habitat linkages that allow terrestrial species to move between protected habitats within and adjacent to the project area (Resource Restoration and Performance Principle L2).
- Protect/restore up to 1070 acres of grassland (Environmental Commitment 3).
- Protect/restore 150 acres of vernal pool/alkali seasonal wetlands complexes in the greater Byron Hills including associated grasslands (Environmental Commitment 3, Environmental Commitment 9, and Resource Restoration and Performance Principle VP/AW1) with the grassland portions expected to benefit California red-legged frog.
- Increase burrow availability for burrow-dependent species in grasslands surrounding all suitable aquatic habitat including stock ponds and vernal pool/alkali seasonal wetland complexes (Resource Restoration and Performance Principles G5, VP/AW6).
- Increase native species diversity and relative cover of native plant species, and reduce the introduction and proliferation of nonnative species (Resource Restoration and Performance Principle L3).
- Protect up to 6 acres of stock ponds and other aquatic features within protected grasslands to provide aquatic breeding habitat for native amphibians and aquatic reptiles (Resource Restoration and Performance Principle G2).
- Maintain and enhance aquatic features in protected grasslands to provide suitable inundation depth and duration and suitable composition of vegetative cover to support breeding for amphibian and aquatic reptile species (Resource Restoration and Performance Principle G7).

The Final EIR/EIS also includes *AMM14 California Red-Legged Frog,* would be implemented to ensure that California red-legged frog upland and aquatic habitats are avoided, as described in Appendix 3B, *Environmental Commitments, AMMs, and CMs*. Alternative 4A also includes commitments to implement *AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion*

and Sediment Control Plan, AMM5 Spill Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material, and *AMM10 Restoration of Temporarily Affected Natural Communities,* which would also serve to avoid and minimize effects on the species.

California Tiger Salamander

Under Alternative 4A, the Final EIR/EIS includes several measures to ensure that any adverse effects on California tiger salamander are mitigated to a less-than-significant level. Alternative 4A would include the following Environmental Commitments and associated Resource Restoration and Performance Principles to benefit the California tiger salamander.

- Protect and improve habitat linkages that allow terrestrial species to move between protected habitats within and adjacent to the project area (Resource Restoration and Performance Principle L2).
- Protect/restore up to 1070 acres of grassland (Environmental Commitment 3).
- Protect/restore 150 acres of vernal pool/alkali seasonal wetlands complexes in the greater Byron Hills including associated grasslands (Environmental Commitment 3, Environmental Commitment 9, and Resource Restoration and Performance Principle VP/AW1).
- Increase, or insure sufficient, burrow availability for burrow-dependent species in grasslands surrounding all suitable aquatic habitat including stock ponds and vernal pool/alkali seasonal wetland complexes (Resource Restoration and Performance Principles G5, VP/AW6).
- Increase native species diversity and relative cover of native plant species, and reduce the introduction and proliferation of nonnative species (Resource Restoration and Performance Principle L3).
- Protect up to 6 acres of stock ponds and other aquatic features within protected grasslands to provide aquatic breeding habitat for native amphibians and aquatic reptiles (Resource Restoration and Performance Principle G2).
- Maintain and enhance aquatic features in protected grasslands to provide suitable inundation depth and duration and suitable composition of vegetative cover to support breeding for amphibian and aquatic reptile species (Resource Restoration and Performance Principle G7).
- Increase the size and connectivity of protected vernal pool complex within the project area and increase connectivity with protected vernal pool complex adjacent to the project area (Resource Restoration and Performance Principle VP/AW3).

The Final EIR/EIS also includes *AMM13 California Tiger Salamander*, which would be implemented to ensure that California tiger salamander upland and aquatic habitats are avoided and minimized, as described in Appendix 3B, *Environmental Commitments, AMMs, and CMs*. Alternative 4A also includes commitments to implement *AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material,* and *AMM10 Restoration of Temporarily Affected Natural Communities,* which would also serve to avoid and minimize effects on the species.

Giant Garter Snake

Under Alternative 4A, the Final EIR/EIS includes several measures to ensure that any adverse effects on giant garter snake are mitigated to less than significant. Alternative 4A would include the following Environmental Commitments and associated Resource Restoration and Performance Principles to benefit the giant garter snake.

- Increase native species diversity and relative cover of native plant species, and reduce the introduction and proliferation of nonnative species (Resource Restoration and Performance Principle L3).
- Protect/restore 1,070 acres of grassland (Environmental Commitment 3 and Environmental Commitment 8).
- Protect up to 843 acres of upland giant garter snake habitat adjacent to suitable aquatic habitat (Environmental Commitment 3, Resource Restoration and Performance Principle GGS4).
- Restore/protect up to 832 acres of nontidal marsh consisting of a mosaic of nontidal perennial aquatic and nontidal freshwater emergent wetland natural communities, with suitable habitat characteristics for giant garter snake and western pond turtle in CZ 4 and CZ 5 (Environmental Commitment 10).
- Protect and improve habitat linkages that allow terrestrial species to move between protected habitats within and adjacent to the project area (Resource Restoration and Performance Principle L2)
- Target cultivated land conservation to provide connectivity between other conservation lands (Resource Restoration and Performance Principle CL2).
- Maintain and protect the small patches of important wildlife habitats associated with cultivated lands that occur in cultivated lands within the conservation area, including isolated valley oak trees, trees and shrubs along field borders and roadsides, remnant groves, riparian corridors, water conveyance channels, grasslands, ponds, and wetlands (Resource Restoration and Performance Principle CL1).
- Protect giant garter snakes on restored and protected nontidal marsh and adjacent uplands from incidental injury or mortality by establishing 200-foot buffers between protected giant garter snake habitat and roads (other than those roads primarily used to support adjacent cultivated lands and levees). Establish giant garter snake conservation area at least 2,500 feet from urban areas or areas zoned for urban development (Resource Restoration and Performance Principle GGS2).

The Final EIR/EIS includes *AMM16 Giant Garter Snake*, which requires construction monitoring and other measures that would be implemented to avoid and minimize injury or mortality of giant garter snake during construction. Alternative 4A also includes commitments to implement *AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material, AMM7 Barge Operations Plan,* and *AMM10 Restoration of Temporarily Affected Natural Communities,* which help avoid and minimize effects on the species.

California Black Rail

Under Alternative 4A, the Final EIR/EIS includes several measures to ensure that any adverse effects on California black rail are mitigated to less than significant. Alternative 4A would includes the following Resource Restoration and Performance Principles that would benefit the California black rail.

- At the ecotone that would be created between restored tidal wetlands and transitional uplands (Environmental Commitment 4), provide for at least 13.5 acres of California black rail habitat (*Schoenoplectus* and *Typha*-dominated tidal and nontidal freshwater emergent wetland in patches greater than 0.55 acres at a location subject to CDFW approval) consisting of shallowly inundated emergent vegetation at the upper edge of the marsh (within 50 meters of upland refugia habitat) with adjacent riparian or other shrubs that will provide upland refugia, and other moist soil perennial vegetation. If feasible, create the 13.5 acres of tidal habitat in a single patch in a location that is contiguous with occupied California black rail habitat (Resource Restoration and Performance Principle CBR1).
- Create topographic heterogeneity in restored tidal wetlands (Environmental Commitment 4, Resource Restoration and Performance Principle CBR2).

The Final EIR/EIS also includes *AMM38 California Black Rail*, which ensures construction activities would not result in take and minimizes effects on the species. Also the implementation of AMM1–AMM7, and *AMM27 Selenium Management* would avoid and minimize effects on the species.

Least Bell's Vireo

Under Alternative 4A, the Final EIR/EIS includes several measures to ensure that any adverse effects on least Bell's vireo is mitigated to less than significant. Alternative 4A includes the following Environmental Commitments and Resource Restoration and Performance Principles that would benefit least Bell's vireo.

- Restore/protect up to 251 acres of valley/foothill riparian natural community (Environmental Commitment 7).
- Protect 103 acres of existing valley/foothill riparian natural community (Environmental Commitment 3).
- Restore, maintain, and enhance riparian areas to provide a mix of early-, mid- and late-successional habitat types with a well-developed understory of dense shrubs (Resource Restoration and Performance Principle VFR1).
- Maintain a single contiguous patch of 100 acres of mature riparian forest in either CZ 4 or CZ 7 (Resource Restoration and Performance Principle VFR2).

The Final EIR/EIS also includes *AMM22 Suisun Song Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western Yellow-Billed Cuckoo,* which requires preconstruction nesting bird surveys and measures for avoiding and minimizing effects on nests. The Final EIR/EIS also includes commitments to implement *AMM1 Worker Awareness Training*, *AMM2 Construction Best Management Practices and Monitoring*, *AMM3 Stormwater Pollution Prevention Plan*, *AMM4 Erosion and Sediment Control Plan*, *AMM5 Spill Prevention, Containment, and Countermeasure Plan*, *AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material,* and *AMM7 Barge Operations Plan*, which would further avoid and minimize effects on the species.

Swainson's Hawk

Under Alternative 4A, the Final EIR/EIS includes several measures to ensure that any adverse effects on Swainson's hawk are reduced to less than significant. Alternative 4A would include the following Environmental Commitments and Resource Restoration and Performance Principles which would benefit Swainson's hawk.

- Restore/protect up to 251 acres of valley/foothill riparian natural community (Environmental Commitment 7).
- Protect 103 acres of existing valley/foothill riparian natural community (Environmental Commitment 3).
- Conserve 1 acre of Swainson's hawk foraging habitat for each acre of lost foraging habitat in minimum patch sizes of 40 acres (Resource Restoration and Performance Principle SH1).
- Protect Swainson's hawk foraging habitat above 1 foot above mean sea level with at least 50% in very high-value habitat (see Table 12-4A-35 for a definition habitat value) production (Resource Restoration and Performance Principle SH2).
- Maintain and protect the small patches of important wildlife habitats associated with cultivated lands within the conservation area, including isolated valley oak trees, trees and shrubs along field borders and roadsides, remnant groves, riparian corridors, water conveyance channels, grasslands, ponds, and wetlands (Resource Restoration and Performance Principle CL1).

The Final EIR/EIS also includes *AMM18 Swainson's Hawk*, which includes measures to avoid impacts on nesting Swainson's hawks and commits to replacing trees that are suitable for nesting. The Final EIR/EIS also includes commitments to implement *AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material, AMM7 Barge Operations Plan*, and *AMM10 Restoration of Temporarily Affected Natural Communities*, which would further avoid and minimize effects on the species.

Tricolored Blackbird

Under Alternative 4A, the Final EIR/EIS includes several measures to ensure that any adverse effects on tricolored blackbird are reduced to less than significant. Alternative 4A would include the following Environmental Commitments and Resource Restoration and Performance Principles to benefit the tricolored blackbird.

- Protect and manage occupied or recently occupied (within the last 15 years) tricolored blackbird nesting habitat located within 3 miles of high-value foraging habitat in Conservation Zones 1, 2, 8, or 11. Nesting habitat will be managed to provide young, lush stands of bulrush/cattail emergent vegetation and prevent vegetation senescence, or other non-marsh nesting habitat suitable for the species. If sufficient acres of protection are not available, create suitable nesting habitat at a ratio of 1:1 (Resource Restoration and Performance Principle TB1).
- Protect high- to very high-value breeding-foraging habitat (as defined in Table 12-4A-37) (within 5 miles of occupied or recently occupied) (within the last 15 years) tricolored blackbird nesting habitat. At least 130 acres will be within 3 miles of the 38 acres of nontidal wetland nesting habitat protected (Resource Restoration and Performance Principle TB2).

- Protect moderate-, high-, or very high-value cultivated lands (as defined in Table 12-4A-37) as nonbreeding foraging habitat, at least 50% of which is of high- or very high-value (Resource Restoration and Performance Principle TB3).
- Protect/restore up to 891 acres of nontidal and tidal wetland (Environmental Commitment 3, 4 and Environmental Commitment 10).

The Final EIR/EIS also includes *AMM21 Tricolored Blackbird*, which includes preconstruction surveys and measures to avoid and minimize effects on the species. The Final EIR/EIS also includes commitments to implement *AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material*, and *AMM7 Barge Operations Plan*, which would further avoid and minimize effects on the species.

Western Yellow-Billed Cuckoo

Under Alternative 4A, the Final EIR/EIS includes several measures to ensure that any adverse effects on western yellow-billed cuckoo are reduced to less than significant. Alternative 4A would include the following environmental commitments and Resource Restoration and Performance Principles which would benefit western yellow-billed cuckoo.

- Restore/protect up to 251 acres of valley/foothill riparian natural community (Environmental Commitment 7).
- Protect 103 acres of existing valley/foothill riparian natural community (Environmental Commitment 3).

The Final EIR/EIS also includes *AMM22 Suisun Song Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western Yellow-Billed Cuckoo,* which would ensure that the project does not affected western yellow-billed cuckoo nesting and migration. Other AMMs that would help avoid and minimize effects on the species include *AMM1 Worker Awareness Training*, *AMM2 Construction Best Management Practices and Monitoring*, *AMM3 Stormwater Pollution Prevention Plan*, *AMM4 Erosion and Sediment Control Plan*, *AMM5 Spill Prevention, Containment, and Countermeasure Plan*, *AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material, AMM7 Barge Operations Plan*, and *AMM10 Restoration of Temporarily Affected Natural Communities.*

Bank Swallow

Under Alternative 4A, the Final EIR/EIS includes mitigation measures to ensure that any adverse effects on bank swallow are reduced to less than significant. These mitigation measures include Mitigation Measure BIO-146, *Active Bank Swallow Colonies Shall Be Avoided and Indirect Effects on Bank Swallow Will Be Minimized*, which requires avoidance and minimization of effects on active colonies and Mitigation Measure BIO-147, *Monitor Bank Swallow Colonies and Evaluate Winter and Spring Flows Upstream of the Study Area*, which requires that the Department of Water Resources monitor colonies upstream of the project area and compensate for lost habitat that is attributable to project operations.

Riparian Brush Rabbit

Under Alternative 4A the Final EIR/EIS includes several measures to ensure that any adverse effects on riparian brush rabbit are reduced to less than significant. Alternative 4A would include the following Environmental Commitments and associated Resource Restoration and Performance Principles to benefit the riparian brush rabbit.

- Increase the size and connectivity of the conservation area by acquiring lands adjacent to and between existing conservation lands (Resource Restoration and Performance Principle L1).
- Of the 103 acres of protected valley/foothill riparian natural community, protect and maintain 19 acres of riparian habitat that meets the ecological requirements of the riparian brush rabbit and that is within or adjacent to or that facilitates connectivity with existing occupied or potentially occupied habitat (Environmental Commitment 3 and Resource Restoration and Performance Principle RBR1).
- Of the up to 251 acres of restored valley/foothill riparian natural community, restore and maintain 19 acres of riparian habitat that meets the ecological requirements of the riparian brush rabbit and that is within or adjacent to or that facilitates connectivity with existing occupied or potentially occupied habitat (Environmental Commitment 7 and Resource Restoration and Performance Principle RBR2).
- Create and maintain high-water refugia in the 19 acres of restored riparian brush rabbit habitat and the 19 acres of protected riparian brush rabbit habitat, through the retention, construction and/or restoration of high-ground habitat on mounds, berms, or levees, so that refugia are no further apart than 66 feet (Resource Restoration and Performance Principle RBR3).
- In protected riparian areas that are occupied by riparian brush rabbit, monitor for and control nonnative predators that are known to prey on riparian brush rabbit (Resource Restoration and Performance Principle RBR4).
- Of the up to 1,070 acres of grasslands protected, protect up to 227 acres of grasslands on the landward side of levees adjacent to restored floodplain to provide flood refugia and foraging habitat for riparian brush rabbit (Resource Restoration and Performance Principle RBR5).

The Final EIR/EIS also includes *AMM25 Riparian Woodrat and Riparian Brush Rabbit,* which would includes specific measures to avoid and minimize effects on the species during project construction. The Final EIR/EIS also includes *AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material, AMM7 Barge Operations Plan,* and *AMM10 Restoration of Temporarily Affected Natural Communities,* which would further avoid and minimize effects on the species.

State and Federally Listed Plants

The proposed habitat protections under Alternative 4A would benefit some of the state and federally listed plants addressed in the Final EIR/EIS. The Final EIR/EIS also includes Mitigation Measure BIO-170, *Avoid, Minimize, or Compensate for Impacts on Special-Status Plant Species*, which includes measures to project and avoid populations of rare plants. In addition, the Final EIR/EIS includes *AMM11 Covered Plant Species,* which provides specific guidance for protecting and avoiding effects on listed plants.

Master Response 18: Agriculture

This master response discusses the proposed project's impacts on agriculture and why the proposed agricultural mitigation for those impacts is adequate. The master response addresses the following topics.

- *Why the approach to agricultural mitigation is defensible under CEQA despite including the option of focusing on economic impacts to affected farmers.*
- *Why the general approach to agricultural mitigation is defensible under CEQA.*
- *Why effects on grazing and enclosed agriculture lands are not mitigated.*
- *Why temporary effects on agricultural land are not mitigated.*
- *Why a mitigation ratio of 1:1 of land converted to land preserved in easements is defensible.*
- *Why it is permissible to count easements on land preserved in restricted agriculture for terrestrial species as mitigation for agricultural impacts.*
- *Why it is permissible to use mitigation measures, other than easements, that promote sustainability of agriculture in the Delta.*
- *Why impacts on transportation and economic infrastructure are not environmental impacts.*
- *Why impacts that limit agricultural production or affect the value of agricultural land (such as seepage and reduced water quality) are not environmental impacts.*

Approach to Agricultural Impact Analysis and Mitigation

Agricultural land is a complex and vital resource in California. It is somewhat of a unique resource under CEQA, as it is both environmental and economic in character, and actions that reduce the amount available as a natural and economic resource can result in impacts to the physical environment (within the scope of CEQA) and to the farm economy (outside the scope of CEQA). In examining the impacts on farmland from the proposed project, it is apparent that there are limits to the options for environmental mitigation of the impacts, but there may also be creative alternatives that conserve farmland by encouraging farming to continue on other land in the Delta.

The law concerning CEQA's consideration and protection of agricultural land continues to evolve, and the proposed project carefully considers the impacts of farmland conversion and the options available for responding to those impacts. As the Third District Court of Appeal noted in the 2012 case *Citizens for Open Government v. City of Lodi*, 205 Cal.App.4th, "there was no mitigation that would reduce this impact [from the loss of prime farmland] to a less-than-significant level (except an outright prohibition on all development on prime agricultural land) because the land 'once converted, loses its character as agricultural land and is removed from the stock of agricultural land.'"

Although the proposed project will attempt all reasonable mitigation for the potentially significant environmental impacts resulting from the loss of Important Farmland, farmland conservation goals identified in the Final EIR/EIS to reduce avoid or minimize these potentially significant impacts may not be able to be achieved through the use of agricultural conservation easements, because:

1. The scope of the impacts, particularly for the BDCP alternatives, is so significant,
2. There is a lack of readily available land within the Delta available for traditional mitigation measures, such as agricultural conservation easements, especially given the lack of development pressures within the primary zone of the Delta.
3. Delta farmers have thus far reacted negatively for proposals to additionally burden agricultural properties with additional restrictions resulting from easements.

Scope of the impacts: Mitigation to completely address the magnitude of significant environmental impacts on agricultural land for the BDCP alternatives is not feasible because so much land will be affected within the Delta.

As noted in Chapter 14, *Agricultural Resources*, of the Final EIR/EIS:

> "A substantial portion of agricultural land in the study area is designated Important Farmland by the DOC's FMMP. Under this program, lands are categorized into one of eight categories. In the study area, there are more than 512,000 acres of Important Farmland, including approximately 395,000 acres of Prime Farmland, 34,000 acres of Farmland of Statewide Importance, 40,000 acres of Unique Farmland, and 44,000 acres of Farmland of Local Importance. Additionally, there are more than 77,000 acres of Grazing land, Semi-Agricultural and Rural Commercial Land, and Farmland of Local Potential, categories that are not included in estimates of Important Farmland (California Department of Conservation 2008–2010)."

Of these mapped Important Farmlands in the study area, the Draft EIR/EIS notes that between approximately 3,000 and 22,000 acres would be temporarily or permanently converted from farmland depending on the alternative selected for the conveyance. Additionally, there will be impacts on agricultural lands resulting from the cultivated lands strategy and within the Restoration Opportunity Areas (ROAs) of up to 150,000 acres under the BDCP alternatives.

Of the approximately 150,000 acres that would be affected by ecosystem restoration or the cultivated lands strategy, if an BDCP alternative is chosen, a significant amount would be land currently classified as Important Farmland. It is unlikely that it would be possible to replace the land that would have been lost as a result of the BDCP conveyance and conservation measures.

Alternative 4A is proposed as the preferred alternative in this Final EIR/EIS; however, Alternative 4 (BDCP) remains an important option for consideration by the lead agencies. Alternative 4A includes all of the conveyance components of Alternative 4 and was formulated as an outgrowth of Alternative 4 in response to input from other agencies and members of the public. For Alternative 4A, agencies embody a different implementation strategy that would not involve a 50-year HCP/NCCP approved under the federal Endangered Species Act (ESA) Section 10 and the Natural Community Conservation Planning Act, but rather would achieve incidental take authorization for a much shorter period (between 11 and 15 years) under ESA Section 7 and California Endangered Species Act (CESA) Section 20181(b) (see Final EIR/EIS Executive Summary). The large-scale habitat restoration (up to 150,000 acres) is not a part of Alternative 4A.

Effects of Alternative 4A related to the conversion of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones associated with these Environmental Commitment activities would be similar to those described for Alternative 4. However, as described under Chapter 3, *Description of Alternatives*, Alternative 4A would restore up to approximately 15,836 acres of habitat under Environmental Commitments 3, 4, and 7–10 as compared with 83,800 acres under Alternative 4. Channel margin enhancement under Environmental Commitment 6 would be implemented on up to 4.6 levee miles compared with 20 miles under Alternative 4.

Similarly, Environmental Commitments 11, 15, and 16 would be implemented only at limited locations. Installation of nonphysical fish barriers at Georgiana Slough may require conversion of a small area of Important Farmland for potential construction of an access road and/or storage facility. Conservation Measures 2, 5, 13, 20, and 21 would not be implemented as part of Alternative 4A. Considered together, the magnitude of effects under Alternative 4A would likely be substantially smaller than those associated with Alternative 4.

The lack of readily available land within the Delta available for traditional mitigation measures, such as agricultural conservation easements, and the lack of development pressures within the primary zone of the Delta make the development of feasible mitigation measures difficult. Most of the Delta land within the BDCP Plan Area is in agricultural use. Were these lands subject to urban development pressures, traditional methods of mitigation, particularly agricultural conservation easements, could be effective tools for mitigation. However, almost all of the agricultural land impacts fall within the boundaries of the Delta Primary Zone. Under the Delta Protection Commission's *Master Land Use and Resource Management Plan*, Land Use Policy P-2 provides, "Local government general plans, as defined in Government Code Section 65300 et seq., and zoning codes shall continue to promote and facilitate agriculture and agriculturally-supporting commercial and industrial uses as the primary land uses in the Primary Zone; recreation and natural resources land uses shall be supported in appropriate locations and where conflicts with agricultural land uses or other beneficial uses can be minimized."

Delta farmers have thus far reacted negatively for proposals to additionally burden agricultural properties with additional restrictions resulting from easements. The Delta farming community has demonstrated a reluctance to voluntarily participate in an agricultural conservation easement program, especially in the context of anticipated reductions in acreage available for farming in the Delta because of the BDCP alternatives.

Faced with the need to identify and adopt feasible mitigation measures for the environmental impact resulting from the significant loss of farmland, the lead agencies looked to CEQA for guidance. CEQA does not require lead agencies to address purely economic issues (see Public Resources Code Section 21060.5 [definition of "environment" focuses on "physical conditions"]; State CEQA Guidelines Section 15131, subd. (a) "economic or social effects of a project shall not be treated as significant effects on the environment"; *Hecton v. the People of the State of California* (1976) 58 Cal.App.3d 653, 656 [CEQA was "not designed to protect against the … decline in commercial value of property adjacent to a public project"]). However, CEQA does not foreclose considering forms of mitigation that reasonably pertain to the unique character of the affected resource. Considering the complexity of farmland as both an environmental and economic resource, and that a vital agricultural economy is a benefit to both the Delta region and the State, it seemed prudent to expand the possible scope of mitigation to reflect both the complexity and value of the resource. The Alternative Mitigation Strategy does that.

Zoning or other urban 'developmental' activities that lead to agricultural land being taken out of production permanently generally constitutes an impact that may be significant under CEQA, and agencies should look to feasible alternatives or specific measures to mitigate that impact. Court cases dealing with this issue assume that agricultural land can provide environmental benefits and that converting that land to urban development proposes an irretrievable commitment. There is no general consensus regarding activities that lead to agricultural land being taken out of production for non-developmental uses, including production, restoration or enhancement of natural resources or flood control. However, in a case involving the use of categorical exemptions relied upon to

restore former agricultural lands to habitat, *California Farm Bureau Federation v. California Wildlife Conservation Board* (2006), the Third District Court of Appeal overturned the use of specific categorical exemptions because the conversion involved active restoration, including land alteration. Since the project involved physical reshaping of the land to create habitat, the court concluded that there was a possibility of a significant environmental impact.

The First District Court of Appeal overturned a local project approval in *Masonite Corp. v. County of Mendocino* (2013) 218 Cal.App.4th 230. In that case, the land use was to be changed from agriculture to a sand and gravel quarry, a type of nonurban resource use that would not have a beneficial environmental purpose and would have permanently eliminated the possibility of a return to agriculture on the land in the future. In the lower court, the neighboring landowner, Masonite Corporation filed a petition for writ of mandate. The petition challenged the county's approval of the project on a variety of grounds including a claim that the county erred in its finding that agricultural conservation easements and in-lieu fees for agricultural conservation were not feasible mitigation for the adverse impacts on Prime Farmland due to the project.

The Appeals court ruled that agricultural conservation easements can mitigate for the loss of farmland from conversion to a nonagricultural use, even though an agricultural conservation easement does not replace the lost farmland. The court found the basis for its conclusion in the State CEQA Guidelines, case law on agricultural conservation easements, the history of comparable mitigation for loss of biological resources, and California public policy.

Another case suggests that permanent protection via easement as a mitigation strategy is more defensible when combined with enhancement and management efforts. In *Environmental Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018, the Third District Court of Appeal considered the adequacy of a 0.5 to 1 preservation ratio under both CEQA and CESA. In upholding the ratio, the court relied in part on the fact that the land at issue would be enhanced and managed for habitat purposes, whereas at present, no such enhancement and management were occurring.

More recently, in *Friends of the Kings River v. County of Fresno,* (2014) 232 Cal.App.4th 105, the Fifth District Court of Appeal addressed plaintiff *Friends'* complaint that the county failed to require adequate mitigation for the conversion of Important Farmland, in violation of CEQA. The court rejected that argument, pointing out that the EIR recommended three mitigation measures, which the court upheld as adequate:

- The project would maintain the current agricultural use of the site until the land is prepared for mining;
- It would keep 602 acres within the site but outside the surface disturbance boundary as an agricultural buffer zone for the life of the use permit; and
- That mine cells would be reclaimed as farmland as adequate materials are generated to fill the empty mine cells.

The court also rejected *Friends'* contention that the county was required to establish agricultural conservation easements (ACEs) to mitigate the permanent loss of 600 acres of farmland. The court held that while a county must consider using agricultural conservation easements as a mitigation measure for direct loss of farmland, it is not required to adopt an agricultural conservation easement as a mitigation measure, even where such an easement is financially feasible.

The *Friends* court distinguished *Masonite Corp. v. County of Mendocino* because there the county had categorically excluded ACEs as a potential mitigation measure. The court did not read *Masonite* to

require the adoption of ACEs as mitigation, but rather that ACEs not be categorically excluded from consideration—which Fresno County did not do. While *Masonite* indicates that agricultural conservation easements ordinarily should be considered as a mitigation measure, a lead agency has discretion to adopt other mitigation measures.

The action alternatives approached the issue by acknowledging the environmental impact from the loss of farmland will be significant and unavoidable, and that it will not be possible to fully mitigate the impacts from that loss. While Alternative 4A involves significantly less conversion of agricultural land, the EIR/EIS still identified the impact from the loss of farmland as significant and unavoidable. The EIR/EIS go on to identify, for the BDCP alternatives and Alternative 4A, agricultural conservation easements as one mitigation strategy, and identified an alternative mitigation strategy looking beyond easements to other means of limiting the impacts of farmland conversion and creating or expanding direct and indirect mechanisms supporting sustainable, long-term farming in and near the Delta.

Consideration of Grazing and Enclosed Agriculture Lands

CEQA defines agricultural land in Public Resources Code Section 21060.1 as follows: "'Agricultural land' means prime farmland, farmland of statewide importance, or unique farmland, as defined by the United States Department of Agriculture land inventory and monitoring criteria, as modified for California." This definition is broadly inclusive of cultivated farmlands, but excludes grazing land.

Appendix G of the State CEQA Guidelines, which is a sample Initial Study Checklist that sets forth sample questions a lead agency should consider in evaluating the environmental impacts of a proposed project, expressly asks whether a project would convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance to a non-agricultural use.

The Land Evaluation and Site Assessment model, which is incorporated into the State CEQA Guidelines as an optional Threshold of Significance, evaluates the impact of the loss of "agricultural land," as defined in the statute, above. Again, this definition is broadly inclusive of cultivated farmlands, but excludes grazing land.

Although it was not specifically required by the Guidelines, the alternatives expand the examination of agricultural resources to include farmland of local importance, a class of lands not covered by the definitions of Prime Farmland, Unique Farmland or Farmland of Statewide Importance. Local Boards of Supervisors could designate additional land not covered by the other Important Farmland categories (including grazing) if the land is locally important to agriculture in the county. Therefore, if grazing land was sufficiently important to any county, it was eligible for inclusion in the BDCP evaluation of Important Farmland impacts. Of the five counties within the Plan Area, only Solano and Yolo Counties have not included grazing land in the Delta as Farmland of Local Importance. Sacramento and San Joaquin also include confined grazing operations within their Farmland of Local Importance.

Consideration of Agricultural Land Temporarily Affected

The temporary change impacts are associated with construction activities for the conveyance facility. The temporary change in use of Important Farmland during construction activities would prevent cultivation of the affected land for the duration of the construction, and thus cause economic effects for that limited time. The affected landowners would be reimbursed for any fee title or other

property interests acquired by a public entity during the course of preparing for construction and other siting activities. However, after temporary construction is completed, the soil resource would be restored to preconstruction quality and farmable condition. However, if circumstances limit the ability to restore the land and full restoration is not possible, additional mitigation for the resource impact would occur.

If the course of the project extends beyond a reasonable fallowing period, or the land is otherwise unavailable to farm for a substantial period, the impacts would reassessed and if necessary, be further mitigated.

For shorter fallowing periods, since the land will be returned to agricultural use, the effects are solely economic and will be compensated in the relevant land transaction with the landowner.

Use of Mitigation Ratio of 1:1 of Land Converted to Land Preserved

In *Citizens for Open Government v. City of Lodi*, (2012) 205 Cal.App.4th 296) , the Third District Court of Appeal dealt directly with the question of whether an agency must apply a mitigation ratio of greater than 1:1, which it referred to as a "Heightened Mitigation Ratio." In examining the issue of farmland loss it described the following situation:

> The […] draft EIR stated the project would convert approximately 40 acres of prime agricultural land to urban uses. It then explained there was no mitigation that would reduce this impact to a less-than-significant level (except an outright prohibition on all development on prime agricultural land) because the land 'once converted, loses its character as agricultural land and is removed from the stock of agricultural land.'
>
> Because there was no mitigation that would reduce this impact to a less-than-significant level, the city adopted a statement of overriding considerations. In that statement, the city explained that while there was 'no feasible mitigation measures available that would avoid the significant loss of agricultural land if the project wa[s] implemented,' (bold text omitted) '[t]he acquisition of an off-site agricultural conservation easement would provide partial mitigation. The city then required the applicant to 'obtain a permanent [a]gricultural [c]onservation [e]asement over 40 acres of prime farmland (1:1 mitigation ratio).'
>
> (*Citizens for Open Government v. City of Lodi*, supra, 205 Cal.App.4th at p. 322.)

The court then noted that the EIR addendum explained why the city rejected the heightened mitigation ratio:

> 'The EIR acknowledges that agricultural easements are not mitigation in the true sense of the word. They do not lessen the impact to the loss of the farmland.... As such, no ratio, no matter how high[,] will achieve a mitigation effect, and no particular ratio can be ultimately justified as the scientifically correct one. For that reason, a statement of overriding considerations is necessary for the loss of farmland. The ratio is therefore a matter of local concern for the council to establish. The standard for California communities is the 1 for 1 ratio and is appropriate in this case. In addition to the City of Lodi, the following agencies in the surrounding area apply the 1:1 mitigation ratio: cities of Stockton and Elk Grove, counties of San Joaquin and Stanislaus, Tri–Valley Conservancy (Livermore/Alameda County).'
>
> (*Ibid*.)

In its appeal of the lower court's decision, the Plaintiff contended the city's "rejection of the heightened mitigation ratio [was] not supported by substantial evidence." As with the proposed project, the factual situation was one where the city has specifically found mitigation measures infeasible to fully mitigate and therefore adopted a statement of overriding considerations.

While the *Lodi* case related to the loss of farmland to urban development, it noted that "[t]he land, once converted, loses its character as agricultural land and is removed from the stock of agricultural land. Thus, while the permanent protection of prime farmland elsewhere in the vicinity may reduce the amount of agricultural land converted to urban uses in the County over the long-term, such off-site mitigation would not avoid the significant impact resulting from the permanent loss of prime agricultural lands at the project site."

The court in the *Lodi* case went on to note:

> In the city's findings of fact and statement of overriding considerations, the city explained the following: There were no feasible mitigation measures to avoid the loss of prime agricultural farmland because it was not possible to recreate prime farmland on other lands. The city considered but rejected as infeasible the alternatives of denying the project or substantially reducing its size, but rejected these alternatives because they would not meet the fundamental objective of the project applicant [...] The city would minimize and substantially lessen the significant effects of the proposed project by requiring the project applicant to acquire an off-site agricultural conservation easement. … This substantial evidence supported the finding there were no feasible mitigation measures.
>
> (Citizens for Open Government v. City of Lodi, supra, 205 Cal.App.4th at p. 323.)

Thus, in the absence of fully effective mitigation measures, the court recognized that providing 1:1 mitigation as a partial, but customary form of mitigation in the region is acceptable within a full and reasonable examination of a full range of possible mitigation.

The EIR/EIS recognizes that the conversion of farmland is significant and unavoidable under the BDCP alternatives and Alternative 4A. Providing 1:1 mitigation as a partial, but customary form of mitigation in the region is acceptable.

Overlapping Mitigation Requirements Between Agricultural Impacts and Terrestrial Species Impacts for Easements on Land Preserved

There is nothing in CEQA that bars a lead agency from considering hybrid forms of limiting uses of property in ways that provide multiple types of benefit to respond to adverse effects from a project. Indeed, public agencies have a duty to protect public funding and limit expenditures to those necessary to carry out a project's public purpose, including environmental mitigation. [See, e.g., *Stanson v. Mott, (1976)*,17 Cal.3d 206: "We recognize, of course, that public officials who either retain custody of public funds or are authorized to direct the expenditure of such funds bear a peculiar and very grave public responsibility, and that courts and legislatures, mindful of the need to protect the public treasury, have traditionally imposed stringent standards upon such officials." *Id at 225.*] Accordingly, if the multiple demands for mitigation can be met with a single measure that meets those purposes, it is appropriate for a public official deciding among those alternative measures to use one that saves public funds and provides multiple benefits.

Existing farmland generally has the same species benefits without the restrictions, which is the reason for replacing the land lost with other agricultural land. The restrictions resulting from the proposed hybrid form of agricultural conservation easements with habitat restrictions ensure the habitat benefits will remain on easement lands, and the farmer would be paid for any restrictions. Because hybrid easements would provide additional certainty for land protections (for farming) and restrictions (for habitat protection) into perpetuity, both resources will benefit.

Agricultural Mitigation Measures, Other Than Easements

It is not possible at this time, particularly for the BDCP alternatives; to confidently identify available land to replace the land required for the conveyance, cultivated lands strategy and conservation measures. However, rather than give up on potential mitigation, nontraditional methods have been examined to offset the impacts in ways that improve the viability of farming in the Delta areas actually affected. Of particular relevance, the courts have recognized that lead agencies may consider other measures to mitigate for significant impacts to agricultural land, and that while agricultural conservation easements should be one measure considered, such a measure is not required.

In *Friends of the Kings River v. County of Fresno,* (2014) 232 Cal.App.4th 105, the Fifth District Court of Appeal addressed plaintiff *Friends'* complaint that the county failed to require adequate mitigation for the conversion of Important Farmland, in violation of CEQA. The court rejected that argument, pointing out that the EIR recommended three mitigation measures, which the court upheld as adequate:

- The project would maintain the current agricultural use of the site until the land is prepared for mining;
- It would keep 602 acres within the site but outside the surface disturbance boundary as an agricultural buffer zone for the life of the use permit; and
- That mine cells be reclaimed as farmland as adequate materials are generated to fill the empty mine cells.

The court also rejected *Friends'* contention that the county was required to establish agricultural conservation easements (ACEs) to mitigate the permanent loss of 600 acres of farmland. The court held that while a county must consider using agricultural conservation easements as a mitigation measure for direct loss of farmland, it is not required to adopt an agricultural conservation easement as a mitigation measure, even where such an easement is financially feasible.

The *Friends* court distinguished *Masonite Corp. v. County of Mendocino* because there the county had categorically excluded ACEs as a potential mitigation measure. The court did not read *Masonite* to require the adoption of ACEs as mitigation, but rather that ACEs not be categorically excluded from consideration—which Fresno County did not do. While *Masonite* indicates that agricultural conservation easements ordinarily should be considered as a mitigation measure, a lead agency has discretion to adopt other mitigation measures.

As the *Friends* court makes clear, not only does CEQA require a lead agency to 1) identify adverse environmental effects, and 2) inform the public whether and how well they can be avoided or mitigated, it also requires a lead agency to 3) consider a range of alternative methods with which to mitigate effects, and 4) permits it to use its best judgement and discretion in choosing among them.

Transportation and Economic Infrastructure

The transportation system, including impacts of the project alternatives within the proposed project's Plan Area, is extensively discussed in Chapter 19, *Transportation*, of the Final EIR/EIS. The socioeconomic effects of the proposed project also are examined in Chapter 16. *Socioeconomics*, of the Final EIR/EIS.

Other Considerations Related to Potential Agricultural Impacts

To the extent that these potential effects are solely economic effects on agricultural production, they do not fall within the customary examination of impacts to the environment that is the primary purpose of the Final EIR/EIR. To the extent that there are physical changes to land and waters associated with seepage and water quality, they are examined in the Final EIR/EIS. But effects such as seepage and reduced water quality are either addressed as impacts in other resource sections or considered to be temporary or transient effects, and their economic cost identified. These effects do not appear to impair the long-term quality or capability of Delta soils, and therefore they are not environmental impacts to the Important Farmland resources.

Impact AG-2 in Chapter 14, *Agricultural Resources*, addresses seepage and water quality. Because there are slurry cutoff walls now for the MPTO alignment, there should no seepage impacts. Complete water quality modeling results are discussed in Chapter 8, *Water Quality*.

Master Response 19: Climate Change and Greenhouse Gas Emissions

This master response provides an overview on how the lead agencies incorporated climate change and greenhouse gas (GHG) emission standards into the EIR/EIS analyses, including background information on both of these issues. It also discusses the methodology and assumptions used in the climate change and GHG impact analyses and the identification of potential project impacts. In addition, the master response describes how the analyses and mitigation complies with NEPA, CEQA, and Delta Reform Act standards and regulations, among others, as well as how the project alternatives affect the resiliency and adaptability of the Plan Area in the face of climate change.

Since the release of the Draft EIR/EIS for the proposed BDCP, the lead agencies have analyzed an alternative implementation strategy known as the California WaterFix, developed in response to input from the public and public agencies. This proposed change in approach reflected, among other things, the uncertainties regarding the effectiveness of large-scale habitat restoration and the future effects of climate change. The new proposed project, referred to as Alternative 4A in the Partially Recirculated Draft EIR/Supplement to Draft EIS (RDEIR/SDEIS) and the Final EIR/EIS, will not include either a Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) or a 50-year permit term, but will instead include incidental take authorization under Section 7 of the Endangered Species Act (ESA) and Section 2081(b) of the California Endangered Species Act (CESA). In addition, the proposed project no longer includes habitat restoration measures beyond those needed to provide mitigation for specific regulatory compliance purposes.

The Draft EIR/EIS analyzes the BDCP alternatives at late long-term conditions (2060) based on the 50-year permit term of the proposed HCP/NCCP, while the alternative implementation strategy and associated alternatives (4A, 2D, and 5A) presented in the RDEIR/SDEIS and Final EIR/EIS are analyzed in the early long-term (2025; estimated time of initial operations at the north Delta intakes).

The EIR/EIS deals properly and thoroughly with issues related to climate change.

Introduction

Some commenters have raised concerns that the EIR/EIS does not adequately address issues related to climate change under CEQA and the Delta Reform Act. Contrary to these commenters' contentions, climate change has been properly, methodically, and comprehensively described and analyzed in the EIR/EIS.

As Chapter 29, *Climate Change*, explains, climate change has been unequivocally linked to increasing concentrations of GHGs loading and accumulating in the atmosphere. Higher concentrations of heat-trapping GHGs in the atmosphere result in increasing global surface temperatures, which in turn contribute to changes to global climate patterns, including rising air temperatures; rising ocean temperatures; increasing ocean acidity; rising sea levels; changes in precipitation patterns; and increased intensity and frequency of extreme events such as storms, droughts, and wildfires. Major contributors to GHG emissions include fossil fuel combustion, agricultural practices, and deforestation. (Final EIR/EIS, Chapter 29.)

The EIR/EIS analysis for climate change had three major prongs, which are discussed in more depth below:

- What are the impacts of the alternatives on climate change? (In other words, what is the project's contribution to elevated GHG concentrations in the atmosphere?) This climate change question is addressed for both the duration of the construction of the alternatives, as well as for operations of the proposed project once it is up and running. Chapter 22, *Air Quality and Greenhouse Gases*, and related appendices address this fundamental question.
- Are future changes in climate likely to exacerbate project impacts? (In other words, what is the impact of climate change, which is expected to occur independently from the project, on the environmental impacts of the alternatives?) Using computer modeling, the EIR/EIS incorporates the projected effects of climate change into the key models used to analyze the alternatives and their impacts on water supply, fish species, and numerous other resources. The methods, models, and assumptions used in the climate change analysis are detailed in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, and the effect of climate change on the impacts of the alternatives is reflected in all of the resource chapters.
- How will the alternatives improve the resiliency and adaptability of the Plan Area to the effects of climate change in the future? This third important question is evaluated in Chapter 29. This section describes the manner in which the alternatives would improve resiliency and adaptability to sea level rise and hydrology changes for four key areas: water supply reliability, aquatic species in the Delta, terrestrial habitat and terrestrial species, and Delta levee stability. The section also provides analysis of the resiliency and adaptability to increased temperature for two key areas: water demand and water temperatures.

In addition to these three fundamental questions, the EIR/EIS also adds a fourth layer of analysis by evaluating climate change impacts in a manner consistent with a particular provision of the Delta Reform Act (Cal. Wat. Code, § 85320, subd. (b)(2)(C).) As explained in the Final EIR/EIS, this analysis was premised on the assumption that the proposed BDCP, which was the CEQA preferred alternative at the time the Draft EIR/EIS was released in late 2013, as well as the other action alternatives in the document, would function as HCP/NCCP documents eligible for ultimate inclusion in the statutorily mandated Delta Plan pursuant to Water Code Section 85320. That statute provides that the BDCP shall not be incorporated into the Delta Stewardship Council's Delta Plan by operation of law, or be eligible for state funding, unless, among other things, the BDCP EIR comprehensively reviews and analyzes the "potential effects of climate change, possible sea level rise up to 55 inches, and possible changes in total precipitation and runoff patterns on the conveyance alternatives and habitat restoration activities considered in the environmental impact report." (Cal. Wat. Code, § 85320, subds. [b][2][C] and [e].) Much of the analysis prepared for the Final EIR/EIS in response to this statutory directive overlaps with the three prongs of analysis described both above and below. In addition, as will be explained below, the Delta Reform Act's specific requirement that the EIR analyze "possible sea level rise up to 55 inches" is discussed in Chapter 29, *Climate Change*. (For a full discussion of the EIR/EIS compliance with the Delta Reform Act's climate change requirements, please see Master Response 31, *BDCP/California Water Fix and 2009 Delta Reform Act*.)

The analysis described above retains value, though it no longer applies with the same force to Alternatives 2D, 4A, and 5A addressed in the RDEIR/SDEIS and Final EIR/EIS. Because these three alternatives do not include HCP/NCCP components, they are not eligible for inclusion in the Delta Plan through the process set forth in Section 85320. Rather, if DWR approves one of the non-HCP alternatives, DWR would need to demonstrate that its action is consistent with the Delta Plan as a

"covered action" defined in California Water Code Section 85057.5, subdivision (a), which was also enacted as part of the 2009 Delta Reform Act. According to that definition, "covered action" means "a plan, program, or project as defined pursuant to Section 21065 of the Public Resources Code that meets all of the following conditions:

(1) It will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh.

(2) It will be carried out, approved, or funded by the state or a local public agency.

(3) It is covered by one or more provisions of the Delta Plan.

(4) It will have a significant impact on achievement of one or both of the coequal goals or the implementation of government-sponsored flood control programs to reduce risks to people, property, and state interests in the Delta.

The Delta Reform Act established a self-certification process for demonstrating consistency with the Delta Plan. This means that a state or local agency proposing to undertake what the agency believes is a "covered action" must submit to the Delta Stewardship Council a written certification of consistency with detailed findings as to whether the covered action is consistent with the Delta Plan. (Cal. Wat. Code, § 85225.) Such a determination may be appealed to the Delta Stewardship Council on the ground that the proposed covered action "is inconsistent with the Delta Plan and, as a result of that inconsistency, the action will have a significant adverse impact on the achievement of one or both of the coequal goals or implementation of government-sponsored flood control programs to reduce risks to people and property in the Delta[.]" (Cal. Wat. Code, § 85225.10, subd. (a).) After a hearing on an appealed action, the Delta Stewardship Council "shall make specific written findings either denying the appeal or remanding the matter to the state or local public agency for reconsideration of the covered action based on the finding that the certification of consistency is not supported by substantial evidence in the record before the state or local public agency that filed the certification. Upon remand, the state or local agency may determine whether to proceed with the covered action. If the agency decides to proceed with the action or with the action as modified to respond to the findings of the council, the agency shall, prior to proceeding with the action, file a revised certification of consistency that addresses each of the findings made by the council and file that revised certification with the council." (Cal. Wat. Code, § 85225.25.)

Should the lead agencies choose to approve either Alternative 4A, Alternative 2D, or Alternative 5A, DWR would have to prepare a "certification of consistency" pursuant to this process. Should the lead agencies choose to approve one of the BDCP alternatives set forth in the Final EIR/EIS, however, DWR would pursue incorporation into the Delta Plan through the process set forth in Water Code Section 85320, as described earlier.

As a general backdrop to this master response, please see *Master Response 31, BDCP/California Water Fix and 2009 Delta Reform Act*, for a listing of the numerous chapters and appendices in the Final EIR/EIS that address and demonstrate the importance of climate change in the evaluation of the BDCP alternatives.

As this master response explains, the EIR/EIS evaluation of climate change represents a thorough, complex, and multi-layered analysis, incorporating the requirements of CEQA, NEPA, and the Delta Reform Act. The analysis addresses 1) the potential impacts of the alternatives on climate change via an analysis of the alternatives' contribution to GHG concentrations in the atmosphere, 2) the potential impacts of climate change on the impacts of the alternatives, 3) the resiliency and adaptability of the alternatives in the face of future climate change, and 4) the climate change-related requirements of the Delta Reform Act.

1. The Impacts of the Project on Climate Change

As noted above, one of the three fundamental climate change issues evaluated by the EIR/EIS is to assess the impacts of the proposed project and alternatives on climate change. Chapter 22, *Air Quality and Greenhouse Gases*, addresses this issue by evaluating the contributions of the project and alternatives to elevated GHG concentrations in the atmosphere.

This discussion addresses three key concerns raised by commenters:

(A) The lead agencies' methodology for assessing GHG effects;

(B) The lead agencies' reliance on DWR's overall long-term plan for reducing GHG emissions for the entire State Water Project (SWP) as mitigation for operational GHG effects; and

(C) The No Project Alternative's consistency with CEQA and NEPA requirements.

A. The Lead Agencies' methodology for assessing GHG effects in the EIR/EIS is consistent with the requirements of the State CEQA Guidelines and NEPA dealing with GHG effects

As this discussion will show, in analyzing the effects of greenhouse gas emissions associated with the BDCP, the California WaterFix (Alternative 4A), and the various alternatives in the EIR/EIS documents, DWR complied with the State CEQA Guidelines,[206] which call for a "good-faith effort, based to the extent possible on scientific and factual data," to calculate the amount of GHG emissions the BDCP alternatives produce. (State CEQA Guidelines, § 15064.4, subd. (a).) For those alternatives involving HCP/NCCP components, the EIR/EIS covers two prongs of such alternatives: the construction phase of the BDCP; and operations through 2060 (which approximately marks the proposed 50-year permit duration of the proposed BDCP). Given the seriousness of climate change, DWR set the notably conservative significance threshold of "net zero" for construction-related GHG emissions impacts, which means that any and all emissions due to construction are considered significant and require feasible mitigation to minimize the significant adverse impacts. The Final EIR/EIS identifies a comprehensive set of mitigation strategies to reduce construction-related emissions to net zero. For operations-related GHG emissions, DWR relied on its adopted *Climate Action Plan-Phase 1: Greenhouse Gas Emissions Reduction Plan* (CAP), which is designed to reduce the GHG emissions of all DWR activities. Consistent with State CEQA Guidelines provisions encouraging agencies to adopt "plan[s] for the reduction of greenhouse gas emissions," the CAP adjusts DWR's future renewable energy resources portfolio to ensure that DWR stays on track with its long-term emissions reduction trajectory. This trajectory must be maintained regardless of whether one of the project alternatives is approved. (State CEQA Guidelines, §§ 15183.5, subd. (a) and 15064, subd. (h)(3).) Compliance with requirements of the CAP is sufficient to render the operational GHG impacts of such alternatives to less than significant levels. (*Id.*, § 15183.5, subd. (b)(2).) As discussed below, this approach also satisfies the requirements of NEPA.

The Applicable Regulatory Scheme

In September 2006, the California Legislature adopted Assembly Bill No. 32, the California Global Warming Solutions Act of 2006 (AB 32), which establishes a 2020 cap on statewide GHG emissions

[206] California Code of Regulations Title 14, § 15000 et seq.)

and sets forth a regulatory framework to achieve the corresponding reduction in statewide emission levels.

In 2010, the State CEQA Guidelines were amended to address GHG emissions that would result from projects. The Guidelines make clear that lead agencies must identify the potential GHG emissions of a project and propose mitigation as necessary. Specifically, State CEQA Guidelines Section 15064.4, subdivision (a), provides that "[a] lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of greenhouse gas emissions resulting from a project." This determination requires "careful judgment by the lead agency consistent with the provisions in [State CEQA Guidelines] Section 15064." (State CEQA Guidelines, § 15064.4, subd. (a).) A lead agency may choose whether to use a model or methodology to quantify GHGs resulting from a project, and may select the model or methodology it considers most appropriate. A lead agency may also rely on a qualitative analysis or performance based standards. (*Id*., § 15064.4, subd. (a)(1)–(2).) The Court of Appeal in *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista* (2011) 197 Cal.App.4th 327, 335-336 ("*CREED v. Chula Vista*") affirmed that under State CEQA Guidelines Section 15064.4, "Lead Agencies are allowed to decide what threshold of significance [they] will apply to a project." The California Supreme Court provided further guidance on this subject in *Center for Biological Diversity v. California Department of Fish and Wildlife* (2015) 62 Cal.4th 204, 228-231 (*CBD v. DFW*).

Although the Guidelines do not contain standards or thresholds to measure the significance of GHG emissions, Section 15064.4, subdivision (b), provides that the following factors should be considered when assessing the significance of a project's GHG emissions impacts on the environment:

1. The extent to which the project may increase or reduce GHG emissions compared to the existing environmental setting.
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
3. The extent to which the project complies with specified regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. [207]

As this master response explains, these three factors played an integral role in the analysis of GHG emissions impacts of the EIR/EIS alternatives.

Under CEQA, an EIR must describe the significance of each individual impact. Under NEPA, an EIS must describe and disclose the effects of the alternatives and determine whether a project as a whole would have an adverse effect on the environment. Neither NEPA nor the NEPA Regulations promulgated by the Council on Environmental Quality (CEQ) expressly require analysis of GHG emissions impacts. The Ninth Circuit Court of Appeals has stated, however, that "[t]he impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct." (*Center for Biological Diversity v. National Highway Traffic Safety Administration*, 538 F.3d 1172, 1217 (9th Cir. 2008.)

[207] See also *North Coast Rivers Alliance v. Marin Municipal Water Dist. Bd. of Directors* (2013) 216 Cal.App.4th 614, 650.

In 2010, the CEQ issued draft NEPA guidance advising federal agencies that they should address GHG emissions caused by federal actions in their agency NEPA procedures. In late 2014, CEQ published a revised version of that draft document, commencing a public comment period that ended in March 2015. The CEQ issued a final guidance in August 2016. CEQ's *Final Guidance for Federal Departments and Agencies in Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews* (Final GHG Emissions and Climate Change Guidance), by its terms, applies to prospectively to new projects and provides that it is within the discretion of the lead agency to determine whether to apply the guidance to an on-going NEPA process It has been clear since 2008 that NEPA documents should address the subject of greenhouse gas emissions and while the EIR/EIS was prepared prior to the release of the final CEQ guidance, as discussed in Section 5, *The Final EIR/EIS is Consistent with the CEQ's Final GHG Emissions and Climate Change Guidance*, of this master response, the EIR/EIS is consistent with the recommendations in the CEQ's GHG Emissions and Climate Change Guidance. Thus, in this case, revising the EIR/EIS to address the Final GHG Emissions and Climate Change Guidance was not necessary.

The EIR/EIS describes the GHG emissions impacts of the alternatives under both NEPA and CEQA for each of the alternatives.

Notably, in May 2012, after completing environmental review, DWR adopted its CAP. The CAP is contained in Final EIR/EIS Appendix 22D, *DWR Climate Action Plan*. This plan details DWR's efforts to reduce GHG emissions related to all DWR activities consistent with AB 32 and Executive Order S-3-05, which sets GHG emissions reduction targets for state agencies. As discussed further below, the EIR/EIS alternatives analysis for GHG emissions meets the requirements of the CAP.

Analysis of Water Conveyance Facility

The effects of the alternatives on GHG emissions from both construction and the operation of the proposed water conveyance facility (called CM1 for alternatives including HCP/NCCP components) were assessed and quantified using standard and accepted software tools, techniques, and emission factors. A full list of assumptions used to quantify emissions is found in Appendices 22A, *Air Quality Analysis Methodology*, and 22B, *Air Quality Assumptions*. State CEQA Guidelines Section 15364.5 states that greenhouse gases include, but are not limited to: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The primary GHGs generated by the alternatives include carbon dioxide, methane, nitrous oxide, and sulfur hexafluoride. To simplify reporting and analysis, the EIR/EIS uses methods to describe emissions of GHGs in terms of a single gas (CO_2e, or carbon dioxide equivalent). The GHG analysis employs the Global Warming Potential method (GWP) defined in the Intergovernmental Panel on Climate Change reference documents, which is the most commonly accepted method to compare GHG emissions. The GWPs of the primary GHGs generated by the alternatives, their lifetimes, and abundances in the atmosphere are described in Chapter 22. In addition, GHG emissions inventories are provided for global, national, state, and local levels in Chapter 22, as well. These inventories help contextualize the magnitude of potential project-related emissions.

Chapter 22 describes the regulatory setting affecting this analysis, including the plans, policies, and regulations at the federal, state, and local level that would apply to the alternatives. In determining an appropriate significance threshold, the lead agencies first reviewed and considered thresholds set by the four air quality management districts (AQMDs) wherein the proposed project will be located. They are Yolo-Solano AQMD; Sacramento Metropolitan AQMD; Bay Area AQMD; and San

Joaquin Valley Air Pollution Control District. The thresholds vary by district, and also, in some districts, by construction versus operational effects.

Yolo-Solano AQMD has no proposed specific thresholds for GHGs, and recommends that lead agencies include at least a qualitative discussion of potential climate change impacts for sizeable projects. (Final EIR/EIS, Chapter 22.) Sacramento Metropolitan AQMD's advisory CEQA Guidelines recommend that lead agencies include a description of the GHGs, summarize existing regulations, and discuss GHG emissions sources in the study area. The advisory further recommends that the analysis quantify GHG emissions associated with both project construction and operation. Sacramento Metropolitan AQMD does not recommend a GHG emissions threshold for construction but encourages the implementation of best management practices. (Final EIR/EIS, Chapter 22.)

The Bay Area Air Quality Management District (BAAQMD) has adopted recommended significance thresholds for operational GHG emissions from land use development and stationary projects. These thresholds are intended to reduce GHG emissions from major contributors within the air district. Currently, BAAQMD does not recommend GHG emission thresholds for construction but encourages the implementation of best management practices. (Final EIR/EIS, Chapter 22.) Finally, San Joaquin Valley Air Pollution Control District has GHG guidance intended to streamline CEQA review by pre-quantifying emissions reductions that would be achieved through the implementation of best performance standards. Projects are considered to have a less-than-significant cumulative impact on climate change if any of the following conditions are met: 1) Complies with an approved GHG reduction plan; 2) Achieves a score of at least 29 using any combination of approved operational best performance standards; or 3) Reduces operational GHG emissions by at least 29% over business-as-usual conditions (demonstrated quantitatively). The San Joaquin Valley Air Pollution Control District also recommends quantification of GHG emissions for all projects where an EIR is required. (Final EIR/EIS, Chapter 22.)

Faced with these differing approaches from the different air districts, and in order to be conservative in light of the seriousness of the global problem of climate change, the lead agencies opted to employ a "net zero (0)" threshold of significance for construction-related GHG emissions. (Final EIR/EIS, Chapter 22.) Although the California Supreme Court's late-2015 decision in *CBD v. DFW* raised questions about some of the methodologies recommended by these air districts, nothing in that decision calls into question the extremely conservative approach of treating *any* net increase in GHG emissions as a significant environmental effect.

DWR's Climate Action Plan

As noted above, DWR adopted its CAP in 2012. (Final EIR/EIS Appendix 22D.) This department-wide plan details DWR's efforts to reduce GHG emissions related to all DWR activities consistent with AB 32 and Executive Order S-3-05, which sets GHG emissions reduction targets for state agencies. (Final EIR/EIS, Chapter 22.) The plan provides estimates of historical, current, and future GHG emissions related to operations, construction, maintenance, and business practices for DWR activities. The CAP specifies aggressive 2020 and 2050 GHG emissions reduction goals and identifies a list of GHG emissions reduction measures that DWR will undertake to achieve these goals. (Chapter 22, Final EIR/EIS)

DWR prepared its CAP consistent with State CEQA Guidelines Section 15183.5, *Tiering and Streamlining the Analysis of Greenhouse Gas Emissions*. This section of the State CEQA Guidelines provides that a "plan for the reduction of greenhouse gas emissions, once adopted following certification of an EIR or adoption of an environmental document, may be used in the cumulative

impacts analysis of later projects." (State CEQA Guidelines, § 15183.5, subd. (b)(2).) More specifically, "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG reduction plan. (*Id*., § 15183.5, subd. (a).) "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project." (*Id*., § 15183.5, subd. (b)(2).) Because global climate change is, by its nature, a global cumulative impact, an individual project's compliance with a qualifying greenhouse gas reduction plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable." (*Id*., § 15064, subd. (h)(3).)

State CEQA Guidelines Section 15183.5 thus permits DWR to rely on the CAP (a "plan for the reduction of greenhouse gas emissions") in the cumulative effects analysis for GHG emissions for the proposed BDCP (a "later" project). Notably, in *CBD v. DFW*, the California Supreme Court expressed conceptual approval of an approach for assessing the significance of GHG emissions through reference to the extent to which particular projects complied with plans for the reduction of GHG emissions. (62 Cal.4th at p. 230.)

As this master response explains next, the lead agencies' GHG analysis for both the construction-related and operations-related GHG emission meets or exceeds the requirements contained in the CAP. (Chapter 22, Final EIR/EIS) The construction-related GHG emissions impacts of the alternatives are identified as the CAP requires, and exceed the CAP's limit for emissions that may be directly analyzed under the CAP. The construction effects are, therefore, appropriately the subject of a project-specific analysis that meets the requirements of the CAP and complies with CEQA. By setting an aggressive net-zero significance thresholds for construction-related GHG emissions, however, DWR has exceeded the construction-related mitigation requirements contemplated by the CAP. The operational GHG emissions effects of the alternatives also are identified pursuant to the CAP. Because the operational effects meet the consistency requirements of the CAP, DWR properly relies on the CAP's emissions reduction strategy as mitigation for those effects under CEQA.

The Climate Action Plan's Consistency Requirements

Chapter 12 of DWR's CAP outlines how individual projects can demonstrate consistency with the CAP, so that they may rely on the analysis it provides for the purposes of a CEQA cumulative impacts GHG analysis. (Final EIR/EIS, Appendix 22D and Chapter 22.) The following steps must be taken to ensure that the project – from both a construction and an operations perspective – is consistent with the CAP.

- Identify, quantify, and analyze the GHG emissions from the proposed project and alternatives consistent with DWR's internal guidance: "Guidance for Quantifying Greenhouse Gas Emissions and Determining the Significance of their Contribution to Global Climate Change for CEQA Purposes."
- If construction emissions levels are greater than 25,000 metric tons of carbon dioxide equivalent (CO_2e) for the entire construction phase or if they exceed 12,500 metric tons of carbon dioxide equivalent in any single year of construction, the project's construction emissions cannot rely on the analysis provided in the DWR CAP and must complete a project-specific analysis of the construction emissions for CEQA purposes.

- Emissions Reduction Measures CO-1 and CO-2 must be incorporated into the design of the project.
    - CO-1: Construction Best Management Practices (BMPs) are designed to minimize fuel consumption by construction and transportation of materials, reduce landfill material usage, and reduce emissions from cement production. DWR's BMPs are listed and discussed in Appendix 22D, *DWR Climate Action Plan*; see also Appendix 3B, *Environmental Commitments AMMs, and CMs*.
    - CO-2: Compliance with the California Air Resources Board's 2007 Off-Road Diesel Vehicle Regulation, designed to phase in the use of cleaner engines in diesel vehicles with engines greater than 25 horsepower and any other statewide regulations targeting GHG emissions reductions. (See Final EIR/EIS, Appendix 22D.)
- Determine that the project does not conflict with DWR's ability to implement any of the specific action GHG emissions reduction measures outlined in the CAP.
- If, after construction, implementation of the proposed project would result in additional energy demands on the SWP system of 15 gigawatt hours per year or greater, the project must perform additional analyses with the DWR SWP Power and Risk Office to determine whether the additional energy demand will require DWR to take additional steps beyond those identified in the CAP to achieve its emissions reduction goals. If the analyses indicate that the additional load resulting from the proposed project would require DWR to modify existing or implement additional GHG emissions reduction measures, such measures must be approved by DWR SWP Power and Risk Office.

(Final EIR/EIS, Appendix 22D.)

Construction-Related Emissions – Water Conveyance Facility

The CAP explains that a future construction project exceeding the 25,000 metric tons of carbon dioxide equivalent in total or 12,500 metric tons of carbon dioxide equivalents in a year is considered an "Extraordinary Construction Project." Such projects may require "a project-specific impacts analysis for construction GHG emissions following the State CEQA Guidelines and DWR policy." By contrast, operational emissions associated with such a project "could still rely on the analysis in [the CAP)] to streamline later, project-specific cumulative impacts analyses under CEQA provided the Extraordinary Construction Project meets all other consistency requirements of [the CAP.]" (Final EIR/EIS, Appendix 22D.)

As noted above, the first factor under the State CEQA Guidelines that a lead agency should consider when assessing the significance of a project's GHG emissions impacts on the environment is the extent to which the project may increase or reduce GHG emissions compared to the existing environmental setting. (State CEQA Guidelines, § 15064.4, subdivision (b)(1).) The CEQA Existing Conditions Baseline is discussed in Chapter 4, *Approach to the Environmental Analysis*, and in Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*. While the NEPA No Action Alternative assumes environmental changes due to climate change that would occur with or without the proposed action or alternatives, the CEQA Existing Conditions baseline does not. (Final EIR/EIS, Appendix 3D and *Executive Summary*.) With regard to baseline, please also see Master Response 1, *Environmental Baselines*.

The Final EIR/EIS analysis shows that construction of the water conveyance facility alternatives would generate emissions of GHGs under short-term conditions when compared to the existing environmental setting. Such emissions would originate from mobile and stationary construction equipment exhaust, employee vehicle exhaust, and other sources. (Final EIR/EIS, Chapter 22.) Construction of the proposed water conveyance facility would occur in multiple phases and take from seven to nine years, depending on the alternative. (Final EIR/EIS, Chapter 22.)

Construction emissions for the water conveyance facility were calculated consistent with DWR's internal guidance document ("Guidance for Quantifying Greenhouse Gas Emissions and Determining the Significance of their Contribution to Global Climate Change for CEQA Purposes") as specified by the CAP; and a GHG Emission Reduction Plan Consistency Determination Form was completed. The proposed project's construction emissions exceed 25,000 metric tons of carbon dioxide equivalents for each project alternative (except for the No Project Alternative). Thus, the significance determination for construction-related emissions cannot be determined by relying on the analysis in DWR's CAP. (Final EIR/EIS, Chapter 22.)

The second factor under the State CEQA Guidelines that should be considered when assessing the significance of a project's GHG emissions impacts on the environment is whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project. (State CEQA Guidelines, § 15064.4, subdivision (b)(2).) The lead agencies, exercising the discretion contained in the State CEQA Guidelines Section 15064.4, determined that the seriousness of climate change and the regional significance of the proposed project and its alternatives warranted the determination that *any* increase in construction-related GHG emissions above net zero (0) would result in a significant impact. A net zero significance threshold represents a conservative assessment of construction emissions considering that any GHGs released during construction will be temporary and cease once construction is complete. This threshold was set out of an abundance of caution to avoid under-representing potential impacts. (Final EIR/EIS, Chapter 22.)

The GHG emissions resulting from construction of each of the water conveyance alternatives are described in detail in Chapter 22 of the Final EIR/EIS. Construction of Alternative 1A would generate a total of 2.7 million metric tons of GHG emissions. (Final EIR/EIS, Chapter 22.) As noted, any increase in emissions above net zero associated with construction of the water conveyance features would be significant. Under NEPA, the effect is considered adverse. As discussed next, Mitigation Measure AQ-21 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero, thus addressing the adverse effect under NEPA and the significant effect under CEQA.

Water Conveyance Facility Construction Emissions Mitigation

State CEQA Guidelines Section 15126.4, subdivision (c), addresses the requirements for mitigation measures related to GHG emissions. If a project's contribution to GHG emissions is deemed significant, the EIR must describe feasible measures that could minimize the impact. Measures to mitigate these impacts may include:

1. Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;
2. Reductions in emissions resulting from a project through implementation of energy-conserving measures or features;
3. Off-site measures, including offsets that are not otherwise required;

4. Measures that sequester GHGs;
5. Implementation of specific measures or policies aimed at reducing GHG emissions contained in an adopted plan, regulation, or ordinance.

Project-level GHG reduction measures CO-1 and CO-2, which are included in the DWR CAP, are incorporated into the project design as environmental commitments that the DWR will keep if the proposed project is approved and constructed. (See Final EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and CMs.*) As noted above, CO-1 includes construction best management practices designed to minimize fuel consumption by construction and transportation of materials, reduce landfill material usage, and reduce emissions from cement production. CO-2 requires compliance with the California Air Resources Board's 2007 Off-Road Diesel Vehicle Regulation designed to phase in the use of cleaner engines in diesel vehicles with engines greater than 25 horsepower and any other statewide regulations targeting GHG emissions reductions. (Final EIR/EIS, Chapter 22.)

The incorporation of these measures into the project design comports with the third factor that a lead agency should consider when assessing the significance of GHG emissions under State CEQA Guidelines Section 15064.4, subdivision (b). The third factor involves the extent to which a project complies with specified regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. (State CEQA Guidelines, § 15064.4, subd. (b)(3).) Among the CAP consistency requirements is the incorporation of the two GHG reduction measures mentioned above, CO-1 and CO-2, in the project design of a future project. This CAP consistency measure is met, and highlights one of several ways that this CEQA Guideline factor was an integral consideration in the GHG impacts analysis. (See, for example, the two prior discussions in this master response regarding the identification and analysis of GHG emissions impacts as prescribed by the CAP and the CAP requirement for project-specific analysis for the construction-related emissions. See also the discussion below regarding the requirement for further analysis under the CAP's Renewable Energy Procurement Plan (REPP) for the operations-related GHG emissions impacts of the alternatives.)

The EIR/EIS outlines a multi-faceted plan for reducing the construction-related GHG emissions impacts through the use of the types of measures suggested in State CEQA Guidelines Section 15126.4, subdivision (c) (discussed above). Mitigation Measure AQ-21 in Chapter 22, *Air Quality and Greenhouse Gases*, outlines an extensive GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly, the impact would be less than significant with implementation of Mitigation Measure AQ-21.

Mitigation Measure AQ-21 would require that DWR develop the GHG Mitigation Program before commencement of any construction or other physical activities that would generate GHG emissions. The program would consist of feasible options that, taken together, would reduce construction-related GHG emissions to net zero. DWR would determine the nature and form of the components of the program after consulting with the air quality management districts and air pollution control districts in the study area, the California Air Resources Board, the U.S. Environmental Protection Agency, and the California Energy Commission. (Final EIR/EIS, Chapter 22.)

The GHG Mitigation Program is comprised of seven categories of strategies:

- Entering into a renewable energy purchase agreement;
- Additional onsite mitigation such as engine electrification and the use of low-carbon concrete;

- Energy efficiency retrofits and rooftop renewable energy;
- Purchasing carbon offsets;
- Biomass digestion and conversion;
- Increasing renewable energy purchases to operate the SWP; and
- Making changes to land use and sequestration projects.

Several potential mitigation strategies are available, which are described in Chapter 22 and which comport with State CEQA Guidelines Section 15126.4, subdivision (c). (See, for example, Strategies 5 through 8, involving Energy Efficiency Retrofits and Rooftop Renewable Energy Strategies consistent with the type of energy-efficiency measures permitted by State CEQA Guidelines Section 15126.4, subdivision (c)(2).)

Chapter 22 provides detail about each of the GHG reduction strategies that will be considered in formulating the overall GHG Mitigation Program. The Final EIR/EIS explains that the individual strategies are quantified in terms of their capacity to reduce GHG emissions. As just one example, Strategy 1, "Renewable Energy Purchase Agreement," explains that:

> Enter into a power purchase agreement, where feasible, with utilities which provide electricity service within the Study area to purchase construction electricity from renewable sources. Renewable sources must be zero emissions energy sources (e.g., wind, solar, hydro) and may not be accounted to utility RPS goals.

The EIR/EIS explains how the individual strategies will function together as a feasible "suite of strategies" to reduce construction-related GHG emissions to net zero. The interplay among the options is described as follows:

> Quantitative information on the potential capacity of each strategy is provided in Appendix 22A, *Air Quality Analysis Methodology*. These estimates are based on general construction activity information, the size and trading volume of existing carbon offset markets, and available alternative energy resources (e.g., biomass, renewable energy) available to the project as potential mitigation strategies. Emissions reductions quantified for each strategy should be seen as high-level screening values that illustrate a rough order of magnitude for the expected level of emissions reductions or offsets. Moreover, the mitigation strategies should be viewed not as individual strategies, but rather as a suite of strategies. If one strategy, when investigated in greater detail prior to implementation, cannot deliver as high a level of emissions reduction or offset as initially estimated, other strategies will be implemented to ensure achievement of the performance standard of zero net GHG emissions from the project.
>
> (Final EIR/EIS, Chapter 22, Section 22.3.3.2.)

Importantly, Mitigation Measure AQ-21 provides clear and enforceable means for ensuring that the construction-related GHG emissions of the proposed project will be reduced to net zero. As the Final EIR/EIS explains:

> Project proponents will develop a mechanism for quantifying, funding, implementing, and verifying emissions reductions associated with the selected strategies. Project proponents will also conduct annual reporting to verify and document that selected strategies achieve sufficient emissions reductions to offset construction-related emissions to net zero. All selected strategies must be quantifiable, verifiable, enforceable, and satisfy the basic criterion of additional[ity] (i.e., the reductions would not happen without the financial support of purchased offset credits or other mitigation strategies). Annual reports will include, at a minimum the following components:
>
> - Calculated or measured emissions from construction activities over the reporting year;

- Projects selected for funding during the reporting year;
- Total funds distributed to selected projects during the reporting year;
- Cumulative funds distributed since program inception;
- Emissions reductions achieved during the reporting year; and
- Cumulative reductions since program inception.

(Final EIR/EIS, Chapter 22.)

Operational Emissions – Water Conveyance Facility

As Section 1.B, *DWR properly relies on its overall long-term plan for reducing GHG emissions from the entire SWP (as modified) as mitigation for the project's operational GHG effects*, of this master response next explains, the CAP's requirements have been met for the project alternatives' operational GHG effects. The operational emissions associated with increased SWP pumping and project maintenance are identified consistent with the DWR guidance documents required under CAP; and a GHG Emission Reduction Plan Consistency Determination Form has been completed. In terms of operational emissions, the Final EIR/EIS shows that the operation and maintenance of water conveyance facilities create additional SWP energy demands in excess of 15 gigawatt hours per year. The CAP, pursuant to the State CEQA Guidelines, provides for the analysis of operational emissions from later projects that cause energy demands to exceed the 15 gigawatt hours-threshold. In such cases, the CAP requires additional analysis and consultation with DWR's SWP Power and Risk Office to ensure that sufficient additional renewable energy resources are identified to maintain DWR's long-term emissions reduction trajectory.

This analysis and consultation for the alternatives have occurred, and modifications have been made to DWR's Renewable Power Procurement Plan for alternatives that would require additional renewable energy resources. These modifications ensure that the covered activities do not conflict with DWR's ability to achieve the GHG reductions outlined in the CAP. Thus, as Chapter 22 summarizes, operational emissions for the alternatives from 1) increased SWP pumping and 2) project maintenance are addressed consistent with DWR's CAP and are found to be less than significant. (See further discussion in Section 1.B, *DWR properly relies on its overall long-term plan for reducing GHG emissions from the entire SWP (as modified) as mitigation for the project's operational GHG effects*.)

Federal Central Valley Project Operations – Water Conveyance Facility

Chapter 22 discusses the federal Central Valley Project (CVP) operational emissions approach and threshold. The water conveyance facilities associated with the proposed project would be constructed, owned, and operated as a component of the SWP. Water pumped at the new facilities, however, would be for CVP customers as well as SWP customers. Hydropower is the primary energy source for CVP activities. Increased CVP pumping associated with the proposed project will therefore not directly result in increased GHG emissions because hydropower is considered neutral with respect to emissions. However, hydropower supplied to the proposed project would reduce the quantity of hydropower supplied to the California grid and/or other CVP customers. The proposed project may therefore result in an indirect emissions effect because energy from alternative sources (such as natural gas) would be required to meet this demand. Increased GHG emissions generated by CVP pumping could impede attainment of statewide renewable and GHG reduction goals, as

outlined in AB 32. Accordingly, an adverse effect under NEPA would occur if indirect GHG emissions would conflict with AB 32 and state RPS goals.

Conservation Measures 2–22

Chapter 22 also discusses the programmatic assessment of Conservation Measure (CM) 2–CM21 for the BDCP alternatives discussed in the Final EIR/EIS. (These measures are not included in Alternatives 2D, 4A, and 5A, though more modest versions of some of them, called "environmental commitments," would apply.) For the air quality assessment, the GHG impacts of CM2–CM11 (restoration and enhancement actions) are analyzed programmatically for the proposed BDCP. The analysis concludes that the conservation measures consisting of programs to reduce the adverse effects of various stressors on covered species (CM12–CM21) are expected to generate the same types of construction-related emissions relative to Existing Conditions and the No Action Alternative.

Summary

As this discussion shows, DWR's methodology for assessing GHG effects is consistent with the requirements of the State CEQA Guidelines dealing with GHG effects. The analysis addresses the construction phase of the alternatives, as well as implementation and operation of the alternatives. In choosing to rely on DWR's CAP to calculate and analyze GHG emissions for the alternatives, the lead agencies applied the "careful judgment" called for under the State CEQA Guidelines and case law, based "to the extent possible on scientific and factual data." (State CEQA Guidelines, § 15064.4, subd. (a); see also *CREED v. Chula Vista, supra*, 197 Cal.App.4th at pp. 335–336.)

The Final EIR/EIS describes in detail the construction-related GHG emissions for water conveyance facility alternatives that, absent mitigation, would exceed the threshold in the CAP for making a significance determination and thus required a project-specific analysis of construction emissions for CEQA purposes. The lead agencies have proceeded with an abundance of caution in selecting the net zero significance threshold for construction-related GHG emissions. This decision was based on the seriousness of climate change, the regional significance of the proposed project, the state's statutory and regulatory policies, and DWR's own commitment to aggressively reduce GHG impacts on the environment. The conclusions for each of the alternatives are described in Chapter 22, and an expansive and enforceable mitigation plan has been developed, consistent with State CEQA Guidelines Section 15126.4, subdivision (c). In addition, the project-level GHG reduction measures CO-1 and CO-2 contained in the CAP are incorporated into the project design, as required by the CAP, taking the form of environmental commitments that DWR will keep if the project is approved and constructed.

For the analysis of operations of the proposed water conveyance facility alternatives, the Final EIR/EIS describes the GHG emissions associated with increased SWP pumping and project maintenance, which are evaluated consistent with DWR's guidance documents as required by the CAP. Chapter 22 explains in detail the projected additional energy demands of the alternatives. These energy projections triggered the CAP requirement for additional analysis and identification of sufficient renewable energy sources to ensure that proposed project activities do not conflict with DWR's ability to achieve the GHG reductions outlined in the CAP.

As Section 1.B explains, pursuant to State CEQA Guidelines Sections 15183.5, subdivision (a), and 15064, subdivision (h)(3), DWR has appropriately relied on the CAP's overall plan for reducing GHG emissions as mitigation for the operations-related GHG impacts of the project alternatives.

B. DWR properly relies on its overall long-term plan for reducing GHG emissions from the entire SWP (as modified) as mitigation for the project's operational GHG effects.

Streamlining the Cumulative Impacts Analysis

State CEQA Guidelines Section 15183.5, subdivision (a), provides for tiering and streamlining the analysis of GHG emissions. Under this provision, lead agencies may analyze and mitigate the significant effects of GHG emissions at a programmatic level, and later project-specific environmental documents may tier from and / or incorporate by reference the existing programmatic review.

In May 2012, DWR adopted its CAP for all activities of the department. The CAP specifies aggressive department-wide 2020 and 2050 emission reduction goals and identifies a list of GHG emissions reduction measures that DWR will undertake to achieve these goals. (Final EIR/EIS, Chapter 22.) DWR's CAP was prepared consistent with State CEQA Guidelines Sections 15130, subdivisions (b)–(d) [discussion of cumulative impacts], and 15183.5, which states:

> A plan for the reduction of greenhouse gas emissions, once adopted following certification of an EIR or adoption of an environmental document, may be used in the cumulative impacts analysis of later projects. An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project.
>
> (State CEQA Guidelines, § 15183.5, subd. (b)(2); see Final EIR/EIS, Appendix 22D referencing the CAP, Chapter 12 *Use of this Plan for Cumulative Impact Analyses of Future Projects*.).)

CEQA permits lead agencies to "determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including, but not limited to . . . plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located." (State CEQA Guidelines, § 15064, subd. (h)(3).) DWR's CAP was intended, in part, to streamline DWR's analysis for CEQA purposes of the potential for future DWR projects to contribute to the cumulative impact of increased GHG concentrations in the atmosphere. (Final EIR/EIS, Appendix 22D.)

DWR's Overall Climate Action Plan, Phase 1: Greenhouse Gas Emissions Reduction Plan (CAP)

Chapter 12 of DWR's CAP outlines how individual projects can demonstrate consistency with the CAP so that they may rely on the analysis it provides for the purposes of a CEQA cumulative GHG impacts analysis. As noted above, if implementation of a proposed project would result in additional energy demands on the SWP system of 15 gigawatt hours per year or greater, the project is not required to do separate project-specific analysis, but instead must perform additional analyses with the DWR SWP Power and Risk Office to determine if the additional energy demand will require DWR to take additional steps beyond those identified in the CAP to achieve its emissions reduction goals. If the analyses indicate that the additional load resulting from the proposed project would require DWR to modify existing or implement additional GHG emissions reduction measures, such measures must be approved by DWR's SWP Power and Risk Office.

In its CAP, DWR developed estimates of historical, current, and future GHG emissions. The overwhelming majority of DWR GHG emissions are emitted by non-hydroelectric-generation facilities, which are needed to move water through the SWP. (Final EIR/EIS Appendix 22D, *DWR Climate Action Plan*.) The CAP includes a set of GHG emissions reduction measures designed to meet DWR's GHG emissions reduction goals. Among those measures is the CAP's REPP, which calls for incrementally reducing GHG emissions of the SWP by increasing the proportion of energy used to run the SWP that is procured from renewable energy supplies and reducing the use of thermal generation. (Final EIR/EIS, Appendix 22D.)

The prior adoption of the CAP by DWR provides a commitment on the part of DWR to continue meeting the planned trajectory for emissions reductions, including modifying DWR's REPP and other emissions reduction measures as necessary to accommodate the additional energy needs of new projects such as the proposed project.

Water Conveyance Facility Operations GHG Emissions

The Final EIR/EIS analysis for impacts due to operational GHG emissions shows that the action alternatives will result in additional SWP energy demands in excess of 15 gigawatt hours per year, thus triggering the requirement for further analysis under the CAP. The required consultation with DWR's SWP Power and Risk Office has occurred, and modifications to the Renewable Power Procurement Plan to accommodate the project alternatives have been identified to ensure that covered project activities do not conflict with DWR's ability to achieve the GHG reductions outlined in the CAP. For these reasons, the operational emissions from both increased SWP pumping and project maintenance are found to be less than significant. (Final EIR/EIS, Chapter 22.)

Through this demonstration of consistency and compliance with the CAP, DWR properly relies on the analysis it provides for the purposes of a CEQA cumulative GHG impacts analysis. As noted, the State CEQA Guidelines permit lead agencies to "determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including, but not limited to . . . plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located." (State CEQA Guidelines, § 15064, subd. (h)(3); see also State CEQA Guidelines, § 15183.5, subds. (a) and (b).)

The Final EIR/EIS analyzes, for each of the alternatives, Impact AQ-22, "Generation of Cumulative Greenhouse Gas Emissions from Operation and Maintenance of the Proposed Water Conveyance Facility and Increased Pumping." The results are described in detail in Chapter 22. Sources of direct GHG emissions include heavy-duty equipment, on-road crew trucks, and employee vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption required for pumping, as well as maintenance, lighting, and other activities. A portion of carbon dioxide emissions generated by calcination during cement manufacturing would be absorbed into the limestone of concrete structures. This represents an emissions benefit. (See e.g. Chapter 22 discussion of Alternative 1A in Section 22.3.3.2.)

The analysis for Alternative 1A provides an example of the level of detailed evaluation that has been done for all of the alternatives. Alternative 1A would add approximately 1,727 gigawatt hours of additional net electricity demand to operation of the SWP each year, assuming 2060 conditions. The 2060 conditions are used for the analysis because they yield the largest increase in energy demand and thus represent the most conservative potential impact. The 1,727 gigawatt-hour figure is based

on assumptions of future conditions and operations and includes all energy required to operate the project with BDCP Alternative 1A, including any additional energy associated with additional water being moved through the system. (Final EIR/EIS, Chapter 22.)

Mitigation Analysis under DWR's CAP

In 2024, the year Alternative 1A, if approved, was projected to go online, the analysis shows DWR total emissions jump from around 912,000 metric tons of carbon dioxide equivalent to nearly 1.7 million metric tons of carbon dioxide equivalent. This elevated level is approximately 400,000 metric tons of carbon dioxide equivalent above DWR's designated trajectory for reducing GHG emissions under CAP. The projection indicates that, after the initial jump in emissions, DWR's existing GHG reduction measures under the CAP would bring the elevated GHG emissions level back down below DWR'S GHG emissions reduction trajectory by 2045, and that DWR would still achieve its GHG emission reduction goal by 2050. (Final EIR/EIS, Chapter 22.)

Given the scale of additional emissions that BDCP Alternative 1A would add to DWR's total GHG emissions, DWR has evaluated the most likely method that it would use to compensate for such an increase in GHG emissions: modification of DWR's REPP. This plan describes the amount of additional renewable energy that DWR expects to purchase each year to meet its GHG emissions reduction goals. The REPP lays out a long-term strategy for renewable energy purchases, though actual purchases of renewable energy may not exactly follow the schedule and will ultimately be governed by actual operations, measured emissions, and contracting. (Final EIR/EIS, Chapter 22.) The CAP commits DWR to monitoring its emissions each year and evaluating its emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established in the plan, DWR will make adjustments to existing emissions reduction measures, devise new measures to ensure achievement of the goals, or take other action. (Final EIR/EIS, Chapter 22.)

Table 22-28 in Chapter 22, *Air Quality and Greenhouse Gases*, shows how the REPP could be modified to accommodate Alternative 1A, and shows that additional renewable energy resources could be purchased during years 2022–2025 over what was programmed in the original REPP. The net result of this change is that by 2026 DWR's energy portfolio would contain nearly 1,700 gigawatt hours (GWh) of renewable energy (in addition to hydropower generated at SWP facilities). This amount is nearly twice the amount called for in the original DWR REPP (1,692 compared to 792). In later years, 2031–2050, DWR would bring on slightly fewer additional renewable resources than programmed in the original REPP; however, more than 13,000 additional GWh of electricity would be purchased under the modified REPP during the 40-year period 2011–2050 than under the original REPP. Figure 22-4 in Chapter 22 shows projected future emissions under Alternative 1A and a revised REPP.

Chapter 22 contains similar analysis under the CAP for GHG operational emissions impacts of all of the proposed water conveyance facility alternatives.

Summary

As this master response explains, DWR properly relied on its overall long-term plan for reducing GHG emissions from the entire SWP as mitigation for the proposed project's operational GHG emissions effects. (State CEQA Guidelines, §§ 15183.5, subd. (a) [providing for tiering and streamlining the analysis of GHG emissions]; 15064, subd. (h)(3) [permitting lead agencies to determine that a project's incremental contribution to a cumulative effect is not cumulatively

considerable if the project complies with a previously-approved plan's specific requirements to avoid or substantially lessen the cumulative problem].)

Here, DWR adopted its CAP, which seeks to reduce GHG emissions for all activities of the department. The CAP was prepared consistent with State CEQA Guidelines Section 15183.5, *Tiering and Streamlining the Analysis of Greenhouse Gas Emissions*. The CAP was intended, in part, to streamline DWR's analysis for CEQA purposes the potential for future DWR projects to contribute to the cumulative impact of increased GHG concentrations in the atmosphere. Either the BDCP (Alternative 4), the California WaterFix (Alternative 4A), or one of the other action alternatives would be a proposed future project of the DWR. The Final EIR/EIS thus properly relied on DWR's CAP in its analysis of the GHG emissions impacts of operating and maintaining the proposed water conveyance facility for all of the action alternatives. Under this analysis, the proposed project's incremental contribution to the cumulative effect of GHG emissions on the environment is deemed to be less than cumulatively considerable and therefore less than significant. (Final EIR/EIS, Chapter 22.) DWR's application and reliance on its adopted CAP thus is consistent with CEQA's streamlining provisions for GHG emissions analysis.

C. DWR's No Project Alternative, which assumes sea level rise and climate change, is consistent with CEQA requirements.

The Purpose of the No Project Alternative

Because the EIR/EIS must comply with both NEPA and CEQA, the document was required to include both a No Action Alternative (NEPA) and a No Project Alternative (CEQA). Because the two requirements are so similar, however, the lead agencies, to minimize unnecessary bulk in the document, combined the two concepts into one and chose to use the NEPA term in referring to the joint construct. As explained in the Final EIR/EIS, "[b]ecause the BDCP No Action Alternative assumptions are consistent with the requirements and limitations prescribed by CEQA, from this point forward in this document, the No Action Alternative also represents the No Project Alternative."

CEQA requires lead agencies to evaluate a No Project alternative, along with its reasonably foreseeable impacts. (State CEQA Guidelines, § 15126.6, subd. (e)(1).) This section states:

> The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline (see Section 15125).

The No Project Alternative thus allows the project decision makers to use the EIR to compare the impacts of approving the proposed action alternatives with the impacts under future 2060 and 2025 conditions of not approving the proposed project. Analysis of the No Project Alternative includes a two-fold discussion:

> The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services."
>
> (State CEQA Guidelines, § 15126.6, subd. (e)(2).)

Climate Change Assumptions in the No Project Alternative

As noted, the No Project Alternative analysis must take into account not only existing conditions at the time the Notice of Preparation is published, but also must include "what would be reasonably expected to occur in the foreseeable future if the project were not approved[.]" (State CEQA Guidelines, § 15126.6, subd. (e)(2).) This requirement is qualified by the phrase, "based on current plans and consistent with available infrastructure and community services." (*Ibid*.) This qualifying language limits the number of assumptions a CEQA lead agency can make about potential future actions. (Final EIR/EIS Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*) In envisioning No Project conditions nearly a half century away (2060) and in 2025 for Alternatives 4A, 5A, and 2D, the lead agencies were required to make certain informed judgments about what might reasonably be expected to happen outside the immediate SWP / CVP context during an extended time period. (Final EIR/EIS, Appendix 3D.) For climate change issues, the assumptions and determinations about future climate change and sea level rise are based on current and widely accepted research, the best available science and data, extensive computer modeling based on the existing water delivery infrastructure and system, and careful evaluation of the resulting data. This research projects anticipated future climate conditions that are wholly independent of "current plans" or "available infrastructure and community services."

Chapter 29, *Climate Change*, provides background information about climate change at the global, national, and local levels. This information helps readers of the Final EIR/EIS to understand the rationale and approach for including climate change and sea level rise in the No Project Alternative. A vast amount of scientific research on both the causes and effects of climate change has been conducted during the past 50 years. The Intergovernmental Panel on Climate Change (IPCC) was established by the United Nations Environment Program and the World Meteorological Organization to provide the world with a clear scientific view of the current state of knowledge regarding climate change and its potential environmental and socioeconomic impacts. The IPCC is an organization of more than 800 scientists from around the world, and regularly publishes summary documents that analyze and consolidate peer-reviewed scientific literature, providing a consensus of the state of the science on climate change. Governments, policymakers, and scientists view the IPCC as the leading international body on the science of climate change, and its summaries are considered to be the best available science. The chapter's analysis is built upon IPCC data, as well as California-specific studies.

The EIR/EIS relies on computer modeling to estimate the projected effects of climate change on precipitation patterns in the Central Valley. The likely effects of sea level rise also were evaluated based on modeling simulations. Detailed discussions are included in the Chapter 29, Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix,* and Appendices 29A-C.

In particular, the character of precipitation within the Sacramento and San Joaquin River basins is expected to change under warming conditions, resulting in more frequent rainfall and less frequent snowfall. Increased warming is expected to diminish the accumulation of snow during the cool season and the availability of snowmelt to sustain runoff during the warm season. This shift is expected to lead to changes in peak runoff periods, causing higher flow potential in late winter and early spring and resulting in less runoff during the late spring and summer. (Final EIR/EIS, Chapter 29.)

At the same time, sea level rise from the changing climate will push saltwater farther east into the Delta, requiring increased upstream water releases to push seawater out of the Delta and achieve in-

Delta water quality standards. These hydrological and operational changes would, in turn, decrease available water supply for south-of-Delta users and are thus important considerations for the EIR/EIS. (Final EIR/EIS, Chapter 29.)

The changes to climate and sea level rise are well documented. The effects from those changes are carefully evaluated in the EIR/EIS. The EIR/EIS acknowledges the inherent variability in anticipated future scenarios. Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for example, describes the scientific basis for the EIR/EIS's use of an 18-inch sea level rise projection by 2060 for the alternatives analysis. The projection was based on an evaluation of the best available science at the time of the analysis. Current and well-supported research shows the projected sea level rise for 2060 is approximately 12 inches to 24 inches (hence the 18-inch mid-point). This sea level rise estimate was found to be consistent with those outlined by the U.S. Army Corps of Engineers 2009 guidance for incorporating sea level changes in civil works programs. It also is consistent with the National Research Council's 2012 definitive study of sea level rise projections for the west coast of the United States.

The effects from climate change are expected in the future, regardless of whether the proposed project is approved. Under State CEQA Guidelines Section 15126.6, subd. (e)(2), the No Project Alternative required in an EIR should discuss "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." Given the extensive body of science and research discussed above, the lead agencies determined that the effects of climate change and sea level rise are not only reasonably foreseeable, but are also expected to be major drivers in water operations and ecosystem management issues in the future. As such, they are appropriate assumptions to include in the No Project Alternative. (Final EIR/EIS, Appendix 3D.) Under the circumstances, DWR would have been remiss if the No Project Alternative had *not* included sea level rise and changed precipitation patterns in its 2060 and 2025 impact projections.

Relationship between NEPA No Action Alternative and CEQA No Project Alternative

Under NEPA, as discussed earlier, an EIS must include evaluation of a No Action Alternative. (40 C.F.R. § 1502.14.) Federal lead agencies have discretion to describe the No Action Alternative as the future circumstances without the proposed action. Because the No Action Alternative assumptions are consistent with the requirements and limitations prescribed by CEQA, the NEPA No Action Alternative also represents the CEQA No Project Alternative, as discussed previously. As also mentioned earlier, for ease of reference, the joint No Action/No Project Alternative is referred to as the "No Action Alternative" in the EIR/EIS. (Final EIR/EIS, Executive Summary.)

The Final EIR/EIS No Action Alternative assumptions include the basic description of the No Action Alternative, assumptions related to the SWP and CVP, ongoing programs and policies by governmental and nongovernmental entities, projections related to climate change, and assumptions related to annual actions that vary every year. (Final EIR/EIS, Executive Summary.) This alternative includes projects and programs with defined management and/or operational plans that are likely to occur by 2060 (note that Alternatives 4A, 5A, 2D, and the early long-term No Action Alternative are analyzed at 2025 environmental conditions), as well as facilities under construction as of February 13, 2009. (Final EIR/EIS, Chapter 4.) It also includes projects and programs that received approvals and permits in 2009 and implementation of requirements in the U.S. Fish and Wildlife Service (USFWS) 2008 *Biological Opinion on the Effects of Long Term Coordinated Operations*

of the Central Valley and State Water Project on Delta Smelt and its Designated Critical Habitat and the National Marine Fisheries Service (NMFS) 2009 *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project*. (Final EIR/EIS, Appendix 3D, Chapter 22, and *Executive Summary*.) As with the No Project Alternative under CEQA, the effects of climate change and sea level rise are included in the No Action Alternative under NEPA because they are reasonably foreseeable, based on current research and well-established scientific understanding. (Appendix 3D, Final EIR/EIS)

This approach was legally proper under NEPA because, among other reasons, the federal courts have required consideration of climate change in long-term NEPA impact projections. In *Center for Biological Diversity v. National Highway Traffic Safety Administration*, 538 F.3d 1172, 1217 (9th Cir. 2008), for example, the Court of Appeals held that "[t]he impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct." In finding problems with the NEPA analysis for regulations affecting vehicle fuel efficiency standards, the court noted that, according to the IPCC, "[c]hanges in disturbance regimes and shifts in the location of suitable climatically defined habitats may lead to abrupt breakdown of terrestrial and marine ecosystems with significant changes in composition and function and increased risk of extinctions." (*Id.* at p. 1221.) In *Massachusetts v. EPA*, 549 U.S. 497, 519 (2007), the United States Supreme Court, in considering whether greenhouse gases might be "pollutants" within the meaning of the federal Clean Air Act, had previously acknowledged that "[t]he harms associated with climate change are serious and well recognized," citing a scientific report that had "identifie[d] a number of environmental changes that have already inflicted significant harms, including 'the global retreat of mountain glaciers, reduction in snow-cover extent, the earlier spring melting of ice on rivers and lakes, [and] the accelerated rate of rise of sea levels during the 20th century relative to the past few thousand years[.]'"

Relationship of No Action/No Project Alternative to CEQA Baseline for Analysis

Under NEPA, the No Action Alternative may provide a benchmark that allows decision makers to compare the magnitude of environmental effects of the action alternatives. (Final EIR/EIS, Executive Summary.) Accordingly, the federal lead agencies defined the point of comparison for assessing environmental effects of the alternatives under NEPA as the No Action Alternative. (Final EIR, Executive Summary.) CEQA, on the other hand, generally does not allow lead agencies to use the No Project Alternative as the sole baseline for assessing the significance of impacts unless the No Project Alternative is identical to existing conditions. (State CEQA Guidelines, § 15126.6, subd. (e)(1); see also Final EIR/EIS, Appendix 3D.) CEQA does allow lead agencies, however, to consider multiple baselines in assessing the significance of impacts, and normally requires that at least one baseline for environmental analysis reflect the lead agencies' reasonable assumption regarding existing conditions, consistent with State CEQA Guidelines Section 15125, subdivision (a). (*Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439, 454 ("*Neighbors for Smart Rail*").)

In *Neighbors for Smart Rail*, *supra*, 57 Cal.4th at p. 457, the California Supreme Court held that, although existing conditions represent the "default" baseline for projects, an agency has discretion to substitute a baseline consisting of future projected environmental conditions. In such a case, an agency must justify the decision by showing that an existing conditions analysis would be misleading or without informational value. (*Ibid.*) The burden of justification applies, however, only when an agency wholly omits an analysis based on existing conditions and substitutes a future conditions analysis. The burden does not exist where, as occurs here in some instances, an EIR

analyzes the impacts of a project against *both* existing and future conditions. (*Id*. at p. 454.) In explaining its reasoning, the court noted that "a project's effects on future conditions are appropriately considered in an EIR's discussion of cumulative effects *and in discussion of the no project alternative*." (*Ibid*., italics added.) According to the court, "nothing in CEQA law precludes an agency, as well, from considering both types of baselines – existing conditions and future conditions – in its primary analysis of the project's significant adverse effects." (*Ibid*.)

The baseline approach used in the EIR/EIS is consistent with these principles. The EIR portion of the joint CEQA/NEPA document uses an existing conditions baseline to analyze the proposed project's impacts on the existing environment, pursuant to State CEQA Guidelines Section 15125, subdivision (a). The NEPA baseline, as explained above, is the No Action Alternative, which includes future conditions including climate change and sea level rise. These two baselines have been labeled the CEQA and NEPA baselines (or the NEPA "point of comparison"), respectively, throughout the EIR/EIS. However, the CEQA analysis in the various resource chapters frequently mentions the NEPA baseline in order to fully explain the results based on the CEQA baseline. (Final EIR/EIS, Chapter 4, *Approach to the Environmental Analysis*) This is because under NEPA, the effects of sea level rise and climate change are evident both in the future (2060 and 2025) condition and in the effects of the action alternatives. By contrast, under CEQA, the absence of anticipated future climate change and sea level rise in the Existing Conditions baseline results in model-generated impact conclusions that merge the impacts of sea level rise and climate change with the effects of the action alternatives. As a result, a CEQA analysis that reported these conclusions without qualification and explanation would either overstate the true effects of the action alternatives or would misleadingly suggest that the action alternatives were the cause of significant effects that are largely or even exclusively attributable to sea level rise and climate change, and not to the action alternatives themselves. (Final EIR/EIS, Chapter 4.)

Thus, although the EIR/EIS does not generally use dual baselines for either CEQA or NEPA purposes, it sometimes relies in part on the NEPA baseline (which is consistent with the No Project Alternative under CEQA) for some CEQA impact conclusions. This is done to clarify the analysis results based solely on the CEQA baseline, which does not include anticipated climate change and sea level rise. (Final EIR/EIS, Chapter 4.)

GHG Emissions Impacts under the No Action Alternative (No Project Alternative)

State CEQA Guidelines Section 15126.6, subdivision (e)(3)(C), reiterates that the impacts of the No Project Alternative must be analyzed by "projecting what would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." Under this alternative, facilities under construction as of February 13, 2009, would result in short-term GHG emissions from land disturbance and heavy-duty equipment use. Construction impacts will vary depending on the type of construction project. (Final EIR/EIS, Chapter 22.) Activities associated with long-term maintenance of the existing SWP and CVP systems would continue. There would be no changes attributable to the proposed project that would affect long-term operational emissions. (Final EIR/EIS, Chapter 22.)

As discussed in Chapter 21, *Energy*, there would be no substantial changes in CVP and SWP energy production or use for the No Action Alternative because there would be no change in the operations of the existing CVP and SWP hydroelectric generation facilities or pumping facilities. Because emissions rates are expected to decrease in the future due to state mandates for renewable energy production, implementation of the No Action Alternative would result in a decrease in GHG

emissions. (Final EIR/EIS, Chapter 22.) Likewise, substantial changes in GHG emissions due to the BDCP conservation measures under this alternative also are not anticipated. (Final EIR/EIS, Chapter 22.)

The Final EIR/EIS notes that the Delta and vicinity are within a highly active seismic area, where the probability of major earthquake events and associated levee failures is expected to increase because of climate change factors. Reclaiming land or rebuilding levees after such a catastrophe would introduce considerable heavy equipment and associated vehicles, which would generate GHG emissions and create adverse air quality effects. (Final EIR/EIS, Chapter 22.)

The air quality and GHG emissions analysis reaches the following CEQA conclusions for the No Action Alternative (No Project Alternative), which, as noted, appropriately includes the impacts of projected climate change and sea level rise:

> *CEQA Conclusion:* Construction of ongoing projects, programs, and plans under the no project would generate short-term emissions that could temporary affect regional and local air quality. These projects would be required to comply with air district rules and regulations to reduce construction-related criteria pollutant and GHG emissions. Mitigation and permit requirements would be implemented on a case-by-case basis. Energy required for long-term operation of the no project will be supplied by the California electrical grid. Power plants located throughout the state supply the grid with power, which will be distributed to the study area to meet demand. Because these power plants are located throughout the state, criteria pollutant emissions associated with the no project electricity demand cannot be ascribed to a specific air basin or air district within the study area. However, as shown in Table 22-10, operation of the no project would result in a net decrease in all criteria air pollutants and GHG emissions, relative to Existing Conditions. Consequently, a regional air quality benefit would be realized under the no project. This impact would be less than significant. No mitigation is required.
>
> (Final EIR/EIS, Chapter 22.)

Summary

As this master response explains, the No Project Alternative analysis provides agency decision makers with the ability to "compare the impacts of approving the proposed project with the impacts of not approving the proposed project." (State CEQA Guidelines, § 15126.6, subd. (e)(1).) The inclusion of the effects of climate change and sea level rise projected for 2060 and 2025 is in harmony with subdivision (e)(2) of Section 15126.6, which requires discussion not only of existing conditions, but also "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." Each of the resource chapters, including Chapter 22, *Air Quality and Greenhouse Gases*, provides a discussion of the No Project Alternative's impacts on the particular resource area, pursuant to State CEQA Guidelines Section 15126.5, subdivision (e), thereby providing a gauge for the agency decision makers to assess the impacts of approving the proposed project or any of the action alternatives with the impacts of not approving one of them.

It is important to note that the lead agencies, in determining that climate change and sea level rise were "reasonably foreseeable future conditions" that should be assumed under the No Project Alternative analysis, were mindful of the requirement that such determinations must be "based on current plans and consistent with available infrastructure and community services." (State CEQA Guidelines, § 15126.6, subd. (e)(2).) As noted earlier, however, sea level will continue to rise, and climate change will continue to get worse, even in the absence of any changes to "current plans" and "available infrastructure and community services." Where appropriate, moreover, the discussions

involving climate change and sea level rise impacts in the resource chapters make note of the dynamic nature of *ongoing* programs in the Delta addressing those effects. As one example, in Chapter 5, *Water Supply*, the discussion of impacts from levee failures under the No Action Alternative (No Project Alternative) includes this caveat:

> As discussed in the No Action Alternative, sea-level rise could result in an increased risk of levee failure if the levees are not maintained and improved to accommodate the additional load. However, the State has programs and partners in the local agencies to support necessary levee improvements to minimize any increase in risk. It will be important to continue supporting these programs and to provide funds for the improvement of the levees in order to minimize the potential for inundation of the Delta islands. Without the programs and funding, the potential effects on Delta water supplies could be very significant.
>
> (Final EIR/EIS, Chapter 5.)

2. Future Climate Change and Its Potential Effect on the Impacts of the Project

As noted earlier in this master response, the scientific consensus is that rapid loading of greenhouse gas emissions into the atmosphere is expected to continue causing climate change and sea level rise globally, in California, and in the Delta. (Final EIR/EIS, Chapter 29.) Thus, legitimate concern exists about the impacts of future climate change and sea level rise on the components of the proposed project and the environmental impacts of those components.

In December of 2015, the California Supreme Court issued its opinion as to whether CEQA requires analysis of the impacts of existing environmental conditions on future residents or users (receptors) of a proposed project. (*Cal. Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369 ("*CBIA v. BAAQMD*").) The Court held that "CEQA does not require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents. What CEQA does mandate consistent with a key element of the Resources Agency's interpretation, is an analysis of how a project might exacerbate existing environmental hazards. CEQA also requires such an analysis where the project in question falls into certain specific statutory categories governing school, airport, and certain housing projects . . . [citations]." (*CBIA v. BAAQMD*, *supra*, 62 Cal.4th at p. 392.)

Although the Draft EIR/EIS and RDEIR/SDEIS were both released long before the Court made these pronouncements, the approaches the lead agencies took in the documents are wholly consistent with the court's guidance in both *CBIA v. BAAQMD* and *Neighbors for Smart Rail*, discussed earlier. The effects of sea level rise and changed precipitation patterns were legitimate factors to consider under CEQA because they represent reasonably foreseeable aspects of future conditions and because the project alternatives would exacerbate those effects to the extent that the action alternatives would all involve changes to the operations of the SWP, which inevitably must deal with the consequences of diminishing snow packs and anticipated upstream spread of saline ocean water as sea level rises. The action alternatives would also generate GHG emissions that, despite being mitigated to less than significant levels, nevertheless contribute to the ongoing phenomenon of climate change. Indeed, given the importance of planning for adaptation to climate change in California water policy, the lead agencies would have been remiss had they simply ignored the issue.

The lead agencies' analysis of the potential effects of climate change on the alternatives in the EIR/EIS is both methodical and comprehensive. One of the goals of the analysis was to determine whether future changes in climate and sea level rise are likely to exacerbate project impacts and vice

versa. To answer these questions, the models used to analyze the alternatives incorporated possible changes in total precipitation and runoff patterns (reservoir inflow) due to climate change. As this master response explains below, the models reasonably incorporated sea level rise up to 18 inches, which research suggests may potentially occur by 2060, the year marking the approximate end of the permit duration for the proposed BDCP alternatives in the Draft EIR/EIS. Note that the Final EIR/EIS analyzes the non-HCP alternatives at 2025 climate conditions, in addition to the BDCP alternatives at 2060. Furthermore, in order to meet Delta Reform Act requirements for a scenario by which an approved BDCP alternative could be automatically incorporated into the Delta Plan (Cal. Wat. Code, § s 85320, subd. (b)(2)(C)), the EIR/EIS also includes a qualitative analysis of the potential effects of sea level rise up to 55 inches, which is highly uncertain and not expected to occur until 2100 or beyond (at least 40 years after the expected expiration of incidental take permits that would be issued under the BDCP).) These analyses are based on currently accepted research and the best available science.

Climate Change and Sea Level Rise Projections

Climate change projections (drawn from global climate change models) have been integrated into the computer modeling used to analyze the effects of all of the alternatives on the physical environment. The alternatives analysis has been conducted across 26 individual resource areas, including water supply, fish and aquatic resources, terrestrial biological resources, and numerous other topics.

California's water supply system is dependent, in large part, on snowpack storage in the Sierra Nevada. Climate change is anticipated to result in a decreased snowpack in coming years, as more precipitation falls as rain, and less falls as snow. This shift also would lead to changes in peak runoff periods, causing higher flow potential in late winter and early spring and resulting in less runoff during the late spring and summer. These timing changes could result in reduced water supply availability in late spring and summer, as well as warmer water temperatures in rivers and reservoirs. Moreover, the potentially decreased river flows could affect salinity in Delta waterways. (Final EIR/EIS, Chapters 5 and 29.)

At the same time, sea level rise from the changing climate will push saltwater farther east into the Delta, requiring increased upstream water releases to push seawater out of the Delta and achieve in-Delta water quality standards. These operational changes would, in turn, decrease available water supply for south-of-Delta users. (Final EIR/EIS, Chapters 5 and 29.)

Such effects from climate change are critical concerns for the proposed project and the other action alternatives. They all involve complex changes to the way water moves into, though, and out of the Delta, as well as changes to ecological functions within the Delta. The potential changes involve potential new water conveyance facilities, modifications to the Fremont Weir, tidal marsh restoration, and changes in the operation of existing water export facilities. In addition, as noted, climate change, including reduced snowpack and sea level rise, is expected to be a future driver of change with regard to reservoir storage, river flow, Delta flows, exports, water quality, and tidal dynamics. (Final EIR/EIS Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*.)

To assess those changes, the environmental analysis relies on physical modeling to simulate the operations of the SWP and CVP under the alternatives and to evaluate the effects on water supply, fish species, and a wide spectrum of other resources. As Appendix 5A explains, the effects of climate

change and sea level rise "are incorporated into the key models used in the analytical framework" for analyzing the alternatives. In other words, when the alternatives and their components are analyzed in the EIR/EIS, the potential effects of climate change and possible sea level rise are an integral part of the analysis. (Final EIR/EIS, Appendix 5A.)

What follows is a detailed summary of the EIR/EIS assumptions, modeling, methods and conclusions related to the analysis of potential future climate change impacts on the components of the various alternatives and their impacts on the environment. This discussion is also included in Master Response 31, *BDCP/California Water Fix and 2009 Delta Reform Act*.

The Environmental Baselines

As a starting point, it is important to understand how the environmental baselines for the alternatives analysis were developed under CEQA and NEPA. As discussed above, the CEQA baseline for assessing significance of impacts of any proposed project is normally the environmental setting, or existing conditions, at the time a Notice of Preparation is issued. (State CEQA Guidelines, § 15125(a).) The CEQA baseline employed in the EIR/EIS thus uses Existing Conditions assumptions that include facilities and ongoing programs that existed as of February 13, 2009, which is the publication date of the most recent (state) Notice of Preparation and (federal) Notice of Intent to prepare the document. Because climate change projections involve potential events that will occur in the future, anticipated changes due to climate change are not included in the CEQA Existing Conditions Baseline for alternatives comparison. (Final EIR/EIS, Chapter 4.)

In contrast, under NEPA, federal agencies have the discretion to define the point of comparison for assessing environmental effects of the alternatives as the No Action Alternative. (See discussion of the No Action Alternative, above.) Thus, the No Action Alternative – unlike the Existing Conditions baseline under CEQA – includes changes due to climate change that would occur with or without the proposed project or action alternatives. (Final EIR/EIS, Chapter 4 and Appendix 3D.)

Because of this difference in the baselines, the CEQA analysis presented in the various resources chapters frequently mentions the NEPA baseline. As discussed above, the absence of sea level rise and climate change in the CEQA Existing Conditions baseline results in model-generated impact conclusions that include the impacts of sea level rise and climate change with the effects of the action alternatives. As a consequence, a CEQA analysis that reported these conclusions in isolation would either overstate the true effects of the action alternatives or misleadingly suggest that the action alternatives will cause significant effects that are largely or exclusively attributable to sea level rise and climate change, and not to the action alternatives themselves. To inform the public of what DWR, as CEQA lead agencies, believes to be the true reasonably foreseeable impacts of the project alternatives, DWR has reported some of the CEQA effects with an explanation regarding the extent to which the impacts of sea level rise and climate change are reflected in the bare impact conclusions as modeled. To help explain these points, DWR has frequently pointed the reader to the NEPA conclusions, which allow for more of an "apples to apples" comparison because of the inclusion of sea level rise and climate change in both the No Action Alternative and the action alternatives. (Final EIR/EIS, Chapter 4.)

The Modeling Process

The proposed project includes several main components that will affect SWP and CVP operations and the hydrologic response of the system. Most of the alternatives include construction and

operation of new north Delta intakes and associated conveyance, modifications to the Fremont Weir, tidal marsh restoration in the Delta, and changes in the operation of the existing south Delta export facilities – all of which can significantly influence the hydrologic response of the system. At the same time, "external forcings" such as climate and sea level changes are expected to influence the future conditions of reservoir storage, river flow, Delta flows, exports, water quality, and tidal dynamics. Evaluation of these conditions is the primary focus of the physical modeling analyses used in the EIR/EIS. (Final EIR/EIS, Appendix 5A.)

Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, is a lengthy and highly technical appendix that provides detailed information about the physical modeling methodology and analysis used for the EIR/EIS. For the alternatives analysis, the EIR/EIS relies on the modeling of physical variables such as flow to evaluate changes to conditions affecting resources within the Delta, as well as effects to upstream and downstream resources. Figure A-1 in Appendix 5A (page 5A-A6) provides a helpful graphic illustration of how the various models used in the analysis are integrated to collectively provide data used to support the impact analyses. The CALSIM II model, for example, simulates the operation of the major SWP and CVP facilities in the Central Valley, and generates estimates of river flows, exports, reservoir storage, and deliveries. The CALSIM II model is used in concert with another model, DSM2, outputs from which are used to predict changes in flow rates and depths and their effects on covered species, to predict the fate and transport of water quality constituents such as salts, and to predict the fate and transport of particular organisms such as fish eggs and larvae. Other models also are involved in the alternatives analysis.

Climate change and sea level rise are incorporated into the CALSIM II model in two ways. Changes in runoff and stream flow are simulated through the VIC hydrology model, which is explained in Appendix 5A. Such regional hydrologic modeling is necessary to understand the watershed-scale impacts of historical and projected climate patterns on the processes of rainfall, snowpack development and snowmelt, soil moisture depletion, evapotranspiration, and, ultimately, changes in stream flow patterns. These simulated changes in runoff are applied to the CALSIM II models used to evaluate the alternatives. (For further detail, see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix,* and Appendix 29B, *Climate Change Effects on Hydrology in the Study Area Used for CALSIM Modeling Analysis*) Sea level rise and restored tidal marsh effects on the flow-salinity response is incorporated in the new "Artificial Neural Network," which is discussed in Appendix 5A. The Artificial Neural Network is implemented within CALSIM II to constrain the operations of the upstream reservoirs and the Delta export pumps to satisfy particular salinity requirements.

In this manner, and as will be described below, climate and sea level rise scenarios have been incorporated into the models that were used to quantitatively analyze the impacts of the alternatives. In the evaluation of the No Action Alternative and action alternatives, sea level rise was assumed to be inherent. (Final EIR/EIS, Appendix 5A.)

Selecting and Incorporating the Climate Change and Sea Level Rise Scenarios

Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, describe the coordinated effort that went into both selecting the climate change and sea level rise scenarios and incorporating climate change into analytical processes. A technical subgroup with representatives from DWR, the U.S. Bureau of Reclamation, USFWS, and NMFS met over the course of 2009 and 2010 to review the merits of various approaches and methods, based on an international archive of

climate projections generated by modeling groups throughout the world and a review of relevant research and best available science.

The technical group's recommended approach makes use of 112 future climate projections generated from 16 different global climate models. The climate projections were grouped together in "ensembles" to identify aggregated projected temperature and precipitation changes. The ensemble projections then were broken into four quadrants that grouped the projections into potential scenarios in terms of wetness and dryness, and in terms of more warming versus less warming. Appendix 5A also describes a fifth quadrant that was identified to represent the central region of climate change. Known as Q5, this fifth scenario is derived from the central-tending climate projections and thus reflects the closest thing to a scientific consensus that can be discerned from the various ensembles.

Appendix 5A discusses how extreme events of droughts and floods often drive decision-making and long-range planning efforts for water resources. This section describes the analytical approaches used to incorporate such natural variability into the climate scenarios before the climate change outputs were incorporated into the operations and other models.

Appendix 5A describes the scientific basis for the Final EIR/EIS's use of the 18-inch sea level rise projection by 2060 for the BDCP alternatives analysis. The decision was based on an evaluation of the best available science at the time of the analysis. This projection was based on current and well-supported research showing that the projected sea level rise for 2060 is approximately 12 inches to 24 inches (hence the 18-inch mid-point). The non-HCP alternatives were evaluated at 2025 climate conditions, which includes sea level rise of approximately 5-7 inches (mid-point of 6 inches). This sea level rise estimate was found to be consistent with those outlined by the U.S. Army Corps of Engineers 2009 guidance issued for incorporating sea level changes in civil works programs. The projection is also consistent with the National Research Council's 2012 exhaustive and definitive study of sea level rise projections for the west coast of the United States.

Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies*, presents the National Research Council's projections for sea level rise values for the California coast and Delta region. The projection for 2030 is 5.7 inches (plus or minus 2 inches). For 2050, it is 11 inches (plus or minus 3.6 inches). For 2100, the projection is 36.2 inches (plus or minus 10 inches).

Applying the Modeling to the Alternatives

As previously noted, the alternatives analysis for the EIR/EIS focuses on 26 resource areas, including fish and aquatic species, terrestrial biological resources, water supply, water quality, groundwater, surface water, and agricultural resources. Each resource area is addressed in a separate chapter of the Final EIR/EIS (Chapters 5 through 30). The alternatives' impacts for each resource in the study area – including the effects of climate change – thus are addressed throughout the Final EIR/EIS in the resource chapters.

As one of many examples, Chapter 5, *Water Supply*, describes the quantitative analysis of SWP and CVP water supply impacts. In analyzing changes in SWP and CVP water deliveries under Alternative 1A, the discussion concludes that under NEPA standards, overall SWP and CVP deliveries would increase as compared to deliveries under the No Action Alternative. The CEQA conclusion states that deliveries would decline as compared to Existing Conditions. The "primary cause of the reduction . . . would be due to increased north-of-Delta water demands and changes in SWP and CVP operations resulting from sea level rise and climate change." This section explains further that, as the NEPA

analysis for this alternative shows, "SWP and CVP deliveries would either not change or would increase under Alternative 1A as compared to deliveries under conditions in 2060 without Alternative 1A if sea level rise and climate change conditions are considered the same under both scenarios. SWP and CVP deliveries under Alternative 1A would increase as compared to deliveries under Existing Conditions without the effects of increased north-of-Delta water demands, sea level rise, and climate change."

Similar analyses and discussions can be found throughout the resource chapters. The interrelationship between resource topics addressed in the Final EIR/EIS and potential climate change effects under the No Action Alternative is presented in Table 29-1 in Chapter 29, *Climate Change*. An "X" in the table signifies that there is a clear connection between the resource topic and a climate change effect under the No Action Alternative.

The analyses in Chapter 6, *Surface Water*, and Chapter 8, *Water Quality*, include projected climate change modeling analyses of Delta tidal flows and salinity conditions. Appendix 29A, *Effects of Sea Level Rise on Delta Tidal Flows and Salinity*, contains a summary of those modeling analyses. These analyses used the 2-D RMA Bay-Delta and the 3-D UnTRIM Bay-Delta tidal hydrodynamic models to simulate and evaluate the effects of projected climate change of sea level rise on Bay-Delta tidal flows and salinity intrusion, thereby analyzing the effects of a potentially deeper estuary in which a greater amount of seawater intrusion occurs.

The analyses for Chapter 8, *Water Quality*, and Chapter 11, *Fish and Aquatic Resources*, include projected climate change modeling of water temperature analyses. Appendix 29C, *Climate Change and the Effects of Reservoir Operations on Water Temperatures in the Study Area*, contains a summary of these modeling analyses.

Summary

As this portion of the master response explains, the EIR/EIS takes a methodical and comprehensive approach toward analyzing the effects of potential future climate change and sea level rise on the impacts of the alternatives. The analysis relies on well-established research and science, carefully developed assumptions and projections, and a complex suite of applicable modeling tools to identify climate change-related impacts across the 26 resource areas analyzed by the EIR/EIS.

3. The Alternatives' Effects on the Resiliency and Adaptability of the Plan Area in the Face of Climate Change

As noted earlier, this is the third fundamental question about climate change evaluated by the EIR/EIS. Chapter 29, *Climate Change*, explains that resiliency and adaptability mean the ability of the Plan Area to remain stable or flexibly change, as the effects of climate change increase. Resiliency and adaptability are needed so that the Plan Area can both continue to provide water supply benefits with sufficient water quality and support ecosystem conditions that maintain or enhance aquatic and terrestrial plant and animal species.

Focus of the Climate Change Resiliency and Adaptability Analysis

This analysis focuses on the major impacts of climate change in the Plan Area and the clear and measurable ways that the action alternatives will ameliorate these impacts and add flexibility to the system. This section points out that no single project or any of the action alternatives would be able

to completely counteract all of the impacts of climate change. The action alternatives, however, provide important added resilience and adaptability to many of the expected changes. (Final EIR/EIS, Chapter 29.)

The action alternatives seek to make physical improvements to the SWP/CVP system that will serve to provide resiliency and adaptability to rising sea levels and other reasonable foreseeable consequences of climate change. The EIR/EIS analyzes how the alternatives would serve to increase resiliency and adaptability to climate change over the No Action/No Project Alternative. Project components that could affect the resilience and adaptability of the Plan Area to climate changes consist of water diversion and conveyance facilities combined with differing operational scenarios, measures focused on the protection, restoration and enhancement of natural communities, and measures related to reducing other stressors. (Final EIR/EIS, Chapter 29.) To the extent possible, detailed project-specific analysis for the alternatives is reported to provide evidence of the expected changes in resiliency and adaptability. Where no detailed project-specific analysis was available, references and/or qualitative descriptions are included that provide evidence that the described effect would provide a resiliency or adaptation benefit. (Final EIR/EIS, Chapter 29.)

The Resiliency and Adaptability analysis covers two key areas:

- Resiliency and Adaptability to Sea Level Rise and Hydrology Changes; and
- Resiliency and Adaptability to Increased Temperature.

Resiliency and Adaptability to Sea Level Rise and Hydrology Changes

This portion of the Climate Change analysis addresses four key areas:

- Water supply reliability
- Aquatic species in the Delta
- Terrestrial species and terrestrial habitat
- Delta levee stability and reliability

Water Supply Reliability

In terms of water supply reliability, the EIR/EIS shows that Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 2D, 3, 4A, and 5A would provide substantial resiliency and adaptation benefits compared with the No Action/No Project Alternative. These particular alternatives have dual conveyance facilities, which allow water to be moved through the Delta when conditions permit and allow water to be diverted from the Sacramento River in the north Delta when conditions do not permit through-Delta conveyance. The location of the north Delta diversion facilities are farther inland at higher elevations, making them less vulnerable to salinity intrusion due to substantial sea level rise and critically dry upstream conditions. Delta management flexibility is enhanced by the establishment of the alternative diversion point for Delta exports. (Final EIR/EIS, Chapter 29.)

In addition, management of the Delta currently is constrained by requirements to maintain X2 at specific locations during certain times of the year to ensure water diversions have low salinity and to ensure that critical fish populations stay outside of the entrapment zone. Alternatives 1A through 5A would allow the Delta to be managed in a number of different ways, including maintaining salinity as it is currently managed or allowing salinity to fluctuate more freely in the Delta as it did prior to the development of upstream reservoirs. This added flexibility would allow managers more

options for adaptively managing the Delta so that conditions can be optimized to provide the greatest benefits across all Delta water uses and habitat conditions. (Final EIR/EIS, Chapter 29.)

As shown in Table 29-4 in Chapter 29, Alternatives 6 through 9 would decrease Delta exports and total SWP and CVP water deliveries compared with the No Action Alternative. Accordingly, these alternatives may not add resiliency to existing water supplies. However, similar to Alternatives 1 through 5A, Alternatives 7 and 8 would have dual conveyance facilities, which could improve management flexibility. The location of the north Delta diversion facility proposed under these alternatives, as well as under Alternative 6, would also be farther inland, making the alternative less vulnerable to salinity intrusion than the No Action Alternative.

Aquatic Species in the Delta

Uncertainty exists about how different Delta conditions, including salinity, tidal habitat, Delta outflow, water temperature, Delta water quality, and the level of Delta exports, would affect critical species. Anticipated climate change responses add more uncertainty to these variables. (Final EIR/EIS, Chapter 29.) Several alternatives would increase resilience and adaptability with respect to this uncertainty by providing additional management flexibility for in-Delta conditions. Under the BDCP alternatives, CM2–21 provide for actions that will improve habitat and reduce the effects of other stressors on the Delta ecosystem, which in turn will increase resilience and adaptability to climate changes. (Final EIR/EIS, Chapter 29.)

The Final EIR/EIS lists a number of ways that particular conservation measures associated with BDCP alternatives strengthen individual aquatic species populations, reduce stressors and enhance habitats, thereby enabling species to become stronger and more resilient in the face of variability and extremes caused by climate change. Among the examples described are the restoration of wetlands, floodplains, and riparian habitats that will serve to restore ecosystem services, including flow regulation, nutrient cycling, and sediment processes that enhance aquatic habitats. In addition, increased wetland plant biomass helps to promote accretion and the ability of the marsh to keep pace with sea level rise. Improved floodplain connections to rivers will restore the ability of floodplains to absorb flood flows and provide a reservoir of water to help aquatic species withstand droughts. Restoration of habitat supports species diversity by providing a mosaic of habitats that can be used by different species. Wetland restoration will include networks of channels within marshes that can be used by fish for foraging, refuge, and movement into and out of the marsh; currently such channels are rare. (Final EIR/EIS, Chapter 29.)

Terrestrial Species and Their Habitat

As for terrestrial species and terrestrial habitat, the BDCP alternatives include measures to restore between 43,000 and 94,000 acres of new seasonally inundated floodplain, tidal wetland, valley/foothill riparian, grassland, vernal pool complex, and nontidal marsh habitat. Additionally, 69,000 acres of natural communities would be protected and 20 to 40 miles of channel margin habitat would be enhanced. These enhancements are expected, among other things, to create alternative habitats if other habitats in some locations are destroyed or degraded by unforeseen climate changes or catastrophic events, and to strengthen population sizes, thereby providing more resilience against a changing climate. (Final EIR/EIS, Chapter 29.)

Delta Levee Stability and Reliability

Water levels in the Delta are expected to rise as sea levels rise, placing additional stress on fragile Delta levees. In addition, the increased likelihood and magnitude of extreme precipitation events could also increase vulnerability of Delta levees. These levees not only protect farmland but also maintain hydrodynamic conditions in the Delta. Depending on the location and hydrological conditions at the time, a levee collapse could change the hydrodynamic balance in the Delta and lead to substantial salinity intrusion and potential interruption of water supplies to water users for weeks or months. A catastrophic salinity intrusion also could have significant impacts on aquatic species and their habitat. (Final EIR/EIS, Chapter 29.)

The action alternatives, with the exception of Alternative 9, would not add resiliency to existing levees; levee fragility would remain high and increase with time as with the No Action/No Project Alternative. The Final EIR/EIS analysis for Alternatives 1A through 8, however, shows that these alternatives would provide additional adaptability in the face of catastrophe. Alternatives 1A through 8 provide a means of continuing to make water deliveries to SWP/CVP contractors and local and in-Delta water users with conveyance interties even if the Delta were temporarily disrupted by levee failure. Alternative 9 adds additional resiliency to the Delta by strengthening and reinforcing levees critical to the through-Delta conveyance route; however, this alternative does not increase the adaptive capacity of the system to deal with the possibility of catastrophic failure of Delta levees by providing an alternate route around the Delta for making continued water deliveries during a levee crisis. (Final EIR/EIS, Chapter 29.))

Resiliency and Adaptability to Increased Temperature

This portion of the Climate Change analysis addresses two key areas:

- Water Demand
- Water Temperatures

Water Demand

The Chapter 29 explains that increased air temperatures associated with climate change will lead to increased evapotranspiration that will increase the water demand for crops and vegetation. While additional factors such as increased carbon dioxide, humidity, and cloudiness also will influence water demand, agricultural water demand is expected to increase as a result of climate change. Increased evaporation may also reduce water supplies in open water supply and conveyance facilities, such as canals and reservoirs. (Final EIR/EIS, Chapter 29.)

Modeling analysis of the alternatives indicates that Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 2D, 3, 4, 4A, 5, and 5A would improve water supply reliability, thereby providing additional resilience and adaptability in the face of higher temperatures and increased evapotranspiration and evaporation. The analysis shows that Alternatives 6A, 6B, 6C, 7, 8, and 9 would result in reduced water supply reliability and therefore provide reduced resilience and adaptability to the impacts of climate change. (Final EIR/EIS, Chapter 29.) The modeling analysis expresses the change in water supply reliability in terms of long-term Delta export averages. (Final EIR/EIS, Chapter 29.)

Water Temperatures

Warmer water temperatures are expected to decrease suitable summer habitat of delta smelt, a federally listed endangered species. This is expected because waters in the lower Delta may be too

saline and lack sufficient food for the delta smelt, and because fresh water in the upper Delta may be too warm for the species. Warming of streams and rivers also facilitates colonization by invasive species that will compete for native species' habitat. (Final EIR/EIS, Chapter 29.)

The Final EIR/EIS analysis shows that, by creating a wider variety of water management options and restoring habitat on a large scale, the proposed project can help buffer potential negative effects of increased water temperatures, thereby adding resiliency to the impacts of rising water temperatures. Chapter 29 that Chapter 11, *Fish and Aquatic Resources*, includes more detail on existing temperature conditions in watersheds within the Plan Area and water temperature effects on aquatic habitat, as well as biological and biochemical processes and the ways that managed flows influence water temperatures. Additional information about the analysis methodology and modeling assumptions used in the analysis can be found in Appendix 29C, *Climate Change and the Effects of Reservoir Operations on Water Temperatures in the Study Area*.

Summary

As the above discussion shows, the third prong of the EIR/EIS Climate Change analysis focuses on the major impacts of climate change in the Plan Area and the clear and measurable ways that the action alternatives will help to ameliorate these impacts and add flexibility to the system. Although no single project or any of the action alternatives would be able to completely counteract all of the impacts of climate change, the action alternatives provide additional resilience and adaptability to many of the expected changes.

4. Compliance with the Delta Reform Act's Climate Change Requirements

In addition to addressing the three fundamental questions addressed above, the EIR/EIS adds a fourth layer of climate change analysis by evaluating climate change impacts in compliance with those provisions of the Delta Reform Act by which the BDCP (i.e., an alternative including a full HCP and NCCP) could be automatically incorporated into the Delta Plan (Cal. Wat. Code, § 85320, subd. (b)(2)(C).) (Note that this does not apply to the new proposed project, Alternative 4A) The Delta Reform Act implicitly recognizes that climate change will be a critical and potentially detrimental factor to the ecosystem of the Delta and to the state's future water supply reliability.

Water Code Section 85320 provides that the BDCP shall not be incorporated into the Delta Plan by operation of law or be eligible for state funding unless, among other things, the EIR for the BDCP comprehensively reviews and analyzes the "potential effects of climate change, possible sea level rise up to 55 inches, and possible changes in total precipitation and runoff patterns on the conveyance alternatives and habitat restoration activities considered in the environmental impact report."

Much of the analysis apparently contemplated by the Delta Reform Act overlaps with the three prongs of the climate change analysis described above in this master response, and thus is not described again in this section. The analysis called for under the Delta Reform Act is comprehensively addressed in the master response discussing the BDCP's compliance with numerous Delta Reform Act provisions. (See Master Response 31*, BDCP/California Water Fix and 2009 Delta Reform Act.*)

The discrete requirement regarding "possible sea level rise up to 55 inches" in the Delta Reform Act is addressed in *Analysis of Sea Level Rise Beyond 2060* section. That discussion is included below for the convenience of readers. It explains that sea level rise to 55 inches is highly uncertain and not expected to occur until 2100 or beyond (at least 40 years after the expected expiration of the BDCP take permits). Because of the long time frames involved, the EIR/EIS provides a qualitative analysis of the impacts associated with such sea level rise.

Analysis of Sea Level Rise Beyond 2060

As discussed above, the decision to use an 18-inch sea level rise projection for 2060 for the alternatives analysis was based on a rigorous evaluation of the best available science and consistency with the U.S. Army Corps of Engineers 2009 guidance issued for incorporating sea level changes in civil works programs. As this discussion demonstrates, sea level rise was incorporated into the analysis of the alternatives as contemplated by Water Code Section 85320, subdivision (b)(2)(C). It should be noted, however, that the highly uncertain sea level rise projections beyond the 50-year permit duration of the BDCP (as will be discussed below) led the technical team to determine that a qualitative rather than quantitative analysis was appropriate for evaluating sea level rise projections beyond those applied to the 2060 analysis of the alternatives. For this reason, the EIR/EIS includes a qualitative analysis and discussion of potential sea level rise to 55 inches for the Plan Area.

Chapter 29 states that the California Ocean Protection Council and other scientific bodies have projected that sea level rise will not reach 55 inches until approximately the year 2100. Other research suggests that such an increase is likely even further out in the future. (Final EIR/EIS Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies.*)

The National Research Council in 2012 predicted a wide range of potential sea level rise scenarios for the west coast of the United States in the Delta region – from 17 inches to 66 inches by 2100 (a range of less than 1 1/2 feet to more than 5 feet). The National Research Council projection for 2100 is that sea level will rise 36.2 inches (plus or minus 10 inches) for the west coast Delta region. (Final EIR/EIS, Appendix 3E.) In 2011, the U.S. Army Corps of Engineers issued further guidance on incorporating sea level change in civil works programs, with the ranges of future sea level rise based on empirical procedures recommended by the National Research Council and updated for recent conditions. The U.S. Army Corps of Engineers' three scenarios included in the guidance suggest a similarly wide range for possible end-of-century sea level rise – from 20 inches to 59 inches. (Final EIR/EIS, Appendix 5A.)

As these projected ranges for the end of the century demonstrate, the further out in time the projections go, the more uncertain and varied projected future sea level rise scenarios become. As noted earlier, during the 50-year permit duration for the BDCP alternatives, best available science has found that sea level rise is expected to increase between 12 inches and 24 inches by 2060. The National Research Council's 2012 data and U.S. Army Corps of Engineers' 2011 guidance, along with other research, indicates the 18-inch level used to analyze the BDCP alternatives in 2060 may not even materialize until close to the turn of the century.

In the face of these uncertainties, the EIR/EIS employs a qualitative approach to analyze the possible effects of sea level rise up to 55 inches. Chapter 29, *Climate Change*, discusses climate change trends, effects and projections to 2100 at the global level, for California, and for the Plan Area. As discussed earlier, for California, changes in precipitation trends are expected to diminish snowpack

accumulation and lead to more rainfall-runoff during the cool season, which conceptually leads to increases in December-March runoff and decreases in April-July runoff. (Final EIR/EIS, Chapter 29.)

In the analysis and discussion of sea level rise projections to 2100 for the Plan Area, Chapter 29 describes the special consideration that must be given to three interrelated elements: inundation, salinity gradient, and tidal variations. The section explains that changes in sea level have the potential to inundate previously dry areas; to change the location of the gradient between saline, brackish, and freshwater in the San Francisco estuary (which could impact aquatic species as well as drinking water quality); and to influence natural tidal variations along the California coast and within the San Francisco Bay and the Delta. (Final EIR/EIS, Chapter 29.)

Figure 29-1 in Chapter 29, *Climate Change*, shows potential changes in inundation at high tide as a consequence of 55 inches of sea level rise. Figure 29-1 is based on tidal elevation data developed as part of the Delta Risk Management Strategy, Phase 1 (Phase 1 datasets) (California Department of Water Resources). The Phase 1 datasets are projections of floodplain depths as a function of sea level rise scenarios (including 55 inches). In Figure 29-1, map areas shaded in light yellow are at or below the high tide elevation based on the current sea level. Areas shaded in orange are additional areas at or below high tide elevation when a 55-inch rise in sea level is considered. It should be noted that the yellow and orange areas are not necessarily inundated due to control structures such as levees. Figure 29-1 provides insight as to which additional areas in the Delta may need to introduce or augment control structures to avoid inundation if a mean sea level rise increase of 55 inches occurs.

As shown in Figure 29-1, several communities with elevations greater than 17 feet (for example, Fairfield, Manteca, Tracy, and Brentwood) likely will not be directly affected by a 55-inch increase in sea level. However, some of the Delta islands and other low lying areas may incur additional inundation risk if 55 inches of sea level rise were to occur, especially if levees or other control structures were to fail.

Chapter 29 also discusses the UnTRIM Bay-Delta Model (MacWilliams et al., 2009). This is a three-dimensional hydrodynamics and water quality model that was used to simulate localized impacts on hydrodynamics and salinity transport in the Delta for a range of selected sea level scenarios (6 to 55 inches). The results from the UnTRIM model were used to corroborate two other models (the RMA Bay-Delta Model [RMA 2005] and Delta Simulation Model [DSM2]) to correctly simulate tidal marsh restoration effects with and without sea level rise to those levels. (See Figure 29-2 in Chapter 29.) In addition, the CALSIM II planning model, described above, was adjusted to match the salinity effects from sea level rise to simulate CVP and SWP operations over the range of projected hydrologic conditions. Calculations showed that higher Delta outflows would be required to meet the existing salinity objectives.

Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies*, contains additional discussion of potential long-term effects of climate change and sea level rise on the SWP and CVP water supplies. This discussion includes a summary of DWR's 2009 study, *Using Future Climate Projections to Support Water Resources Decision Making in California*. This study quantitatively evaluated possible climate change impacts to SWP and CVP operations using 12 future climate projections, based on six different global climate models and two different greenhouse gas models. Sea level rise was modeled as 1 foot in 2050 and 3 feet in 2100. (Final EIR/EIS, Appendix 3E.)

Median results for the six projections under each of the greenhouse gas emissions scenarios are presented in Chapter 29. In general, DWR's study shows that the reliability of the SWP and CVP water supply systems will be reduced under future climate and sea level rise conditions. Delta exports would be reduced by as much as 25 percent by the end of the century. In addition, 30 percent reductions in reservoir carryover storage would reduce the system's flexibility during water shortages. In the Sacramento Valley, water users would be expected to make up for reduced surface water supplies by increasing their use of groundwater, which could exacerbate existing overdraft and have other environmental impacts (although 2014 legislation, the Sustainable Groundwater Management Act, requires that groundwater basins designated as high- or medium-priority basins reach stable conditions by 2040). Both power generation and power use by the SWP and CVP are expected to decrease under climate change due to the expected reductions in available water deliveries. The study also raises concern because the projections of future conditions indicate that in some future years, water levels in the main supply reservoirs (Shasta, Oroville, Folsom, and Trinity) could fall below the lowest release outlets, making the system vulnerable to operational interruption.

DWR's 2009 study and the discussion of it in the Final EIR/EIS demonstrate that continued operation and management of the Delta using current procedures are not sustainable in the long run as sea level continues to rise. In response to those concerns, the Final EIR/EIS contains the above-described analysis of the impact of the alternatives on resiliency and adaptability to the effects from sea level rise and changes in upstream hydrology.

5. The Final EIR/EIS is Consistent with the CEQ's Final GHG Emissions and Climate Change Guidance

In relevant part, the CEQ's Final GHG Emissions and Climate Change Guidance recommends that:

- Agencies quantify the projected direct and indirect GHG emissions of a proposed agency action, taking into account available data and GHG quantification tools that are suitable for the proposed agency action when tools, methodologies or data inputs are reasonably available and consider the action's effects in the context of the future state of the environment;
- Use projected GHG emissions to assess potential climate change effects when preparing a NEPA analysis.
- Discuss methods to appropriately analyze reasonably foreseeable direct, indirect, and cumulative GHG emissions and climate effects;
- Consider short- and long-term effects and benefits in the alternatives and mitigation analysis using a temporal scope that is grounded in the concept of reasonable foreseeability;
- Use available information when assessing the potential future state of the affected environment in a NEPA analysis, instead of undertaking new research;
- Use information developed during the NEPA review to consider alternatives that would make the actions and affected communities more resilient to the effects of a changing climate;
- Assess the broad-scale effects of GHG emissions and climate change to inform programmatic and project- or site-specific effects of GHG emissions and climate change and set forth a reasoned explanation for the agency's approach;

- Determine, based on their expertise and experience, how to consider an environmental effect and prepare an analysis based on the available information; and
- Take environmental justice considerations into account.

(CEQ's Final GHG Emissions and Climate Change Guidance, at pp. 4-6, 18, 20, 30.)

The CEQ's guidance further provides that agencies should disclose the information and assumptions used in the analysis and explain any uncertainties (*Id*. at p. 16); carefully evaluate the quality of the mitigation to ensure it is additional, verifiable, durable, enforceable, and will be implemented; and incorporate monitoring into mitigation measures where appropriate (*Id*. at pp. 19-20). Although the GHG emissions and climate change analyses included in the EIR/EIS predate the CEQ's Final GHG Emissions and Climate Change Guidance, the analyses included in the EIR/EIS are consistent with and address all recommendations provided in the CEQ's Final GHG Emissions and Climate Change Guidance.

Specifically, the Final EIR/EIS does all of the following: quantifies the proposed project's direct and indirect GHG emissions (see, *supra*, *Construction-Related Emissions – Water Conveyance Facility* and *Operational Emissions – Water Conveyance Facility* in Section 1.A; see also Final EIR/EIS, Chapter 22); considers the proposed project's effects in the context of the future state of the environment (see Final EIR/EIS, Chapter 4, *Approach to Environmental Analysis*, Chapter 22, Section 22.3.3.1, *No Action Alternative*, and Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*); analyzes climate and sea level rise impacts on the BDCP alternatives (see *supra*); uses project GHG emissions to analyze potential climate change effects (see Final EIR/EIS, Chapter 22); identifies the methodologies used to appropriately analyze reasonably foreseeable direct, indirect and cumulative GHG emissions and climate effects (see, *supra*, and Final EIR/EIS Chapter 22, and Final EIR/EIS Appendix 22A, *Air Quality Analysis Methodology*); considers reasonably foreseeable short- and long-term effects and benefits of the proposed project on GHG emissions and climate change (see Final EIR/EIS Appendix 3I and Final EIR/EIS Chapter 22); considers alternatives that would make affected communities more resilient to the effects of climate change (see Final EIR/EIS Chapter 29); assesses the broad-scale effects of climate change at a project and programmatic level (see all resource chapters within the Final EIR/EIS.); and addresses environmental justice concerns in the analysis of GHG emissions and climate change (see Final EIR/EIS Chapter 28). Finally, the Final EIR/EIS identifies enforceable, additional, and verifiable mitigation measures to address the proposed project's GHG emissions (see, *supra*,; Final EIR/EIS, Chapter 22.).

Conclusion

Using nationally recognized science and research and extensive and detailed physical modeling, the Final EIR/EIS comprehensively evaluates the potential effects of climate change on the alternatives. As this master response explains, the analysis is comprehensive and multi-layered, incorporating the requirements of CEQA and NEPA and those of the Delta Reform Act. The analysis addresses 1) the potential impacts of the alternatives on climate change via an analysis of the alternatives' contribution to GHG concentrations in the atmosphere, 2) the potential impacts of climate change on the impacts of the alternatives, 3) the resiliency and adaptability of the alternatives in the face of future climate change, and 4) the climate change-related requirements of the Delta Reform Act, including a qualitative evaluation of possible sea level rise up to 55 inches and possible changes in total precipitation and runoff patterns, as contemplated by California Water Code Section 85320, subdivision (b)(2)(C).

Master Response 20: Cultural Resources Assessment

Comments have raised concerns regarding the adequacy of the analysis of cultural resource impacts in the EIR/EIS. In particular, some commenters have argued that the document fails to meet legal standards because it has not fully characterized all of the potential cultural (i.e., historical and/or archaeological) resources that might be adversely affected by the proposed project or the various action alternatives.

Legal Standards Compliance Related to Cultural Resources Assessment

Contrary to the concerns of the commenters, the lead agencies, in preparing the EIR/EIS, have fully satisfied the legal requirements of both NEPA and CEQA in their approach to analyzing potential impacts on cultural resources, determining significance, and where appropriate proposing mitigation for significant adverse effects. The EIR/EIS also sets forth the framework under which the proposed project and the various action alternatives would, if approved, comply with Section 106 of the National Historic Preservation Act (NHPA) (54 United States Code Section 306108) and the California Public Resources Code sections pertinent to historical resources and Native American resources. Please refer to Chapter 18, *Cultural Resources*, and Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, for further information. In particular, a very detailed explanation on federal plans, policies, and regulations associated with cultural resources assessment pertaining to NEPA and Section 106 of the NHPA can be found in Chapter 18, Section 18.2.1. This discussion presents the process and significance criteria that federal agencies (including lead agencies such as U.S. Army Corps of Engineers) employ, when considering how their actions may affect cultural resources and historical properties.

Please note that with respect to precise information on locations of historic resources and Native American resources, federal law prohibits disclosure in public documents per the Archaeological Resources Protection Act of 1979 and Executive Order 13007 (Indian Sacred Sites).

With respect to CEQA, Chapter 18, Section 18.2.2 of the Final EIR/EIS explains in full the state's meaning of historic resources and significance criteria pursuant to California Public Resources Code Section 21084.1 and State CEQA Guidelines Section 15064.5. Such resources gain special protection under CEQA insofar as the California Legislature has directed that a "project that may cause a *substantial adverse change* in the significance of an historical resource is a project that may have a significant effect on the environment." This language essentially requires the preparation of a full EIR for any project that may have such effects (e.g., involving the demolition of an historical structure (*League for Protection of Oakland's Architectural and Historic Resources* (1997) 52 Cal.App.4th 896, 906-909). The definition of "substantial adverse change" is discussed in detail below.

In contrast, California Public Resources Code Section 21083.2 requires agencies to determine whether proposed projects would have effects on "unique archaeological resources," but instructs agencies *not* to be concerned with "nonunique archaeological resources." Notably, as explained below, sometimes an archaeological resource might not be "unique" but might still receive some

protection under CEQA as an "historical resource" (State CEQA Guidelines Section 15064.5, subds. (c)(1), (c)(2)).[208]

Historical Resources

The term "historical resource" is defined in California Public Resources Code Section 21084.1 and State CEQA Guidelines Section 15064.5. As noted earlier, the term embraces four separate but closely related categories of resources. One such category consists of any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR). The CRHR includes resources listed in, or formally determined eligible for listing in, the NRHP, as well as some California State Landmarks and Points of Historical Interest. Under this category, a lead agency looks to listing and eligibility determinations already made by the State Historical Resources Commission (SHRC).

A second category consists of properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory are presumed to be "historical resources" for purposes of CEQA unless a preponderance of evidence indicates otherwise (California Public Resources Code Section 5024.1; California Code Regulations, Title 14, Section 4850). Unless a resource listed in a survey has been demolished or has lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be "historical" for CEQA purposes.

The third category is closely related to the first, though it requires lead agencies to conduct their own factual analyses rather than relying on analyses previously prepared by the SHRC. In addition to assessing whether historical resources potentially impacted by a proposed project are already listed or already have been identified in a survey process, lead agencies themselves have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources (California Public Resources Code Section 21084.1; State CEQA Guidelines Section 15064.5, subd. (a)(3)). In general, a historical resource, under this approach, is defined as any object, building, structure, site, area, place, record, or manuscript that:

[208] During the preparation of the EIR/EIS, the California Legislature, in enacting AB 52 in 2014, created a third category of protected cultural resources: "tribal cultural resources." This new category will often overlap with "historical resources" and "unique archaeological resources. This new category is defined in California Public Resources Code Section 21074, subdivision (a), as "either of the following:

(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
(2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1."

AB 52 also created special consultation obligations set forth in California Public Resources Code Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. No aspect of AB 52 applies to the BDCP/California WaterFix EIR/EIS, as the requirements of the legislation only apply to projects for which a Notice of Preparation was issued after July 1, 2015. (Stats. 2014, ch. 532, § 11 [uncodified language].)

a. Is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California; and

b. Meets any of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.

(State CEQA Guidelines Section 15064.5(a)(3)).

These four factors are known as "Criteria 1, 2, 3, and 4" and parallel Criteria A, B, C, and D under the National Historic Preservation Act (discussed above). The fact that a resource is *not* listed or determined to be eligible for listing does not preclude a lead agency from determining that it may be a historical resource (California Public Resources Code Section 21084.1; State CEQA Guidelines Section 15064.5, subd. (a)(4)).

In reviewing the different categories of historical resources described above, the courts have broken them down into three basic categories for a lead agency to consider: mandatory; presumptive; or discretionary (see *Valley Advocates v. City of Fresno* (2008) 160 Cal.App.4th 1039, 1051–1062). Although most of the operative statutory and regulatory language has already been set forth above, each of these three categories are briefly discussed below.

Mandatory - The historical resource is listed in the California Register of Historical Resources.

Historical resources include those that are listed in, or determined eligible by the State Historical Resources Commission, for listing in the CRHR.

Presumptive - The historical resource is not listed but it meets the listing criteria.

Even if the resource is not listed, and even though evaluation of resources for NRHP- and CRHR-eligibility is not necessary for impact analysis, State CEQA Guidelines Section 15064.5, subdivision (a)(3), directs a lead agency to generally consider a resource historically significant if it meets certain criteria for listing on the CRHR (see also California Public Resources Code Section 5024.1, subd. (c)).

Discretionary

Even if a resource is not listed in the CRHR, State CEQA Guidelines Section 15064.5, subdivision (a)(4), gives lead agencies the discretion to treat a resource as a historical resource. Thus, a lead agency is not prohibited from treating a resource as historical for purposes of analyzing for significant impacts. Section 15064.5, subdivision (b)(2)(B), however, also gives discretion to a lead agency to show by the preponderance of evidence that the resource is *not* historically significant.

Unique and Nonunique Archaeological Resources

Most, but by no means all, "historical resources" are above-ground structures. CEQA, however, also distinguishes between three classes of underground archaeological resources: "unique archaeological resources"; "nonunique archaeological resources"; and archaeological sites that meet the definition of historical resources, as described above. Under CEQA, an archaeological resource is considered "unique" if it:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

(California Public Resources Code Section 21083.2, subd. (g).)

In contrast, a "nonunique archaeological resource" is any "an archaeological artifact, object, or site which does *not* meet the criteria in subdivision (g)" (*Id*., subd. (h) (italics added)). "A nonunique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects" (*Ibid*).

Recognizing that some "historical resources" might lie beneath the surface of the ground, State CEQA Guidelines Section 15064.5 recognizes that archaeological resources might qualify as "historical resources," as "unique archaeological resources," as both, or as neither. Subdivision (c) of that section provides as follows:

> (c) CEQA applies to effects on archaeological sites.
>
> (1) When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subdivision (a).
>
> (2) If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, and this section, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
>
> (3) If an archaeological site does not meet the criteria defined in subdivision (a), but does meet the definition of a unique archeological resource in Section 21083.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c–f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
>
> (4) If an archaeological resource is neither a unique archaeological nor an historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Mitigation or "Treatment" of Archaeological and Historical Resources

As noted earlier, if a proposed project may cause a substantial adverse change in the significance of any of these categories of historical resource, it is a project that may have a significant effect on the environment (California Public Resources Code Section 21084.1). In this context, a "substantial

adverse change in the significance of an historical resource" means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. "Materially impaired" means that a project would demolish or materially alter – in an adverse manner- those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR (State CEQA Guidelines, Section 15064.4, subd. (b)(2)(A)).

State CEQA Guidelines Section 15126.4, subdivision (b), sets forth principles relevant to means of mitigating impacts on historical resources. It provides as follows:

(1) Where maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of the historical resource will be conducted in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (1995), Weeks and Grimmer, the project's impact on the historical resource shall generally be considered mitigated below a level of significance and thus is not significant.

(2) In some circumstances, documentation of an historical resource, by way of historic narrative, photographs or architectural drawings, as mitigation for the effects of demolition of the resource will not mitigate the effects to a point where clearly no significant effect on the environment would occur.

(3) Public agencies should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature. The following factors shall be considered and discussed in an EIR for a project involving such an archaeological site:

(A) Preservation in place is the preferred manner of mitigating impacts to archaeological sites. Preservation in place maintains the relationship between artifacts and the archaeological context. Preservation may also avoid conflict with religious or cultural values of groups associated with the site.

(B) Preservation in place may be accomplished by, but is not limited to, the following:

1. Planning construction to avoid archaeological sites;
2. Incorporation of sites within parks, greenspace, or other open space;
3. Covering the archaeological sites with a layer of chemically stable soil before building tennis courts, parking lots, or similar facilities on the site.
4. Deeding the site into a permanent conservation easement.

(C) When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provision for adequately recovering the scientifically consequential information from and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken. Such studies shall be deposited with the California Historical Resources Regional Information Center. Archaeological sites known to contain human remains shall be treated in accordance with the provisions of Section 7050.5 Health and Safety Code. If an artifact must be removed during project excavation or testing, curation may be an appropriate mitigation.

(D) Data recovery shall not be required for an historical resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the archaeological or historical resource, provided that the determination is documented in the EIR and that the studies are deposited with the California Historical Resources Regional Information Center.

Separate, but sometimes overlapping, mitigation principles apply to protected archaeological resources. State CEQA Guidelines Section 15064.5, subdivision (c), provides specific guidance on how to mitigate impacts to such resources, depending on whether they meet the definition of an historical resource or a unique archaeological resource. If the site meets the definition of a unique archaeological resource, it must be treated in accordance with the provisions of California Public Resources Code Section 21083.2. Please refer to Section 18.2.2.1 under the subtitle of *Mitigation for Unique Archaeological Resources* in Chapter 18.

Section 15064.5, subdivision (f), deals with potential discoveries of potential historical and unique archaeological resources during project construction. That provision states that, "[a]s part of the objectives, criteria, and procedures required by Section 21082 of the California Public Resources Code, a lead agency should make provisions for historical or unique archaeological resources accidentally discovered during construction. These provisions should include an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place."

Special considerations apply where human remains are discovered during construction. State CEQA Guidelines Section 15064.5, subdivision (e), requires both that excavation activities be stopped whenever human remains are uncovered, and that the county coroner be called in to assess the remains. For further details on this matter, please refer to Chapter 18, Section 18.2.2.3, *Discoveries of Human Remains under CEQA Public Law*. Section 15064.5 of the State CEQA Guidelines directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

Confidentiality Considerations

CEQA and the California Public Records Act restrict the amount of information regarding cultural resources that can be disclosed in an EIR in order to avoid the possibility that such resources could be subject to vandalism or other damage. (*Clover Valley Foundation v. City of Rocklin* (2011) 197 Cal.App.4th 200, 219 (*Clover Valley*).). Thus, the State CEQA Guidelines prohibit an EIR from including "information about the location of archaeological sites and sacred lands, or any other information that is subject to the disclosure restrictions of Section 6254 of the Government Code [(part of the California Public Records Act)]." For more details on this important issue, please refer to Chapter 18, Section 18.2.2.5, *Confidentiality Considerations*.

Additionally, the Court of Appeal has explained the policy basis for these privacy-protecting policies as follows:

> CEQA's exclusion of archaeological site information from an EIR reflects the state's strong policy in protecting Native American artifacts. Indeed, state law now requires a city or county prior to amending a general plan to consult with affected Native American tribes to preserve or mitigate impacts to Native American artifacts that are located within the city or county's jurisdiction. (California Government Code, § 65352.3, subd. (a)(1).) As part of that process, the city or county must, consistent with guidelines developed by the Governor's Office of Planning and Research, "protect the confidentiality of information concerning the specific identity, location, character, and use of those places, features, and objects." (California Government Code, § 65352.3, subd. (b).)

> The Governor's Office of Planning and Research guidelines, in turn, counsel local governments to "avoid including any specific cultural place information within CEQA documents (such as Environmental Impact Reports, Negative Declaration, and Mitigated Negative Declarations) or staff reports which are required to be available at a public hearing. In such cases, confidential cultural resource inventories or reports generated for environmental documents should be maintained under separate cover and shall not be available to the public." (Governor's Office of Planning and Research, State of Cal. Tribal Consultation Guidelines Supplement to General Plan Guidelines (Nov. 14, 2005) p. 27.)
>
> (*Clover Valley*, *supra*, 197 Cal.App.4th at p. 221.)

Application of Federal and State Legal Principles to EIR/EIS for BDCP/California WaterFix

CEQA Compliance and Inability to Access some Sites for Cultural Resources Surveys

A summary comparison of a number of important cultural impacts is provided in Figure 18-0 in the Final EIR/EIS. This figure provides information on the magnitude of the most pertinent and quantifiable cultural impacts, both adverse and beneficial, that are expected to result from all alternatives. Important impacts to consider include effects on known and as-yet unknown buried archaeological sites, known archeological sites, and impacts on historic structures.

As explained at length in Chapter 18, Section 18.1.1, the lead agencies went to considerable lengths to try to characterize the potential historical, archaeological, and other cultural resources that could be adversely affected by the various action alternatives (while maintaining the confidentiality of locations that should not be disclosed). Also, refer to Appendices 18A, *Archaeological Resources Sensitivity Assessment*, and 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, for specific information on these sensitive resources. These efforts included the following: archival map research; field surveys; record searches; sensitivity analyses for unidentified historic-era and prehistoric archaeological resources; archaeological surveys on legally accessible parcels; review of built-environment resources using aerial photography; and correspondence with Native American contacts provided by the NAHC; and search of the sacred lands data base supplied by the NAHC (see Chapter 18, Section 18.1.1, *Methods for Resource Identification*.)

As explained at length in Appendix 4A, *Summary of Survey Data Collection Efforts by Department of Water Resources to Obtain Information Regarding Baseline Conditions in Areas That Could Be Affected by BDCP*,, however, lead agency representatives were not able to gain legal access to all of the private properties in the Delta that might have cultural resources that could be adversely affected by the action alternatives. Certain property owners elected not to grant permission. For all property owners, the lead agencies wrote letters requesting permission to enter the properties; meet with landowners; filed "Petitions for Order Permitting Entry and Investigation of Real Property" in the superior courts of Sacramento, San Joaquin, Yolo, Solano, and Contra Costa Counties; and, finally, pursued eminent domain proceedings. The dispute over the terms by which the California Department of Water Resources (DWR) may ultimately gain the right to access certain properties was decided by the California Supreme Court. The California Supreme Court held that pre-condemnation entry and testing statutes authorized DWR to petition to enter privately owned land to conduct environmental studies and geological activities (see *Property Reserve, Inc. v. Superior Court*, (July 21, 2016, S217738 ___ Cal. 4th ___ [2016 WL 3924221] [p. 23.]).

Another factor in limiting the extent of ground-disturbing testing for all of the action alternatives is the fact that only one alternative (if any) will be chosen, and that the lead agencies, having sufficient

area-wide information, determined to limit the extent of impacting potential unknown sub-surface archaeological deposits. Even under the best of circumstances, archaeological surveys do not always cover 100 percent of the site due to vegetation overgrowth, water bodies (such as vernal pools and creeks), and obstructions (both natural such as rock outcroppings or manmade like sheds).

Chapter 18, Section 18.1.1.3, explains the risks of ground-disturbing testing:

> All parcels that were legally accessible were surveyed for archaeological resources. Of the 49,224 acres of the constructability footprint (including the pipeline tunnel options, the west and east alignments, and the separate corridors option), 2,231 acres were surveyed (4.53%). Parcels were walked in traditional transects, with archaeologists spaced no more than 20 meters apart at any time. Visibility of the ground surface varied significantly, from excellent visibility to near zero where high grasses made visibility difficult. Identified resources were recorded on California Department of Parks and Recreation forms and surface boundaries were mapped.
>
> Archaeological sites were not evaluated for their eligibility for listing in the CRHR and NRHP because the amount of information obtained during the field surveys would be insufficient for this purpose. This is because the evaluation of archaeological sites that have the potential for buried deposits would require subsurface investigations to retrieve a suitable sample of subsurface materials and to assess integrity and boundaries of the site. Therefore, subsurface investigations may be needed to evaluate the CRHR and NRHP eligibility of the archaeological sites visited during the field surveys and any identified during any future cultural resources studies performed after action alternative are selected.
>
> It is important to note that subsurface investigations are considered potentially damaging both within the professional practice of archaeology and among the Native American community. Professional archaeologists consider test excavation destructive because it can only be performed once. After a portion of a deposit has been disturbed, the original spatial relationships between buried artifacts can never be perfectly restored for re-examination. In addition, because science improves over time, archaeologists assume that some data is always irretrievably lost during current excavations. Relative to future advances in science; current excavations destroy the possibility of retrieving information that cannot currently be analyzed based on available technology. In addition, the Native American community may object to excavation of prehistoric sites because testing itself has the potential to impact Native American cultural and religious values associated with prehistoric sites. Testing may also have the potential to disturb burials if present.
>
> For the analysis of effects under CEQA and NEPA, the potential damage to archaeological resources associated with subsurface investigations does not sufficiently justify the information gained prior to the selection of an alternative for construction, as noted earlier. While individual archaeological sites cannot be completely evaluated without test excavation; however, suitable proxy measures offer means of assessing the potential of the various conveyance alignments to result in significant impacts on CRHR and NRHP eligible resources as well as unique archaeological sites. These proxy measures consist of analyzing the density and distribution of recorded resources, and estimating the nature and size of identified sites based surface observations. This approach allows for subsequent assessment of the potential of the alternatives to result in adverse effects on archaeological resources that are likely to qualify for the CRHR or NRHP without physical destruction of the sites.

As is evident from the preceding discussion, even though the lead agencies had no way of gaining direct physical access to the lands of property owners who litigated DWR in court to prevent access, the lead agencies nevertheless met their obligations under CEQA and NEPA, as the identification and analyses of impacts were conducted for those portions of the proposed alignments that were surveyed.

As explained in Chapter 18, Cultural Resources, and as noted above, the EIR/EIS examined the project footprint of every alternative to the extent possible. Efforts included archival map research, archeological and field surveys of legally accessible properties, record searches to identify recorded

cultural resources, sensitivity analyses for unidentified resources, and correspondence with Native American contacts. The construction of the conveyance facilities would affect identified, as well as yet to be identified, archeological resources in the project footprint.

Notwithstanding these efforts, commenters have argued that the cultural resources analysis is deficient because 1) not all potentially affected properties were surveyed; and 2i) because mitigation measures proposed in the Draft EIR/EIS allegedly "defer" the formulation of details until after project approval.

In support of this first contention, commenters have cited *Madera Oversight Coalition, Inc. v. County of Madera* (2011) 199 Cal.App.4th 48, 79-82, which involved an EIR for a proposed major mixed-use development. There, the lead agency identified the proposed project's potentially significant impacts on archaeological resources, but stopped short of determining whether each such resource technically qualified as "historical resources" under the detailed CEQA definitions provided above. The challenged EIR also included, however, mitigation measures that would first require subsequent, post-approval "verification" that the resources at issue were indeed "historical," and then require some level of protection for any verified resources. The Fifth District Court of Appeal found that subsequent or post-certification verification violated CEQA because State CEQA Guidelines Section 15064.5, subdivision (c)(1), requires a lead agency to determine whether a site is an historical resource *prior* to approving a project (99 Cal.App.4th at pp.81–82). The court also reasoned that the lead agency's actions violated CEQA because the post-certification verification and subsequent decision would be outside a public arena where public officials can be held accountable (199 Cal.App.4th at p. 82).

As noted above, commenters have cited *Madera Oversight Committee* for the notion that the EIR/EIS for the BDCP/California WaterFix cannot be legally adequate until each and every single affected potential "historical resource" has been analyzed and verified, despite the lead agencies' inability to gain legal access to all relevant private properties. These commenters urge, in effect, that the practical consequence of the refusal of various property owners to allow the lead agencies access to their lands is to make it impossible for the lead agencies to complete a valid EIR/EIS.

The law is neither so rigid nor so impractical. Nor does it reward uncooperative landowners by allowing them to prevent the completion of an adequate environmental document until lead agencies, after years of litigation, someday gain access to their properties.

The Court of Appeal confronted a very similar situation in *City of Maywood v. Los Angeles Unified School District* (2012) 208 Cal.App.4th 362, 375, 403-413 (*City of Maywood*). There, in preparing an EIR for a proposed new high school, the school district lead agency was "unable to secure 'access agreements'" for testing 27 residential properties for hazardous materials (*Id*. at p. 375). But the court rejected the notion that the resulting lack of information made the EIR inadequate, reasoning that a mitigation measure requiring post-approval testing and cleanup sufficed to make the EIR adequate. The court reached these conclusions after discussing at length a governing precedent called *Oakland Heritage Alliance v. City of Oakland* (2011) 195 Cal.App.4th 884 (*Oakland Heritage*), which had dealt with seismic safety issues.

In that earlier case, the *Oakland Heritage* court had upheld as consistent with CEQA an approach to analysis and mitigation by which the lead agency had conducted a "preliminary" geotechnical investigation "to determine overall engineering feasibility and to inform the preliminary designs." A mitigation measure required that, based on this preliminary analysis, a "site-specific, design level geotechnical investigation for each site area" would be conducted. This approach, the court

concluded, "sufficiently addressed potential environmental impacts associated with seismicity" (*City of Maywood*, *supra*, 208 Cal.App.4th at pp. 410-411, citing *Oakland Heritage*, *supra*, 195 Cal.App.4th at pp. 892, 899-890, 907). In finding the facts of *Oakland Heritage* to be analogous, the *City of Maywood* court noted that "the FEIR in this case also included a discussion of why it would be impractical to conduct a full investigation and remediation of the project site prior to approval of the FEIR" (*City of Maywood*, *supra*, 208 Cal.App.4th at p. 412; see also State CEQA Guidelines Section 15151 ["the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible"]). The court added that, as in *Oakland Heritage*, the project at issue would require "further investigatory steps" after project approval, and "construction would not start until [the Department of Toxic Substances Control] determined that no further action was necessary" (*City of Maywood*, *supra*, 208 Cal.App.4th at p. 412). The court saw the situation as being governed by the principle that, "'when a lead agency has evaluated the potentially significant impacts of a project and has identified measures that will mitigate those impacts,' and has committed to mitigating those impacts, the agency may defer precisely how mitigation will be achieved under the identified measures pending further study" (*Ibid*., citing to *Oakland Heritage*, *supra*, 195 Cal.App.4th at p. 910).

Here, the same principles from *City of Maywood* and *Oakland Heritage* apply to the approach taken to historical and archaeological resources by the lead agencies for the BDCP/California WaterFix; and the situation at hand is readily distinguishable from the one found to be problematic in the *Madera Oversight Coalition* decision. Here, because of the lack of consent by landowners with properties that might include historical or archaeological resources, the lead agencies have been unable to gain access to those properties in order to conduct detailed surveys; and the EIR/EIS explains in detail (in Appendix 4A, *Summary of Survey Data Collection Efforts by Department of Water Resources to Obtain Information Regarding Baseline Conditions in Areas That Could Be Affected by BDCP*) why it was impractical to undertake such surveys. In part because of this lack of access, the lead agencies have proposed a number of mitigation measures that will ensure maximum feasible avoidance of significant impacts to historical and unique archaeological resources, both known and as yet to be discovered during ground disturbing activities. For instance, Mitigation Measure CUL-2 provides that, prior to groundbreaking, the lead agencies must complete a full cultural resources inventory in those areas that will be affected by the project as approved but that were not subject to previous on-site surveys. This inventory will determine whether any such resources qualify as "historical resources" or "unique archaeological resources." The lead agencies will then determine whether any such resources will be subjected to the kinds of impacts described earlier as being significant. Where significant impacts are found, mitigation strategies will be developed. Where, due to the location of affected resources, data recovery (as opposed to preservation in place) is the only viable mitigation strategy, data recovery plans will be required. Under Mitigation Measure CUL-1, which applies to *known* archaeological resources that cannot be avoided during construction, treatment plans and data recovery plans will also be required. Other mitigation call for additional mitigation measures to reduce project impacts to the extent feasible, including avoidance, facility redesign where feasible, complete documentation in accordance with applicable programs, and other appropriate treatment methods that are identified in relation to the particular resources being affected.

Under these circumstances, in which certain landowners have refused to allow on-site surveys, there was no other "reasonably feasible" or practicable approach. The *Madera Oversight Coalition* decision cannot be fairly understood as providing landowner project opponents an easy roadmap by which they can prevent the successful completion of environmental review simply by refusing to allow physically-damaging on-site surveys on properties that would be affected by proposed

projects. Under such circumstances, as in *City of Maywood*, CEQA compliance can be achieved through a combination of steps that *are* feasible. Here, these steps include archival map research; field surveys; record searches; sensitivity analyses; archaeological surveys on legally accessible parcels; review of built-environment resources using aerial photography; correspondence with Native Americans; search of the sacred lands data base; and detailed, thorough mitigation ensuring that all potentially affected historical or unique archaeological resources will be fully assessed prior to groundbreaking, that avoidance will occur where feasible, and that data recovery will occur where avoidance is infeasible. This approach is plainly reasonable, particularly in light of privacy concerns that make it problematic to disclose the precise locations of many archaeological sites.

Compliance of Proposed Project with Section 106 of the NHPA

Section 106 review and compliance will be carried out pursuant to a programmatic agreement (PA) that will set forth federal agency responsibilities under the NHPA. The PA will require the United States Army Corps of Engineers to complete the management steps for all future undertakings necessary to implement the proposed project. The lead agencies, in consultation with the State Historic Preservation Officer, Native American Tribes, and other interested stakeholders, will do all of the following: identify the area in which historic properties may be affected; complete an inventory of the historic properties; evaluate identified resources to determine if they are historic properties; determine whether the undertaking will adversely affect those properties; and resolve any adverse effects.

Master Response 21: Tribal Issues

This master response discusses:

- *Traditional cultural properties designation and how the concept was handled in the EIR/EIS.*
- *Compiled literature review, field surveys, and investigations that followed standard cultural resources protocols and scientific requirements.*
- *Native American consultation and coordination efforts.*

For additional discussions on cultural resources in general, which includes tribal cultural resources, please refer to Master Response 20, Cultural Resource Assessment.

Traditional Cultural Properties Designation and How This Concept Was Handled in the EIR/EIS

An overall discussion of how the lead agencies addressed cultural resources is provided in Master Response 20, *Cultural Resources*. That master response explains how the lead agencies have addressed the characterization and mitigation of a variety of cultural resources, including "historical resources" and "unique archaeological resources" subject to CEQA, as well as cultural and historical resources subject to NEPA and Section 106 of the National Historic Preservation Act (NHPA) (54 United States Code (USC) Section 306108), including "districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places" (see 40 Code of Federal Regulations Part 1508.27[b][9]). As explained below, tribal cultural resources are cultural resources protected by these state and federal laws. This master response sets forth the process carried out by the lead agencies to coordinate with the tribes to make sure that tribal cultural resources are located, identified, and protected.

Notably, Section 101(d)(6) of the NHPA provides that properties of religious and cultural significance to Indian tribes may be eligible for listing in the National Register of Historic Places (NRHP), and requires that federal agencies, in carrying out their Section 106 responsibilities, consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking (54 USC 302706).

Although the phrase "historic property of religious and cultural significance to an Indian tribe" is used Section 106 regulations of NHPA (54 USC Section 306108), another broader term, "Traditional Cultural Property" (TCP), is also relevant and is commonly used in practice. This latter term is used, for example, in National Park Services (NPS) Bulletin 38, which is entitled "Guidelines for Evaluating and Documenting Traditional Cultural Properties." That bulletin explains how to identify a property "that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community." For a TCP to be found eligible for the NRHP, it must meet the existing NRHP criteria for eligibility as a building, site, structure, object, or district. TCPs are defined only in NPS guidance and are not referenced in any statute or regulation, and refer to places of importance to any community, not only to Indian tribes. Therefore, this terminology may be used when an agency is considering whether any property is eligible for the NRHP.

Unlike the term TCP, the term "historic property of religious and cultural significance to an Indian tribe" only applies (strictly) to tribal sites. Thus, it is not necessary to use the term TCP when considering whether a site with significance to a tribe is eligible for the NRHP as part of the Section 106 process. The NPS Bulletin 38 guidelines are helpful, however, in providing an overview of how NRHP criteria are applied. (For more details, see Advisory Council on Historic Preservation, *Consultation with Indian Tribes in the Section 106 Review Process: A Handbook* (2012), p. 21.)

As Master Response 20 explains, the California Legislature recently passed legislation providing protection to "tribal cultural resources," which is now a defined term under California law. This legislation is known as Assembly Bill (AB) 52 applies to projects with notices of preparation filed after July 1, 2015. As the Master Response 20 explains, the Notice of Preparation for the BDCP/California WaterFix EIR/EIS, which was filed in February 2009; therefore, the project is not subject to the new procedural requirements of AB 52[209], However, the "tribal cultural resources" protected by AB 52 are subsets of the broader categories of "historical resources" and "unique archaeological resources," which the EIR/EIS addresses at length.

As Master Response 20 explains, the mitigation measures set forth in the EIR/EIS will ensure that all historical resources that could be adversely affected by project construction will be fully characterized and subject to some sort of mitigation, including avoidance where feasible or data recovery where avoidance is not feasible. Thus, by addressing the broad category of "historical resources" under CEQA, the lead agencies have addressed all tribal cultural resources, as the latter term is a subset of the former

The term "tribal cultural resource" in the context of CEQA , overlaps in its definition with the related concepts of "historic property of religious and cultural significance to an Indian tribe," as used in Section 106 and its NHPA regulations, and TCPs, as used in NPS Bulletin 38.

The EIR/EIS broadly addresses cultural resources under federal and state law in a way that should ensure the identification of all legally protectable sites of interest to Native American tribes in the affected region.

Literature Review and Field Surveys and Investigations Complied with Standard Cultural Resources Protocols and Scientific Requirements

Chapter 18, *Cultural Resources*, explains why the lead agencies could not gain legal access to many properties within the Delta to conduct cultural resource surveys. Even with the best investigative techniques and a full access to the site, field studies may not always be complete due to obstructions or vegetation at the surface that preclude a thorough scientific survey and technical observations.

However, an extensive record search was undertaken in preparing the EIR/EIS based on a number of parameters available to the qualified archaeological and historical consultant teams. This broad collection of facts provides a baseline for future, more refined resource studies by identifying sites that have been previously recorded and areas that have previously been surveyed for cultural resources. This baseline was used to develop mitigation measures that address ongoing site identification efforts. Mitigation measures have been developed to include a process to identify the

[209] AB 52 does not apply retroactively to EIRs already in process as the time the new state law took effect on January 1, 2015.

full extent of known resources in the area of direct impact prior to the start of construction. Mitigation measures also address the potential for inadvertent discovery of buried sites not visible on the surface.

The Final EIR/EIS documentation comprehensively evaluates the significant adverse impacts/effects on tribal cultural resources and addresses applicable mitigations for these resources under federal and state laws. Please refer to Chapter 18, *Cultural Resources*, and Appendices 18A. *Archaeological Resources Sensitivity Assessment*, and 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*. The mitigation measures, environmental commitments, and avoidance and minimization measures have all been developed in a way that ensures the identification and mitigation of all legally protectable sites of interest to Native American tribes in the affected region.

Native American Consultation and Coordination

The lead agencies have consulted extensively with tribal representatives with tribal cultural resources that may be affected by the proposed project to benefits from their expertise on the location, indentation, and protection of cultural resources. As directed by Governor's Executive Order B-10-11 and the California Natural Resources Agency policy regarding consultation with California Native American tribes, DWR conducted government-to-government consultation for BDCP/California WaterFix. Although the EIR/EIS is not subject to AB 52 (Notice of Preparation issued prior to effective date), the DWR met the spirit and the intent of that legislation by hosting several regional meetings with interested tribes and considering tribal cultural values when determining impacts and mitigation. Through these meetings and otherwise, DWR has consulted with, and solicited input from, various tribes on the proposed project and tribal cultural resources and properties. Currently, information from tribes is being gathered and will be used to guide future meetings and continued collaboration with tribal communities.

The various general public meetings on the project and its environmental documents also provided opportunities for tribal input. Regional meetings were held across the state as a means to provide information and solicit input on the proposed project. The meetings were held to help identify concerns and resources and to identify sensitive resources that may be impacted as a result of the project. An informational meeting was held in Sacramento in December 2013. Several meetings followed thereafter through February 10, 2016. Information about these meetings can also be located on DWR's web site, at http://baydeltaconservationplan.com/EnvironmentalReview/Tribal.aspx.

In addition, any tribe interested in further consultation with DWR may request this as appropriate.

Finally, the United States Army Corps of Engineers is drafting a Programmatic Agreement (PA) as part of the Section 106 NHPA process for undertakings related to the proposed project, and the final version will incorporate input from tribes through review and consultation of the draft documents. The PA will set forth federal agency responsibilities under the NHPA. The PA will require USACE to complete the management steps for all future undertakings necessary to implement the proposed project. The agencies will, in consultation with the State Historic Preservation Officer, Native American tribes and other interested parties: identify the area in which historic properties may be affected, complete an inventory of the historic properties, evaluate identified resources to determine if they are historic properties, determine whether the undertaking will adversely affect those properties, and resolve any adverse effects.

Master Response 22: Standards Governing the Adequacy of Mitigation Measures

This master response lays out both the general legal standards for adequate mitigation measures and the more specific standards for adequate performance standards within mitigation measures. The master response distinguishes between the following: project features or environmental commitments; conservation measures and avoidance and minimization measures developed under federal and state endangered species law; and formal CEQA/NEPA mitigation measures considered by the lead agencies in the Draft EIR/EIS, RDEIR/SDEIS, and Final EIR/EIS.

Definitions

The State CEQA Guidelines define "mitigation" as including:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(e) Compensating for the impact by replacing or providing substitute resources or environments.[210]

Courts have treated as legitimate examples of mitigation measures both the payment of fair-share fees as part of a reasonable mitigation program,[211] and the use of conservation easements or other legal mechanisms to preserve (and possibly enhance or manage) offsite agricultural land or wildlife habitat.[212] In formulating mitigation measures, however, lead agencies must be cognizant of any limitations on their own regulatory powers or those of other agencies with potential mitigation responsibilities.[213]

The California Natural Resources Agency has provided further general guidance on the subject of mitigation in Section 15126.4[a] of the State CEQA Guidelines. That regulation states, in pertinent part:

> The discussion of mitigation measures shall distinguish between the measures which are proposed by project proponents to be included in the project and other measures proposed by the lead, responsible or trustee agency or other persons which are not included but the lead agency determines could reasonably be expected to reduce adverse impacts if required as conditions of

[210] State CEQA Guidelines, § 15370.

[211] See, e.g., *Save Our Peninsula Committee v. Monterey County Board of Supervisors* (2001) 87 Cal.App.4th 99, 140.

[212] See, e.g., *California Native Plant Society v. City of Rancho Cordova* (2009) 172 Cal.App.4th 603, 619-627; *Save Panoche Valley v. San Benito County* (2013) 217 Cal.App.4th 503, 523-529 (*Save Panoche Valley*); *Environmental Council*, *supra*, 142 Cal.App.4th at pp. 1038-1041.

[213] *Kenneth Mebane Ranches v. Superior Court* (1992) 10 Cal.App.4th 276, 289-292; see also Cal. Pub. Resources Code, § 21004 ["[i]n mitigating or avoiding a significant effect of a project on the environment, a public agency may exercise only those express or implied powers provided by law other than [CEQA]"; "[h]owever, a public agency may use discretionary powers provided by such other law for the purpose of mitigating or avoiding a significant effect on the environment subject to the express or implied constraints or limitations that may be provided by law"].

> approving the project. This discussion shall identify mitigation measures for each significant environmental effect identified in the EIR.[214]

Later, the same regulation explains that "[f]ormulation of mitigation measures should not be deferred until some future time. However, measures may specify *performance standards* which would mitigate the significant effect of the project and which may be accomplished in more than one specified way."[215] Section 15126.4[a] then goes on to state that, when a project is approved, "[m]itigation measures must be fully enforceable through permit conditions, agreements, or other legally binding instruments. In the case of the adoption of a plan, policy, regulation, or other public project, mitigation measures can be incorporated into the plan, policy, regulation, or project design."

General CEQA Mitigation Principles

Under CEQA, the need for mitigation measures arises out of the "substantive policy" of CEQA, by which public agencies cannot approve proposed projects that would cause significant environmental effects without first adopting any feasible mitigation measures and considering any feasible alternatives that would substantially lessen such significant effects.[216] This substantive goal can be met through: 1) the adoption of feasible mitigation measures, 2) the approval of a feasible alternative other than the proposed project, or 3) a combination of those two options.[217] As the California Supreme Court has noted, "alternatives and mitigation measures have the same function—diminishing or avoiding adverse environmental effects. The chief goal of CEQA is mitigation or avoidance of environmental harm."[218] However, mitigation measures need not necessarily eliminate significant environmental impacts, but only lessen them.[219]

Importantly, California courts generally do not review a set of mitigation measures to determine whether each and every one of them is "perfect" or meets some set of legal standards that applies to each and every mitigation measure viewed in insolation. Rather, courts review mitigation measures to see whether they support a lead agency's conclusion that particular significant environmental effects can be mitigated to less-than-significant levels. Where a lead agency claims that a single mitigation measure or set of mitigation measures will achieve this level of effectiveness, a court should consider the mitigation measures as part of its *overall* determination as to whether substantial evidence in an agency's administrative record supports the conclusion that the impacts at issue will indeed be less than significant after mitigation. The California Supreme Court explained this overall approach in its seminal decision in *Laurel Heights Improvement Association v. Regents of the University of California*:

> [T]he reviewing court must consider the evidence *as a whole*. That an EIR's discussion of mitigation measures might be imperfect in various particulars does not necessarily mean it is inadequate. We do not suggest that a reviewing court should refrain from carefully scrutinizing the record… The often technical nature of challenges to EIR's also requires particular attention to detail by a reviewing

[214] State CEQA Guidelines, § 15126.4[a][1][A].

[215] Italics added.

[216] Cal. Pub. Resources Code, §§ 21002, 21081; State CEQA Guidelines, §§ 15002[a][3], 15021[a][2]; *Mountain Lion Foundation v. Fish & Game Commission* (1997) 16 Cal.4th 105, 134; *Sierra Club v. State Board of Forestry* (1994) 7 Cal.4th 1215, 1233.

[217] *Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376, 403 (*Laurel Heights I*).

[218] *Ibid*.

[219] Cal. Pub. Resources Code, § 21100(b)(3); Guidelines, § 15126.4[a][1].

> court. The proper judicial goal, however, is not to review each item of evidence in the record with such exactitude that the court loses sight of the rule that the evidence must be considered as a whole.[220]

Consistent with this approach, the Court of Appeal in in *Environmental Council of Sacramento v. City of Sacramento*[221] (*Environmental Council*) chided the petitioners in that case both for "pars[ing] but one component from" a larger "integrated mitigation program" and for "ignoring the broader context, the broader findings, and the broader evidence relied on by the [lead] agencies." The court went on to uphold the one individual measure to which the petitioners had objected, citing numerous items of evidence from the administrative record conveying that "broader context."[222] In another case, *Concerned Citizens of South Central Los Angeles v. Los Angeles Unified School District*, the Court of Appeal explained that "[t]he discussion of mitigation measures in [an EIR] must be assessed in accordance with the 'rule of reason.'"[223] The court added that "CEQA does not require analysis of every *imaginable* … mitigation measure; its concern is with *feasible* means of reducing environmental effects."[224]

A recent major California Supreme Court case dealing with the adequacy of mitigation measures is *Neighbors for Smart Rail v. Exposition Metro Line Const. Authority*,[225] which involved a challenge to an EIR for a proposed light rail line. In that case, the lead agency, a regional transportation agency, was required to address potential spill-over parking effects that might result from development of new transit facilities. Since the lead agency lacked legal authority to regulate parking in affected areas, the EIR proposed (and the agency adopted) mitigation measures that contemplated that local municipal governments would, with the lead agency's assistance, develop and implement permit parking programs or other parking restrictions if monitoring proved that there was a problem. Project opponents objected that this mitigation was not legally enforceable. The Supreme Court disagreed, explaining that CEQA "allows an agency to approve or carry out a project with potential adverse impacts if binding mitigation measures have been 'required in, or incorporated into' the project, or if [t]hose changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.'"[226] The court noted that, while the lead agency "[could] not guarantee local governments will cooperate to implement permit parking programs or other parking restrictions, the record supports the conclusion these municipalities 'can and should' do so."[227] Thus, the question for a reviewing court is *not* whether the lead agency can *guarantee* that impacts will be mitigated, but whether reasonable means for mitigating impacts are identified in the EIR, even if some uncertainty remains.[228]

Most of the critical comments on the mitigation measures in the Draft EIR/EIS and RDEIR/SDEIS invoke the body of CEQA case law dealing with the subject of "deferred mitigation." That body of law

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[220] (1988) 47 Cal.3d 376, 408, original italics (*Laurel Heights I*).

[221] (2006) 142 Cal.App.4th 1018, 1039.

[222] *Id.* at pp. 1039-1041.

[223] (1994) 24 Cal.App.4th 826, 841.

[224] *Ibid.*, original italics; internal quotation marks omitted.

[225] (2013) 57 Cal.4th 439, 465-466.

[226] *Id*. at 465, original italics; internal citations omitted.

[227] *Id*. at p. 519, quoting Pub. Resources Code, § 21081, subd. (a)(2).

[228] See also *Environmental Council*, *supra*, 142 Cal.App.4th at p. 1036 ["[a] public agency can make reasonable assumptions based on substantial evidence about future conditions without guaranteeing that those assumptions will remain true"].

addresses circumstances in which public agencies can formulate only some of the details of mitigation measures when the environmental documents are being prepared and leave the formulation of further details until after project approval. When a lead agency points to measures of this kind to claim that significant impacts will be mitigated to less-than-significant levels, courts look for enforceable performance standards that, when satisfied, will ensure that impacts will indeed be less than significant. Because of the importance of the mitigation measures in the Draft EIR/EIS and RDEIR/SDEIS, a careful look at that body of law will be helpful in explaining why the mitigation measures in those two documents are legally sufficient under CEQA.

The case that spawned the entire body of CEQA law dealing with "deferred mitigation" is *Sundstrom v. County of Mendocino* (*Sundstrom*),[229] a 1988 Court of Appeal decision involving a negative declaration for a sewage treatment plant intended to serve an existing development consisting of a small motel, restaurant, and filling station, to which a larger motel, restaurant, and apartments would be added. The court in *Sundstrom* held that the respondent county had violated CEQA by approving the project based on a negative declaration without first resolving uncertainties regarding the project's potential to cause significant environmental impacts.

Among the conditions of approval were directions to the applicant and planning staff to develop and implement concrete mitigation measures *after* project approval. For instance, the applicant was instructed to prepare a hydrological study evaluating the project's potential environmental effects and proposing any necessary mitigation measures. The study was to focus on soil stability, erosion, sediment transport, and the flooding of downslope properties. The court concluded that, because the success of mitigation was uncertain, the agency could not have reasonably determined that significant effects would not occur. This deferral of environmental assessment until after project approval violated CEQA's policy that impacts must be identified before project momentum reduces or eliminates the agency's flexibility to subsequently change its course of action. In addition, because the permit authorized the applicant himself, subject to planning staff approval, to conduct the required analyses, the county had violated CEQA's requirement that an agency's decision-making body must ultimately review and vouch for all environmental analysis mandated by CEQA.[230]

The court also found inadequate a permit condition requiring subsequent county approval of a sludge disposal plan, pointing to evidence in the record showing that environmentally sound disposal might be hard to achieve, given that no suitable disposal site was known to exist. Both the county public works department and the Coastal Commission had recommended project denial until these problems could be worked out. The court found that, by approving the project without showing that a solution was possible, the county had "evaded its duty to engage in comprehensive environmental review."[231] The court held that the county had no right to expect the Regional Water Quality Control Board to devise a solution under such circumstances. The court also held that the county should have required the applicant to fully develop his design for an irrigation system, since preliminary data showed a danger that the tentative design could adversely affect soil stability and would cause drainage problems.[232]

Sundstrom should not be read as an absolute constraint on the post-approval formulation of detailed mitigation measures. The case suggests that, in some instances at least, agencies can reasonably

[229] (1988) 202 Cal.App.3d 296, 307-308.

[230] *Id.* at pp. 306–308.

[231] *Id.* at p. 309.

[232] *Id.* at pp. 308–309.

conclude that impacts will be mitigated to less-than-significant levels even if mitigation measures are not fully developed until after project approval. The court upheld permit conditions requiring compliance with air and water quality standards because the approving agency possessed "'*meaningful information*' reasonably justifying an expectation of compliance."[233]

The first reported CEQA precedent following *Sundstrom* to deal in depth with the use of performance standards as a basis for allowing some deferral of the formulation of mitigation specifics was *Sacramento Old City Assn. v. City Council of Sacramento* (1991) 229 Cal.App.3d 1011, 1026-1030 (*SOCA*), which involved an EIR for a proposed convention center project. The court in that case upheld a mitigation measure requiring the future completion of a transportation management plan (TMP) that 1) set an enforceable performance goal of "an overall area parking utilization rate of 90 percent during the critical weekday afternoon period," and 2i) identified a number of different options for how the goal might be met.[234] In finding this approach to mitigation to be consistent with CEQA, the court rejected an argument based on the principles articulated in *Sundstrom*. The *SOCA* court explained why the use of a performance standard could solve the problem identified by the court in *Sundstrom*:

> [I]n *Sundstrom* the county had determined, before the required studies were even performed, that the project would not have a significant impact on the environment. In contrast, the City in the present case acknowledged traffic and parking have the potential, particularly under the worst case scenario, of causing serious environmental problems. The City did not minimize or ignore the impacts in reliance on some future parking study.
>
> Moreover, the county in *Sundstrom* approved the project without considering or addressing *any* mitigation measures. In the present case, the City has set forth a list of alternatives to be considered in the formulation of a transportation management plan, a plan the City itself, not the developer, will prepare.

As one commentator has opined, *Sundstrom* "need not be understood to prevent project approval in situations in which the formulation of precise means of mitigating impacts is truly infeasible or impractical at the time of project approval. In such cases, the approving agency should commit itself to eventually working out such measures as can be feasibly devised, but should treat the impacts in question as being significant at the time of project approval. Alternatively, for kinds of impacts for which mitigation is known to be feasible, but where practical considerations prohibit devising such measures early in the planning process (e.g., at the general plan amendment or rezone stage), the agency can commit itself to eventually devising measures that will satisfy specific performance criteria articulated at the time of project approval. Where future action to carry a project forward is contingent on devising means to satisfy such criteria, the agency should be able to rely on its commitment as evidence that significant impacts will in fact be mitigated. (*See Laurel Heights I, supra,* 47 Cal.3d at 418 [253 Cal.Rptr. 426, 448] [upholds mitigation measure by which project noise levels will be kept within performance standards]; and *Schaeffer Land Trust v. San Jose City Council* (6th Dist. 1989) 215 Cal.App.3d 612, 632 [263 Cal.Rptr. 813, 819] [upholding approval of general plan amendment based on a negative declaration because actual physical development will be contingent on devising plan to ensure compliance with city standards for traffic levels of service].)" (Remy et al., Guide to the Cal. Environmental Quality Act (1991 ed.) pp. 200-201, fn. omitted.)

Another important case on point is *Fairview Neighbors v. County of Ventura* (1999) 70 Cal.App.4th 238, 244–245 (*Fairview Neighbors*), which involved an EIR for a proposed use permit authorizing

[233] *Id.* at p. 308 (italics added).

[234] *Id.* at p. 1021.

the expansion of an existing surface mine. In that case, the Court of Appeal distinguished the situation it faced from the one at issue in *Sundstrom*, emphasizing that the lead agency in *Fairview Neighbors* was entitled to adopt mitigation measures that stopped short of mitigating impacts to less than significant levels:

> *Sundstrom* is distinguishable from the instant case. In *Sundstrom*, a negative declaration relied on future proposed mitigation studies to provide presumed mitigation measures. That was improper. [Citation.] It simply deferred environmental assessment to a future date after approval of the project. That is not what occurred here. Here the EIR explains what the environmental impacts would be, and it concludes that the impacts would be significant and unmitigable regardless of the proposed mitigation measures or future studies. Under such circumstances, the Board may adopt a statement of overriding considerations and approve the project.[235]

Over the last 25 years or so, a series of Court of Appeal opinions have developed detailed principles governing deferred mitigation and the use of performance standards. Although "the exception allowing the deferral of the formulation of mitigation measures has been expressed in a variety of ways,"[236] the consensus seems to be that such deferral is permissible where the adopted mitigation measure both:

(1) Commits the agency to a realistic performance standard or criterion that will ensure the mitigation of the significant effect

(2) Disallows the occurrence of physical changes to the environment unless the performance standard is or will be satisfied.[237]

Whether the performance standards included in a particular mitigation strategy are sufficiently definite and specific to satisfy CEQA's mitigation requirements will generally depend on the circumstances surrounding the agency approval or even the particular impact at issue. In any event, the performance criteria must be sufficiently definite to ensure that the potential impacts will be mitigated.[238]

Notably, courts have also upheld mitigation measures against allegations of improper deferral when the performance standards were based on regulatory requirements that would apply to a project independent of CEQA. A condition requiring compliance with regulations is a common and reasonable mitigation measure, and may be proper where it is reasonable to expect compliance. In *Oakland Heritage Alliance v. City of Oakland*,[239] for instance, the court upheld deferring site-specific seismic impact mitigation measures when the EIR relied on compliance with "a regulatory scheme

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[235] *Fairview Neighbors*, *supra*, 70 Cal.App.4th at p. 245.

[236] *POET, LLC v. State Air Resources Board* (2013) 218 Cal.App.4th 681, 737-738 (*POET*).

[237] See *POET, supra,* 218 Cal.App.4th at p. 738 [noting two principles gleaned from deferral of mitigation cases: (1) "the deferral of the formulation of mitigation measures requires the agency to commit itself to specific performance criteria for evaluating the efficacy of the measures implemented" and (2) "the 'activity' constituting the CEQA project may not be undertaken without mitigation measures being in place 'to minimize any significant adverse effect on the environment of the activity'"]; *Endangered Habitats League v. County of Orange* (2005) 131 Cal.App.4th 777, 793-794 [deferral is permissible where the agency commits itself to mitigation and either (1) adopts a performance standard and makes further approvals contingent on finding a way to meet the standard or (2) lists alternative means of mitigating the impact which must be considered, analyzed, and possibly adopted in the future]; *Cf. Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, 1275 [deferral is impermissible when the agency "simply requires a project applicant to obtain a biological report and then comply with any recommendations that may be made in the report"].

[238] *Rialto Citizens for Responsible Growth v. City of Rialto* (2012) 208 Cal.App.4th 899, 945 (*Rialto Citizens*). Accord *Save Panoche Valley*, *supra*, 217 Cal.App.4th at pp. 524-525.

[239] (2011) 195 Cal.App.4th 884.

designed to ensure seismic safety" that gave "adequate assurance that seismic impacts will be mitigated through engineering methods known to be feasible and effective."[240]

Based on the general principles set forth above, it is clear that the legal adequacy of a mitigation measure under CEQA should be judged based on the following factors: whether the lead agency claims the measure will or will not reduce impacts to less-than- significant levels; whether the lead agency relies on the measure by itself to address a particular environmental impact, or instead relies on the measure as a part of a larger package of measures that, taken together, address the impact; whether the measure, and perhaps others that complement it, are sufficiently detailed that they do not need performance standards to achieve impact reduction; whether, if a measure or set of measures lacks sufficient detail to effectively mitigate impacts, at least one of the measures contains a performance standard that, if satisfied, would support the agency's ultimate factual conclusion; and, finally, whether the lead agency's administrative record, viewed as a whole, supports the lead agency's ultimate factual conclusion regarding the effectiveness of the measure, or a package of measures, to reduce an environmental impact to a less-than-significant level or not.

Only when a lead agency has relied on a particular measure, *by itself*, to reduce an impact to a less–than-significant level must the measure either be sufficiently detailed to accomplish that purpose by itself or include a performance standard that, when translated in the future into a detailed measure, will accomplish that purpose by itself. To the extent that some commenters believe that, to be adequate under CEQA, each and every measure must have a performance standard, such commenters are simply mistaken.

Mitigation Measures Incorporated Into Projects

As noted earlier, an EIR "shall distinguish between the measures which are proposed by project proponents to be included in the project and other measures proposed by the lead, responsible or trustee agency or other persons[.]"[241] In general, lead agencies may assume that measures proposed by project proponents will be carried out if the projects are approved.[242] "[I]n the case of the adoption of a plan, policy, regulation, or other public project," such measures can be incorporated directly "into the plan, policy, regulation, or project design."[243] In contrast, mitigation measures formulated by lead agencies and included in EIRs "'are suggestions which may or may not be adopted by the decisionmakers. There is no requirement in CEQA that mitigation measures be

[240] *Id.* at p. 912. See also *City of Maywood v. Los Angeles Unified School District* (2012) 208 Cal.App.4th 362, 409-413 [court upholds lead agency's reliance on hazardous materials clean-up laws as being sufficient to ensure adequate mitigation under CEQA]; *Citizens Opposing a Dangerous Environment v. County of Kern* (2014) 228 Cal.App.4th 360, 383-385 [court upholds mitigation measure requiring project applicant to obtain a "determination of no hazard to air aviation" from Federal Aviation Administration in order to mitigate wind farm's potential impacts to aviation safety]; *Rialto Citizens for Responsible Growth v. City of Rialto* (2012) 208 Cal.App.4th 899, 945-947 [court upholds mitigation measure requiring the private applicant and local lead agency to consult with the United States Fish and Wildlife Service Under the Endangered Species Act in order to address impacts to kangaroo rats]; and *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 234 Cal.App.4th 214, 245-246 [court upholds a state agency's reliance on requirements of federal regulations implementing the Endangered Species Act as providing adequate CEQA mitigation for effects on fish species].

[241] State CEQA Guidelines, § 15126.4[a][1][A].

[242] See, e.g., *Village Laguna of Laguna Beach v. Board of Supervisors* (1982) 134 Cal.App.3d 1022, 1029–1030; and *Taxpayers for Accountable School Bond Spending v. San Diego Unified School District* (2013) 215 Cal.App.4th 1013, 1037-1038.

[243] Cal. Pub. Resources Code, § 21081.6[b].

adopted.'"[244] Thus, agency decisionmakers may reject proposed mitigation measures as infeasible, leaving significant impacts unmitigated.[245]

Because project features that tend to mitigate significant effects are not subject to being rejected as infeasible the way mitigation measures are, CEQA encourages project proponents to design their projects so as to avoid significant effects in the first place, even if such features are in a form that could have been imposed by lead agencies as mitigation measures. This approach to project design is consistent with the substantive policy of CEQA, which encourages all participants in the environmental review process to focus their efforts on mitigating significant environmental effects.[246] For this reason, the Legislature encourages the use of *mitigated* negative declarations (MNDs). Such documents allow project proponents, in exchange for their willingness to embrace effective up-front mitigation, to avoid the expense and time necessary for the preparation of full EIRs. The fact that, in MNDs, the mitigation measures become "part of the project" is evident from the portion of the statutory definition of such documents that refers to "*revisions in the project plans or proposals* made by, or agreed to by, the applicant before the proposed negative declaration and initial study are released for public review[.]"[247] A similar incentive for project proponents to embrace mitigation concepts is evident from the rules governing the recirculation of EIRs. Under those rules, project applicants can avoid recirculation by agreeing to adopt new mitigation measures that emerge after completion of public review on draft EIRs, even if those measures are "considerably different" from those set forth in draft EIRs.[248]

The Draft EIR/EIS for the BDCP included not only traditional mitigation measures, but also a variety of additional mitigation strategies reflecting both the lead agencies' proactive approach to minimizing effects through project design and project commitments, as well as the requirements of the Endangered Species Act (ESA) and the Natural Community Conservation Planning Act (NCCPA). Because each of the proposed action alternatives within the Draft EIR/EIS, including Alternative 4 (the proposed BDCP), was intended to function as a joint habitat conservation plan/natural community conservation plan (HCP/NCCP), these action alternatives included both conservation measures (CMs) and avoidance and minimization measures (AMMs), as is common for such regulatory documents. Although many of these measures functioned like CEQA or NEPA mitigation measures, they were formulated with the requirements of ESA and the NCCPA in mind. Consistent with the requirements of those two Acts, the CMs and AMMs are "project features" or applicant-proposed mitigation measures built into the project for CEQA and NEPA purposes. In addition to CMs, AMMs, and traditional mitigation measures, the Draft EIR/EIS also included numerous environmental commitments that the Lead Agencies, and, in particular the California Department of Water Resources (DWR), agreed to undertake. These environmental commitments were found in Appendix 3B to the Draft EIR/EIS.

The lead agencies' inclusion of environmental commitments in the Draft EIR/EIS was intended to reassure readers that DWR was unambiguously committed to carrying out a large number of best

[244] *Native Sun/Lyon Communities v. City of Escondido* (1993) 15 Cal.App.4th 892, 908, quoting *No Slo Transit, Inc. v. City of Long Beach* (1987) 197 Cal.App.3d 241, 256.

[245] Cal. Pub. Resources Code, § 21081[a][3].

[246] Cal. Pub. Resources Code, § 21003[f].

[247] Cal. Pub. Resources Code, § 21064.5, italics added.

[248] State CEQA Guidelines, § 15088.5[a][3]; *Laurel Heights Improvement Association v. Regents of University of California* (1993) 6 Cal.4th 1112, 1130 (*Laurel Heights II*); *South County Citizens for Smart Growth v. County of Nevada* (2013) 221 Cal.App.4th 316, 329-330.

management practices (BMPs) or other environmentally sound practices that would be effective either in reducing significant environmental effects to less-than-significant levels or in reducing the severity of such impacts by some substantial degree. By labeling these practices *environmental commitments* rather than *mitigation measures*, DWR intended to dispel any concern that the practices and BMPs designated as environmental commitments either might be rejected as infeasible at the time of project approval or might not be undertaken by the lead agencies absent the imposition of permit conditions by state responsible agencies or federal permitting agencies.

Both DWR and the federal lead agencies were aware that, in many instances, the environmental commitments function as *de facto* mitigation measures insofar as they were intended to reduce the severity of significant environmental effects. The Draft EIR/EIS was therefore written with a recognition that, where appropriate and necessary, its text should explain how the environmental commitments would function, and whether particular commitments would or would not be effective in reducing various significant or adverse effects to less-than-significant or less-than-adverse levels. The lead agencies intended that, when read together with Table 3B-1 in Draft EIR/EIS Appendix 3B, these textual passages would provide sufficient explanation and evidence to justify reliance on the environmental commitments as feasible means to reduce the severity of environmental effects.

Despite these efforts reflected in the Draft EIR/EIS, which was issued for public review in December 2013, several commenters on that document asserted that it did not comply with the requirements subsequently announced by the California Court of Appeal in the January 2014 decision *Lotus v. Department of Transportation*.[249] That case lays out principles that CEQA lead agencies should follow with respect to "'avoidance, minimization and/or mitigation measures' that 'have been incorporated into the project to avoid and minimize impacts as well as to mitigate expected impacts.'"[250] In general, lead agencies must not simply assume, without identifying and applying a threshold of significance, that such project features will be effective in avoiding or minimizing significant environmental effects.[251] Rather the *Lotus* court held that such project features should be discussed in a manner similar to that required for formally proposed mitigation measures. In other words, for potentially significant environmental effects, an EIR should do the following: state whether, in the absence of such features, impacts would be significant; and explain, in light of the applicable significance thresholds, whether the project features would or would not be sufficient to render the effects less than significant.[252] Such project features should also be made enforceable through some means at the time of project approval.[253]

In response to comments contending that DWR, as lead agency, had failed to comply with the *Lotus* decision in preparing the Draft EIR/EIS, DWR, along with the Bureau of Reclamation, as federal lead agency, modified Appendix 3B as part of the RDEIR/SDEIS and Final EIR/EIS. In addition to an expanded version of Table 3B-1 and the refinements made to some of the environmental commitments, Appendix 3B as modified now includes, after each specific environmental

[249] 223 Cal.App.4th 645.

[250] 223 Cal.App.4th at p. 650.

[251] 223 Cal.App.4th at p. 655 (holding that the analysis of impacts of the roadway improvement project violated CEQA because "the EIR fails to identify any standard of significance, much less to apply one to an analysis of predictable impacts from the project" on adjacent old-growth redwood trees). The court went on to explain the lead agency's fundament error: "Absent a determination regarding the significance of the impacts to the root systems of the old growth redwood trees, it is impossible to determine whether mitigation measures are required or to evaluate whether other more effective measures than those proposed should be considered." *Id*. at p. 656.

[252] *Id*. at p. 656.

[253] *Id*. at pp. 656-657.

commitment, one or more narrative discussions explaining both how it reduces the severity of environmental effects and whether the level of impact reduction is sufficient to render the effects less than significant. This approach provides a succinct presentation and analysis of the effectiveness of each environmental commitment in reducing environmental impacts in a comprehensive and understandable manner without reproducing all the original Draft EIR/EIS impact discussions that reference environmental commitments. The lead agencies were cognizant of the size of the Draft EIR/EIS, which was the subject of many comments on the document, and opted to take an approach intended to minimize the burdens placed on readers. The alternative approach would have been to add new text throughout the Draft EIR/EIS – which would have been substantially more burdensome to readers.

Additionally, recognizing that the proposed BDCP and the action alternatives in the Draft EIR/EIS included both CMs and AMMs serving as *de facto* mitigation measures, those AMMs and CMs were added to Appendix 3B, the title of which was changed to reflect the addition of this discussion. The appendix is now called *Environmental Commitments, AMMs, and CMs*.

Because neither Alternative 4A (the proposed project, also known as the California WaterFix) nor the two additional action alternatives (2D and 5A) first introduced in the RDEIR/SDEIS and analyzed in the Final EIR/EIS are HCP/NCCP options, the Final EIR/EIS uses modified terminology when referring to project features of the non-HCP alternatives that function as *de facto* mitigation measures. The three additional alternatives embody an alternative implementation strategy that focuses on improvements to the conveyance facility necessary for the State Water Project to increase water supply reliability in conjunction with related ecosystem improvements, such as significantly reducing reverse flows and direct fish species impacts associated with the existing south Delta intakes. The alternative implementation strategy allows for other state and federal programs to address the long-term conservation efforts for species recovery in programs separate from the proposed project. Alternatives 4A, 2D, and 5A are not presented as HCP/NCCP options prepared pursuant to ESA Section 10 and the NCCPA. Instead, they would achieve compliance with ESA and the California Endangered Species Act (CESA) through the Section 7 process under the ESA,[254] and the Section 2081 incidental take permit process under CESA.[255] Thus, the proposed BDCP habitat restoration and stressor reduction measures (i.e., CM2 through CM21), as presented in the BDCP and Draft EIR/EIS, were not carried forward fully into the non-HCP alternatives, except where elements of the former CMs were retained to mitigate the potential impacts of the proposed project in compliance with CEQA, NEPA, and other environmental regulatory permitting requirements. Many of these original BDCP conservation measures may, however, be implemented through the separate California EcoRestore program.

Alternatives 4A, 2D, and 5A include portions of the actions originally proposed under CM3, CM4, CM6, CM7, CM8, CM9, CM10, CM11, CM12, CM15, and CM16. As preserved within Alternatives 4A, 2D, and 5A, however, these activities are no longer styled "conservation measures." The reason for not using this familiar term was to avoid creating confusion regarding the rationale for retaining these activities within the non-HCP alternatives. The term "conservation measure" is often used in the context of HCPs under Section 10(a)(2) of the ESA[256] and NCCPs under the NCCPA.[257] The repackaged and limited elements of the original BDCP CMs are instead referred to as Environmental

[254] 16 U.S.C. § 1536.

[255] Cal. Fish & Game Code, § 2081.

[256] 16 U.S.C. § 1539.

[257] See California Fish and Game Code, §§ 2805[h], 2820[a][4][A], and 2820[b][9].

Commitments. These Environmental Commitments are actions primarily intended to satisfy CEQA, CESA Section 2081, and ESA Section 7. To minimize confusion, they were numbered in the RDEIR/SDEIS and Final EIR/EIS to track the parallel BDCP Conservation Measures: Environmental Commitments 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, and 16, as summarized in Tables 3-8, 3-9, 3-10, and 3-11 in Chapter 3, *Description of Alternatives*. These commitments consist primarily of habitat restoration, protection, enhancement, and management activities necessary to mitigate adverse effects from construction of the proposed water conveyance facilities, along with species-specific resource restoration and protection principles to ensure that implementation of these commitments would achieve the intended mitigation of impacts. Where impact statements or mitigation measures from the Draft EIR/EIS referred to conservation measures, these statements were changed in the RDEIR/SDEIS and Final EIR/EIS analysis for Alternatives 4A, 2D, and 5A to refer instead to the parallel Environmental Commitments. Additionally, pertinent elements included as AMMs and the proposed Adaptive Management and Monitoring Program would be implemented as applicable to the activities proposed under Alternatives 4A, 2D, and 5A. These, too, would serve a mitigation function under CEQA. All of these components would function as *de facto* CEQA and NEPA mitigation measures for the construction and operations-related impacts of Alternatives 4A, 2D, and 5A.

As part of CEQA environmental review procedures, Public Resources Code Section 21081.6 requires a public agency in approving a project for which mitigation measures have been proposed to adopt a mitigation monitoring and reporting program as a mechanism for ensuring compliance with all adopted mitigation measures during the implementation of the project. As stated in Public Resources Code Section 21081.6 (a)(1):

> The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes which have been required or incorporated into the project at the request of a responsible agency or a public agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead agency or a responsible agency, prepare and submit a proposed reporting or monitoring program.

Consistent with the procedure contemplated by CEQA, DWR will adopt the Mitigation Monitoring and Reporting Program (MMRP) at the time it takes action on the project or on one of the alternatives addressed in the Final EIR/EIS. Although neither Public Resource Code Section 21081.6[a] nor State CEQA Guidelines Section 15097, which adds details to the statutory MMRP requirement, expressly requires that MMRPs include anything other than formal adopted mitigation measures, DWR will include in the MMRP for this project all of the mitigation measures formulated in EIR/EIS, project features identified as Environmental Commitments, and AMMs in order to provide to the public, through a transparent and legally enforceable mechanism, assurances that all such mitigation measures, Environmental Commitments, and AMMs will be fully carried out.

Mitigation measures are described in detail in specific resources chapters of the Final EIR/EIS. For responses related to the adequacy of water quality mitigation measure please see Master Response 14. *Water Quality*.

Master Response 23: Other Stressors

This master response is intended to inform the reader of the many stressors other than the State Water Project [SWP] and Central Valley Project [CVP] that are contributing to the decline of the Delta. The master response provides a brief history of the Delta, and discusses non-SWP/CVP water diversions, nonnative species, predation, Delta salinity, water quality and contaminants, sediment supply, physical alterations to the Delta, land subsidence, pelagic organism decline, methylmercury and selenium, invasive aquatic vegetation, low dissolved oxygen (DO) levels and illegal harvest.

Please also see the Biological Assessment which discusses the current status of the listed species and the existing factors that affect the listed species populations.

Sacramento-San Joaquin Delta and the Bay Delta Conservation Plan/California WaterFix

While reverse flows related to SWP/CVP pumping and south Delta entrainment can affect species survival and distribution, there are a myriad of other environmental stressors affecting the Delta (e.g. nonnative species, upstream pollution, predation, water quality concerns). The lead agencies recognize that while the relative contribution and impact of each individual stressor towards the decline of species populations is somewhat uncertain, the combination and interaction (both additive and synergistically) of these stressors have likely played a role. The lead agencies also recognize the importance of collaborative science among resources agencies to support the development of research actions to address data gaps and improve our understanding of the Delta ecosystem (See Chapter 3, *Description of Alternatives*, Section 3.6.4.4, for a description of the Collaborative Science and Adaptive Management Program).

The Sacramento-San Joaquin Delta (Delta or Bay Delta) is a region where two of California's largest rivers meet. Freshwater from the rivers mingles with saltwater from the Pacific Ocean, creating the West Coast's largest estuary. When first explored by the Spanish in the 1770s, the Delta was a vast marsh covered with tules and teeming with wildlife. Today the Delta is a highly engineered environment, composed of 57 leveed island tracts and 700 miles of sloughs and winding channels.

The watersheds for the Sacramento and San Joaquin Rivers and the Delta serve a number of competing uses. They provide water for much of California. They also provide rich and productive habitat for more than 500 species of fish and wildlife and support a number of endangered species. Railways, highways, and utilities crisscross the Delta, and ships traveling up and down deepwater channels to Sacramento and Stockton transport millions of tons of cargo to busy ports. The Rivers and the Delta also provide significant recreational opportunities.

Over decades, physical, biological and chemical alternations have occurred. Delta channels have been widened, straightened, deepened, connected, leveed, and gated. Rivers have been dammed and flows manipulated. Hydraulic mining has had lasting effects on sediment dynamics. Nonnative and invasive species have been introduced and become established. Agriculture, industry, and municipalities use the rivers and the Delta to discharge and remove runoff. Many of these changes have contributed to the Delta's decline as a natural estuary.

The proposed project is not intended solve all of these problems or to address all of the factors that have contributed to the Delta's decline. The scope of the proposed project is located within the Delta with a specific purpose to address the conflict between the ecological needs of a range of at-risk Delta species and natural communities, while providing for more reliable water supplies for people, communities, agriculture, and industry. Other efforts, particularly the Delta Plan, are focused on the broader interests and issues currently facing the Delta region as a whole. The following paragraphs provide a brief overview of some of the other stressors facing the Delta.

Other Stressors

Non-SWP/CVP Water Diversions

Within the Plan Area, approximately 2,589 non-SWP/CVP water diversions have been put in place (Figure 3.4-35 in BDCP Chapter 3, *Conservation Strategy*). The majority of those structures divert water to agricultural fields between April and August, depending on the crop type. The timing of these diversions at least partially overlaps with the periods in which several listed species are present in the Delta (Hallock and Van Woert 1959). More than 95% of these nonproject diversions have not been screened to reduce fish entrainment (Herren and Kawasaki 2001). Consequently, there is potential for significant entrainment of fish to occur at these facilities (Hallock and Van Woert 1959 in Moyle and White 2002).

The entrainment risk associated with unscreened diversions in the Central Valley has been recognized for many years (e.g., Hallock and Van Woert 1959). The few studies that have compared entrainment densities to ambient densities have found that covered fish species are entrained into these small diversions at densities much lower than they occur in the adjacent channels (Hanson 2001; Nobriga et al. 2004; Enos et al. 2007). In the mid-1990s, the U.S. Bureau of Reclamation's (Reclamation's) Anadromous Fish Screen Program was initiated to screen irrigation diversions, with primary funding provided through the Central Valley Project Improvement Act restoration fund, and augmented on occasion by other Reclamation and CALFED funds. Currently, Reclamation's Anadromous Fish Screen Program and the California Department of Fish and Wildlife's Fish Screen and Passage Program are operated jointly, with additional participation from the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Water Resources. These programs have thus far supported more than 30 projects addressing unscreened diversions throughout the Central Valley, with the majority of projects implemented on relatively large diversions along the mainstem Sacramento River.

For more information on nonproject diversions, please see BDCP Appendix 5.B, Section 5.B.6.4.3.1.

Nonnative Species

The Delta is one of the most invaded ecosystems in the world, the result of accidental and purposeful introductions of nonnative species that have been occurring over many decades (State Water Resources Control Board 2008). Nonnative species are known to have harmful effects on the Delta ecosystem and may directly and indirectly threaten native species by altering ecosystem functions and the food web and competing with or directly preying upon native species. Cohen and Carlton (1998) recognized 234 introduced species in the San Francisco Bay estuary and the Delta, of which 69% are invertebrates, 14% are fish and other vertebrates, 13% are plants, and 4% are protists.

The invasive overbite (*Potamocorbula amurensis*) and Asian clams (*Corbicula fluminea*) have contributed to changes in the foodweb supporting the Delta's fish species. High rates of clam grazing reduce the abundance and species composition of the phytoplankton that supply food for the invertebrate prey of many of the Delta's fish species (Alpine and Cloern 1992; Jassby et al. 2002). Reductions in calanoid copepods that provide food for delta smelt (Bennett 2005) have been related to declines in phytoplankton and also to direct feeding by clams on copepod naupalii (Kimmerer et al. 1994; Kimmerer and Orsi 1996; Orsi and Mecum 1996; Mueller-Solger et al. 2002). The clams also have become a major portion of the diets of consumers that feed at or near the bottom, including several species of diving birds and bottom-feeding fishes (Nichols et al. 1990). While this has provided a new food resource, it has also had adverse effects on these species because the clams concentrate selenium, a toxic substance.

Refer to BDCP Chapter 3, *Conservation Strategy*, Section 3.4.20, BDCP Appendix 5.F, *Biological Stressors on Covered Fish*, and Final EIR/EIS Appendix 1A, *Primer on California Water Delivery Systems and the Delta*, for more information.

Predation

Predation rates have been identified as a stressor for covered fish species, especially juvenile Chinook salmon (Good et al. 2005; Moyle 2002; National Marine Fisheries Service 2009), steelhead (Clark et al. 2009; National Marine Fisheries Service 2009), and delta smelt (Baxter et al. 2008). Predator-prey dynamics are influenced by many interacting factors that directly and indirectly influence prey encounter and capture probabilities (Mather 1998; Nobriga and Feyrer 2007; Lindley and Mohr 2003).

Predatory fish species of particular concern in the Delta are striped bass (*Morone saxatilis*), largemouth bass (*Micropterus salmoides*), and Sacramento pikeminnow (*Ptychocheilus grandis*). Nobriga and Feyrer (2007) found numerous invertebrate and fish taxa in the diets of these common species. Many predatory fish species, such as striped bass and largemouth bass, are nonnative, although the Sacramento pikeminnow is a native species. Habitat type can affect opportunities for encounter and capture of fish species of concern by predators. In open water habitats, striped bass are the most likely primary predator of juvenile and adult delta smelt. Other species, such as largemouth bass, are ambush predators that remain close to cover such as submerged structures or aquatic vegetation.

For more information on fish predation in the Delta, please see Conservation Measure and Environmental Commitment 15 in the Final EIR/EIS for potential actions to reduce populations of predatory fish at locations of high predation risk. Also, see BDCP Appendix 5.F, Section 5.F.1.2, for more information on fish predation.

Delta Salinity

Salinity is a critical component of the Delta, having broad impacts on the quality of water in the Delta available for drinking, agriculture, and biological resources use. Due to physiological constraints and life history characteristics, many aquatic species have specific salinity requirements, which can affect their abundance and distribution in the Delta. The primary source of salinity in the Delta is seawater intrusion from the west (CALFED Bay-Delta Program 2000), which occurs at greater magnitudes when Delta outflow to San Francisco Bay is low. Salinity also is elevated in the San Joaquin River inflows as a result of irrigated agricultural drainage on southern San Joaquin Valley

soils of marine origin that are naturally high in salts, and from salt in Delta waters that are used for irrigation and returned back to the Delta. In addition, municipal and industrial discharges can also affect Delta salinity. From a broad viewpoint, salinity is determined as interplay between the amount of fresh water entering the Delta from the major tributaries (e.g., Sacramento and San Joaquin Rivers) and seawater from San Francisco Bay. However, salinity concentrations are not uniformly distributed throughout the Delta because of the complex interactions between tidal and freshwater inputs that are subject to spatial and temporal variability. During the late winter and spring months of seasonally elevated runoff and flows, and in particular during wet years with high levels of runoff from interior California, the elevated freshwater flows limit the extent of seawater intrusion into the Delta from the Bay. During low-flow summer and fall months, and dry water-year types with low levels of runoff, the lower freshwater flows result in greater amounts of seawater intrusion. Maximum salinity intrusions into the Delta from the Bay are greatest during low-precipitation years (e.g., drought years).

See Appendix 11A, *Covered Fish Species Descriptions*, of the Final EIR/EIS for a discussion on life stage salinity requirements for various species analyzed in the EIR/EIS. Please also see Chapter 6 of the California WaterFix Biological Assessment (BA) and Section 4 of the California WaterFix 2081(b) Incidental Take Application for a brief discussion on the importance of salinity habitat for listed species such as Delta smelt and longfin smelt.

Water Quality and Contaminants

Because the Delta is a source of drinking water for more than 20 million Californians, the quality of this water is very important. Cycling of nutrients, carbon, and other organic and inorganic materials are some of the major chemical processes driving the ecological conditions of the Delta. Water quality contaminants—organic, inorganic, and biological pathogens—are found in many forms and have the ability to affect the ecosystem in many ways and at different life stages of individual species. Water quality characteristics and the presence of contaminants in the environment are determined by both natural conditions and land use. The primary land uses affecting contaminants in the Delta include historical mining operations in the mountains drained by Delta tributaries, agriculture in the Delta and tributaries, discharges related primarily to rural human habitation (wastewater), and discharges related to urban development (stormwater runoff, municipal wastewater, industrial wastewater).

Contaminants have been identified as adverse stressors in the Delta ecosystem and have been associated with pelagic organism decline (Baxter et al. 2010; Glibert 2010; Glibert et al. 2011). Some of these contaminants are contaminants that have been introduced to the ecosystem, and others are naturally occurring constituents in the Delta that have been mobilized and/or concentrated by anthropogenic activities. Although contaminants in water can be directly lethal to biota at very high concentrations, contaminants usually occur at concentrations much below lethal levels, enter the food chain at lower trophic levels, and can become more concentrated higher up in the food chain. Sublethal levels in fish result in various effects, including impaired growth and reproduction, and increase in the organism's susceptibility to disease (Werner et al. 2008).

The Final EIR/EIS includes several environmental commitments to address potential increases in contaminant discharge as result of implementing the proposed project, including Develop and Implement Stormwater Pollution Prevention Plans; Develop and Implement Hazardous Materials Management Plans; and Develop and Implement Spill Prevention, Containment, and Countermeasure Plans. Refer to the Final EIR/EIS, Appendix 3B, *Environmental Commitments, AMMs,*

and CMs, for more information. In addition, see BDCP, Appendix 5.D, *Contaminants*, for a discussion on contaminants in the Plan Area, and Chapters 5 and 6 in the California WaterFix BA for some background information on contaminants that may affect listed species.

Sediment Supply

Suspended sediments are a natural component of the Delta and are not inherently toxic, but have direct as well as indirect impacts on the Delta ecology. The Delta was created as a result of sediment deposition from the Sacramento and San Joaquin Rivers entering the ocean. Many of the species in the Delta have adapted to these highly turbid conditions. Over the last three decades, water in the Delta has become less turbid due to a variety of physical and biological changes. The resulting decreased turbidity alters the natural system in the Delta by increasing light penetration, altering primary production, and affecting predator-prey interactions through increased water transparency and susceptibility to predation pressure (CALFED 2008; U.S. Fish and Wildlife Service 2008).

Change in the timing and volume of flow patterns due to climate change has the potential to alter sediment supply and the timing of the supply, as spring snowmelt sediment concentrations are lower than first flush events at the same flow rates (Schoellhamer et al. 2007). The timing of the bulk of sediment deposition may affect resuspension during the seasonal period of high winds. Since newly deposited sediment is more easily resuspended, earlier deposition of sediment due to earlier snowmelt may result in less resuspension in the summer and a seasonal increase in water clarity (Ganju and Schoellhamer 2010).

For more information on sediments and sedimentation in the Plan Area, please see BDCP, Appendix 5.C, *Flow, Passage, Salinity, and Turbidity*, Attachment D.

Physical Alterations to the Delta

The Delta has undergone significant physical modifications over the past 150 years, including the reclamation of 700,000 acres of tidal marsh and adjoining floodplains, as well as significant changes in riverine and tidal hydrology, and water quality (Moyle et al. 2010). Habitats for Delta native fishes have changed dramatically as a result of upstream land use changes, tidal marsh reclamation, and channelization of rivers and tidal channels (Moyle et al. 2010). As a result, the estuary is now one of the most highly modified and controlled estuaries in the world, having lost much of its variability and complexity (Moyle et al. 2010). Today, over 1,100 miles of levees protect the 738,000 acres of Delta islands, tracts and population centers from flooding, as well as protecting a large portion of the State's water supply. These levees were built to prevent flooding and allow cultivation of the rich soil, while protecting towns and public infrastructure such as highways, railroads and pipelines. These levees were generally built to an agricultural standard and may be somewhat less stable than those constructed and maintained to protect urban areas.

Refer to Appendix 1A, *Primer on California Water Delivery Systems and the Delta*, and Appendix 6A, *BDCP/California WaterFix Coordination with Flood Management Requirements*, in the Final EIR/EIS for more information.

Land Subsidence

A large portion of the Delta lands is now more than 25 feet or more below sea level and below the level of the water in the surrounding channels. Land subsidence is a critical problem because the process puts additional stress on levees and renders the system of Delta levees unstable, creating a

greater likelihood of levee failure and subsequent flooding. In the event of a levee failure, land subsidence would result in greater saltwater intrusion into the Delta.

The project would have an environmental commitment, Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material, that relates to this stressor. Under this environmental commitment, material could be applied to reduce the localized effects of subsidence and contribute to subsidence reversal. Refer to the Final EIR/EIS Appendix 1A, P*rimer on California Water Delivery Systems and the Delta*, and Appendix 3B, *Environmental Commitments, CMs, and AMMs*, for more information.

Pelagic Organism Decline

The four primary pelagic (open water) fish of the upper Delta (delta smelt, longfin smelt, striped bass and threadfin shad) have shown substantial variability in their populations, with evidence of long-term declines for these species (Baxter et al. 2008). Concerns surrounding the decline focus on the fish species that rely on the pelagic zone for spawning, early life history, and perennial habitat. The apparent simultaneous declines of these four fish species occurred despite differences in their life histories and in how each species utilizes Delta habitats. These differences suggested one or more Delta-wide factors, including several of the ones described in this Mater Response, to be important in their declines (Baxter et al. 2008). Refer to the Final EIR/EIS Appendix 1A, *Primer on California Water Delivery Systems and the Delta*, and BDCP Chapter 5, *Effects Analysis*, for more information on the pelagic organism decline.

Methylmercury and Selenium

Mercury is present in sediments and soils throughout the Delta, having been deposited by tributaries and rivers that drain areas of former mining operations in the mountains. Mercury in an inorganic or elemental form tends to adhere to soils and has limited bioavailability. Mercury may be converted by bacteria to a different form, called methylmercury, which is much more bioavailable and toxic than inorganic forms, and has a strong tendency to bioaccumulate in organisms. The toxicity and tissue concentrations of methylmercury are amplified as it biomagnifies through the food chain.

Selenium is a naturally occurring micronutrient that can have significant ecological effects at elevated concentrations. Selenium is highly bioaccumulative and can cause chronic toxicity (especially impaired reproduction) in fish and aquatic birds (Presser and Luoma 2010; Ohlendorf 2003; San Francisco Bay Regional Water Quality Control Board 2009). Selenium has been identified as an important contaminant in the Delta, especially in the San Joaquin watershed where irrigation practices mobilize naturally occurring selenium from the soils. In the Delta watershed, selenium is most enriched in marine sedimentary rocks of the Coast Ranges on the western side of the San Joaquin Valley (Presser and Piper 1998). Irrigation of soils derived from the marine rocks leaches the selenium, and the subsequent practice to drain excess shallow groundwater from the root zone to protect crops can result in elevated concentrations of selenium in groundwater and receiving rivers (McCarthy and Grober 2001).

The Final EIR/EIS includes environmental commitments (Methylmercury and Selenium Management) to address potential increases in methylmercury and selenium as a result of habitat restoration under the proposed project. Refer to Final EIR/EIS, Chapter 3, *Description of*

*Alternative*s, for more information. In addition, see BDCP Appendix 5.D, *Contaminants*, for a discussion on contaminants in the Plan Area,

Invasive Aquatic Vegetation

Invasive Aquatic Vegetation (IAV) is a widespread problem in the Delta and has multiple adverse effects on the ecosystem. All tidal marsh channels in the Delta already contain IAV. Most IAV spread readily from fragments that can colonize and grow rapidly in shallow water. In the Delta, IAV reduces the amount and suitability of habitat for covered fish species through adverse effects on water quality and the food web and by physically obstructing covered fish species' access to habitat. Dense stands of IAV displace native aquatic plants and provide suitable habitat for nonnative fish species, which in turn displace native species through competition and predation. The two most abundant IAV species in the Delta are Brazilian waterweed (*Egeria densa*), commonly referred to as *Egeria*, and water hyacinth (*Eichhornia crassipes*).

The Final EIR/EIS includes an environmental commitment to fund the California Department of Boating and Waterways (DBW) programs for aquatic weed control. The lead agencies would fund these programs as way to compensate for potential losses of recreational opportunities as result of implementing the proposed project. The lead agencies' contribution to DBW's aquatic weed control would include enhancement funding for those areas with project impacts that are located outside DBW's risk assessment area.

Please refer to Appendix 3B, *Environmental Commitments, AMMs, and CMs*, in the Final EIR/EIS for more information. Also, see BDCP Appendix 5.F, *Biological Stressors on Covered Fish*, for more information on invasive species.

Low Dissolved Oxygen Levels

As much as 60% of the natural historical inflow to Central Valley watersheds and the Delta have been diverted for human uses. Depleted flows have contributed to higher water temperatures, lower DO levels, and decreased recruitment of gravel and large woody debris. Low DO levels have the potential to delay the migration of both juvenile and adult fish, and may result in greater stress on listed fish species. Please see BDCP Appendix 5.C, *Flow, Passage, Salinity, and Turbidity*, Section 5C.4.4.5, for more information on dissolved oxygen.

Illegal Harvest

Illegal harvest is thought to have substantial effects on sturgeon populations, particularly white sturgeon (Beamesderfer et al. 2007). Illegal harvest of juvenile and adult Chinook salmon and steelhead in the Delta and bays is also common (Laughlin 2007). Commercial and recreational harvest of winter-run Chinook salmon in the ocean and inland fisheries results in incidental, and potentially illegal, harvest of wild-origin Chinook salmon. The wild-origin Chinook are less able to withstand high harvest rates than hatchery-origin stocks. Refer to BDCP Chapter 3, *Conservation Strategy*, Sections 3.3.7.3 and 3.4.17, for more information on harvest impacts on fish species.

Master Response 24: Delta as Place

This master response discusses how the BDCP (Alternative 4) and the proposed project (Alternative 4A) meet the policy of the State of California, as set forth in the Delta Reform Act, to achieve the coequal goals for the Delta "in a manner that protects and enhances the unique cultural, recreational, and agricultural values of the California Delta as an evolving place" (California Public Resources Code Section 29702, subd. (a)). The master response also includes a background on Delta Reform Act and Delta Plan provisions regarding "Delta as Place", and a discussion on how the Final EIR/EIS adequately analyzes NEPA and CEQA resources that are related to "Delta as Place".

Delta Reform Act Provisions Regarding "Delta as Place"

The Delta Reform Act issues raised by the commenters represent important policy considerations for the Delta and the State of California as a whole. The Sacramento-San Joaquin Delta Reform Act of 2009 was enacted by the Legislature in 2009, Senate Bill No. 1 (SBX7 1 or the Act), as part of a landmark package of bills aimed at establishing new water policy for the State. The Delta Reform Act established in State policy the management of the Delta and Suisun March (together referred to as the "Delta" in the Act) in support of the coequal goals of water supply reliability and ecosystem restoration (Chapter 1, *Introduction*, Section 1.4.3, *Relationship to the Delta Reform Act and Delta Plan*). The Act provides that the coequal goals "shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place" (California Public Resources Code Section 29702, subd. (a)).

Under the Act, the coequal goals are described as "the basic goals for the state for the Delta" (California Public Resources Code Section 29702.) The proposed project strongly supports the Delta Reform Act's coequal goals by providing a more reliable water supply for California while reducing effects of the existing SWP and CVP water conveyance infrastructure on State and federally listed species, thereby improving the Delta ecosystem.

The Delta Reform Act contains numerous provisions and responsibilities that extend beyond the scope of the proposed project. Under the Act, the proposed project is not required to achieve all of the objectives of the Delta Reform Act. Rather, the Act assigns specific responsibility for ensuring the protection of the "Delta as place" to the Delta Stewardship Council (DSC) and the Delta Protection Commission (DPC) by requiring the DPC to "develop, for consideration and incorporation into the Delta Plan by the [Delta Stewardship] council, a proposal to protect, enhance and sustain the unique cultural, historical, recreational, agricultural and economic values of the Delta as an evolving place, in a manner consistent with the coequal goals" (California Water Code Section 85301, subd. (a); California Public Resources Code Section 29703.5, subd. (a)). The DPC's responsibilities included, among other things, the development, for possible inclusion in the DSC's Delta Plan, of a proposed plan "to establish State and federal designation of the Delta as a place of special significance, which may include application for a federal designation of the Delta as a National Heritage Area" (California Water Code Section 85301, subd. (b)(1)).

The DPC also is required to include in that same proposal "a regional economic plan to support increased investment in agriculture, recreation, tourism and other resilient land uses in the Delta" (California Water Code Section 85301 (b)(2)). To assist the DPC in preparing this proposal, the legislation required the Department of Parks and Recreation to prepare a proposal to expand the

network of State recreation areas within the Delta, and the Department of Food and Agriculture to develop a proposal to "establish market incentives and infrastructure to protect and enhance economic and public values of Delta agriculture" (California Water Code Section 85301, subds. (c)(1) and (2)). Additionally, the DPC was assigned the job of developing an economic sustainability plan for the Delta that specifically addressed the "continued socioeconomic sustainability of agriculture and its infrastructure and legacy communities in the Delta" and "ways to encourage recreational investment along the key river corridors, as appropriate" (California Public Resources Code Section 29759, subds. (a), (b)(2), and (b)(4)).

The Act further authorizes the DPC to review and provide comments and recommendations to the DSC on "any significant project or proposed project within the scope of the Delta Plan" (including "actions by state and federal agencies") that "may affect the unique cultural, recreational, and agricultural values within the primary and secondary zones" (California Public Resources Code Section 29773, subd. (a)). The Act gives the DPC the authority to recommend actions that may "avoid, reduce or mitigate impacts to the cultural, recreational and agricultural values of the Delta," and the DSC may adopt any recommendation it finds feasible and consistent with the Delta Plan's objectives (California Public Resources Code Section 29773, subd. (b)).

In addition, the legislation established in the California Natural Resources Agency the Sacramento-San Joaquin Delta Conservancy, which is required to act as "a primary State agency" to implement ecosystem restoration in the Delta and to support efforts that advance environmental protection "and the economic well-being of Delta residents." (Legislative Counsel's Digest to SBX7 1, Section1; California Public Resources Code Section 32322, subds. (a) and (b)). Among other things, the Delta Conservancy is tasked with supporting the protection and preservation of "Delta agriculture and working landscapes," providing "increased opportunities for tourism and recreation," promoting "Delta legacy communities and economic vitality in the Delta in coordination with the Delta Protection Commission," and protecting, conserving and restoring "the region's physical, agricultural, cultural, historical and living resources. (California Public Resources Code Section 32301, subd. (i)(2)–(4) and (9)).

As can be seen from these provisions, the Delta Reform Act does not require the California Department of Water Resources (DWR), the BDCP, or the proposed project, the California WaterFix, to achieve or further the state's objectives with respect to "Delta as Place." The project objectives and project purpose and need for the proposed project are described in the Final EIR/EIS Executive Summary, Sections ES.1.1.1.2 and ES.1.1.1.3. Section ES.1.1.1.2, *Project Objectives*, states that "DWR's fundamental purpose in proposing the proposed project is to make physical and operational improvements to the SWP/CVP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations." The section includes a list of eight project objectives, all of which involve ecosystem improvement and water supply reliability. Section ES.1.1.1.2, *Project Need*, acknowledges the importance of the Delta's resources, including agricultural and recreational uses, and identifies the three key reasons improvements to the water supply conveyance system are needed: "to respond to increased demands upon and risks to water supply reliability, water quality, and the aquatic ecosystem."

As discussed in the following section, the Final EIR/EIS demonstrates the proposed project's compatibility with the Delta Plan with respect to "Delta as Place," and that it is consistent with Delta Plan objectives for achieving the coequal goals in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

The Delta Plan Provisions Regarding "Delta as Place"

The Delta Reform Act requires the DSC to develop a comprehensive plan to further the coequal goals of more reliable water supplies and ecosystem restoration for the Delta, called the "Delta Plan." In a process separate from CEQA, before DWR can initiate implementation of the proposed project, Alternative 4A (California WaterFix), DWR must submit a written certification to the DSC that the project is consistent with the applicable policies in the Delta Plan[258] (California Water Code Section 85225; 23 California Code of Regulations [CCR] Section 5002, subd.(b).) In addition, under the Delta Plan regulations, where consistency with one or more individual policies in the Delta Plan is infeasible, DWR may certify that the California WaterFix is, on the whole, consistent with the coequal goals themselves. (23 CCR Section 5002, subd. (b)(1).)

The council's regulatory definitions in the Delta Plan include the following definition with respect to Delta as Place:

> "Achieving the coequal goals in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place" means accepting that change, including change associated with achieving the coequal goals, will not cease, but that the fundamental characteristics and values that contribute to the Delta's special qualities and that distinguish it from other places can be preserved and enhanced while accommodating these changes. In this regard, the following are core strategies for protecting and enhancing the unique values that distinguish the Delta and make it a special region:
>
> (A) Designate the Delta as a special place worthy of national and state attention;
>
> (B) Plan to protect the Delta's lands and communities;
>
> (C) Maintain Delta agriculture as a primary land use, a food source, a key economic sector, and a way of life;
>
> (D) Encourage recreation and tourism that allow visitors to enjoy and appreciate the Delta and that contribute to its economy;
>
> (E) Sustain a vital Delta economy that includes a mix of agriculture, tourism, recreation, related industries and business, and vital components of state and regional infrastructure; and
>
> (F) Reduce flood and other risks to people, property, and other interests in the Delta.
>
> (23 CCR Section 5001, subd. (h)(3); Delta Plan, Ch. 5 at pp. 164, 192.)

None of the various tasks identified in this definition are assigned to DWR. As discussed above, the legislation assigns specific responsibility for formulating recommendations to ensuring protection of the "Delta as an Evolving Place" to the DPC and Sacramento-San Joaquin Delta Conservancy.

In addition, in Chapter 5 of the Delta Plan, the Council recognizes that Delta as Place does not mean maintaining the status quo:

> The Delta's uniqueness, however, does not exempt it from change. Increasing pressures of growing populations, shifting commodity markets, climate changes, and rising sea level will require new ways of adaptation for this region. Some changes are driven by the Delta's location at the center of California's water systems and are required to meet statewide goals of restoring the Delta's ecosystem and improving water supply reliability. Other changes may be caused by floods, earthquakes, or other events that threaten the Delta's levees and islands. Some changes can be managed by policies that shape how the Delta's traditions are honored and its history preserved;

[258] In contrast, if DWR approves the BDCP and it meets the requirements of Water Code Section 85320, the DSC must incorporate the BDCP into the Delta Plan.

> guide new development; enhance recreation and tourism; and encourage agriculture, business expansion, and economic development.
>
> Protecting the Delta as an evolving place means accepting that change will not stop, but that the fundamental characteristics and values that contribute to the Delta's special qualities and that distinguishes it from other places can be preserved and enhanced while accommodating these changes (Delta Vision Blue Ribbon Task Force 2008). It does not mean that the Delta should be a fortress, a preserve, or a museum.
>
> (Delta Plan, Ch. 5 at p. 167.)

The Delta Plan includes two specific policies with respect to the Delta as Place, DP P1, *Locate New Urban Development Wisely*, and DP P2, *Respect Local Land Use When Siting Water or Flood Facilities or Restoring Habitats*. (Delta Plan, Ch. 5 at pp. 194-195.) In addition, it includes 19 recommendations. (23 CCR Section 5001, subd. [h][3]; Delta Plan, Ch. 5 at pp. 164, 192.) Together, the policies and recommendations are designed to achieve the core strategies for protecting and enhancing the unique values that distinguish the Delta and make it a special region set forth in the Delta Plan and associated regulations.

Please see Appendix 3J, *Alternative 4A (Proposed Project) Compliance with the 2009 Delta Reform Act*, provides a discussion of compliance with the certification of consistency process that would apply to the non-HCP alternatives, California WaterFix (Alternative 4A) and Alternatives 2D and 5A. In addition, please refer to Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*, which explains that the BDCP alternatives would follow a different path to Delta Reform Act compliance. The consistency certification process would not apply to these BDCP alternatives because they were developed to fulfill the requirements of a habitat conservation plan/natural community conservation plan as specified in Water Code Sections 85320 *et seq.*

The Final EIR/EIS Includes Adequate Analysis of the Various Resource Areas Implicated in Comments on the Proposed Project's Impacts on "Delta as Place"

Although the Delta Reform Act assigns specific responsibility for addressing Delta as Place values to the DSC, DPC, and the Sacramento-San Joaquin Delta Conservancy, the Final EIR/EIS for the proposed project includes consideration of these issues. As a consequence of the need to comply with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), the Chapter 13, *Land Use*, discusses the policy objectives set forth in the Delta Reform Act. To the extent that the alternatives could cause significant impacts on the physical environment, such environmental impacts are analyzed and discussed in the Final EIR/EIS and, where feasible, mitigation measures and environmental commitments are recommended (see Appendix 3B, *Environmental Commitments, AMMs, and CMs*, for further description of these commitments).

The practical effect of many of these mitigation measures and environmental commitments would be to protect resources in the Delta, including those of concern to commenters. The effects are addressed in Chapter 14, *Agricultural Resources*, Chapter 18, *Cultural Resources*, Chapter 15, *Recreation*, Chapter 16, *Socioeconomics*, and Chapter 17, *Aesthetics and Visual Resources*. However, to the extent commenters suggest the EIR/EIS must also include an analysis of the "Delta as Place," there is no such requirement beyond the resources analysis required in the Final EIR/EIS (e.g., *Preserve Poway v. City of Poway* (2016) 245 Cal.App.4th 560, 581 [holding that CEQA does not require an analysis of community character to the extent that it includes the psychological and social

impacts of a project on the community because those are not physical impacts on the environment]). In addition, under CEQA, social or economic effects alone are not treated as significant effects; thus, a discussion of socioeconomic effects is not required except where they would result in reasonably foreseeable adverse physical changes to the environment.[259] Similarly, under NEPA, where "economic and social and natural or physical environmental effects are interrelated, then the [EIS] will discuss all of these effects on the human environment."[260]

Under the legal framework of CEQA and NEPA, the Final EIR/EIS includes extensive analysis of the impacts of the various project alternatives addressed in the document where such impacts are environmental in nature. Accordingly, the environmental analysis covers 26 resource topics within the Plan Area, including resource topics related to the issues raised by commenters regarding cultural, recreational, and agricultural values of the Delta. These analyses have been prepared to identify any significant impacts that the project alternatives would have on these resource areas, and to identify potential mitigation measures and environmental commitments. In many instances, as will be discussed below, the recommended mitigation measures would have the practical effect of protecting resources. Likewise, the conservation measures themselves, in many instances, serve to not only protect but to improve resources in the Delta.

The following presents a discussion of how the Final EIR/EIR addresses three issues under the umbrella of "Delta as Place", cultural, recreational and agricultural resources.

Cultural Resources

Chapter 18, *Cultural Resources*, provides an explanation of the methods used to identify the cultural resources in the Plan Area, a description of the environmental setting and regulatory framework governing those resources, and an analysis of effects of the alternatives on those resources and mitigation measures to reduce or eliminate such effects. Chapter 18 defines "cultural resources" as prehistoric and historic archaeological resources, architectural/built-environment resources, places important to Native Americans and other ethnic groups, and human remains.

To identify cultural resources in the Plan Area, the Final EIR/EIS employed standard methods such as record searches, field surveys, and site visits (Chapter 18, Section 18.1.1). Appendix 18A, *Archaeological Resources Sensitivity Assessment*, considers the relationship of sensitive soil formations and identified sites against typical conveyance footprints to demonstrate the overall sensitivity for previously unidentified archaeological resources of the area where conveyance facilities would be constructed. Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, supplies a lengthy listing and descriptions of identified and analyzed resources potentially affected by the alternatives, such as particular houses, vineyards, ranches, schools, barns, businesses, historic districts, industrial complexes, bridges, and islands.

The cultural resources analysis in Chapter 18 identifies significant or adverse impacts that would result from each alternative. For example, for Alternative 4A, construction of the water conveyance facilities may require removal or alteration of certain historic built-environment resources, which is considered a significant effect. Where feasible, mitigation measures to reduce or eliminate the impacts are recommended. For example, Mitigation Measure CUL-5 calls for consultation with an architectural historian or other relevant parties to develop a plan to protect and monitor historic

[259] State CEQA Guidelines Section 15064, subd. (f), 15131.

[260] 40 Code of Federal Regulations Section 1508.14.

resources that, though in close proximity to project facilities, need not be removed but may be subject to direct effects such as vibration or inadvertent damage. Although the Final EIR/EIS acknowledges that such mitigation cannot guarantee that all impacts would be entirely avoided, such measures would have the practical effect of supporting the Delta Reform Act policy of protecting unique cultural resources in the Delta.

In addition to addressing cultural resources, the Final EIR/EIS also includes numerous chapters that similarly analyze the extent to which project alternatives could affect the quality of life in the Delta. Each resource chapter includes a regulatory setting section describing the laws, regulations and policies that apply to and protect the resource being evaluated. Where adverse or significant impacts are identified, the Final EIR/EIS identifies potential mitigation measures and environmental commitments to reduce or minimize the impacts and thereby protect to the extent feasible resources that may be affected by the project alternatives. Some of these numerous chapters are discussed below.

Chapter 16, *Socioeconomics*, for example, analyzes the alternatives' potential socioeconomic effects in the Delta region, including effects on population, housing, employment, social structure, and community character and cohesion. The analysis is supplemented by Appendix 16B, *Community Characterization Photographs*, which provides representative photos of community features within the five Delta counties, such as historic structures, residential housing styles, and river features including docks and bridges.

Section 16.1.1.1 of Chapter 16 provides an overview of the Delta community. As this section notes, the unique landscape, heritage, and recreational opportunities found in the Delta combine to create a distinctive environment that supports its own social and cultural character. The demographic composition of the Delta varies greatly, and includes small towns and dispersed rural residences across the majority of the interior of the Delta, and large urban areas on the periphery. The economy of the interior of the Delta generally revolves around agriculture and tourism.

Section 16.3.1 of Chapter 16 describes the quantitative and qualitative analysis used to identify impacts on the Delta community, including population, housing, and social and community effects, and the recommended mitigation for those impacts deemed adverse or significant. Social and community impacts, for example, were qualitatively evaluated. The analysis considered effects on established communities whose character could be most directly influenced by the proposed project's activities, based on total population, economic composition, proximity to proposed features, and the nature of activities. As this section explains, "Examples of Delta community characteristics include location, small town feeling or rural setting, proximity to recreational opportunities, and cultural and natural heritage, all of which contribute to a sense of place."

Under the analysis for Alternative 4A, the Final EIR/EIS concludes that construction of the water conveyance facilities could affect community character in the Delta region during the construction time period. Because the impacts are social in nature, rather than physical, they are not considered impacts under CEQA (Chapter 16, Section 16.3.4.2). To the extent that changes to community character would lead to physical impacts involving population growth, such impacts are described under Impact ECON-2 in Chapter 16 and in Chapter 30, *Growth Inducement and Other Indirect Effects*. Chapter 16, Section 16.3.4.2, explains that notable decreases in population or employment, even if limited to specific areas, sectors, or the vacancy of individual buildings, could result in the alteration of community character stemming from a lack of maintenance, upkeep and general investment. However, implementation of mitigation measures and environmental commitments

related to noise, visual effects, transportation, agriculture, and recreation would reduce the extent of these effects.

The following other resource chapters in the Final EIR/EIS also address various aspects of the cultural attributes and quality of life in the Delta.

- Chapter 13, *Land Use*, describes existing land uses and planned future land uses that could be affected by construction and operation of the alternatives in the study area. This discussion summarizes the goals, objectives and policies from the general plans and other regulations and plans of agencies with jurisdiction over land uses in the Delta, Suisun Marsh, and Yolo Bypass upstream of the statutory Delta. Potential temporary, permanent, direct, and indirect land use impacts associated with each alternative are assessed based on the compatibility of constructing and operating the alternatives with the existing and planned land uses in the study area (see Section 13.3.2 for a more detailed description of the determination of effects for this analysis, and subsequent sections of Chapter 13 for a description of the impacts for each alternative).
- Chapter 17, *Aesthetics and Visual Resources*, analyzes how construction and operation of the proposed project's features may impact aesthetics and visual resources. For example, light or glare from construction of infrastructure elements of the project could affect daytime or nighttime public views in the area. Additionally, Appendix 17C, *Scenic Quality Rating Summary*, applies rating criteria (landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications) to physical features of the project components such as intakes, canals, and fish screens. Appendix 17E, *Permanent Features*, is a chart showing how permanent features remaining after construction of the conveyance facilities would result in adverse visual effects on foreground views for recreationists, roadway travelers, residences, and businesses.
- Chapter 19, *Transportation*, analyzes the effects of the alternatives on transportation systems in the Plan Area. Additionally, Appendix 19A, *BDCP Construction Traffic Impact Analysis*, is a technical report that documents the potential traffic impacts associated with construction-related activities, employees, and equipment, and recommends mitigation measures to avoid or reduce potential impacts.
- Chapter 20, *Public Services and Utilities*, analyzes how public services and utilities could be affected by construction, operations, and maintenance of the action alternatives. Public services include law enforcement, fire protection and emergency response, hospitals and medical services facilities, public schools, and libraries, while utilities include solid waste management, water supply and treatment, wastewater treatment, electricity and natural gas, and communications.
- Chapter 22, *Air Quality and Greenhouse Gases*, assesses local and regional air quality impacts associated with criteria pollutants and toxic air contaminants generated by construction and operation of the alternatives. Chapter 22 also evaluates the impact of the alternatives on climate change (namely, the project's contribution to elevated greenhouse gas concentrations in the atmosphere).
- Chapter 23, *Noise*, describes the existing ambient noise conditions in the Plan Area, analyzes potential impacts related to the construction and operation of the conveyance facilities and conservation measures, and identifies mitigation measures and environmental commitments to mitigate significant impacts.

- Chapter 25, *Public Health*, focuses on human health and safety issues that could be affected by implementation of the alternatives, particularly with respect to water quality, water-borne illness, the habitat for disease-carrying vectors, and other issues.
- Chapter 27, *Paleontological Resources*, addresses the potential effects of the alternatives on paleontological resources (typically called fossils, these are remains, traces, imprints, or life history artifacts such as nests of prehistoric plants and animals found in ancient sediments) in the Delta.
- Chapter 28, *Environmental Justice*, analyzes the potential for the alternatives to cause disproportionately high and adverse human health or environmental effects on minority and low-income populations.
- Chapter 30, *Growth Inducement and Other Indirect Effects*, addresses the direct and indirect growth inducement potential of the alternatives. As Chapter 30 explains, assessing growth inducement potential involves determining whether project implementation would directly or indirectly support economic expansion, population growth, or residential construction, and if so, determining the magnitude and nature of the potential environmental effects of that growth.

It is important to note that the needs and concerns of the Delta community, along with statewide input, helped to shape the development of the alternatives for the Final EIR/EIS, including the preferred alternative 4A (California WaterFix). Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, explains that DWR's goal in formulating alternatives was to identify an appropriate balance between the coequal goals of ecosystem restoration and water supply reliability, as well as minimizing physical impacts in the Delta (Appendix 3A, Section 3A.10.6).

Appendix 3A refers readers to an August 2013 document titled, *BDCP Refinements Respond to Community and Statewide Needs*. This document describes and graphically illustrates proposed refinements to the alternatives that have been developed to address comments and concerns gathered throughout the 7-year BDCP planning process. For example, in response to concern from within the Delta and elsewhere, DWR decided to develop an alternative approach to water conveyance using underground tunnels, rather than a surface canal. Tunnel realignment recommendations subsequently were made based on local input and ongoing evaluation to improve efficiency, reduce impacts on local Delta communities, and minimize environmental impacts. Such realignment plans call for, among other things, the use of more public lands, fewer impacts on bridges and roads in certain areas, and additional mitigation such as a 1,200-foot noise buffer near the town of Hood. Public concern similarly led DWR to propose three, rather than five, intake facilities in the North Delta, thereby substantially reducing the project's footprint within the Delta (Appendix 3A, Section 3A.10.6). Additional changes have been proposed, include shrinking intermediate forebay surface acreage, shortening the proposed tunnel length, shifting construction activities associated with intermediate forebay and reusable tunnel material area away from north Delta communities, and reducing the amount of private land subject to permanent and temporary construction impacts of water conveyance infrastructure. (For further information, see *BDCP Refinements Respond to Community and Statewide Needs* at http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/BDCP_Refinements_Respond_to_Community_and_Statewide_Needs_brochure_8-15-13.sflb.ashx.)

The environmental analysis for the proposed project has taken into account and attempted to protect, to the extent feasible, the unique cultural resources and community character of the Delta.

Significant refinements to the alternatives have been incorporated to minimize impacts on the Delta region, based on input from local communities. Importantly, the Final EIR/EIS contains numerous chapters that together help to address the proposed project's impacts on the cultural attributes and quality of life in the Delta. As described above, these chapters evaluate the impacts of the alternatives on the various resources, and recommend mitigation measures and provide environmental commitments to protect these important resources to the extent feasible.

Recreational Resources

Chapter 15, *Recreation*, describes the physical environment, recreation facilities, and associated recreation activities and opportunities that could be affected by implementing the alternatives in the Plan Area. The Delta, Yolo Bypass, and Suisun Marsh contain numerous parks, extensive public lands, and many interconnected rivers, sloughs, and other waterways that offer diverse recreation opportunities. As the Final EIR/EIS explains, the impacts of construction activities on certain aspects of recreation in the Delta are significant.

The Final EIR/EIS identifies feasible mitigation measures that will reduce such impacts, although, as Chapter 15 explains, some of the impacts will remain significant and unavoidable (see, for example, Section 15.3.4.2 discussion of Alternative 4A, Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities). The Final EIR/EIS concludes that other impacts on recreation would be less than significant. (See, for example, the discussion in Section 15.3.4.2 of Impact REC-4 regarding long-term reductions in recreational fishing opportunities as a result of constructing the proposed water conveyance facilities.)

As noted above, the recreational resources analysis provides recommended mitigation measures to reduce the impacts of the alternatives on recreational opportunities in the Delta. In many instances, these measures are consistent with the state's policy goal, set forth in the Delta Reform Act, of protecting the recreational resources of the Delta. For example, Section 15.3.4.2 of Chapter 15 provides the following conclusion for Impact REC-2, "Construction of the Alternative 4A intakes and related water conveyance facilities would result in permanent and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would occur year-round. The mitigation measures described below, in combination with environmental commitments, would reduce some construction-related impacts by compensating for effects on wildlife habitat and species; minimizing the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implementing noise reduction and complaint tracking measures."

In addition to the Final EIR/EIS environmental review process, a number of plans, policies, and programs exist to enhance recreational opportunities within the Delta. The Final EIR/EIS describes these efforts in Appendix 15B, *Delta Recreation*. This appendix summarizes by county the current recreation priorities that have been identified in planning and other documents within the primary zone of the Delta. The appendix advocates specific regional recommendations and envisioned outcomes for future recreation planning and development in and surrounding the Delta.

Additionally, Appendix 3B, *Environmental Commitments, AMMs, and CMs*, describes the environmental commitments and best management practices that the project proponents have incorporated into the action alternatives in order to avoid or minimize potential adverse or

significant effects from the project components. Table 3B-1 summarizes all of the environmental commitments incorporated into the alternatives. Some of these environmental commitments are designed to address impacts on recreational resources. Among these environmental commitments are fugitive dust control measures, development and operation of erosion and sediment control plans, and development and implementation of fish rescue and salvage plans.

As this discussion demonstrates, the Final EIR/EIS identifies the impacts that the alternatives would have on recreational resources in the Delta and makes recommendations for mitigation measures to reduce or eliminate the impacts, thereby serving to protect such resources where feasible.

Agricultural Resources

Chapter 14, *Agricultural Resources*, explains that under both California and federal law and policy, farmland is recognized as a unique resource and that conversion of farmland to other uses may have adverse economic and environmental impacts. Farmland is unique under CEQA and NEPA in that it represents both a natural resource and an economic resource. In general, CEQA and NEPA do not require mitigation for purely economic impacts unless they lead to reasonably foreseeable secondary environmental impacts.

California Public Resources Code Section 21060.1, subdivision (a), defines agricultural land as "Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, as defined by the United States Department of Agriculture land inventory and monitoring criteria as modified for California." These categories, and sometimes Farmland of Local Importance, taken together, are commonly described as "Important Farmland." For purposes of the Final EIR/EIS, Important Farmland is defined as land designated under any of these four categories, and refers to land located in areas that can continue to be farmed economically and on a sustainable basis for an indefinite period of time absent a conversion to a different use under the proposed project (Chapter 14, Section 14.3.2, *Determination of Effects*).

As Chapter 14, Section 14.3.2, *Determination of Effects*, explains, the criteria used for determining the significance of an effect on agricultural resources are based on the factors described above, inquiries found in Appendix G of the State CEQA Guidelines (Environmental Checklist), and professional standards and practices. Effects on agricultural resources may be considered adverse for purposes of NEPA and significant for purposes of CEQA if an alternative would result in any one of the following conditions:

1. Convert to nonagricultural use a substantial amount of Prime Farmland, Unique Farmland, Farmland of statewide Importance, or Farmland of Local Importance (collectively "Important Farmland"), as shown on the most recent California Department of Conservation Important Farmland maps for each of the affected counties.
2. Convert a substantial amount of land subject to Williamson Act contracts or in Farmland Security Zones to a non-agricultural use incompatible with contract restrictions or local preserve rules or ordinances, or conflict with surrounding land uses or the terms of the applicable Farmland Security Zone.
3. Involve other changes in the existing environment, which, because of their location or nature, would result in the conversion of substantial amounts of Important Farmland to nonagricultural use.

For the purposes of assessing both the severity of impacts and the need for mitigation, the Final EIR/EIS does not use a numerical approach. Rather it identifies different degrees of impacts and different mitigation measures, depending in part on the nature, duration, and permanence of the impacts (Chapter 14, Section 14.3.2, *Determination of Effects*).

The temporary and short-term construction of facilities under Alternative 4A, for example, would convert to other uses approximately 1,495 acres of Important Farmland and 1,132 acres of land subject to Williamson Act contracts or in Farmland Security Zones. Alternative 4A physical structures would also permanently convert approximately 3,909acres of Important Farmland and 2,035acres of land subject to Williamson Act contracts or in Farmland Security Zones to other uses. These are considered significant impacts on the environment (Chapter 14, Section 14.3.4.2).

Implementation of Mitigation Measure AG-1 is a carefully developed strategy that recommends developing a series of "Agricultural Lands Stewardship Plans" to reduce (although not necessarily eliminate completely) these impacts in connection with the construction of conveyance facilities (Conservation Measure 1 and other conservation measures for BDCP alternatives). The Agricultural Lands Stewardship Plans would set forth measures to promote agricultural productivity through early planning, site specific avoidance and mitigation, onsite mitigation, and landowner participation. DWR would implement such activities as siting project footprints to encourage continued agricultural production; relocating or replacing agricultural infrastructure in support of continued agricultural activities; engaging counties, owners/operators, and other stakeholders in developing optional agricultural stewardship approaches; and preserving agricultural land through off-site easements or other agricultural land conservation interests (Chapter 14, Section 14.3.3.2).

Mitigation Measure AG-1 includes affiliated Mitigation Measures AG-1a, AG-1b and AG-1c. These are lengthy and detailed proposals calling for extensive consultation with farmers and land owners, local agencies, and other agencies; numerous steps to minimize permanent conversion of agricultural lands to nonagricultural uses; mitigation on site; and other stewardship efforts (Chapter 14, Section 14.3.3.2). These measures demonstrate that the proposed project's mitigation recommendations are designed to protect agricultural resources in the Delta to the extent feasible, and are thus in general harmony with the Delta Reform Act's stated policy goal of protecting the agricultural resources of the Delta.

Chapter 16, *Socioeconomics*, describes the socioeconomic effects of the alternatives on the Delta region, including effects on agricultural economics. For Alternative 4A, for example, the construction of the proposed water conveyance facilities would reduce the total value of agricultural production in the Delta region. As Chapter 16 explains, this reduction is not considered an environmental impact; however, the discussion notes that DWR would, where required, provide compensation to property owners for economic losses due to implementation of the alternative (Chapter 16, Section 16.3.4.2). Appendix 14A, *Individual Crop Effects as a Result of BDCP Water Conveyance Facility Construction*, provides estimates of the temporary, short-term, and permanent impacts on individual types of crops as a result of construction of the water conveyance facilities under the action alternatives.

Summary

While the Final EIR/EIS does not include a specific impact analysis addressing the project's consistency with the concept of the "Delta as an Evolving Place," it is not required to under CEQA, NEPA, or other law. Instead, this concept is addressed across the resource chapters. Specifically, the Final EIR/EIS recognizes the Delta as a place of national and state importance in the resource chapters that describe the Delta's importance related to fish and wildlife habitat, agricultural resources, cultural and historical resources, recreation and land uses and communities. The Final EIR/EIS also identifies numerous mitigation measures and environmental commitments designed to reduce or eliminate significant impacts for each of the alternatives. These mitigation measures have the practical effect of protecting the unique cultural, recreational and agricultural resources that the Delta Reform Act seeks to protect.

Master Response 25: Upstream Reservoir Effects

This master response discusses how upstream operations were modeled in the EIR/EIS, how climate change was incorporated into the modeling, and existing real-time operations processes that would continue to guide future operations under the California WaterFix.

Modeling Upstream Operations

A number of physical and biological models were used to assess the operational effects of the BDCP and non-HCP alternatives, with the primary model being CALSIM II, a monthly model on which other monthly and daily physical and biological models rely for input. The CALSIM II model takes into account the entire Central Valley Project (CVP) and State Water Project (SWP) coordinated operations, including reservoirs, tributary flows, and Delta operations. These models represent the best scientific and commercial data available to estimate and analyze the potential environmental effects of the alternatives on water operations. For more information regarding updated modeling assumptions and comparisons please see Appendix 5F, *Comparison of FEIRS Alternatives 2D, 4A, and 5A Modeling Results to RDEIR/SDEIS Modeling Results*, and Appendix 5G, *Comparison of FEIRS Alternative 4A Modeling Results to the California Water Fix Section BA Proposed Action Modeling Results*. A full description of the CALSIM II modeling, and the assumptions used for Alternative 4A are included in the Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*.

For additional information related to modeling please refer to Master Response 30, *Modeling Approach and Availability of Newer Versions of the Models*. Operations for the proposed project would still be consistent with the criteria set by the U.S. Fish and Wildlife Service (USFWS) *Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP)* (2008) and National Marine Fisheries Service (NMFS) *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project* (2009), (BiOps) and by State Water Resources Control Board Water Right Decision 1641, subject to adjustments made pursuant to the adaptive management process as described in the 2008 and 2009 BiOps (Executive Summary Section ES.2.3.2).

The lead agencies will make the final decisions regarding the selection of an alternative (and therefore, an operational scenario) for the purposes of CEQA and NEPA. USFWS and NMFS have authority under the federal Endangered Species Act (ESA) to determine whether the proposed project meets the regulatory standard of ESA Section 7, and the California Department of Fish and Wildlife, a CEQA responsible agency, has authority to determine if the proposed project meets the regulatory standards of the California Endangered Species Act. Please see Chapter 3, *Description of Alternatives*, Section 3.5.18, for additional information on proposed project operations.

Most of the alternatives considered, including Alternative 4A, the preferred alternative, do not propose any changes to upstream operational criteria. The CALSIM II model assumes that the currently applicable criteria, including but not limited to those set forth in the NMFS 2009 BiOp, remain intact. The modeled results show that the CVP could be operated slightly differently with the alternatives, including Alternative 4A. However, the modeled differences shown for Alternative 4A do not reflect the ability to manage the upstream operations in real-time to address environmental variables and meet the applicable flow and temperature criteria. However, the CALSIM II modeling results are a reasonable representation of long-term operational trends of CVP and SWP, providing

the ability to compare and contrast the effect of current and assumed future operational conditions. The modeled results do not necessarily represent the specifics of how the project would operate at any particular time, because CALSIM II cannot take into account the various annual, seasonal, and real-time conditions that occur as part of the operational management of the CVP and SWP. These operational management decisions occur in response to real-time hydrological and ecological conditions, which can be uncontrollable and unpredictable and can vary significantly, and often at a time step much shorter than the basis for the operations model. (Please see discussion below.)

The existing processes used to manage upstream operations and meet the current applicable criteria (which are not proposed to change) will continue. However, the effects of these model differences are thoroughly evaluated in the EIR/EIS as detailed above and as additionally described in the Final EIR/EIS, Appendix 30. The increased flexibility provided by the proposed California WaterFix dual conveyance system and changes in operational criteria for facilities within the Delta may allow for changes in upstream operations to occur; however, such changes would be consistent with the existing operating criteria governing those operations. For example, upstream operations are expected to change in response to climate change and sea level rise as shown in the modeling of the No Action Alternative included in the Final EIR/EIS, even though the operating criteria remain unchanged. In addition, if upstream operations may have changes, overall project operations would continue to follow the Coordinated Operations Agreement between the California Department of Water Resources (DWR) and the U.S. Bureau of Reclamation. The EIR/EIS assumes no changes in the Coordinated Operations Agreement (COA). If through a separate process the COA is modified in the future, following adoption of the modified COA by Congress and the state legislature, DWR and the Bureau of Reclamation will need to determine if their operations of the SWP and CVP require modifications. Please refer to Chapter 5, *Water Supply*, for additional analysis on upstream operations and COA. Please also see Master Response 28, Adequacy of Operational Criteria.

Upstream Operations

As described in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix,* Section B, flows to meet the Delta outflow criteria based upon the State Water Resources Control Board Decision 1641 and the 2008 USFWS BiOp are provided by a combination of SWP and CVP reservoir releases and reduced Delta exports. Under Alternative 4 Operational Scenarios H2 and 4 H4, water to support enhanced spring Delta outflow was provided by additional water releases from reductions in Delta exports and releases from Lake Oroville. The enhanced spring Delta outflow was considered to be met outside of the Coordinated Operations Agreement which defines sharing criteria between the SWP and CVP. This would result in reductions in SWP water contract deliveries, as indicated in Appendix 5A, Section C.

Inclusion of Climate Change

The action alternatives, including Alternative 4A, would begin operations in the future, and the modeling used to assess their impacts assumes that climate change would occur. For BDCP alternatives, this assumes climate conditions in 2060 and for Alternatives 4A, 2D, and 5A, this assumes 2030 climate conditions. A detailed description of the development of the climate change assumptions is included in Appendix 5A, *BDCP/California WaterFix Modeling Technical Appendix*. Please refer to Master Response 19, *Climate Change and Greenhouse Gas Emissions*.

Climate change effects include sea level rise and changes in the timing, location, and amount of precipitation throughout the system. These projected changes affect how CVP and SWP operations

could occur in the future, even while remaining compliant with the existing regulations, as assumed for all of the alternatives. The No Action Alternative includes the same climate change assumptions as the action alternatives. When an action alternative is compared against the No Action Alternative, climate change is not seen as an effect. However, the CEQA evaluation, which compares the action alternatives (with climate change assumptions) and the existing conditions (without any climate change assumptions), shows the effects of both the alternatives and climate change. Comparing the existing conditions with the No Action alternative shows the isolated effects of climate change. Please refer to Master Response 19 for added information.

As described in detail throughout Chapter 5, *Water Supply*, and Appendix 5A, climate change has the potential to change reservoir and other upstream conditions, especially related to the projected increased frequency of drier years that lead to more frequent reservoir 'deadpool', or low storage level, conditions. (As discussed below, project operator's real-time decision-making could possibly avoid or minimize projected increased frequency of dead pool.) The CEQA evaluation of alternatives includes these effects, but the NEPA evaluation demonstrates that these effects are attributable to climate change. Please see Master Response 19, Chapter 29, *Climate Change*, and Appendices 29A–C for a detailed description of how climate change assumptions impact the analysis.

Current Planning Activities That Would Continue under California WaterFix

The CVP/SWP operators seasonally plan the CVP/SWP operations to comply with existing regulatory requirements and, consider many factors such as forecasted hydrology, contractual demands etc. The operators also consider any recommendations resulting from the real-time operations (RTO) decision-making process to minimize adverse effects for listed species while meeting permit requirements and contractual obligations for water deliveries. These processes would continue under Alternative 4A.

The existing RTO decision-making process allows for flexible decision making that can be adjusted to address uncertainties such as the hydrologic conditions, ocean conditions, presence and distribution of the listed species, and other ecological conditions while taking into account public health, safety and water supply reliability. The existing RTO decision-making team, including the management team, the information teams, and fisheries and operations technical teams that are part of the RTO decision making process are described in Chapter 3, *Description of Alternatives*, Section 3.6.4.3, *North Delta and South Delta Water Conveyance Operational Criteria*, and in Chapter 3 of the Biological Assessment. The RTO teams review the current data and information on fish status and habitat conditions, and develop recommendations that fishery agencies' management can use in identifying actions to protect listed species consistent with existing regulatory requirements. The existing RTO decision-making process is expected to continue to gather and analyze information, and make recommendations, regarding adjustments to water operations under Alternative 4A within the range of flexibility prescribed in the implementation procedures.

Master Response 26: Area of Origin and Other Legal Water Users

This master response discusses the general approach to water rights for the proposed project and why the project would not affect water rights of other legal water users or affect protections granted under area-of-origin laws.

Proposed Project and Delta Exports

The California WaterFix includes three new diversion intakes with a maximum capacity of 3,000 cubic feet per second each, located in the vicinity of Hood on the Sacramento River. The California Department of Water Resources (DWR) and the U.S. Bureau of Reclamation (Reclamation) will seek authorization from the State Water Resources Control Board (State Water Board) for a change in point of diversion but no new water rights are requested as a part of the proposed project. (See Master Response 32, *Water Rights Compliance Issues for California WaterFix*, for information about DWR and Reclamation's process for obtaining appropriate water right authorizations from the State Water Board.) The proposed project will be operated consistent with water right priorities and water right laws, including those protections to water rights provided pursuant to area-of-origin statutes.

The proposed project, the California WaterFix, is intended to provide a more reliable water supply, with diversions that are more protective for fish, in accordance with the Delta Reform Act co-equal goals of improving water supply reliability and Delta ecosystem health. The proposed water conveyance facilities provide for new water supply intakes on the Sacramento River that would be operated in conjunction with the existing State Water Project (SWP) and Central Valley Project (CVP) south Delta export operations to improve conditions for Delta fish and aquatic resources and provide for more predictable and reliable export water supply. The extent the proposed project will achieve the project objectives and purpose and need identified in Chapter 2 of the Final EIR/EIS depend on a number of factors, including avoiding jeopardy to listed species or adverse modification to designated critical habitat.

One of the project objectives listed in Chapter 2 is to restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements. Because California WaterFix is proposed to stabilize, and not directly increase, water supplies, exports to public water agencies could only increase (as compared to existing project operations) under certain circumstances. Water deliveries from the SWP and CVP under a fully implemented Alternative 4A are projected to be about the same as the average annual amount diverted in the last 20 years. Although the proposed project would not increase the overall volume of Delta water exported, it would make the deliveries more predictable and reliable, while restoring an ecosystem in steep decline (see Master Response 35, *Local Resource Programs and Water Conservation in Southern California*).

The Proposed Project Will Not Affect Water Rights of Other Legal Water Users in the Delta or Delta Watershed

As described in more detail in Master Response 32, DWR and Reclamation filed a joint petition for a change in point of diversion with the State Water Board consistent with Water Code Section 1701 and the State Water Board regulations. The joint petition for the change in point of diversion requests adding to DWR and Reclamation water rights the three new diversion intakes on the Sacramento River. DWR and Reclamation are not applying for, and the petition does not initiate, a new water right as a part of the proposed project. Water diverted at the new intake facilities will be delivered to a modified Clifton Court Forebay and exported through Harvey O. Banks or C. W. "Bill" Jones Pumping Plants; thus, the export locations will not change. The petition is limited to requesting a change in point of diversion. All other existing permit provisions including sources of water, amounts of direct diversion and diversion to storage, maximum allowable combined diversion from the Delta, places of use, purposes of use and season of diversion, will remain unchanged. The diversion rates in the existing water rights permits held by DWR and Reclamation remain unchanged, however maximum annual diversions may increase relative to existing conditions consistent with what is authorized under the existing water rights permits.

The petition for change of point of diversion also does not propose any changes to SWP and CVP upstream operational criteria and will not affect other water users' existing upstream water rights. The proposed facilities and the rest of the SWP and CVP will be operated to meet authorized purposes, including flood control, water supply, and fish and wildlife purposes, in a manner that comports with existing applicable water rights and contractual obligations. Chapter 5, *Water Supply*, Section 5.3.1 explains that the modeling assumes for all of the action alternatives, including the California WaterFix, the SWP and CVP are solely responsible for providing any needed water for implementing the action alternatives, and the alternatives would not modify water deliveries to non-SWP and non-CVP water rights holders, including in-Delta water rights holders because the project alternatives do not include any actions that would affect water availability to any such water rights holders.

The State Water Board is conducting an evidentiary water rights hearing on the petition where interested parties (water agencies, non-governmental organizations, and the public) have the opportunity to protest and comment on the petition. Prior to approving the petition, the State Water Board must find that the requested changes will not cause injury to any legal user of the water involved, will not initiate a new water right, and will not result in unreasonable impacts to fish or wildlife or recreational uses.

Area-of-Origin Protections

The legal term "area of origin" dates back to 1931 in California. At that time, concerns over water transfers prompted enactment of several area-of-origin statutes. The statutes were intended to protect local areas against export of water. In particular, counties in Northern California had concerns about the state tapping their water to develop California's supply. Early statutes prohibited depriving a "county in which the water…originates of any such water necessary for the development of the county." The major area-of-origin laws are:

- The 1931 County of Origin Law (Water Code Sections 10500–10506).
- The 1933 Watershed Protection Statute (Water Code Sections 11460–11465).

- The 1959 Delta Protection Act (Water Code Sections 12200–12205).

A fourth area-of-origin statute, enacted in 1984, designated specific "protected areas," all in northern California, and prohibited water exporters from depriving those areas "of the prior right to all the water reasonably required to adequately supply the beneficial needs of the protected area."

These laws seek to grant areas in which water originates an adequate water supply for present and future needs. An important distinction related to these laws, recently clarified in *Tehama-Colusa Canal Authority v. U.S. Dept. of the Interior*, 819 F. Supp. 2d 956 (E.D. Cal. 2011) and affirmed by the Ninth Circuit in an appeal (721 F.3d (9th Cir. 2013)), is that these laws generally apply to protect water users within the area of origin against previous appropriations for export. In other words, water users within an area where water originates may apply for new diversions by seeking a water right from the State Water Board, and may obtain priority for such diversions ahead of already existing diversions for export uses by the CVP and the SWP. However, when water is acquired and stored in CVP or SWP reservoirs, area-of-origin laws do not control how the stored water is allocated, which is determined by individual water service contracts. Water contractors located in an area of origin cannot assert preferential allocation of acquired and stored water simply because of their location within a watershed.

No measures or operating assumptions for the proposed project would affect protections under area-of-origin laws regarding rights to source water. Additionally, the CALSIM II modeling performed for conveyance facility operations takes into account projected future demand for water supply in areas upstream of the Delta (as part of the future No Action baseline) prior to calculating proposed project diversion estimates to ensure that no area-of-origin protections or water rights are affected by project conveyance facilities.

As described above, the proposed project would not change current regulatory requirements that protect the beneficial use of water. When exporting water from the Delta, DWR and Reclamation must comply with all current state and federal regulatory requirements in effect at the time of the export pumping, including numerous environmental standards, laws, and regulations relating to Delta inflow and outflow, Delta water quality, fish protection, environmental needs, water rights, and the needs of other users, including in-Delta users. The laws and regulations include regulatory constraints of applicable State Water Board orders, U.S. Army Corps of Engineers permits, Biological Opinions, and any relevant judicial orders in effect at the time of the operation. The State Water Board has also established water quality and flow requirements and limits on the rate of export of water that can be pumped by the state and federal pumping plants and is currently reviewing those requirements in its Bay-Delta Water Quality Control Plan to ensure beneficial uses are protected.

Master Response 27: Environmental Justice

This master response discusses environmental justice analyses and coordination in compliance with both federal and state law during the planning process, and continued outreach that will occur during construction.

Coordination with Environmental Justice Communities during the California WaterFix Planning Process

Chapter 28, *Environmental Justice*, analyzes the potential for the project alternatives to cause disproportionately high and adverse human health or environmental effects on minority and low-income populations. This determination is primarily a Federal requirement, under Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (59 Federal Register [FR] 7629), which requires an analysis of federal actions that have the potential to result in disproportionately high and adverse effects on minority and low-income populations. Memorandum No. ECM 95-3 (U.S. Department of the Interior 1995a) provides guidance for complying with EO 12898 and evaluation of the equity of impacts imposed on these populations relative to the benefit of the action. Reclamation has complied with these requirements for the California WaterFix and associated EIR/EIS process.

Although there is no requirement as a part of compliance with CEQA to analyze the extent that an environmental impact might disproportionately impact low-income or minority populations, consistent with federal environmental justice requirements,, for the California WaterFix and associated EIR/EIS process, the California Department of Water Resources (DWR) has complied with the California Natural Resources Agency's policy on environmental justice.[261] This policy outlines eight methods of incorporating environmental justice outreach into agency processes, decisions, and programs—all of which have been incorporated into the project planning and environmental review processes for the BDCP/California WaterFix. These methods are described below.

1. ***Identification of relevant minority and low-income (environmental justice) populations***

   Using 2010 census data, Chapter 28, *Environmental Justice*, provides an overview of the minority and low-income populations in the study area (the area in which impacts may occur) that are relevant for analysis of environmental justice effects as well as identification of environmental justice groups. In addition, over 200 minority and low-income community leader interviews were conducted, which informed the public outreach and environmental justice needs.

   Based on the census data and interviews, Hispanic, Filipino, Vietnamese and Chinese communities were initially identified as those likely to need language services. In 2014, Hmong and Laotian communities were added. Because the Hispanic population is the largest group represented in the project area, there has been an emphasis on efforts to reach Spanish speakers.

[261] http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Environmental_Justice_Policy_-_California_Natural_Resources_Agency.sflb.ashx

2. ***Seeking out and consulting with community groups and leaders to encourage participation***

In 2010 an Environmental Justice Community Survey Summary Report was prepared for the BDCP (and conducted by the Delta Habitat Conservation and Conveyance Program [DHCCP]) based on outreach efforts that involved soliciting and compiling information provided by respondent members of minority groups regarding culturally significant practices as well as subsistence activities. The results of this survey are described in Chapter 28, Section 28.2.1.5 through 28.2.1.7. Following the community survey, and throughout the planning process, the project mailing and email lists were updated to include relevant minority and low-income environmental justice organizations in the Delta region and throughout the state in an effort to encourage broad-based participation in the planning process by minority and low-income groups from the entire study area.

3. ***Broadly distributing public information, in multiple languages, to encourage participation***

In order to encourage participation, program information in numerous languages was broadly distributed via the program website, public meetings, by request and through regional stakeholder engagement. Translated information was provided in the following ways:

- In-language hotline in six languages: Tagalog, Spanish, Hmong, Cambodian, Chinese (traditional Chinese), and Vietnamese
- Basic project information in all six languages posted online, by request, and Spanish language materials were made available at public meetings
- Translation service notification on materials and website (including contact card distributed to field staff that are likely to environmental justice groups in the course of regular field work)
- Oral translators available at all public meetings, and upon request to field phone calls
- Written translation services available upon request to address written communications
- Ensuring that public documents and notices are readily accessible and printed in multiple languages if appropriate

4. ***Ensuring that public documents and notices are readily accessible***

The following are the ways in which environmental justice communities were notified of major project milestones and public involvement opportunities.

- Signs were posted within and outside of the project area. Notifications about key project milestones, the formal public comment period and public meetings were place at locations within and outside the project area that included a translated statement (6 languages) directing non-English speakers to the hotline for more information.
- Newspaper announcements, postcards and flyers included a statement that language services were available from the lead agencies and directed Spanish speaking individuals to the hotline for more information.
- Postcard and email announcements regarding major project milestones were sent to community groups and leaders representing the environmental justice communities in the project and study areas.

- Postcard notices were sent to a mailing list of more than 10,000 businesses, individuals, and organizations, and included a translated statement (6 languages) directing non-English speakers to the hotline for more information.
- Spanish-language media outreach (print, television, radio) was conducted by the lead agencies.

5. ***Holding required public meetings, hearings, and workshops***

Overall more than 600 public meetings, working group meetings, and stakeholder briefings were held in the Sacramento and Delta region, with a focus on encouraging participation from those likely to be impacted by construction of the proposed project. Meetings were generally held in the afternoons and evenings. Specifically, Delta Office Hours were held in Delta communities during the evenings so that community members could attend after working hours. Scoping meetings and public open house meetings on the Draft EIR/EIS were held throughout the state to encourage participation from members of all affected communities. The RDEIR/SDEIS process also included two public meetings in Sacramento and Walnut Grove. All of the documents, studies, administrative drafts, and meeting materials – more than 3,000 documents – have been posted online since 2010 in an unprecedented commitment to public access and government transparency.

6. ***Working with other federal, state, regional and local agencies to ensure consideration of disproportionate impacts on relevant communities***

The lead agencies have worked together to ensure that the project's public outreach plan is continually being updated to address new needs and reflect changes that occur as the project develops. In 2013 new community groups were added to the mailing list and in 2014 two additional communities were identified as needing language services through community feedback. Additionally, before developing translated factsheets, outreach team staff contacted community groups for feedback on the types of information that would be most useful and developed the materials accordingly. As the project reaches major milestones, the outreach team will continue to evaluate language needs and is committed to taking the necessary steps in order to ensure that individuals and communities with limited English proficiency have access to the project.

7. ***Fostering broad access to existing and proposed data sets and technology to better identify, analyze, and respond to environmental justice issues***

Section 28.2, *Environmental Setting/Affected Environment*, of Chapter 28 presents information about the distribution of low-income and minority populations in the study area. This data came largely from an existing and detailed data set available on the U.S. Census Bureau website. The U.S. Census Bureau collects comprehensive demographic data every 10 years during the decennial census. Chapter 28 uses data from the 2010 decennial census data (i.e., U.S. Census Bureau 2010). Detailed demographic data was collected for the minority and low-income populations from the U.S. Census Bureau website. Low-income data was collected for each census block group, and minority data was collected for each census block within the study area.

Project proponents also expanded upon existing data sets by conducting outreach surveys for the DHCCP. The Environmental Justice Community Survey Summary Report prepared for the project summarizes the 2010 outreach effort that involved soliciting and compiling information provided by respondent members of minority groups regarding culturally significant practices as well as subsistence activity.

8. ***Providing appropriate training to staff***

Key outreach and project staff were made aware of the Environmental Justice policies and procedures and were given appropriate contact information so that the appropriate staff could be notified when language services were needed. As language needs or other issues were raised, the public outreach plan was updated accordingly and every effort was made to accommodate and encourage participation from environmental justice communities in the project and study areas.

Outreach to Minority and Low-Income Communities during Project Construction

The California Environmental Protection Agency (CalEPA) promotes enforcement of all health and environmental statutes within its jurisdiction in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations in the state (California Public Resources Code Section 71110, subd. (b)). Hence, those laws, regulations, and policies that are applicable to the proposed project (and are identified in the resource chapters in the Final EIR/EIS) that may affect minority and low-income communities would be enforced through CalEPA's boards, departments, and offices including but not limited to the Department of Toxic Substances Control, the Office of Environmental Health Hazard Assessment, and the State Water Resources Control Board. As necessary, these offices would communicate to all affected communities in carrying out their respective obligations during project construction.

In terms of compliance with CEQA requirements, once DWR approves the project, it will be responsible for implementing the approved CEQA mitigation monitoring and reporting program (California Public Resources Code Section 21081.6; 14 California Code of Regulations Section 15097). This action would ensure the carrying out of adopted mitigation measures, as applicable, along with monitoring, documenting and reporting the results. Reclamation intends to use the mitigation monitoring program developed by DWR to support the federal monitoring and reporting program required in its Record of Decision. Such reporting could be made available to anyone upon request.

It is expected that through the implementation of the MMRP, additional outreach to minority and low-income communities will occur during project construction. One example of how there will be outreach to all affected communities including the minority and low-income communities during project construction, would be associated with noise impacts and the implementation of key mitigation measures, including Mitigation Measure NOI-1b in Chapter 23:

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Prior to construction, DWR will make a construction schedule available to residents living in the vicinity of the construction areas before construction begins, and designate a noise disturbance coordinator. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

A number of other mitigation measures (see Table ES-8 in *Executive Summary*) also provide for outreach and coordination to affected communities, including minority and low-income populations, relating to cultural resources surveys and effects on aesthetics (light and glare), air quality, and other resources.

During the course of construction, DWR will continue to follow the California Natural Resources Agency's policy on environmental justice as described in the previous section.

Master Response 28: Adequacy of Operational Criteria

This master response discusses the operational criteria assumed for Alternative 4A. This master response provides an overview on exports in drier years, how EIR/EIS operational modeling may not match actual operations, and the proposed operating criteria for the new preferred alternative, 4A.

Alternative 4 and Alternative 4A

As stated in Chapter 1, *Introduction*, the initial preferred alternative analyzed in the 2013 Draft EIR/EIS included a habitat conservation plan to achieve compliance with the federal Endangered Species Act Section 10 and the California Natural Community Conservation Planning Act. Conservation Measure (CM) 1 described in Alternative 4 (also referred to as the Bay Delta Conservation Plan or BDCP) included adding three diversion facilities in the north Delta and ancillary tunnels to transport water to the existing State Water Project (SWP) and Central Valley Project (CVP) pumping facilities in the south Delta; it also included specific operating criteria (ranging between different operational criteria, referred to as H1, H2, H3,and H4) that integrated adaptive management to determine future operations (see Master Response 5, *BDCP*, for additional information on the BDCP and Master Response 44, *Decision Tree Approach*, for additional information on the integration of operations to adaptive management, also referred to as "Decision Tree"). In 2015, the Department of Water Resources (DWR) and the Bureau of Reclamation added three non-HCP alternatives for consideration and proposed that one of them, Alternative 4A (also referred to as California WaterFix) as the new preferred alternative. Alternative 4A retained the basic elements of what was originally labeled as CM1 from Alternative 4, with updated operational criteria. Both Alternative 4 and 4A operations are presented and analyzed in this Final EIR/EIS.

Exports in Drier Years

Alternative 4A includes operational criteria for the existing and proposed Delta export facilities that are intended to allow the SWP and CVP to take better advantage of wetter conditions. Chapter 3, *Description of Alternatives*, describes the operational criteria under Alternative 4A at the proposed north Delta diversion and the existing south Delta export facilities (see discussion below).

The addition of north Delta diversion intakes proposed under Alternative 4A provides operational flexibility. Specific criteria are presented, consistent with the objectives as well as the purpose and need, to protect and enhance conditions for fish and wildlife, although they may be modified through the adaptive management process. The operational criteria under Alternative 4A tend to allow higher exports under wetter conditions and lower exports under drier conditions compared to the No Action Alternative.

Operations Modeling vs. Actual Operations

CVP/SWP operations under the action alternatives were modeled using the CALSIM II model (see Master Response 30, *Modeling Approach and Availability of Newer Versions of the Models*, for detailed discussion of modeling). The CALSIM II model for the No Action Alternative was modified to include additional criteria proposed under the action alternatives to simulate the potential outcomes of the proposed alternatives in comparison to the No Action Alternative.

As described in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, CALSIM II is a monthly model developed for a long-term planning level analyses. The model is run for an 82-year (from 1922 to 2003) historical hydrologic period, at a projected level of hydrology and demands; and under an assumed framework of regulations. CALSIM II uses historical monthly hydrology as inputs adjusted for changes in water and land use that have occurred over time or may occur in the future. The model assumes that facilities, land use, water supply contracts, and regulatory requirements are constant over 82 years, representing a fixed level of development.

The CALSIM II model uses a set of pre-defined generalized balances/targets, collectively referred to as rules, which reflect the assumed regulations and are used to specify the operations of the CVP/SWP systems. These inputted rules are often specified as a function of year type or a prior month's simulated storage or flow condition. The model has no capability of adjusting these rules to respond to specific events that may have occurred historically, e.g., levee failures, fluctuations in barometric pressure that may have affected delta tides and salinities, facility outages. These generalized rules have been developed based on historical operational trends and on CVP/SWP operator input and only provide a coarse representation of the project operations over the inputted hydrologic conditions. Thus, results should not be expected to exactly match what operators might do on a daily basis (referred to as "real time operations") or in a specific month or year within the simulation period since the latter would be informed by numerous real-time considerations. Rather, results are intended to be a reasonable representation of long-term operational trends, providing the ability to compare and contrast the effect of current and assumed future operational conditions.

Even though CALSIM II relies on modified historical hydrologic inputs, and generalized representation of the operating rules, the modeling results are generally comparable to the monthly long-term historical trends. Even with similar facility and regulatory conditions, some differences would be expected due to actions specific to real-time events as mentioned above. Despite detailed model inputs and assumptions, the CALSIM II results may differ from real-time operations given that not all the regulatory requirements (e.g. upstream temperature requirements, reservoir release ramping rates) or real-time operational adjustments to the Shasta Temperature Control Device are modeled in the CALSIM II. The upstream reservoir releases in real-time are determined based on many factors such as temperature control requirements, available cold water pool within the reservoirs, in-basin use including Delta flow requirements, forecasted hydrology, and unforeseen demands. Many of the factors involve day-to-day decision-making by the CVP/SWP operators taking into account the recommendations from many of the decision-making/advisory teams informing the real-time operations. CALSIM II does not take into account all the factors identified above given the generalized representation of the likely long-term operations. As described in Chapter 3, *Description of Alternatives*, Alternative 4A includes a robust real-time operations decision making process. The operations criteria identified under Alternative 4A will be implemented with real-time feedback from the regulatory agencies.

Proposed Operational Criteria for Alternative 4A

The proposed operational criteria for Alternative 4A is presented in Chapter 3 and summarized below. To see the relationship of these operational criteria to CALSM II modeling, please see Table 3-7 of Chapter 3, *Description of Alternatives*. As discussed above, the modeling provides a reasonable representation of long-term operational trends, providing the ability to compare and contrast the effect of current and assumed future operational conditions.

The diversions at the north Delta intakes are governed by the proposed north Delta bypass rules proposed under Alternative 4A operational criteria, which mandate the minimum Sacramento River flow needed to remain in the Sacramento River downstream of the proposed intakes. The proposed bypass rules are structured such that the north Delta diversions are highly constrained early in the December-June months, when the pulse flows are common in the river, and are then progressively relaxed as the season becomes wetter (post-pulse).

During the pulse flow period, the north Delta pumps are only allowed to divert up to what is allowed under the "Constant Low-Level Pumping Criteria." In general, constant low-level pumping allows diversions up to 6% of river flow for flows greater than 5,000 cubic feet per second (cfs), such that no more than 300 cfs is allowed to be diverted at any one intake. Once the pulse protection ends, post-pulse bypass rules govern the diversion amount. The post-pulse operations are structured to be progressively less restrictive depending on the Sacramento River inflow (Level 1, Level 2 and Level 3), with Level 1 being most restrictive and Level 3 being least restrictive in terms of the allowed diversion at the north Delta intakes. In the post-pulse period, the north Delta diversions are initially operated at Level 1. If high flows (more than 20,000 cfs) exist in the Sacramento River for extended periods, then the north Delta diversion is allowed to operate under Level 2 and Level 3 bypass rules. For diversion to occur under Level 1 post-pulse operations, the Sacramento inflow needs to be greater than 15,000 cfs. Under Level 3, Sacramento River inflow needs to be greater than 9,000 cfs, before diversion can begin at the north Delta intakes. Then, as flows increase, a certain percentage of total flow is allowed to be diverted. Therefore, when Sacramento River inflow is low, the amount of diversion allowed at the north Delta intakes will be low, as it is very unlikely that the post-pulse operations are moved beyond the Level 1 or even the low-level pumping.

Alternative 4A includes higher combined Old and Middle River (OMR) flow requirements and south Delta export constraints than the No Action Alternative in the fall, winter and spring months. The additional OMR flow requirements specified under Alternative 4A vary by water year type for December-March and is San Joaquin river flow dependent for April-June. In the fall months, south Delta exports are shutdown during the San Joaquin River pulse flow period. As a result, the diversions at the existing south Delta intakes under the Alternative 4A are typically more constrained compared to the No Action Alternative. Alternative 4A is required to operate to these additional south Delta requirements or to the No Action Alternative requirements, whichever are more constraining.

Therefore, the proposed north Delta bypass flow criteria and the additional OMR flow requirements proposed under Alternative 4A operational criteria typically result in lower Delta exports under the drier hydrologic conditions.

The Final EIR/EIS includes model results for Alternative 4A and all action alternatives as compared to Existing Conditions and the No Action Alternative. These results indicate that total Delta exports under Alternative 4A are approximately 6 percent higher in wet years and similar to or slightly lower in critical and dry years as compared to the No Action Alternative. The results also indicate that total Delta exports under Alternative 4A are similar in wet years and 14 percent lower in critical and dry years as compared to the Existing Conditions, which does not include changes due to climate change, sea level rise, and population growth.

Modeling for Alternative 4A was conducted for Operational Scenario H3+, a point that generally falls between Scenario H3 and H4 operations, as the initial conveyance facilities operational scenario. As

specified in Chapter 3, *Description of Alternatives*, the operating criteria under Scenario H for Alternative 4A would be determined by the Endangered Species Act and California Endangered Species Act Section 2081 permits, and an integrated adaptive management program, where it was estimated that operations would likely be between Scenarios H3 and H4. In addition, future operations under Alternative 4A will also be guided by the outcome of the State Water Resources Control Board (State Water Board) hearings concerning DWR's and the Bureau of Reclamation's petition to add additional points of diversion on the Sacramento River. Consistent with the State Water Board water rights petition process and at the request of State Water Board staff, Appendix 5E*, Supplemental Modeling Related to the State Water Resources Control Board*, provides supplemental modeling at 2025 (early long-term) for three scenarios: Boundary 1, Boundary 2 and a State Water Board staff scenario. Boundaries 1 and 2 were presented to the State Water Board during the water rights petition process as a means to represent a potential range of operations that could occur as a result of adaptive management, and within the range of the modeling and impact analysis presented for the alternatives in the EIR/EIS. The adaptive management process would address scientific uncertainty related to the potential effects of project operations and modify operational criteria in consideration of species effects and water supply reliability.

In summary, the generalized representation of the existing and proposed operational criteria in CALSIM II provides likely long-term operations and flow changes in the CVP/SWP under the proposed alternatives in comparison to the No Action Alternative. However, actual operations will be driven by real-time decision making processes in addition to the operational criteria defined for the selected alternatives and possible changes from future actions arising from adaptive management, permits and biological opinions.

Master Response 29: Timing of Endangered Species Act Compliance

This master response describes the timing of environmental review under CEQA and NEPA relative to the release of the Endangered Species Act (ESA) biological assessment and biological opinions and California Endangered Species Act (CESA) Section 2081(b) documents for the proposed project. In addition, the master response discusses how the lead agencies are complying with ESA and CESA requirements.

Subsequent to the Draft EIR/EIS, the lead agencies decided to circulate the RDEIR/SDEIS with three new alternatives developed to comply with ESA Section 7 and CESA Section 2081(b). The RDEIR/SDEIS identified a preferred CEQA and NEPA alternative, described as the California WaterFix (Alternative 4A). Because of this preferred alternative change, this master response only addresses the issues of timing and requirements for biological assessments and biological opinions under Section 7 of the ESA associated with the RDEIR/SDEIS versus those of a habitat conservation plan and natural community conservation plan.

The Draft EIR/EIS and RDEIR/SDEIS are documents that were prepared and made available pursuant to CEQA and NEPA, whereas biological assessments and biological opinions are documents that are prepared pursuant to ESA Section 7. Although the proposed project triggers CEQA and NEPA, as well as ESA Section 7 and CESA Section 2081(b), these are separate statutory schemes and processes.[262] The agencies are proceeding with ESA/CESA compliance, in addition to CEQA/NEPA review, and the various documents prepared pursuant to the respective statutory schemes will be completed and made available consistent with the applicable legal requirements.

NEPA, CEQA and ESA Section 7 Requirements

Environmental Review under NEPA and CEQA

Before the selection and approval of one of the project alternatives considered in the EIR/EIS, the lead agencies must comply with the CEQA and NEPA review requirements. NEPA requires federal agencies to prepare an EIS for major federal actions that could significantly affect the quality of the human environment. Similarly, CEQA requires preparation of an EIR when there is substantial evidence in light of the whole record that an agency action, such as approval and implementation of the proposed project, may have a significant impact on the environment. The California Department

[262] When an agency takes major federal action, the agency must prepare an environmental impact statement where there are substantial questions about whether a project may cause significant degradation of the human environment. National Environmental Policy Act of 1969, § 2 et seq., 42 USC § 4321 et seq.; 40CFR § 1508.18. Plaintiffs rejoin that the "irreversible and irretrievable commitment of resources" standard concerns the timing of NEPA, not its applicability, and is therefore inapplicable. Plaintiffs are correct that the "irreversible and irretrievable commitment of resources" is most often used to determine when, rather than whether, NEPA analysis is required, and is designed to ensure that agencies engage in the NEPA process early enough to "insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts." Metcalf, 214 F.3d at 1143 (citing 40CFR 1501.2) Delta Smelt Consolidated Cases. *San Luis & Delta-Mendota Water Authority, et al. v. Salazar, et al.*, (2009) 686 F.Supp.2d 1026, United States District Court, E.D. California.

of Water Resources (DWR) and the Bureau of Reclamation (Reclamation) prepared a joint EIR/EIS for the California WaterFix to comply with the requirements of CEQA and NEPA.

The lead agencies must make the Draft EIR/EIS and RDEIR/SDEIS available for public review and comment pursuant to NEPA and CEQA. NEPA also requires circulation of the final document for 30 days prior to project approval.

Section 7 of the ESA

Section 7 of the ESA requires federal agencies to engage in formal consultation with the U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) for any proposed actions that are likely to adversely affect listed species. Under Section 7, each federal agency must ensure, in consultation with Secretary of the Interior or Commerce, as relevant, that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of areas determined to be critical habitat (16 United States Code [USC] 536(a)(2)). The proposed project under Alternative 4A (California WaterFix) triggers Section 7 consultation. Reclamation would be the lead federal action agency for Section 7 compliance. Reclamation's Section 7 compliance would be expected to also address the Section 7 compliance needs for the USACE permit actions. In cooperation with DWR, Reclamation has prepared a biological assessment for submission to USFWS and NMFS requesting formal consultation under ESA Section 7. It is expected that USFWS and NMFS would ultimately prepare a biological opinion authorizing incidental take of federally listed species. The Section 7 consultation process does not provide for public review and comment on draft biological opinions or biological assessments, described below.

Biological Assessment

A biological assessment is typically prepared to support formal Section 7 consultations for major construction and operational activities that may affect listed species or designated critical habitat. A biological assessment describes relevant existing conditions, the proposed action, and the effects of the proposed action on the listed species and critical habitat, and can identify measures that will be adopted to minimize those effects. The California WaterFix Biological Assessment provides much of the information needed by USFWS and NMFS to support the Section 7 consultation, although additional information may be prepared.

Biological Opinion

A biological opinion is issued by USFWS or NMFS at the completion of formal consultation. The biological opinion concludes that the project as proposed is either likely or not likely to jeopardize the continued existence of the species, or destroy or adversely modify designated critical habitat. If the biological opinion makes a "no jeopardy" conclusion, the action can proceed as proposed consistent with the incidental take statement (ITS), which authorizes a specified level of take. The ITS contains "reasonable and prudent measures" that are designed to minimize the level of incidental take and that must be implemented as a condition of the ITS (50 Code of Federal Regulations (CFR) 402.14(i)(5)). If the biological opinion makes a "jeopardy" conclusion, USFWS or NMFS will identify "reasonable and prudent alternatives" to the proposed action that would avoid jeopardy.

In this case, it is expected that USFWS and NMFS will issue biological opinions that addresses California WaterFix actions undertaken by Reclamation and CVP contractors within the Plan Area.

The California WaterFix Process Satisfies the Requirements for the ESA and NEPA/CEQA Processes

Neither NEPA nor the ESA includes a legal requirement to make the Section 7 biological opinions or biological assessments available at the time the Draft EIR/EIS and RDEIR/SDEIS were made available for public review. As discussed above, separate statutory schemes govern preparation of these documents and there is no requirement that USFWS and NMFS publicly circulate biological opinions or biological assessments. Instead, the project proponents coordinated CEQA and NEPA review with the ESA studies and created a process to develop the California WaterFix that is consistent with the general timing principles governing Section 7 consultation.

Coordinated NEPA Review and ESA Studies

40 CFR 1502.25(a), one of the Council on Environmental Quality's implementing NEPA regulations, addresses the relationship between NEPA and ESA review.

> To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by the . . . Endangered Species Act of 1973 . . . .

This regulation furthers the public's interest in agency efficiency and cost-effectiveness by encouraging coordination between NEPA and ESA efforts on a singular action, but it does not direct agencies to prepare any documents in a specific order.

The lead agencies accounted for 40 CFR 1502.25(a) by coordinating NEPA review and ESA studies. This effort is demonstrated by the issuance of the Draft BDCP and the Draft EIR/EIS in 2013, and issuance of the RDEIR/SDEIS coordinated with preparation of the Draft Biological Assessment in 2015. The environmental documents consider a broad range of environmental impacts, including impacts on aquatic and terrestrial species, natural communities, and ecosystems. Thus, the documents reflect the coordinated gathering and analysis of information regarding the California WaterFix's potential impacts on threatened and endangered species and their critical habitats.

Timing of Section 7 Consultation

Instead of tying the Section 7 consultation period to separate statutory process with its own schedule (such as the NEPA process), the ESA sets forth guiding principles to ensure that consultation occurs at the appropriate time to effectuate Section 7's purpose. 50CFR 402.14(a) directs each federal agency to "review its actions at the earliest possible time to determine whether any action may affect listed species or critical habitat" and, if such determination is made, "formal consultation is required." Once consultation has been initiated,

> [T]he Federal agency and the permit or license applicant shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2) of this section (16 U.S.C.1536 (d)).The process in place for the proposed project is consistent with these guiding principles. The project proponents have always understood that Section 7 would be required for NMFS and USFWS to approve the proposed project and for Reclamation to carry out any proposed project actions because the proposed project has the potential to affect listed species and critical habitat. Thus, NMFS and USFWS, which are the expert agencies for the purpose of Section 7 consultation, have been involved in the development of the BDCP and California WaterFix from its inception.

Recognizing that Section 7 consultation must occur, the project proponents developed a process to ensure that neither formulation nor implementation of any potential reasonable and prudent alternative measures will be foreclosed before the completion of consultation. Reclamation will consult with USFWS and NMFS on any project actions in the Plan Area. These consultations will be completed and will result in the issuance of a biological opinion[263] before there is any federal action to carry out the proposed project.

Some commenters have suggested that *Karuk Tribe of California v. United States Forest Service*, 681 F.3d 1006 (9th Cir. 2012), imposes additional timing requirements—beyond those discussed above—that would impact the proposed project's process. In *Karuk Tribe*, USFWS issued approvals to private parties to conduct mining activities in coho salmon critical habitat without consulting with federal wildlife agencies pursuant to Section 7. Citing 50CFR 402.14(a), the Ninth Circuit explained that, before engaging in a discretionary action that may affect a listed species or critical habitat, federal agencies must consult on the action pursuant to Section 7 and, consequently, USFWS should have consulted on its action before issuing any mining approvals. *Karuk Tribe*, 681 F.3d at 1020, 1030. *Karuk Tribe* confirmed the mandatory nature of Section 7 consultation. It did not address specific Section 7 timing requirements where, as in the case of the proposed project, the federal agencies have already committed to completing consultation before there will be any federal action to carry out a project. Thus, *Karuk Tribe* does not impose any different or additional timing requirements that the proposed project has not already complied with.

Information in the RDEIR/SDEIS and Draft EIR/EIS

The RDEIR/SDEIS and Draft EIR/EIS contain significant information regarding the potential impacts of the proposed project on species. Chapter 11, *Fish and Aquatic Resources*, of the Draft EIR/EIS and updated information in RDEIR/SDEIS that is included in this Final EIR/EIS describe the environmental setting and potential impacts of the proposed project on covered and non-covered fish and aquatic species in and upstream of the Delta. Chapter 12, *Terrestrial Biological Resources*, of the Draft EIR/EIS and updated information in the RDEIR/SDEIS that is provided in the Final EIR/EIS describe the environmental setting and affected environment for the terrestrial biological resources, which include covered and non-covered terrestrial species in the area where impacts might occur. Chapter 12 also describes the potential effects on terrestrial biological resources from implementation of the various alternatives. Thus, even though USFWS and NMFS have not yet prepared biological opinions for the proposed project, detailed documents are available that informs the public about the proposed project's environmental effects on listed species and their habitats.

[263] As previously noted, it is expected that USFWS and NMFS will issue one joint biological opinion.

Master Response 30: Modeling Approach and Availability of Newer Versions of the Models

This master response addresses the modeling approach used for evaluation of the alternatives in the Environmental Impact Report/Environmental Impact Statement (EIR/EIS). Further, it addresses the availability of different versions of the CALSIM II over the planning period and how they were addressed in the environmental documents.

The modeling approach used to evaluate the alternatives is described in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*. Several models and analytical methods were used to characterize and analyze the changes in water operations in the State Water Project (SWP) and Central Valley Project (CVP) systems under each alternative. The primary models used in the analyses are the CALSIM II and DSM2 models. These models represent the best available technical tools for purposes of evaluating the action alternatives' water operations. The models were used to compare and contrast the effects among various operational scenarios. The models incorporate a set of base assumptions; the assumptions were then modified to reflect the operations associated with each of the alternatives. The output of the models is used to show the comparative difference in the conditions among the different alternatives. In general, CALSIM II is used to simulate the operations of the SWP and CVP, resulting in information on projected storage conditions, river flows, exports, deliveries, and delta inflows, and outflows. The output of this model is then used by the DSM2 model to simulate the hydrodynamics, water quality, and particle tracking within the Delta. With the information generated from these models, the water deliveries, flows, water quality, and water levels can be compared for the different alternatives. Sections A, B, and C in Appendix 5A describes the modeling methods, assumptions, and results for various hydrological parameters.

Modeling Climate Change

Climate and sea level changes are incorporated into the CALSIM II model in two ways: changes to the input hydrology and changes to the Artificial Neural Networks (ANNs) (discussed below in the *D-1641 Water Quality Standards* section) to reflect a modified flow-salinity relationship in the Delta due to sea level rise. The application of climate change information in the EIR/EIS modeling was developed in conjunction with California Department of Water Resources (DWR), Bureau of Reclamation (Reclamation), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS) technical staff. The input hydrology and sea level rise assumptions that represent 2025 and 2060 climate change conditions are consistent with the methodology described in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*. The action alternatives and corresponding No Action Alternative make the same climate change assumptions. Because the assumptions are the same, climate change is not a variable that will be expected to affect the comparison of results. Section A.7 in Appendix 5A describes how climate change scenarios were selected for the EIR/EIS modeling. Please also see Master Response 19, *Climate Change and Greenhouse Gas Emissions*, for additional discussion of climate change considerations.

Modeling Results Should Only Be Used Comparatively, Rather Than Predictively

The CALSIM II and DSM2 results are appropriately used as "comparative tools" to assess relative changes in certain resource effects as compared to existing conditions, the No Action Alternative, and the different alternatives. Because CALSIM II relies on generalized rules, a course representation of the project operations, adjusted hydrologic conditions to reflect future demands and land use, and no specific operations in response to extreme events, results should not be expected to exactly match what operators might do in real time operations on a specific day, month or year within the simulation period. In reality, the operators would be informed by numerous real-time considerations such as salinity monitoring.

When comparing CALSIM II results to historical information, it is important to note major changes to the system have occurred within the range of the historic water year types, such as facilities coming in line, availability of Trinity Basin water, growth demands, changes in land use, and changes in regulatory requirements such as the 2008 USFWS *Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP)*and 2009 NMFS *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project* (2008 USFWS and 2009 NMFS BiOps). Therefore, any such comparisons should involve similar conditions. Even with similar facility, land use, demands, and regulatory conditions, differences would be expected due to specific actions in response to real-time events, such as levee failures, gate operations, extreme tidal events, or facility outages.

Although there are detailed model inputs and assumptions, the CALSIM II results can differ from real-time operations given that not all of the regulatory requirements (e.g., upstream, temperature requirements, reservoir release ramping rates) or real-time operational adjustments to Shasta operations are modeled in CALSIM II. The upstream reservoir releases in real-time are determined based on many factors such as available cold water pool within the reservoirs, In-Basin use including Delta flow requirements, forecasted hydrology, and unforeseen demands, among other factors. Many of the factors involve day-to-day decision-making by the SWP/CVP operators taking into account the recommendations from many of the decision-making/advisory teams such as the Sacramento River Temperature Task Group, Water Operations Management Team, b2 interagency team, and American River Operations Group, to name a few. These real time operations decisions, based on the input and recommendations listed above, do not follow a precise operation pattern that can be implemented into CALSIM II. Therefore, CALSIM II does not take into account all of the factors identified above given that it includes a generalized representation of the likely long-term operations.

Delta SWP/CVP diversions in CALSIM II are a function of many factors including physical pumping capacities, health and safety pumping requirements, south-of-Delta allocations, monthly demand patterns, available SWP/CVP Delta diversion capacities considering regulatory and operational constraints, and the San Luis rule curve (rule curve). The rule curve is an input to CALSIM II that provides a target storage each month that is dependent on south-of-Delta allocation and upstream reservoir storage. The rule curve allows CALSIM II to emulate judgment of the operators in balancing the north-of-Delta and south-of-Delta storage conditions. The rule curve could differ depending on the available SWP/CVP Delta diversion capacity during winter and spring months and the need to protect upstream carryover storage in the fall months. In the absence of any other operating criteria controlling the upstream reservoir releases or the Delta SWP/CVP diversions,

different rule curves can result in differences in upstream reservoir release patterns and SWP/CVP Delta diversions.

When system wide storage levels are at or near dead pool, also described as stressed water supply conditions, the CALSIM II model results should only be an indicator of stressed water supply conditions and should not necessarily be understood to reflect actually what would occur in the future under a given scenario. Appropriate use of model results is important. While there are certain components in the model that are downscaled to a daily time step (simulated or approximated hydrology), the results of those daily conditions are always averaged to a monthly time step. As an example, a certain number of days with and without the action is calculated and the monthly result is calculated using a day-weighted average based on the total number of days in that month. However, ultimately model operational decisions based on those components are made on a monthly basis. Therefore, the use of sub-monthly results of CALSIM II should be used with caution. Because it is a simulation, based on a combination of historical hydrology, the current regulatory environment and projected changes to the hydrology due to climate change, CALSIM II cannot be calibrated and therefore, should not be used in a predictive manner for purposes of CEQA and NEPA compliance to make definitive impact conclusions in isolation of a comparison to the baseline or alternatives. CALSIM II results are intended to be used in a comparative manner, which allows for assessing the changes in the SWP/CVP system operations and resulting incremental effects between the alternatives. The use of comparative models for an EIR/EIS is appropriate however when the model results are used to inform the decision of selection of the proposed project compared to effects from the range of alternatives considered in the EIR/EIS, consistent with CEQA and NEPA. This comparison approach is used in this Final EIR/EIS.

D-1641 Water Quality Standards

In CALSIM II, the reservoirs and SWP/CVP facilities are operated to assure the flow and water quality requirements for these systems are met. Meeting regulatory requirements, including Delta water quality objectives, is the highest operational priority in CALSIM II. The CALSIM II model uses an Artificial Neural Network (ANN) to approximate the complex flow-salinity relationships in the Delta. ANN models are commonly used to model complex relationships between inputs and outputs. The ANNs in CALSIM II determine the flows (combination of Delta flows and exports) required to meet the salinity-related Delta standards. The ANNs in CALSIM II emulate flow-salinity relationships derived from DSM2. Since the ANN is built to emulate the flow-salinity relationships from DSM2, CALSIM II is capable of simulating future scenarios with significant changes to the Delta, for example sea level change. The ANN simulates salinity at five of the locations that have standards for salinity under State Water Resources Control Board Decision 1641 (D-1641). These locations are 1) Contra Costa Canal, 2) Banks and Jones Pumping Plants, 3_ Sacramento River at Emmaton, 4) San Joaquin River at Jersey Point, and 5) Sacramento River at Collinsville. In addition, CALSIM II adjusts the operations of the New Melones Reservoir to meet D-1641 objectives at San Joaquin River at Vernalis. Since CALSIM II is a model with a monthly time-step and a number of daily D-1641 objectives are active during only portions of a month (e.g. April 1 to June 20 and June 20 to August 15), D-1641 objectives are calculated as a monthly weighted average. As a result, CALSIM II can only meet the D-1641 water quality objectives on a monthly time-step.

Due to many factors, including the difference in time-step size between the models, DSM2 may show exceedances that are more related to the differences in the assumptions within each model. In the past SWP/CVP operators have been able to make the necessary day to day adjustments in

operations in response to anticipated strong spring tides (which can usually be easily forecasted) or real-time salinity monitoring to meet the D-1641 water quality objectives most of the time. However, there is no mechanism built into DSM2 to make daily variations in river flows or SWP/CVP exports that prevent these exceedances. Thus, the majority of the water quality exceedances reported by DSM2 are caused mainly due to what is considered to be a "modeling artifact" and should not, in isolation of other factors, be considered as a foreseeable environmental impact of project operations.

Review and Development of CALSIM II

CALSIM II is a public access model, meaning that it is publicly available for use by interested members of the public. In 2004 a modeling workgroup was formed to establish a common modeling framework for evaluating future projects' "common assumptions." As a result of the interaction between DWR, Reclamation and the modeling work group, CALSIM II has been updated and improved over time.

CALSIM II is the state of the art model for the purposes of comparing various operational scenarios. It is a well-accepted model and has been used in multiple planning and regulatory processes, including but not limited to, the 2008 USFWS BiOp and 2009 NMFS BiOp, and the related federal litigation. CALSIM II was also used in Reclamation's EIS for the *Coordinated Long-Term Operation of the Central Valley Project and State Water Project* (2015).

CALSIM II has informed the State Water Resources Control Board (State Water Board) during many proceedings, including as part of its triannual reviews of the Bay-Delta Water Quality Control Plan. DWR and the State Water Board also have an agreement whereby DWR completes CALSIM II and other modeling runs at the request of the State Water Board staff in support of the Water Boards planning and regulatory decision-making processes.

DWR submits annual reports to the State Water Board updating the State Water Board on DWR's progress in further refining CALSIM II, as well as its other modeling tools. (See http://baydeltaoffice.water.ca.gov/modeling/deltamodeling/AR2014/AR-2014-All.pdf.)

CALSIM II has been subject to peer review. In 2003, the California Bay Delta Authority Science Program sponsored a peer review panel that issued a report titled, *A Strategic review of CALSIM II and its Use for Water planning, Management, and Operations in Central California*. (available at: http://baydeltaoffice.water.ca.gov/modeling/hydrology/CalSimII/). DWR responded to the peer review in a 2004 report titled *Peer Review Response, A Report by DWR/Reclamation in Reply to the Peer Review of the CALSIM II Model Sponsored by the CALFED Science Program*. (available at: http://baydeltaoffice.water.ca.gov/modeling/hydrology/CalSimII/).

CALSIM II has also been peer reviewed as part of the publication of the model (Draper, et al. 2004). DWR completed a quasi-validation of the CALSIM II model in 2003 (see *CALSIM II Simulation of Historical SWP/CVP Operations*, Technical Memorandum Report, November 2003 [CALSIM II Simulation Study]). The CALSIM II Simulation Study showed that CALSIM II could approximate historic trends suggesting that CALSIM II was a reasonable tool for water resource planning. The CALSIM II Simulation Study results show that simulated SWP Table A and CVP south-of-Delta deliveries during the drought (1987-1992) were within 5 percent of historical values, suggesting a close fit between simulated and actual values. (CALSIM Simulation Study, p. ES-2)

A comparison of Sacramento Valley inflow to the Delta (flow at Freeport) is a good measure of how well Sacramento Valley hydrology is simulated by CALSIM II. The CALSIM II Simulation Study results show that for this quasi-validation run CALSIM II simulated Delta inflows were 0.3 percent greater than historical, a reasonably close fit between simulated and actual values (see CALSIM Simulation Study)

Comparison of the Net Delta Outflow Index, a measure of how well the Sacramento-San Joaquin Delta is represented by CALSIM II, also show a close fit between simulated and actual. The CALSIM II Simulation Study results show simulated values are 3.5 percent less than historical during the 1987-1992 time-period. These results also show that simulated long-term (1975-1998) average deliveries compare quite well and are within 7 percent of historical values, suggesting a reasonably close fit between simulated and actual values. DWR and Reclamation have continued to improve CALSIM II since 2003.

Comparison of CALSIM II 2010 and 2015

In an effort to maintain consistency while developing this EIR/EIS, DWR used the CALSIM II 2010 version throughout the multiple-year development of the Draft EIR/EIS and the RDEIR/SDEIS. At the request of the state and federal fisheries agencies, the CALSIM II 2015 version was used for the biological assessment. As part of Appendix 5G, *Comparison of FEIRS Alternative 4A Modeling Results to the California Water Fix Section BA Proposed Action Modeling Results*, was added to compare incremental changes in the SWP/CVP operations between the No Action Alternative and the Alternative 4A (H3+ Scenario) using the 2010 version and 2015 version of CALSIM II models. As noted in Appendix 5G, changes in the CVP and SWP operations results under Alternative 4A using the 2010 model vs 2015 model remained similar when compared to their respective No Action Alternatives. Appendix 5G, also notes that the changes in the Delta salinity results under the Alternative 4A remained similar between the two versions of the models when compared to their respective No Action Alternatives.

Modeling Review and Comments

During the public review periods for the Draft EIR/EIS and RDEIR/SDEIS, several comments were received regarding the modeling performed for the CEQA/NEPA analysis; these comments relied on the modeling review performed by the MBK Engineers. In addition, several individual entities sent similar reports related to the MBK modeling review. These reports, including the name, date, and location where responses to MBK comments can be found, are listed in the table below. Models such as CALSIM II, which simulate the regulatory and operations criteria, constantly evolve as the understanding of the system and operations improves and the assumptions are better defined. The majority of the issues raised in this modeling review by MBK are related to the CALSIM II model assumptions and inputs that are common to the No Action Alternative and the action alternatives. As such any improvements or updates to CALSIM II that are part of the base model, are not expected to alter the incremental changes between the action alternatives and the No Action Alternative, which form the basis for the impact analyses included in the EIR/EIS.

MBK's independent modeling of the No Action Alternative was inconsistent with the modeling performed by the lead agencies for the EIR/EIS because it included different assumptions than the Draft EIR/EIS No Action Alternative (the basis for their independent modeling of Alternative 4). Furthermore, MBK's independent modeling of Alternative 4 included different assumptions than the Draft EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions

include May–October north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from those presented Draft EIR/EIS. In a planning study, such as the EIR/EIS, the models are generally frozen in time to allow consistency and comparability in the effects analysis. Based on DWR and Reclamation's vast experience in developing the underlying modeling utilized in the EIR/EIS analysis and their understanding of the nuances of operational modeling for use as a planning study, the implementation used in the EIR/EIS modeling provides the appropriate assessment for supporting the EIR/EIS, because the operating criteria are consistent across the No Action Alternative and project alternatives, allowing for an "apples-to apples" comparison to estimate potential project effects.

The EIR/EIS modeling of action alternatives and the No Action Alternative model with projected climate change and sea level rise effects at 2025 and 2060 shows that changes in climate and sea level could result in dead pool conditions in SWP and CVP reservoirs upstream of the Delta under both the No Action Alternative as well as the action alternatives. The dead pool conditions presented in the CALSIM II model results in the EIR/EIS are based on modeled SWP and CVP water operations under current regulations and future demand assumptions. Decisions made in CALSIM II are based upon monthly algorithms that do not reflect real-time decisions that occur on a daily or weekly basis by SWP and CVP operations, such as drought operations during the recent drought. Instead the model simulates long-term monthly operating criteria per the current regulations for all water year types. The CALSIM II model does not reflect emergency operations such as actions approved by the State Water Board under 2014 and 2015 Temporary Urgency Change Petitions that could occur in drought conditions. As described in Chapter 5, *Water Supply*, the EIR/EIS analyses assume continued implementation of regulatory requirements in accordance with the requirements under the CEQA definition of Existing Conditions and under the NEPA definition of the No Action Alternative.

Future long-term changes in the regulatory requirements (e.g., State Water Board Water Quality Control Plan updates) would only occur following detailed engineering and environmental analyses, including project-specific analyses under CEQA, NEPA, ESA, and CESA. Following adoption of changes to State and federal regulatory requirements, DWR and Reclamation would need to determine if changes in the SWP and CVP operations would be necessary. However, at this time, it would be speculative to predict future regulatory changes; therefore, future regulatory changes are not included in the No Action Alternative and are only considered in a qualitative manner in the Cumulative Impact Analysis in the EIR/EIS.

Table MR30-1. MBK Engineers Modeling Review Comment Letters

Date	Title	Comment Letter #
07/11/14	Review of Bay Delta Conservation Program Modeling by MBK Engineers and Daniel B. Steiner, Consulting Engineer.	1633
6/20/14	Report on Review of Bay Delta Conservation Program Modeling, MBK Engineers and Dan Steiner.	1633
07/17/14	Technical Comments on Bay-Delta Conservation Plan Modeling. Provided by MBK Engineers for Reclamation District 830, by Bourez, Ho and Kienlen.	1569
07/11/14	Memo from MBK Engineers, "Technical Comments on Bay-Delta Conservation Plan Modeling," dated July 11, 2014, authored by Bergfeld, Easton and Bourez	1613
10/28/15	Technical Comments on the Bay Delta Conservation Plan/California Water Fix Partially Recirculated Draft EIR/Supplemental Draft EIS, MBK Engineers by Walter Bourez, Lee Bergfeld and Dan Easton	2654

Master Response 31: BDCP/California Water Fix and 2009 Delta Reform Act

This master response discusses a wide variety of issues related to the Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act),[264] the Delta Stewardship Council (DSC), the Independent Science Board, and the requirements of the Delta Plan, which the DSC adopted in May 2013. This master response will summarize the appendices that address Delta Reform Act (Appendix 3I, BDCP Compliance with the 2009 Delta Reform Act*, and Appendix 3J,* Alternative 4A [Proposed Project] Compliance with the 2009 Delta Reform Act*) and assist the reader in locating information in the Final EIR/EIS that address comments that focus on the Delta Reform Act and related issues.*

The California Department of Water Resources (DWR) recognizes and intends to fully comply with its obligations under the 2009 Delta Reform Act, but the legal requirements and the precise manner of compliance varies between the BDCP alternatives and non-HCP alternatives. As discussed in Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*, Alternatives 1A through 9 in the Draft EIR/EIS were developed in a manner to comply with the BDCP-specific habitat conservation plan (HCP)/natural community conservation plan (NCCP) requirements set forth in Water Code Sections 85320 et seq. As discussed in Appendix 3J, *Alternative 4A (Proposed Project) Compliance with the 2009 Delta Reform Act*, the proposed project (Alternative 4A) and Alternatives 2D and 5A are not being proposed to fulfill the requirements of an HCP/NCCP, meaning Water Code Sections 85320 et seq. would not apply to these non-HCP alternatives. The proposed project (Alternative 4A) and Alternatives 2D and 5A would follow a different path to demonstrate consistency with the Delta Plan, The Delta Plan is currently the subject of ongoing litigation that could affect the its policies and recommendations or interpretation of the Delta Reform Act. On June 24, 2016, Sacramento Superior Court Judge Michael P. Kenny ruled the Delta Plan invalid (*Delta Stewardship Council Cases*, JCCP 4758), pending the DSC's remedying certain deficiencies identified in his ruling. Subsequently, the DSC filed notices of appeal in the four coordinated cases where petitioners prevailed in part. Those notices automatically stay the effect of Judge Kenny's ruling, leaving the Delta Plan in place pending the outcome of the appeals in the coordinated cases. Thus, the Delta Plan and the DSC's consistency certification process may undergo changes depending on the outcome of the litigation, including the resolution of all appeals.

Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*

Appendix 3I summarizes the Delta Reform Act requirements for incorporating the BDCP into the Delta Plan. Incorporation of the BDCP into the Delta Plan would qualify the public benefits of the BDCP for state funding. Appendix 3I explains how the BDCP and the accompanying EIR/EIS meet these requirements and guides readers to the supporting information in the Final EIR/EIS.

Topics covered in Appendix 3I include compliance with California Water Code Section 85320(b):

- Flow Criteria, Rates of Diversion & Operational Criteria
- Water Operations Alternatives Analysis

[264] SB X7-1 (2009), codified in various sections of the Public Resources Code and Sections 85000–85350 of the Water Code.

- Reasonable Range of Alternatives
- Climate Change, Sea Level Rise Impacts On BDCP Alternatives
- Migratory Fish & Aquatic Resources
- Sacramento River and San Joaquin River Flood Management
- Delta Conveyance Alternatives and Natural Disasters
- Delta Conveyance Alternatives and Water Quality

Notably, these are requirements for incorporation of the BDCP into the Delta Plan. While the DSC is not required to incorporate the new Preferred Alternative 4A, the California WaterFix, into the Delta Plan, it could exercise its discretion to do so. However, because the California WaterFix is not an HCP/NCCP, it would not qualify for public funding. Instead, the public water agency beneficiaries would pay the costs of the environmental review, planning, design, construction, and mitigation for the California WaterFix as required under Section 85089 of the Water Code.

Appendix 3J, *Alternative 4A (Proposed Project) Compliance with the 2009 Delta Reform Act*

Appendix 3J explains the requirements the Delta Reform Act and Delta Plan policies that may apply to the California WaterFix. This appendix includes a brief overview of the pertinent provisions of the Delta Reform Act and the certification of consistency process (Water Code Section 85225–85225.25 et seq.).

Responses to Comments by Specific Issue Raised

Below is a summary of some of the major issues raised by commenters, with a brief summary and references to Final EIR/EIS chapters, appendices and response to comment letters for reader guidance to the relevant information.

1. Comment Letters
    - For responses to comments from the DSC and Delta Independent Science Board on the RDEIR/SDEIS, see comment letter 2546.
    - For responses to comments from the DSC and Delta Independent Science Board comments on the BDCP, see comment letter 1448.
2. Coequal Goals

    Some commenters suggest that neither the BDCP nor the California WaterFix are consistent with the coequal goals for the Delta, and therefore cannot be approved. There is no requirement in state law that the project achieve the coequal goals. Nevertheless, both the BDCP and California WaterFix would advance the coequal goals, consistent with state policy.

    In the Delta Reform Act, the Legislature declared that the Delta "serves Californians concurrently as both the hub of the California water system and the most valuable estuary and wetland ecosystem on the west coast of North and South America" (Water Code Section 85002). Accordingly, the Legislature adopted the coequal goals for the Delta of "providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem" (California Public Resources Code Section 29702; Water Code Section 85054). The

Delta Reform Act further specifies that the coequal goals must be achieved "in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place" (Water Code Section 85054).

In light of the environmental challenges facing the Delta and the vital importance of water conveyed through and diverted from the Delta to the state's economy, the Legislature stated the intent of the Delta Reform Act is:

> to provide for the sustainable management of the Sacramento-San Joaquin Delta ecosystem, to provide for a more reliable water supply for the state, to protect and enhance the quality of water supply from the Delta, and to establish a governance structure that will direct efforts across state agencies to develop a legally enforceable Delta Plan.
>
> (Water Code Section 85001, subd. (c).)

The Delta Reform Act also recognizes that new conveyance infrastructure is essential to achieving the coequal goals. For instance, Water Code Section 85004, subdivision (b) recognizes that providing a more reliable water supply involves "new . . . Delta conveyance facilities," and Section 85020(f) includes improving the water conveyance system among the objectives inherent in the coequal goals. In addition, the Delta Plan must include performance measurements to track the health of the Delta estuary and the "reliability of California water supply imported from the Sacramento River or the San Joaquin River watershed" (Water Code Section 85211). Indeed, the Delta Reform Act includes provisions for mandatory incorporation of the BDCP into the Delta Plan, and the BDCP includes new water conveyance infrastructure as Conservation Measure 1 (Water Code Section 85320).

The fundamental purpose of the BDCP and the new proposed project, the California WaterFix, is to make physical and operational improvements to the SWP water conveyance system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations.[265] Both the BDCP and California WaterFix are consistent with and further the achievement of the coequal goals by reducing impacts on sensitive fish species by reducing reverse flows and fish entrainment and impingement in the south Delta and protecting CVP and SWP water supplies by increasing opportunities to divert water during high-outflow events and making such supplies more resilient to adverse impacts of climate change and associated sea level rise, as well as catastrophic levee failures that may result from seismic events or other causes. Thus, while the California WaterFix is not required to achieve the coequal goals, it will further both of the coequal goals in a manner consistent with state policy. See Chapter 2, *Project Objective and Purpose and Need*, for more information.

3. Delta As Place

Some comments suggest the proposed project cannot be consistent with the Delta Plan or meet Delta Reform Act requirements because of impacts on the unique cultural, recreational, and agricultural values of the California Delta as an evolving place. Prior to initiating implementation of the proposed project, Alternative 4A (California WaterFix), DWR must submit a written certification that the project is consistent with the applicable policies in the Delta Plan (Water Code Section 85225; 23 California Code of Regulations [CCR] Section 5002, subd. (b)). In

[265] See Final EIR/EIS, Chapter 2, *Project Objectives and Purpose and Need*, for additional background regarding the project objectives and purpose; for the list of the project objectives under CEQA, see Section 2.3, *Project Objectives*. For the Statement of Purpose and Need pursuant to NEPA, see Section 2.4, *Purpose Statement*.

addition, under the Delta Plan regulations, if consistency with one or more individual policies in the Delta Plan is infeasible, DWR may certify that the California WaterFix is, on the whole, consistent with the coequal goals themselves (23 CCR Section 5002, subd. (b)(1)). See Master Response 24, *Delta as Place*, for a more specific response to comments regarding Delta as Place.

4. Reduced Reliance on the Delta

The Delta Reform Act includes a state policy to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. (Water Code Section 85021.) Under Section 85021, it is the obligation of each region that relies on water from the Delta watershed, not DWR or the Bureau of Reclamation, to determine the best ways to meet this goal by improving regional self-reliance. Neither DWR nor any of the public water agency proponents of the proposed project have the legal authority or duty to impose a statewide investment strategy on different regions of the state or individual water suppliers that depend on water from the Delta watershed. In addition, DWR lacks any legal authority or duty to make and implement localized decisions about water technology investments, to develop and impose investments for new water supply projects that serve particular geographic regions, or to mandate coordinated efforts among local and regional water suppliers.

See Appendix 1C, *Demand Management Measures*, and Master Response 35, *Local Resource Programs and Water Conservation in Southern California*, for details on some of the measures taken by water suppliers in regions that rely, in part, on water conveyed through the Delta by coordinated operations of the CVP and SWP to improve regional self-reliance consistent with the state's reduced reliance policy in Section 85021.

5. Delta Plan Consistency

As stated above, the Delta Plan is currently the subject of litigation which could affect the legal requirements and/or implementation of the Delta Plan. DWR will fully comply with the Delta Reform Act, and it will continue to monitor the Delta Plan litigation and future Delta Plan amendments, and will file a certification of consistency for the proposed project, Alternative 4A, California WaterFix, at the appropriate time. As discussed above, Alternative 4, BDCP, would follow a different path for compliance with the Delta Reform Act. For additional discussion, please see Appendix 3J, *Alternative 4A (Proposed Project) Compliance with the 2009 Delta Reform Act*.

6. The Development and Use of the 2010 Flow Criteria Report

Some commenters suggest that the BDCP or California WaterFix are inconsistent with the coequal goal of ecosystem restoration if they do not incorporate the State Water Resources Control Board's (SWRCB's) 2010 Flow Criteria Report. This is not the case. The Delta Reform Act (Water Code Section 85086, subd. (c)(1) required the SWRCB to develop flow criteria for the Delta ecosystem necessary to protect public trust resources, as specified in the Delta Reform Act "[f]or the purpose of informing planning decisions for the Delta Plan and the Bay Delta Conservation Plan." The Delta Reform Act specifically provides that "[t]he flow criteria shall not be considered predecisional with regard to any subsequent board consideration of a permit, including any permit in connection with a final BDCP." (*Ibid*.)

The SWRCB's flow criteria report was completed in August 2010. The 2010 Flow Criteria Report identifies the flows that would be needed in the Delta ecosystem "if fishery protection was the

sole purpose for which its waters were put to beneficial use." ("2010 Flow Criteria Report, "Note to Readers.")

Consistent with the Delta Reform Act, the report explains that the criteria are intended to inform the Delta Plan, the BDCP, and the SWRCB's own "on-going and subsequent proceedings," including the planned update to the 2006 Bay-Delta Water Quality Control Plan and the proceedings for the change in point of diversion water rights petition filed by DWR and Reclamation. (2010 Flow Criteria Report, pp. 3, 9–10). The report emphasizes the artificially narrow scope of the criteria it was required to develop under the Delta Reform Act:

> The State Water Board does not make any determination regarding the feasibility of the public trust criteria and consistency with the public interest in this report.
>
> In this forum, the State Water Board has not considered the allocation of water resources, the application of the public trust to a particular water diversion or use, water supply impacts, or any balancing between potentially competing public trust resources (such as potential adverse effects of increased Delta outflow on the maintenance of coldwater resources for salmonids in upstream areas). Any such application of the State Water Board's public trust responsibilities, including any balancing of public trust values and water rights, would be conducted through an adjudicative or regulatory proceeding. Instead, the State Water Board's focus here is solely on identifying public trust resources in the Delta ecosystem and determining the flow criteria, as directed by Water Code section 85086.
>
> (2010 Flow Criteria Report, p. 3.)

The report further explains that it is not pre-decisional with respect to any future water rights proceeding, including DWR's and Reclamation's petition for a change in their respective water rights permits to change or add new points of diversion:

> If the DWR and/or the USBR in the future request the State Water Board to amend the water right permits for the State Water Project (SWP) and/or the Central Valley Project (CVP) to move the authorized points of diversion for the projects from the southern Delta to the Sacramento River, Water Code section 85086 directs the State Water Board to include in any order approving a change in the point of the diversion of the projects appropriate Delta flow criteria. At that time, the State Water Board will determine appropriate permit terms and conditions. That decision will be informed by the analysis in this report, but will also take many other factors into consideration, including any newly developed scientific information, habitat conditions at the time, and other policies of the State, including the relative benefit to be derived from all beneficial uses of water. The flow criteria in this report are not pre-decisional in regard to any State Water Board action. (See e.g., Wat. Code, § 85086, subd. (c)(1).)
>
> (2010 Flow Criteria Report, pp. 3-4.)

Thus, the 2010 Flow Criteria Report has no binding regulatory effect, includes express warnings that it does not take into account other beneficial uses of water, including flood control, upstream habitat, or beneficial uses for human needs, and is not evidence that the proposed project or any project alternatives will have significant impacts on the environment.

For a more detailed discussion of the 2010 Flow Criteria Report, please see Section 3I.4 of Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*.

7. Climate Change and the BDCP

Water Code Section 85320, subdivision (b)(2)(C), of the Delta Reform Act requires that, to be eligible for incorporation into the Delta Plan, the BDCP EIR/EIS comply with (CEQA, including by providing a "comprehensive" review and analysis of:

> The potential effects of climate change, possible sea level rise up to 55 inches, and possible changes in total precipitation and runoff patterns on the conveyance alternatives and habitat restoration activities considered in the environmental impact report.

For additional discussion, please see Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*, and Master Response 19, *Climate Change and Greenhouse Gas Emissions*.

8. Reasonable Range of Alternatives

Water Code Section 85320, subdivision (b)(2)(A), of the Delta Reform Act requires that, to be eligible for incorporation into the Delta Plan, the BDCP must, in compliance with CEQA, include a "comprehensive" review and analysis of:

> A reasonable range of flow criteria, rates of diversion, and other operational criteria required to satisfy the criteria for approval of a natural community conservation plan as provided in subdivision (a) of Section 2820 of the Fish and Game Code [the California Natural Community Conservation Planning Act], and other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions, which will identify the remaining water available for export and other beneficial uses.

For additional discussion, see Appendix 3I, *Compliance with the 2009 Delta Reform Act*, and Master Response 4, *Alternatives Development*.

9. Flood/levee concerns

Water Code Section 85320, subdivision (b)(2)(E), of the Delta Reform Act requires that, to be eligible for incorporation into the Delta Plan, the BDCP EIR/EIS must also comprehensively review and analyze the "potential effects on Sacramento River and San Joaquin River flood management." Appendix 3I explains the EIR/EIS process used in evaluating the effects of the BDCP alternatives in terms of flood management concerns, including reservoir capacity and channel capacity.

For additional discussion, please see Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*, and Appendix 6A, *BDCP/California WaterFix Coordination with Flood Management Requirements*.

10. Water Quality

Water Code Section 85320, subdivision (b)(2)(G) requires the BDCP to comprehensively review and analyze the "potential effects of each Delta conveyance alternative on Delta water quality."

Chapter 8, *Water Quality*, describes the surface water quality impacts associated with all BDCP alternatives and non-HCP alternatives. The analysis evaluates the potential direct and indirect effects on water quality within the affected environment that would result from implementing each alternative. As described in Chapter 8, Section 8.3, the direct effects analyzed include both temporary construction-related and permanent operations-related effects. For additional discussion, see Appendix 3I, *BDCP Compliance with the 2009 Delta Reform Act*.

Master Response 32: Water Rights Compliance Issues for California WaterFix

This master response generally describes the existing water rights held by the California Department of Water Resources (DWR) for the operations of the State Water Project (SWP) and to the Department of the Interior, Bureau of Reclamation (Reclamation,) for the operations of the Central Valley Project (CVP). This master response addresses how there would be no change in the permitted quantity, maximum rate of diversion, seasonal pattern or timing, purpose of use, and place of use for the SWP and CVP with the proposed project and how the only water rights compliance request in front of the State Water Resources Control Board relates to the additional points of diversion that would be added to the water right permits This master response also generally discusses how the proposed project will not result in injury to other legal users of water as a result of that modification to DWR's and Reclamation's water rights.

Water Rights Background

In the State of California, water rights are issued as rights to use the water for reasonable and beneficial uses. When California became a state in 1850, the state legislature adopted English Common Law, including water rights laws, which included the doctrine of riparian rights that are granted to landowners for properties that are adjacent to natural water courses and are entitled to make reasonable use of water on or flowing past their properties. California also recognizes "pueblo water rights" that were granted under both Spanish and Mexican governments prior to California becoming part of the United States. California water rights also were influenced by the practice of miners of "posting notice" at their points of diversion to substantiate water rights as an "appropriative right" for areas not adjacent to the rivers and streams, or to store water for later use. The rule applies to these rights "first in time, first in right." Appropriative water rights were given statutory recognition in 1872.

Riparian water rights are attached to riparian parcels, and give the landowner the right to divert water, adjacent to natural water courses, for reasonable and beneficial uses on the property. Appropriative water rights have the following characteristics:

- Name of water body that is the source of the water right.
- Amount of water which can be reasonably and beneficially used on the parcel.
- Amount of the water to be included in the water right.
- Location of the point of diversion from the water body.
- Location and season for storage water.
- Location of the place of use for the water right.
- Purpose of use of the water rights.
- Priority date of the water right (appropriative water rights, only)
- Specific conditions in the water right permit or license (e.g., minimum remaining stream flows downstream of the diversion; appropriative water rights only).

Appropriative rights are allocated under a "first in time, first in right" priority system, and the priorities of appropriative rights are based on the dates when the water rights are first used to support beneficial uses. Appropriative water rights established prior to 1914 (known as pre-1914 water rights) apply to surface water and subterranean streams flowing through known and definite channels and are not subject to a statutory permit system. The priorities of pre-1914 rights are based on the date of posting notice indicating an intention to divert and use water.

Appropriative water rights issued after 1914 are based upon an application to the State Water Resources Control Board (State Water Board) for a permit to divert and use surface water and subterranean streams flowing through known and definite channels. After issuance of a permit, the State Water Board issues a license to confirm the diversion and use of water authorized by the permit. The priority of post-1914 appropriative water rights is based on the date of the application. The quantity of the appropriative water rights is the amount put to beneficial use within the upper limit of the permit or license. Water rights for the SWP and CVP operations are post-1914 appropriative water rights.

Water rights are issued for a wide range of beneficial uses, such as hydropower, municipal, industrial, and agricultural water uses. However, not all of the water diverted under the water rights is consumptively used. For example, water diverted for hydropower electric generation is fully returned to the water bodies; however, a portion of the water diverted for municipal, industrial, and agricultural water uses is consumed and is not returned to the water bodies. In addition, the amount of water diverted depends on water rights priorities and the need to meet environmental flow and quality requirements only for DWR and Reclamation. Therefore, it is difficult to compare the total volume of water rights permits and licenses to the total amount of water available in the system. For example, water rights issued to DWR and Reclamation are not fully available to provide water under the SWP and CVP water contracts in many years due to hydrology, the demands of senior water rights holders, and regulatory requirements. In those years, water deliveries to SWP and CVP water contractors are less than total contract amounts.

Proposed Project Objectives and Purpose and Need

CEQA requires that an EIR contain a "statement of the objectives sought by the proposed project." As stated in the Final EIR/EIS, DWR's fundamental purpose in proposing the project is to make physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations (Chapter 2, Section 2.3, *Project Objectives*.) The fundamental purpose, in turn, gives rise to the more specific project objectives. One such objective as stated in Chapter 2, Section 2.3 is:

> Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements.

Just as CEQA requires an EIR to include a statement of "project objectives" NEPA requires that an EIS include a statement of "purpose and need" to which the federal agency is responding in proposing the alternatives, including the proposed action (40 Code of Federal Regulations 1502.13). In Chapter 2, Section 2.3, Reclamation has identified one purpose and need of the proposed project to be:

> Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements

of state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements.

The above phrase—*restore and protect the ability of the SWP and CVP to deliver up to full contract amounts*—is related to the upper limit of legal CVP and SWP contractual water amounts and delineates an upper bound for development of the EIR/EIS alternatives, not a target. It is not intended to imply that increased quantities of water will be delivered under the proposed project. As clearly stated in the project objectives and purpose and need, it is DWR's and Reclamation's intent that the proposed project be developed to operate consistent with existing SWP/CVP water right contracts (see also Master Response 3, *Project Objectives and Purpose and Need*). The proposed project does not propose new water rights contracts or changes to existing water rights contracts affecting the quantity, timing, purpose of use, or place of use of water, as more fully described, below.

Water Rights for the State Water Project

The primary water supply for the SWP are provided under four water rights permits associated with unstored flow in the Feather River, unregulated flow in the Delta, and storage releases from Lake Oroville on the Feather River, as summarized in Table MR32-1.

Table MR32-1. Water Rights Permits for the State Water Project

Permit Number	Location of Diversion/Rediversion	Maximum Direct Diversion (cfs)	Maximum Diversion to Storage (acre-feet)
16478	Direct diversion of up to 1,400 cfs from Feather River at Oroville Dam, rediversion from Lake Oroville through the SWP conveyance facilities to Perris Dam; and storage in Lake Oroville.	1,400	380,000
16479	Direct diversion from Feather River in Sacramento-San Joaquin Delta channels, rediversion from Lake Oroville through the SWP conveyance facilities to Perris Dam; and storage in Lake Oroville.	Feather River: 1,360 Delta: 6,185	Feather River: 3,500,000 Delta: 42,100
16481	Direct diversion from Italian Slough and Old River as part of Sacrament-San Joaquin Delta channels; and storage in Lake Oroville.	2,115	44,000
16482	Direct diversion from Italian Slough and Old River as part of Sacramento-San Joaquin Delta channels and San Luis Creek; and storage in Lake Oroville.		1,100,000

DWR operates the SWP consistent with its water rights, and regulatory requirements, including Water Rights Decision 1641 (D-1641) and biological opinions issued by the U.S. Fish and Wildlife Service and National Marine Fisheries Services for the long-term coordinated operations of the CVP and SWP.

DWR's water rights provide for existing authorized points of diversion and rediversion from Lake Oroville, Thermalito Reservoir, North Bay Aqueduct (Barker Slough Pumping Plant), Clifton Court Forebay (Banks Pumping Plant), and Jones Pumping Plant (previously known as Tracy Pumping Plant). Under these water rights, the combined SWP diversion rate from the Delta at the Banks and Jones pumping plants is up to 10,300 cubic feet per second (cfs), although, diversion at the Clifton Court Forebay/Banks Pumping Plant is limited under the requirements of the U.S. Army Corps of Engineers (USACE).

DWR has three types of agreements or contracts associated with its water rights, including:

- Long-term Water Supply Agreements: These agreements provide for a share of SWP supply. Water under the SWP water rights is delivered under these agreements only after water is delivered to all senior water rights holders and water rights settlement contractors, and water is released to meet regulatory requirements, and water rights and general settlement agreements.
- Water Rights Settlement Agreements: These agreements were developed when the SWP water rights were initially initiated. These agreements include six Feather River Settlement Agreements for local agencies that divert along Feather River downstream of Lake Oroville that define water supply with contract deficiency provisions based on inflow to Lake Oroville. These agreements do not include entitlements to storage in Lake Oroville.
- General Settlement Agreements: These agreements were developed with five Delta entities (Contra Costa Water District, City of Antioch, North Delta Water Agency, Byron-Bethany Irrigation District, and East Contra Costa Irrigation District). These agreements generally include water quality and/or water supply provisions.

DWR settlement agreements provide terms of the agreement related to each specific entity. These agreements do not create water rights for the local agencies, as the local agencies that have signed the water rights settlement agreement with DWR have established their water rights independently through the appropriative water rights system. The agreements contain terms and conditions that are intended to protect the local agencies from impacts of SWP construction and operations, and to resolve potentials issues with DWR about such impacts. The implementation of the terms of each agreement is defined within those agreements or amendments thereto. Some local agency commenters may not interpret the contractual responsibilities of DWR the same as DWR and implementation of certain terms could be resolved through dispute processes under those contracts. These disputes are not discussed in detail in this response nor are they considered a general water right issue as governed by the State Water Board or DWR permits. The proposed project does not propose any changes to rules governing transactions between contractors and individual agricultural producers. Different obligations under each contract/agreement are outside the water rights process and State Water Board jurisdiction.

Water Rights for the Central Valley Project

The primary water supply for the CVP provided under 31 water rights permits including 22 direct diversion and storage water rights permits and nine hydropower water rights permits associated with flows and storage in Shasta Lake, Trinity Lake, Folsom Lake, and New Melones Reservoir. The operations of these facilities are integrated to provide water to senior water rights holders and water contractors and comply with legislative and regulatory requirements. Under the California WaterFix, Reclamation is petitioning the State Water Board to change the place of diversion for 11 water rights permits summarized in Table MR32-2.

Table MR32-2. Location of Diversions for Central Valley Project Water Rights Permits

Permit Number	Location of Diversion/Rediversion	Maximum Direct Diversion (cfs)	Maximum Diversion to Storage (acre-feet)
12721	Direct diversion from Sacramento River at Shasta Lake, and storage from October 1 through June 30; and storage in Shasta Lake.	8,000	3,190,000
12722	Direct diversion from Sacramento River at Shasta Lake from September 1 through June 30 year-round, direct diversion throughout the year in the Sacramento River downstream of Shasta Dam and in the Delta, and storage from October 1 through June 30; and storage in Shasta Lake.	1,000	310,000
12723	Direct diversion from Sacramento River at Shasta Lake from September 1 through June 30 year-round, direct diversion throughout the year in the Sacramento River downstream of Shasta Dam and in the Delta, and storage from October 1 through June 30 in Shasta Lake.	9,000	1,303,000
11967	Direct diversion from Trinity River at Trinity Lake year-round; and storage in Trinity Lake year-round.	2,500	1,540,000
11968	Direct diversion from Trinity River at Trinity Lake year-round; and storage in Trinity Lake year-round.	300	200,000
11969	Direct diversion from Trinity River at Trinity Lake year-round; and storage in Trinity Lake year-round.	1,700	1,800,000
11971	Storage in Trinity Lake year-round.		700,000
11973	Direct diversion from Trinity River at Lewiston Reservoir year-round.	1,500	
12364	Direct diversion from Clear Creek at Whiskeytown Reservoir November 1 through April 1; and storage in Whiskeytown Reservoir November 1 through April 1.	3,600	250,000
11315	Direct diversion from American River at Folsom Dam from November 1 through August 1; and storage in Folsom Lake from November 1 through July 1.	8,000	1,000,000
11316	Direct diversion from American River at Folsom Dam from November 1 through August 1; and storage in Folsom Lake from November 1 through July 1.	700	300,000

Reclamation exercises the above CVP water rights consistent with California's water right priorities, as well as applicable federal and state environmental regulatory requirements.

The State Water Board has issued several decisions and orders that have modified permits related to CVP water rights, many of which are the same decisions and orders that affect Reclamation CVP operations, including Water Rights Order 98-09 and Water Rights Decisions 893, 1422, 1485, 1616, and 1641. Reclamation also operates diversions from and storage in Trinity Lake in accordance with the Trinity River Mainstem Fishery Restoration Record of Decision. The CVP water rights are only exercised after fulfillment of all other senior water rights, legislative requirements (e.g., Central Valley Project Improvement Act, Coordinated Operations Agreement, and California Area of Origin Act requirements), and regulatory requirements (e.g. State Water Board Water Rights Orders and Decisions, biological opinions issued by the U.S. Fish and Wildlife Service and National Marine Fisheries Service for the Long-term Coordinated Operation of the CVP and SWP, and USACE approvals. These water rights provide for existing authorized points of diversion and rediversion from Trinity Dam, Shasta Dam, Whiskeytown Dam, Folsom Dam, Friant Dam, New Melones Dam, Tehama Colusa Canal, points of diversion for Sacramento River Settlement Contractors, Contra Costa Canal Pumping Plant, Jones Pumping Plant (previously known as Tracy Pumping Plant), and Clifton Court Forebay (Banks Pumping Plant).

Reclamation has four types of agreement or contracts associated with water rights, including:

- Long-term Water Service and Repayment Contracts: The 127 contracts provide for a share of CVP supply. Water under the CVP water rights is delivered under these contracts only after water is delivered to all senior water rights holders and water rights settlement contractors, and water is released to meet regulatory requirements.
- Water Rights Settlement Contracts: These 136 negotiated agreements with water users downstream of Shasta Dam were developed to settle water rights disputes that arose from construction of CVP facilities. The total contract amount is delivered annually except in extremely dry years (known as "Shasta Critical Year") when 75 percent of the total contract amount is provided. Many of the water rights settlement contracts include a Base Water Supply related to the water right and a Project Water Supply related to stored CVP water supplies in Shasta Lake.
- San Joaquin River Exchange Contracts: These four contracts with water rights holders on the San Joaquin River allowed for the exchange of San Joaquin River water for CVP water supplies from the Delta. The total contract amount is delivered annually except during Shasta Critical Years when 75 percent of the total contract amount is provided.
- San Joaquin River Settlement Agreements: These nine contracts were developed with entities along the San Joaquin River. The total contract amount is delivered annually except during Shasta Critical Years when 75 percent of the total contract amount is provided.
- San Joaquin River Holding Contracts: These 128 contracts with entities along the San Joaquin River between Friant Dam and Gravelly Ford settle water rights disputes. These contracts do not include shortage provisions.
- Other Settlement Contracts and Operations Agreements: These five contracts/agreements were entered with entities along the American and Stanislaus rivers.

State Water Resources Control Board Change of Point of Diversion Petition

On August 26, 2015, supplemented by an Addendum and Errata on September 11, 2015, DWR and Reclamation jointly submitted a permit application, or petition, for a change to the water rights necessary to allow for the implementation of key components of the Preferred Alternative, Alternative 4A, the California WaterFix. The petition requests State Water Board approval to add points of diversion and rediversion to the existing water right permits (and existing diversion authorization) held by the State Water Project and Central Valley Project. The State Water Board's change petition process and associated hearing for the California WaterFix, and the State Water Board's eventual decision on the petition, are solely about and limited to the California WaterFix proposal to add additional diversion points on the Sacramento River. All other provisions of the exiting permit including places of use, manner of use, other existing points of diversion, quantities of diversion and other water rights terms and conditions identified in D-1641 would remain intact.

As specified in the permit application:

> The intent of the Petition for Change is to add points of diversion and rediversion contained in water rights permits held by DWR and Reclamation to allow SWP and CVP water to move through the intakes identified by Alternative 4A (California WaterFix) of the Bay Delta Conservation Plan/California WaterFix Partially Recirculated Draft Environmental Impact Report / Supplemental Draft Environmental Impact Statement, if ultimately constructed.
>
> Alternative 4A includes the construction of three fish-screened intakes on the east bank of the Sacramento River between Clarksburg and Courtland, each with a capacity of 3,000 cfs. Each intake would be from 1,259 to 1,667 feet in length along the river bank, depending on location, and would consist of a reinforced concrete structure subdivided into individual bays that can be isolated and managed separately. Specific discussions of the components of Alternative 4A most relevant to the attached water rights change petition can be found within the Partially Recirculated Draft EIR / Supplemental Draft EIS at sections 1.1; 1.1.4; 4.1; 4.1.2.2; 4.1.2.3; 4.1.2.4; 4.3.7; 4.3.8; 11.1.5.2; Appendix A; Appendix 3B

As noted in the State Water Board change petition, the rate of direct diversion and diversion to storage, maximum allowable combination of diversions from the Delta, and the season of diversions will remain unchanged under the proposed project as a whole, including implementation of Alternative 4A. DWR has diverted water from the Delta at a maximum rate allowed under the existing permits. The requested change permit will not increase the rate at which water can be diverted from the Delta. The maximum annual quantity of SWP water pumped at the Banks pumping plant to date is 4,042,851 acre feet (af) in 2005 which includes water directly diverted as well as water rediverted from Lake Oroville storage (State Water Board Change Petition Exhibit DWR-53, Section III, and Table 1, Summary Version of the State Water Project Annual Report of Operations). The maximum annual quantity of CVP water pumped at the Jones Pumping Plant to date is 3,344,223 af in 1988, which includes water directly diverted as well as water rediverted from CVP storage.

While the amount of water diverted in any particular year will vary based on hydrologic and other conditions, the quantities of water diverted through existing and proposed new intake facilities under the proposed project will be consistent with SWP and CVP existing water rights and permits—it does not include any regulatory actions that would affect water rights holders other than DWR, Reclamation, and SWP and CVP contractors.

Water Rights Deliveries Related to SWP and CVP Operations

Under the Existing Conditions, No Action Alternative, and all of the action alternatives evaluated in the EIR/EIS, the CALSIM II model prioritizes senior water rights holders and compliance with existing legislative and regulatory requirements prior to delivery of water to SWP and CVP water contractors. The proposed project does not seek any new water rights, nor to increase the total amount of water rights to be diverted by DWR and Reclamation. Nor does it change the quantity, rate, season, place or purpose of use. It only seeks to add new points of diversion.

The No Action Alternative and all of the action alternatives were analyzed at future conditions with assumptions for population growth, climate change, and sea level rise that would occur with or without implementation of California WaterFix. The EIR/EIS analysis anticipates increased water use by senior water rights holders in the Sacramento Valley, especially in the American River watershed, that would reduce the availability of water for deliveries to SWP and CVP water contractors, as indicated in the EIR/EIS through the comparison of the No Action Alternative and Existing Conditions. The No Action Alternative and all of the action alternatives provide an additional 177,000 acre-feet/year of water rights diversions upstream of Folsom Lake for senior water rights holders.

The No Action Alternative and all of the action alternatives also consider the effects of climate change and sea level rise in the future. It is anticipated that climate change will result in more frequent and more severe rainfall events and less snowfall than under historic conditions. These rainfall events would result in periods of time when rainfall would decline in drier years more than under Existing Conditions. Due to the reduction in rainfall and increased sea level rise, western Delta salinity could become greater than under the No Action Alternative and all of the action alternatives. Water would be released from the SWP and CVP reservoirs to reduce Delta salinity, however, in some years, adequate water supplies may not be available to reduce the surface water salinity, as described in Chapter 8, *Water Quality*. This would occur with or without implementation of the California WaterFix. Effects due to climate change are provided for informational purposes only and do not lead to mitigation in the EIR/EIS.

Other Water Rights Holders

The action alternatives analyzed in the Final EIR/EIS only include the use of water from existing SWP and CVP water rights or voluntary water transfers from other water rights holders. Other regulated elements of the existing SWP/CVP water rights permits, such as authorized use and place of use of water, will also remain unchanged with implementation of Alternative 4A. Thus, the proposed project and its alternatives do not reduce the protections afforded to other water right holders based on California's water rights system.

Upstream Water Rights

For a more detailed discussion of why the proposed project would not affect water rights of other legal water users or protections granted under area-of-origin laws, please see Master Response 26, *Area of Origin and Other Legal Water Users*. The proposed project would not affect upstream water rights. It aims to allow the SWP and CVP to deliver more reliable water supplies, in a way that is less harmful to fish. The project does not increase the amount of water to which DWR holds water rights or for use as allowed under its contracts. The CALSIM II modeling performed for conveyance facility operations takes into account projected future demand for water supply in areas upstream of the

Delta (as part of the future No Action baseline) prior to calculating proposed project diversion estimates to ensure that no area-of-origin protections or upstream water rights are affected by project conveyance facilities. Please see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for additional modeling details.

Nothing in the proposed project would change current regulatory requirements that protect the beneficial use of water. When exporting water from the Delta, DWR and Reclamation must comply with all current state and federal regulatory requirements in effect at the time of the export pumping, including numerous environmental standards, laws, and regulations relating to Delta inflow and outflow, Delta water quality, fish protection, environmental needs, water rights, and the needs of other users. The needs of other users include in-Delta users and the water rights of the areas of origin to Delta inflow. These requirements include applicable State Water Board orders, USACE permits, Biological Opinions, Federal Energy Regulatory Commission requirements, and other regulatory constraints including any relevant judicial orders in effect at the time of the operation. The State Water Board has established water quality and flow requirements and limits on the rate of export of water that can be pumped by the state and federal pumping plants and is currently reviewing those requirements to ensure beneficial uses are protected.

SWP and CVP Salinity Control

Some commenters claim that the SWP and CVP operations should ensure water quality in the Delta regardless of the hydrodynamic and climate conditions and therefore any changes to water quality is an impact to in-Delta diverters' water rights. Many commenters cite to the Delta Protection Act (Water Code Sections 12200–12205) as the basis for SWP/CVP operations requirements to ensure water quality in the Delta. These same positions were taken in the D-1641 hearings before the State Water Board.[266] In reviewing the validity of D-1641, the Court of Appeal held that releases from water storage to meet Delta standards, even if such flow would not have been available under natural flow conditions is not a water right of in-Delta users.[267]

There are five basic factors that influence salinity in the Delta:

1. Delta Inflows
2. Net Delta Outflow
3. Exports
4. Net Channel Depletions to meet Delta Consumptive Use (Delta Islands)
5. Tidal Flux

SWP/CVP operators have no control over most of these factors. SWP/CVP operators are only able to control: 1) releases from water project reservoirs upstream of the Delta, which are a portion of Delta Inflows; and 2) exports. When the SWP and CVP are operating in balanced conditions to control salinity, either for a near term or seasonal objective, operators adjust reservoir releases and export rates to meet the objective. Operators must consider in advance how the other factors might influence the system in order to attempt to maintain balanced conditions to control salinity. This is

[266] *State Water Resources Control Board Cases* (2006) 136 Cal.App.4th 674, 768–770.
[267] *Id*. at pp. 771-772.

further complicated because of the amount of time it takes for SWP/CVP reservoir releases to reach the Delta.

Delta Inflows

SWP/CVP operators must evaluate Delta Inflows and add water to the system by releasing water from SWP/CVP reservoirs to meet salinity and Net Delta Outflow objectives. According to D-1641, inflow consists of contributions from the Sacramento River (measured at Freeport); discharges by Sacramento Regional Country Sanitation District; contributions from Yolo County Creeks and tributaries on the East side of the San Joaquin Valley; and the San Joaquin River (measured at Vernalis). Delta Inflows are a combination of: 1) water released from SWP/CVP reservoirs; 2) water released from non-SWP/CVP reservoirs; and 3) accretions to the system both upstream of the Delta and in the Delta.[268]

Net Delta Outflow

Net Delta Outflow (NDO) is a key index of the physical, chemical, biological state of the Delta.[269] It includes daily river inflows, water exports, rainfall, and estimates of Delta agriculture depletions to estimate the "net" flow at the confluence of the Sacramento and San Joaquin Rivers, nominally at Chipps Island. There are also flow gauges at Freeport, Vernalis, and on the Mokelumne and Calaveras Rivers. After water is released from SWP/CVP reservoirs, water users upstream of and in the Delta divert various amounts of water as it makes its way to the Delta and through it. Agricultural diversions are generally not scheduled in advance, because irrigation needs depend on local weather and soil conditions. Warmer conditions increase the need for irrigation or cause it to occur earlier. With each diversion, less water is available to contribute to NDO. In other words, there is less water to flush and dilute ocean and land-derived salts out of the Delta.

SWP/CVP operators assess flows from non-SWP/CVP reservoirs and other accretions independent of SWP/CVP reservoir releases and reservoir releases that are made to meet the remaining demands in the Delta. Forecasts of in-Delta demand, current salinity trends, and expected tidal conditions are taken into account to determine the amount of water that needs to be released from SWP/CVP reservoirs. The four SWP/CVP reservoirs tributary to the Delta are Shasta, Oroville, Folsom, and New Melones. Approximate travel times to the Delta are as follows: Shasta – 5 days; Oroville – 3 days; Folsom – 1 day; and New Melones – 1 day. Therefore, SWP/CVP operators must evaluate current weather, salinity trends, and water demands to forecast what conditions will be in the Delta several days ahead of time. This situation is analogous to a person pressing the accelerator in his car anticipating what the driving conditions will be miles down the road.

Exports

With current facilities, SWP/CVP operators adjust the exports scheduled at the SWP's Clifton Court Forebay (Banks Pumping Plant) and the CVP's Jones Pumping Plant to further prevent salinity incursion into the Delta. SWP/CVP operators forecast how temperature, humidity, wind conditions, and barometric pressure will affect the tides and the projected use patterns days in advance. On a typical summer day, the exports average about 9,000 cfs, because summer demands south of the

[268] There are also depletions both upstream of the Delta and in the Delta.

[269] See California Department of Water Resources, Dayflow, an Estimate of Daily Average Delta Outflow (accessed Nov. 9, 2016), available at http://www.water.ca.gov/dayflow/.

Delta are usually high. In 2015, SWP and CVP exports were held to 1,500 cfs combined, and SWP/CVP operators were also required to meet an NDO of 3,000 cfs. Under these conditions, tides and diversions play a much bigger role in determining the salinity of the Delta. When operators see salinity increasing at the various Delta EC measurement stations, they reduce or stop exports, or make additional reservoir releases. With new northern intake facilities as proposed under the California WaterFix, SWP/CVP operations will continue to be managed to meet water quality standards as required. Dual intakes (South and North intakes) will provide an additional tool that will assist SWP/CVP operators in managing storage releases to meet the standards. Additional in-Delta use data to consider in forecasting in-Delta consumption and use would further assist SWP/CVP operators.

Net Channel Depletions

Few diverters of water within the Delta monitor and report the amount of water that is diverted or returned using flow meters. Non-SWP/CVP diversions are not coordinated with SWP/CVP releases of SWP/CVP exports. The channel depletions are estimated by first estimating Delta crop water use demands and then accounting for sources of water to meet these demands. Generating meaningful estimates of Delta channel depletion requires having accurate and timely land use surveys, an accurate estimation of seasonal variations in crop water use, and an accurate representation of relevant meteorological information. Each of these factors affects modeling Delta consumptive use and channel depletions.

The State Water Board has implemented a comprehensive program to better collect water use data in the Delta. This includes reporting requirements as detailed on the program website. See: http://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/water_use.shtml (accessed, Nov. 10, 2016).

DWR uses two models to estimate Delta channel depletions: DAYFLOW and the Delta Islands Consumptive Use Model (DICU). The Delta channel depletions in DAYFLOW are derived from a 1965 DWR study that was based on land use surveys from the late 1950s and early 1960s. In the 1960s, many of the crops grown in the Delta were row crops and not permanent crops.

The change from row crops to permanent crops has changed water demand. Now, warmer weather in the non-agricultural season (October through March) will cause a spike in agricultural diversions for the permanent crops that typically would not have occurred in decades past. While DWR's current methods for estimating channel depletions (DAYFLOW and DICU) incorporate daily precipitation, crop water needs are based on monthly pan evaporation data. So during the summer months with very little or no rainfall, crop water use is ultimately based on monthly data. DAYFLOW provides daily channel depletions, but these are derived from fitting a curve through the monthly values. Therefore, historic studies of Delta diversions actually provide little information that is applicable on a daily basis.

Delta channel depletions are a significant factor considered in computer modeling of Delta salinity. Regardless of the temperature or moisture in any month consumptive uses remains level throughout the month. July is shown as the peak month in each study, topping out at nearly 5,000 cfs with one set of assumptions. June is the second highest month with averages around 4,000 cfs, and August is the next highest month with a little over 3,000 cfs. Actual consumptive uses vary radically with weather and crop conditions making it a major controlling factor for Delta salinity.

Tides

The tides also influence how SWP/CVP operators manage salinity in the Delta. Tidal flux is the tidal energy that pushes brackish Bay water into the Delta twice each day. In a water year that is not dry or critically dry, flows on the Sacramento River are about 13,000 cfs on an average summer day, while flows on the San Joaquin River are about 3,000 cfs. The tides near Antioch, however, flow in at a rate of 330,000 cfs and flow out a few hours later at nearly the same rate. Therefore, the tidal energy is roughly two orders of magnitude higher than the combined river flows. The net difference between the total flow into the Delta (during flood tide) and the flow out of the Delta (during ebb tide) is commonly referred to as NDO. The NDO is responsible for keeping the salinity low in the Delta. The higher the NDO, the better assurance the salinity will remain at acceptable levels in accordance with D-1641.

Since NDO cannot be measured accurately, the Net Delta Outflow Index was developed for regulatory purposes. The Net Delta Outflow Index is an estimate of the net difference between ebbing and flooding tidal flows at Chipps Island, aliased to a daily average.[270] Depending on conditions, actual NDO outflow for a given day can be much higher or lower than the Dayflow estimate. Tidal flux varies on a twice monthly cycle, and two times each month the tides build consistently to a high "spring" tide based on astronomical forces (gravity) such as the moon and sun. Other forces also contribute to the increased tides such as on-shore winds and atmospheric pressure. These factors can add a foot or more to the astronomical tides that are published in tide tables. Increased tidal forces contribute to lower NDO to the point where the NDO sometimes is negative and bay salinity invades the Delta.

In-Delta Diversions Impact Flow and Water Quality

If there is insufficient natural flow to protect public interest requirements in the Delta, it is in significant part because in-basin diverters are depleting that flow. The SWP and CVP, having the lowest priority to natural flow under the Watershed Protections statutes (Water Code Sections 11460–11463), have long since ceased their diversions of natural flow, and dramatically limited exports to stored water only. The State Water Board embraced the SWP/CVP's limitations in meeting in-Delta standards first in D-1594, the theoretical underpinnings of Term 91, which, on a limited basis, curtails post-1964 diverters of natural flow to help implement Delta objectives. The principle was a prominent aspect of the *Racanelli* decision[271], which held that others beside the SWP and CVP should be considered by the State Water Board in allocating responsibility for implementing Delta water quality objectives.[4]

In-Delta Riparian Rights

The Watershed Protection Statutes (Water Code Section 11460) makes the rights of in-basin diverters, including riparian owners, superior to the rights of the SWP and CVP to divert water for export from the basin. The SWP and CVP must, as well, abide by the water quality objectives set by

[270] See California Department of Water Resources, Dayflow, an Estimate of Daily Average Delta Outflow (accessed Nov. 9, 2016), available at http://www.water.ca.gov/dayflow/

[271] *U.S. v. SWRCB* (1986) 182 Cal. App 3d 82.

[4] Notably, it was advanced by the State Water Board in its Hearing Notice for the D-1641 Phase 8 hearings, which stated that public interest responsibility for Delta outflow must be allocated equitably, including among tributary users, whether by pro rata curtailments, by water right priority, or by a Modified Term 91 approach.

the State Water Board in its Water Quality Control Plans that protect the water quality reasonably required for beneficial uses in the Delta, including domestic and agricultural uses by riparian diverters.

Water Quality Impacts of the Proposed Project

Comments related to water quality impacts are best responded to in Chapter 8, *Water Quality*, of the Final EIR/EIS and also by reviewing the Master Response 14, *Water Quality*. Mitigation for any water quality impacts identified in Chapter 8 is described in detail within that chapter but commenters should also review Master Response 22, *Standards Governing the Adequacy of Mitigation Measures*.

The proposed project, Alternative 4A, will not affect the quantity of water available to in-basin users. The State Water Board has assigned responsibility to the SWP/CVP for meeting certain D-1641 water quality and flow objectives when unregulated flow is insufficient to meet the requirements. When unregulated flow is insufficient to meet in-basin demands, SWP/CVP operators adjust exports or increase storage as necessary to meet the requirements of D-1641. The SWP/CVP must continue making supplemental storage releases to meet the D-1641 requirements even after they have ceased appropriating unregulated flow, operating the SWP/CVP to meet D-1641 first before appropriations are made for SWP/CVP purposes. For this reason, both under Existing Conditions and as proposed for the California WaterFix, water supply diversions will not affect the quantity of water available for other legal users within the watershed.

There will be no change in return flow associated with the change in point of diversion. Water diverted at the new intake facilities will be delivered to a modified Clifton Court Forebay and exported through Banks or Jones pumping plants. The SWP export locations and place of use will not change. The Petition for Change does not propose any changes to upstream criteria. The proposed facilities and the rest of the SWP/CVP will be operated to meet authorized purposes, including flood control, water supply, and fish and wildlife purposes, in a manner that comports with applicable water rights and contractual obligations.

Although there may be changes in the SWP/CVP storage levels or releases, this would not injure other legal users of water because, as explained above, water users without a contract with DWR and/or Reclamation do not have a right to stored water releases from the SWP/CVP. Therefore, the quantity of water available for diversion by in-basin water users will not be affected by any changes in stored water releases that may occur as a result of the California WaterFix.

The modeling demonstrates that carryover storage levels from the four California WaterFix operational scenarios, H1 to H4, would be higher or similar to storage levels in the No Action Alternative. This information demonstrates a continued ability to meet contractual obligations.

Flexible Operations and Delta Water Quality Standards

Operation of the SWP/CVP occurs in a dynamic and challenging environment. DWR and Reclamation constantly monitor Delta water quality conditions and SWP/CVP operations are constantly adjusted in real time as necessary to compensate for hydrologic, tidal, and other influences to ensure that SWP/CVP remain in compliance with the water quality standards established by the State Water Board. These decisions take into account real-time conditions and are able to account for many factors that best available models cannot simulate. In Chapter 8, *Water Quality*, Sections 8.3.1.4 and 8.3.1.7, the history of compliance with Delta water quality objectives is summarized and discussed.

In the more than 30-year history of the water quality standards, there are relatively few instances in which water quality objectives were exceeded when SWP/CVP operations had any ability to prevent the exceedances.

Under the proposed project, the SWP/CVP will still be required to meet all water quality and flow objectives established by the State Water Resources Board. However, construction of new points of diversions on the Sacramento River will allow greater flexibility in operation of both south and north Delta diversions, and better balancing of the associated water quality and hydrodynamic benefits for fish, drinking water, agriculture, and other beneficial uses.

The variable split between north and south diversions will allow for a flexible and improved approach to meeting compliance with flow and salinity standards. For example, if salinity increases were occurring at the Emmaton compliance point on the lower Sacramento River, SWP/CVP could opt to utilize the south Delta diversion location to a greater extent thereby allowing greater flow to travel down the lower Sacramento River. By contrast, if salinity increases were occurring on the lower San Joaquin River, SWP/CVP could decrease the amount of water diverted at south Delta diversion and move a greater percentage of the diversions to the new Sacramento River diversions thereby limiting reverse flows into the Central Delta near Jersey Point. The additional location for SWP/CVP diversions enhances the flexibility of the water management system to more optimally balance flows. This increased diversion flexibility afforded with the new diversions under the proposed project would enhance the capabilities of SWP/CVP to meet existing Bay-Delta requirements.

In real-time, environmental conditions arise that can affect compliance with water quality objectives that cannot be foreseen or simulated in the models that were used to assess potential impacts from the proposed project. These conditions include unpredictable tidal and wind conditions, facility gate failures, operational actions to improve fish habitat conditions, and prolonged extreme drought conditions, among others. It is likely that some exceedances simulated in the modeling as presented in the Final EIR/EIS would not occur or could be addressed with real time adjustments in operations.

While real-time adjustment in operations is a routine practice to ensure water quality objectives are met, the Final EIR/EIS outlines specific mitigation measures that will capitalize on the flexibility provided by the proposed project facilities to manage water quality standards. Mitigation Measure WQ-11e: Implement Real-time Operations, Including Adaptively Managing Diversions at the North and South Delta Intakes, to Reduce or Eliminate Water Quality Degradation in the Western Delta, and Mitigation Measure WQ-11f: Adaptively Manage Head of Old River Barrier and Diversions at the North and South Delta Intakes to Reduce or Eliminate Exceedances of the Bay-Delta WQCP Objective at Prisoners Point, provide further assurances that the SWP and CVP will be operated to meet water quality objectives.

Master Response 33: Adaptive Management and Monitoring

This master response describes the Adaptive Management and Monitoring Program to be implemented under the Preferred Alternative 4A and Alternatives 2D and 5A (the BDCP alternatives first presented in the 2013 Draft EIR/EIS would have a consistent but different program). This master response includes a general discussion of the adaptive management approach, in addition to mechanisms to address scientific uncertainties and effects related to operations of the preferred alternative.

Considerable scientific uncertainty exists regarding the Delta ecosystem, including the habitat needs of the sensitive aquatic species, the effects of CVP/SWP operations, the effects of other stressors, the adequacy of existing regulatory standards and processes, and the related operational criteria for the proposed project. To address this uncertainty, DWR and Reclamation are proposing a robust program of collaborative science, monitoring, and adaptive management. The Adaptive Management and Monitoring Program will likely be refined, as appropriate, through the processes associated with Section 7 of the federal Endangered Species Act (ESA), Section 2081(b) of California Endangered Species Act (CESA), and the water rights change petition hearing, by USFWS and NMFS, CDFW, and the State Water Board, respectively.

The 2013 Draft EIR/EIS was circulated for public review along with a Draft BDCP that described the then proposed Adaptive Management and Monitoring Program in detail in Chapter 3, Section 3.6 of the Draft BDCP. Subsequent to the release of the 2013 Draft EIR/EIS and Draft BDCP, after reviewing comments on the Draft BDCP and Draft EIR/EIS, and through continuing discussions with the federal and state fish and wildlife agencies, the lead agencies decided to develop several alternatives without a habitat conservation plan/natural community conservation plan, along with a number of improvements to the conveyance facility alignment. Accordingly, Alternative 4 in the Draft EIR/EIS is no longer considered the lead agencies' preferred alternative. As described in the RDEIR/SDEIS and Final EIR/EIS, the preferred alternative is now Alternative 4A, referred to as the California WaterFix, which would not include a HCP or NCCP. Alternative 4A and the two other non-HCP alternatives, Alternatives 2D and 5A) are described and analyzed in the Final EIR/EIS. Instead of the HCP/NCCP, the proposed facilities under these three alternatives would secure compliance with the ESA via the interagency consultation provisions contained in Section 7 of the ESA. Similarly, compliance with CESA would be secured via an incidental take permit issued by California Department of Fish and Wildlife, pursuant to Section 2081(b) of the California Fish and Game Code.

Although the Adaptive Management and Monitoring Program described in the BDCP is specific to the BDCP alternatives and is not required for the compliance strategy without an HCP/NCCP, the concept of adaptive management has nonetheless been retained as part of the Preferred Alternative 4A and the other non-HCP alternatives. Although there are similarities, the Adaptive Management and Monitoring Program described in the BDCP should not be confused with Adaptive Management and Monitoring Program proposed with Preferred Alternative 4A and Alternatives 2D and 5A. The latter is described in Final EIR/EIS in Chapter 3, *Description of Alternatives*, Section 3.6.4.4. Please also refer to Master Response 5, *BDCP*, which describes revisions and details to the adaptive management program included as part of the BDCP and specific to the BDCP alternatives.

Adaptive Management and Monitoring Program for California WaterFix

The Adaptive Management and Monitoring Program for the California WaterFix (Alternative 4A) and the other non-HCP alternatives would address the California WaterFix ESA Biological Opinions (BiOps) and Section 2081(b) Incidental Take Permit (ITP), the 2008 USFWS *Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP)*and 2009 NMFS *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project* (2008 USFWS and 2009 NMFS BiOps), and CESA authorizations for the SWP. A framework for the Adaptive Management and Monitoring Program is presented in Chapter 3, *Description of Alternatives*, and a final Adaptive Management and Monitoring Program plan document and/or Memorandum of Agreement will be completed and made available as part of the California WaterFix BiOps, and prior to the Record of Decision. The Adaptive Management and Monitoring Program is intended to provide a process for addressing uncertainty associated with the effectiveness of management actions taken to prevent jeopardy and adverse modification of critical habitat for federally listed species and to prevent jeopardy and minimize and fully mitigate effects on state listed species from: ongoing operations of the SWP/CVP, habitat restoration actions required for California WaterFix and/or the 2008 USFWS and 2009 NMFS BiOps and CESA authorizations for the SWP, and from future construction and operation of the proposed California WaterFix. The Adaptive Management and Monitoring Program will also provide input on certain aspects of the proposed north Delta diversion (NDD) screen final design.

Overview of the Adaptive Management Approach

The Adaptive Management and Monitoring Program will be implemented through a series of distinct steps meant to identify scientific and/or management uncertainties, develop research actions to reduce that uncertainty, and incorporate new information into management actions. The Adaptive Management and Monitoring Program is comprised of four components, referred to as "phases," of adaptive management: 1) Plan; 2) Assess; 3) Integrate; and 4) Adapt. The scope of the Adaptive Management and Monitoring Program consists of 7 primary objectives:

1. Inform and improve on:
    a. Operation of SWP/CVP facilities within the Delta under the existing BiOps and CESA authorizations and the new California WaterFix BiOps and 2081(b) ITP.
    b. Design of fish facilities, including the proposed NDD fish screens.
    c. Habitat restoration and non-operational mitigation relative to in-Delta SWP/CVP operations under existing and new BiOps and CESA authorizations.
2. Ensure the ongoing SWP/CVP operations and future construction and operation of the California WaterFix are implemented in a way that reflects the current state of scientific understanding and improves the viability of the species to the extent possible.
3. Maintain and improve water supply reliability, to the extent possible.
4. Communicate (provide transparency) to the broader community of state, federal and local agencies, the public, universities, scientific investigators, public water agencies and nongovernment stakeholders how existing operations will be assessed, how new scientific

investigations will be prioritized, and carried out, and how the results of those investigations will be integrated into adaptive management decisions.

5. Build on and support existing efforts of the Interagency Ecological Program, Collaborative Science and Adaptive Management and Monitoring Program, Delta Stewardship Council/Delta Science Program, and other relevant individual agency science initiatives.

The objectives for adaptive management for the proposed project's Adaptive Management and Monitoring Program are to:

- Create an adaptive management plan for long-term operations of the CVP and SWP that is consistent with state and federal endangered species laws and the co-equal goals of the Delta Reform Act.
- Develop and implement a robust science program needed to implement the adaptive management plan.
- Identify the key uncertainties about how Central Valley water operations and other management actions to benefit the species can be implemented to avoid jeopardy and meet other regulatory standards applicable to state and federally-listed fishes, including future effects associated with the California WaterFix.
- Describe the basic processes and governance principles that will be needed to ensure the application of best available scientific information to all aspects of decision-making on multiple time scales (*i.e.*, multi-year, annual planning/forecasting, and even real-time operations considered within the bounds of annual planning).
- Communicate and provide transparency to the broader community of state, federal and local agencies; universities; scientific investigators; public water agencies and nongovernment stakeholders on how existing operations and other management actions will be assessed, how new scientific investigations will be prioritized (and funded) and how the results of those investigations will be integrated into adaptive management decisions.
- Describe how the proposed Adaptive Management and Monitoring Program can build on and support existing efforts of the Interagency Ecological Program (IEP), Collaborative Science and Adaptive Management Program (CSAMP), Delta Stewardship Council/Delta Science Program (DSP), and individual agency science initiatives.
- Describe how management relevant science in the areas of a) integrated monitoring and research, b) studies and models, c) information synthesis, and d) data access will be augmented.

Using Adaptive Management to Address Scientific Uncertainties and Adverse Effects

The analyses of effects of the California Water Fix described in the EIR/EIS are based on the best available information. Additionally, the operational criteria, physical components of the project, and mitigation included in the project are meant to reduce all environmental effects to the extent feasible. However, the tools and data available today are limited, and the Adaptive Management and Monitoring Program will provide a mechanism for identifying uncertainties, implementing research actions to reduce those uncertainties, and make adjustments based on that new information. Additionally, during project implementation, additional information will be available as to the effects of the project, and adaptive management can be used to adjust the project to address these

effects. Adaptive management can result in changes in operational criteria based on new information to avoid adverse effects. The process for revising operational criteria will be described in the Adaptive Management and Monitoring Program. In addition, an associated Adaptive Management Framework document has been prepared as a commitment from agencies to an adaptive management approach that will reduce uncertainties and improve operations of both the Central Valley and State Water Projects while meeting the Delta's co-equal goals. This framework document will be reviewed by independent peer review panels to verify that this approach will ensure investments in science to achieve desired goals and objectives and will entail working collaboratively within the limits of regulatory requirements and constraints while still maintaining the authorities of individual agencies. Please also see Master Response 44, *Decision Tree Approach*, which explains how the use of adaptive management for targeted research and studies that had been proposed under the decision tree has evolved for the California WaterFix in investigating the appropriateness of the assumed initial operations criteria.

Evaluation of Effects of Adaptive Management

The outcome of adaptive management will vary based on the information developed as part of the research and implementation aspects of the Adaptive Management and Monitoring Program. The full potential of adjustments made under adaptive management cannot be anticipated and is speculative at this time. However, any adjustments made would be governed by existing regulatory standards under the ESA, CESA, and State Water Board requirements and would likely require additional compliance with CEQA, NEPA, ESA, and/or CESA and would be evaluated as proposed for the need for any additional environmental compliance or permitting requirements beyond what is done for the California WaterFix at this time.

Master Response 34: Beneficial Use of Water

This master response discusses how beneficial use law applies to the proposed project.

This topic raises a policy issue that does not specifically relate to the environmental impacts of the proposed project as presented in this EIR/EIS. Neither CEQA nor NEPA require that the project objectives or purpose and need of a project include a modification of how water is regulated in California and does not require the lead agencies to consider alterations in farming practices or other beneficial uses of water that is lawfully diverted as part of its consideration of a particular proposal for action. Therefore, the project objectives and purpose and need, presented in Chapter 2 of the Final EIR/EIS, and proposed project and alternatives do not propose to alter the place of use or purpose of use of water conveyed by new conveyance.

The guiding principle of California's water law and policy is contained in Article X, Section 2 of the California Constitution, which declares that:

> the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.

This section requires that all uses of the state's water, including public trust uses, be both reasonable and beneficial. [272] It places a significant limitation on water rights by prohibiting the waste, unreasonable use, unreasonable method of use, and unreasonable method of diversion of water.[273]

Rights to use water are also subject to state government's obligations as trustee of certain resources for Californians (see Master Response 13, *Public Trust*, for more information on public trust issues associated with the proposed project). The public trust doctrine is a legal doctrine that imposes responsibility on state agencies "to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible."[274]

Importantly, under California law, it is "the established policy of this State that the use of water for domestic purposes is the highest use of water and that the next highest use is for irrigation."[275] The Water Code does not, however, dictate what domestic purposes are better than others, or which crops should or should not be irrigated.

The proposed project does not propose any changes to the beneficial uses to which water delivered through the proposed project conveyance, California Aqueduct, Delta Mendota Canal, or other water conveyance facility will be put. The proposed project would be operated as a component of the State Water Project (SWP) and would be used to help convey SWP, Central Valley Project, and transfer water to contracted water users. As indicated in this Final EIR/EIS, the operation of the new

[272] *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 443.

[273] California Water Plan Update 2009, page 1.

[274] *National Audubon Society v. Superior Court*, *supra*, 33 Cal.3d at p. 446; California Water Plan Update 2009, page 2.

[275] California Water Code Section 106.

conveyance facilities includes diverting water through the new north delta diversion facilities or through the existing south delta water diversion facilities. It is outside the scope of the proposed project (and, in fact, outside the jurisdiction of the lead agencies) to make determinations regarding what constitutes a beneficial use or to modify water service contracts between the California Department of Water Resources (DWR) and the SWP contractors, the Bureau of Reclamation and their contractors, or between water transfer sellers and buyers. This includes changes in the uses to which contractors may put project water.

Instead, the State Water Resources Control Board (State Water Board) and the nine Regional Water Quality Control Boards (Regional Boards) are charged with the comprehensive planning and allocation of water resources in California.[276] One of the Boards' charges is to ensure that the state's water is put to beneficial use to the fullest extent possible and in the interest of the people and for the general welfare. This charge is reflected in part by the designation of beneficial uses established through the Boards' planning processes. These beneficial uses are identified in the four statewide Water Quality Control Plans and nine Regional Water Quality Control Plans issued by the State Water Board and Regional Boards.

The Water Quality Control Plans encompass all hydrologic regions of the state. A large part of the water service area to which water will be conveyed through the proposed project falls within the Central Valley Region and the Tulare Lake Basin. The Central Valley Region includes all of the Sacramento and San Joaquin River hydrologic basins. Other areas in which water conveyed through the proposed project could be delivered include the San Francisco, Central Coast, Los Angeles, Santa Ana, and San Diego regions.

The definition of beneficial uses may vary slightly between Water Quality Control Plans; however, all definitions are similar in that they are broad and accommodate a wide variety of uses. As an example, the complete definition of beneficial agricultural uses as designated within the Central Valley Region is "[u]ses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing."[277] In addition, the complete definition of industrial service supply within the Central Valley Region is "[u]ses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization."[278] These beneficial use designations are applicable to water conveyed through both the California Aqueduct and Delta Mendota canals. The definitions do not restrict the use of these waters to specific agricultural or industrial uses.

The proposed water conveyance facilities will convey water pursuant to contracts, including federal and state water contracts and potentially water transfer agreements between individuals if system capacity allows. These contracts do not specify the type of water use. As an example, the Bureau of Reclamation water service contracts may specify the percent of water that is expected to be applied to a broad range of use classifications (e.g. agriculture and/or municipal and industrial uses). DWR water service contracts are similar in the identification of the intended use of the water delivered to

[276] *Effective Implementation of the Public Trust Doctrine in California Water Resources Decision-Making: A View From the Bench*, by Ronald Robie, 2012.

[277] The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition, Revised July 2016 (with Approved Amendments), The Sacramento River Basin and The San Joaquin River Basin, at page II-1.00 (available at http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/2016july_1994_sacsjr_bpas.pdf.)

[278] *Ibid.*

SWP contractors. The intent of the proposed project is to increase the reliability of water delivered and not to modify the allowable uses to which water is applied.

Chapter 2, *Project Objectives and Purpose and Need*, clearly articulates the purpose and need for the project and the water supply reliability issues that the project is intended to address. Additional information regarding the purpose and need of the proposed project may be found in Master Response 3, *Project Objectives and Purpose and Need*.

Master Response 35: Local Resource Programs and Water Conservation in Southern California

This master response summarizes the local resource program investments and conservation achievements within the service area of the Metropolitan Water District of Southern California (Metropolitan), which is the regional water agency that provides supplemental water supplies to approximately 19 million people in urban Southern California.[279] Additionally this master response explains why these investments and achievements do not and will not obviate the need for continued exports to Metropolitan from the Delta under the California WaterFix or one of the other alternatives set forth in the EIR/EIS.

Investments in Local Resources

In 1996, in the aftermath of the 1988–1992 drought, Metropolitan and its member agencies developed a long-term Integrated Resource Plan (IRP). The IRP called for diversifying Southern California's resource portfolio and reducing the region's reliance on imported water, especially in dry years. Metropolitan has updated the IRP several times since then, but diversifying the region's water resources by increasing water use efficiency, wastewater recycling, and other local supplies has remained one of the IRP core principles.

Metropolitan's mission is to provide high quality, reliable supplies to Southern California in an economically and environmentally responsible way. Guided by the IRP, Metropolitan and the local water agencies it serves have spent the past 20 years investing in a diversified water resource portfolio that balances imported supplies with local resources. In the process, Southern California has become a statewide and national leader in water conservation, wastewater recycling, and groundwater recovery. Metropolitan's cumulative investments in local supplies include the following.

- $352 million for conservation programs.
- $356 million for recycled water projects.
- $125 million for groundwater recovery projects.
- $373 million for groundwater storage programs.

Additionally, to help Southern Californians cut water use during the current drought, Metropolitan is making a one-time investment of $450 million in turf replacement and device retrofits. The turf replacement program is the largest of its kind in the country and is expected to retrofit over 170 million square feet of turf – more than three times the Governor's goal of 50 million square feet for the State. By the end of FY2015/16, Metropolitan had invested close to $1.7 billion in conservation and local supplies.

Though significant, Metropolitan's spending on local resources is only a percentage of the many billions of dollars invested by the member agencies, local retail agencies, groundwater management

[279] Information in this master response was provided in Metropolitan Water District Comments on Revised Draft EIR/EIS, October 30, 2015, Enclosure 1 – Summary of Southern California's Local Resource Program Investments and Conservation Achievements

agencies, storm water agencies and other related utilities. Recent local agency investments include the Orange County Water District's $480 million investment in the innovative 70,000 acre-foot/year (AFY) Groundwater Replenishment System, the largest indirect potable reuse project in the United States. In November 2014, the San Diego County Water Authority completed and began taking water from the 56,000 AFY Carlsbad Seawater Desalination Project – also the largest in the United States – representing an investment of close to $1.0 billion. These two projects alone represent $1.5 billion since 2010, and together will reduce Southern California's need for imported supplies by more than 120,000 AFY.

Moving forward, Metropolitan is partnering with the Los Angeles County Sanitation District to develop a 150 million gallon/day (MGD) regional indirect potable reuse project geared towards maintaining Southern California's crucial groundwater basins. The first phase of the project began in 2014 and includes a 1.0 MGD demonstration study. Additionally, there are numerous other recycling, groundwater recovery, seawater desalination and storm water projects in various stages of development by local agencies.

Water Use Efficiency and Market Transformation

Metropolitan's and member agency conservation programs have permanently increased water use efficiency in Southern California. This includes replacing over 3.3 million toilets, 530,000 washing machines, 37,000 urinals, 300,000 smart irrigation controllers, 2.3 million rotating sprinkler nozzles, and hundreds of thousands of other devices/appliances. Metropolitan's comprehensive regional conservation programs include water audits and surveys, landscape education programs and a complete K-12 water education program providing free materials to local schools. Many of the member agencies and local retailers supplement Metropolitan's programs with extensive, innovative conservation programs of their own. To lock in these savings, Metropolitan has supported stringent plumbing codes and ordinances that are driving California's market transformation towards water-efficient devices and appliances.

Market transformation is also the goal of Metropolitan's turf replacement program. The $350 million program is replacing landscapes across Southern California. The 172 million square feet anticipated to be replaced represents an area approximately the size of 4,000 football fields. California's updated Model Water Efficient Landscape Ordinance will help complete the transformation by ensuring that new construction is brought on-line with low water-use landscapes.

1.5 Million Acre-Feet per Year from New Resources

Southern California's investment in local resources has reduced water demands and increased local supplies. In February of 2015, Metropolitan released its *Annual Report to the California State Legislature on Achievements in Conservation, Recycling, and Groundwater Recharge* for fiscal year 2013/14. The report shows that in FY2013/14, Metropolitan's conservation efforts, plumbing codes and ordinances saved 923,000 acre-feet, local wastewater recycling projects generated 447,000 acre-feet and groundwater recovery projects yielded 132,000 acre-feet. **Overall, these new local resources amounted to a total of 1,502,000 acre-feet in FY2013/14.** Since 1991, these programs have generated a cumulative 17.9 million acre feet of reduced demands and new supplies.

Southern California's Response to the Governor's Drought Proclamations

After meeting with Governor Brown in 2014, Metropolitan acted decisively to conserve water in Southern California. In February, Metropolitan called on local cities and water agencies to immediately implement extraordinary conservation measures and institute local drought ordinances. The call for local drought ordinances supported the State Water Resource Control Board's water waste prohibitions and included the following provisions.

- Restrict hours of outdoor watering.
- Prohibit landscape irrigation run-off.
- Implement provisions requiring water efficient landscaping.
- Enable reporting of inefficient water use.
- Implement tiered rate structures.
- Restrict the use of potable water for street cleaning.
- Maximize use of recycled water.
- Adopt new and enhanced incentives for water saving devices.

As described above, Metropolitan also significantly expanded its water conservation programs to respond to the Governor's drought proclamation. This included:

- **Increasing Metropolitan's conservation budget by a factor of 10**: Metropolitan increased its conservation budget from $40 million over 2 years to the $450 million discussed above, primarily for turf replacement. The increase has been supplemented with local retail agency contributions and incentivized Southern Californian's to achieve additional water savings during the drought.
- **Increasing outdoor water efficiency incentives**: To galvanize participation in the turf replacement program, Metropolitan doubled the program's incentives from $1.00 to $2.00 per square foot. Coupled with member agency supplemental funding, many residents in Southern California are receiving over $3.00 per square foot. Metropolitan also extended financial incentives for rain barrels and more than doubled recycled water retrofit incentives to large landscape irrigators to accelerate conversions from potable to recycled water.
- **Launching a major outreach campaign:** In 2014 Metropolitan launched a $5.5 million outreach campaign – the largest in Metropolitan's history. The goal of the campaign was to raise awareness of the drought and urge residents and businesses to save water. The campaign featured multiple media platforms, including radio and television, with enhanced outreach to the region's ethnic communities. Activity on Metropolitan's BeWaterWise website quadrupled as a result of the campaign. Metropolitan implemented a similarly sized outreach campaign for 2015/16.
- **Implementing Metropolitan's allocation plan:** In April, 2015, in support of the Governor's call for a 25% state-wide reduction in urban water use, Metropolitan's Board implemented a regional Water Supply Allocation Plan (WSAP) at Level Three, targeting a 15% reduction in demands for Metropolitan's imported supplies. By implementing the WSAP, Metropolitan places limits on the supplies local water agencies can purchase without facing a penalty. Revenues

collected from the penalties are used to fund additional water use efficiency programs. As shown Figure 35-1, the member agencies are meeting the 15% reduction and are on track to exceed a 20% reduction in imported demands.

Figure MR35-1. Water Demand Reduction in Metropolitan Water District of Southern California, 2014/2015

- **Southern California is meeting the State's drought conservation goals.** Supported by these regional conservation and outreach programs, Southern California has responded to the Governor's call for a 25% reduction in urban demands. Because the conservation goal for each water district is different, ranging from 4% to 36%, the regional goal for Metropolitan's service area is roughly 22%. As shown in Figure MR35-2, the region has achieved cumulative 24.5% reduction, despite the unprecedented hot, dry conditions described above.

20 Percent by 2020

Southern California is also on track to meet California's long-term conservation goals. Metropolitan and the Natural Resources Defense Council co-sponsored the Water Conservation Act of 2009, which targets a 20% reduction statewide in urban per-capita water use by 2020. Metropolitan's baseline is 181 gallons per capita per day (GPCD) and the 2020 reduction target is 145 GPCD. By comparison, Metropolitan's service area achieved a 154 GPCD, representing a 15% decrease from the baseline. This shows that the region is reducing use towards meeting the 2020 target.

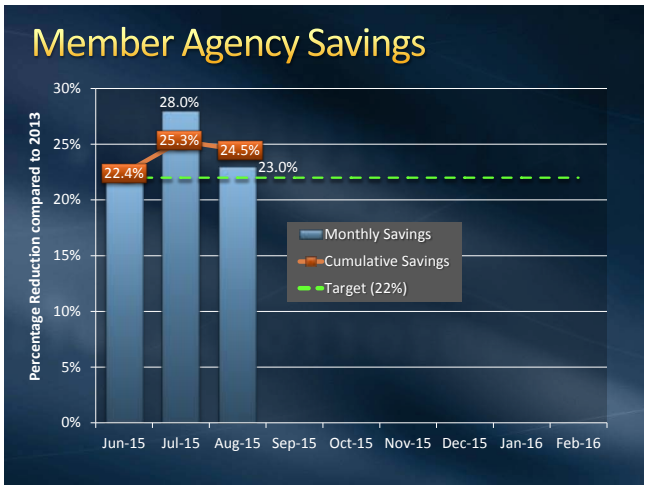

Figure MR35-2. Water Use Reduction in Metropolitan Water District of Southern California, 2015

Building Storage to Reduce Imported Demands in Dry Years

A key element of Metropolitan's IRP includes diversifying dry-year storage and transfer programs. Metropolitan has invested $2.0 billion to build Diamond Valley Lake, doubling the region's surface water storage capacity, and has developed numerous storage, transfer and exchange programs along the State Water Project (SWP), the Colorado River Aqueduct, and within Southern California. These programs are beyond the scope of both this response and the proposed project, but are described in detail in Metropolitan's 2010 *Urban Water Management Plan*. Additional information regarding water storage can be located in Master Response 37. Metropolitan is managing the region's dry-year storage assets to minimize the drought's impacts to Southern California's 19 million residents and its trillion dollar economy. Figure MR35-3 shows that Metropolitan has increased its dry-year storage capacity by a factor of thirteen since the 1990s.

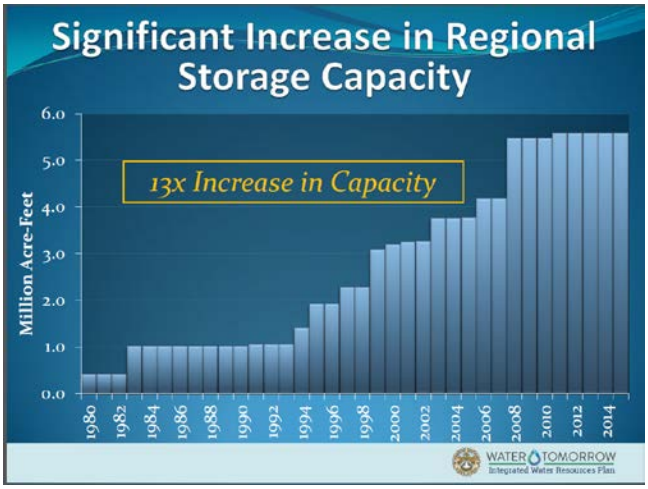

Figure MR35-3. Metropolitan Water District of Southern California's Water Storage Increases

The Need for State Water Project Reliability

The diverse portfolio of resources developed under IRP over the past 20 years has increased Southern California's reliability in part by reducing the Region's reliance on imported supplies during dry years. Moving forward, Southern California cannot rely on local investments alone to maintain the Region's reliable water supply against the numerous challenges and uncertainties California is facing. For instance, many local programs rely on the availability of reliable SWP supplies. In particular, low salinity SWP supplies enable recycled water use and salinity management within local groundwater basins. More importantly, SWP supplies are essential for filling storage reservoirs and recharging groundwater basins during wet years. This is why improving the reliability of SWP supplies is critical for Southern California's long-term supply reliability.

These Programs will complement, but not avoid the need for the California WaterFix or some other alternative analyzed in the EIR/EIS.

As effective as these programs have been and will continue to be, they do not and will not obviate the need for continued exports to Metropolitan from the Delta under the California WaterFix or one of the other alternatives set forth in the EIR/EIS. If these programs, viewed as a package, were conceptualized as a potential alternative to the BDCP or California WaterFix, such a stand-alone alternative would be infeasible. Such an alternative would not provide Metropolitan all of the water it needs to meet projected demands, and would fail to meet DWR's fundamental purpose in proposing the California WaterFix and related alternatives, which "is to make physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and Central Valley Project (CVP) south-of-Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations." Nor would such an alternative meet any of the following project objectives:

- Address adverse effects to state and federally listed species related to:
    - The operation of existing SWP Delta facilities and construction and operation of facilities for the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the southern Delta.

The implementation of actions to improve SWP and/or CVP conveyance that have the potential to result in take of species that are listed under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA).

- Improve the ecosystem of the Delta by reducing the adverse effects to certain listed species of diverting water by siting additional intakes of the SWP and coordinated operations with the CVP.
- Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements.

In addition to the project objectives enumerated above, the project objectives listed below guide the development of the proposed project and alternatives.

- To meet the standards identified in the ESA and the California Fish & Game Code, including the CESA or NCCPA, by, among other things, minimizing and fully mitigating the impacts of take, and, if possible, protecting, restoring, and enhancing aquatic and terrestrial natural communities and ecosystems that support listed and sensitive species within the geographic scope of the proposed project.

- To make physical improvements to the conveyance system in anticipation of rising sea levels and other reasonably foreseeable consequences of climate change.
- To make physical improvements to the conveyance system that will minimize the potential for public health and safety impacts resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the SWP and CVP pumping plants operate in the southern Delta.
- To develop projects that restore and protect water supply and ecosystem health and reduce other stressors on the ecological functions of the Delta in a manner that creates a stable regulatory framework under the ESA and either the CESA or NCCPA.
- To identify new operations and a new configuration for conveyance of water entering the Delta from the Sacramento River watershed to the existing SWP and CVP pumping plants in the southern Delta by considering conveyance options in the north Delta that can reliably deliver water at costs that are not so high as to preclude, and in amounts that are sufficient to support, the financing of the investments necessary to fund construction and operation of facilities and/or improvements.

Appendix 1C, *Demand Management Measures*, explains why conservation efforts, even very aggressive ones, will not be sufficient to satisfy the long-term needs of SWP contractors such as Metropolitan. As Appendix 1C, Section 1C.1 explains,

> Demand management is not being included as a project alternative in the EIR/EIS because it is implemented by local water suppliers and communities, is outside the Plan Area and is not directly controlled by the state. Furthermore, demand management, which is expected to be a component of future actions, alone, will not feasibly meet the environmental and water supply objectives of the BDCP or the legal objective of long-term ESA compliance. … Implementation of … demand management measures statewide will make achieving the project goals much more feasible but is not a substitute means for complying with the ESA. Demand management is a tool that will continue to be used by water agencies and individual water users as part of an integrated water management approach to water supply reliability regardless of whether and how the BDCP/California WaterFix is implemented. Based on existing regulatory mandates as well as economic and environmental imperatives, State and regional/local efforts will continue to improve water use efficiency over that already achieved during the past few decades.

Stated another way, "California needs a comprehensive and integrated approach to secure water supply reliability. Such a comprehensive approach includes both [demand management measures] and more reliable water supplies from inter-regional water systems including the SWP and CVP" (Appendix 1C, Section 1C.1).

Appendix 1C, Section 1C.5.1.1.1 summarizes the situation facing Metropolitan as follows:

> Metropolitan and its member agencies have adopted a policy and planning process for determining the appropriate level of reliability and mix of water supply sources through an Integrated Resources Plan (IRP). The IRP provides for a 25-year water resources strategy with resource targets and timeframes for implementation which seeks to assure a diverse water supply portfolio for Southern California. Metropolitan's water supply strategy has evolved from a portfolio heavily dependent on imported supplies to a diverse portfolio that takes a more balanced approach to developing diverse resources including substantial conservation, local supplies, SWP supplies, Colorado River supplies, groundwater banking, and water transfers. For example, in the 1980s, the region's water supply strategy was heavily reliant on imports from the SWP and the Colorado River, which accounted for 20% and 28%, respectively, of Metropolitan's supply. As a result of the adaptive IRP process, the strategy now relies less on those two imported sources and much more heavily on water conservation and local water supply management SWP – 12%; Colorado River – 20%; conservation – 16%; and storage and transfers – 16%, with the remainder from local supplies.

Despite this reduced reliance on SWP water, Delta exports remain a critical source of supply for Metropolitan for two fundamental reasons. First, it is of relatively low salinity compared to other sources such as the Colorado River, with low salinity key to emerging local initiatives such as recycling. Second, the Delta is uniquely capable of providing additional supplies in wet years, when diversions are far less sensitive on the ecosystem, enabling Metropolitan to replenish groundwater basins and its surface storage network.

Master Response 36: California WaterFix vs. the Peripheral Canal

This master response discusses the primary differences between the Peripheral Canal that was rejected by voters in 1982 and the California WaterFix proposal evaluated in the EIR/EIS.

Goals, Approaches, and New Information

Changing the point of diversion for water exported from the Sacramento-San Joaquin Delta was first proposed in the early 1960s. Efforts to build what became known as the Peripheral Canal lasted through 1982. The Peripheral Canal would have included a diversion located on the Sacramento River near Hood and an open canal that would have conveyed water around the eastern side of the Delta terminating at the SWP and CVP South Delta pumping plants. State fisheries biologists supported such a canal as a way to eliminate the adverse environmental effects of pumping water from the south Delta. Others sought a canal to help meet increased demand for water supplies.

The approach to changing the point(s) of diversion for south of Delta water exports has changed since the Peripheral Canal was proposed. The proposed project is similar in that it proposes conveying water from a diversion point located in the north Delta to the existing CVP and SWP pumps located in the south Delta. Although similar in concept, the scope, goals and legal requirements of the proposed project are vastly different from the Peripheral Canal proposal. The proposed project considers threats to the Delta that were previously unknown or not well understood, changed circumstances, new scientific information, and a regulatory framework intended to better protect the environment. The proposed project is one part of an overall State water plan intended to improve water management.

Water managers in decades past had limited information about climate change, sea level rise, subsidence and seismic risks to water supplies in the Delta. Today, new information is available and has been incorporated into the proposed project.

Facilities and Footprint

The Peripheral Canal proposal entailed a fully isolated facility from Delta channels. It included 43 miles of above-ground, open earth channel, with an average water surface width of about 500 feet and an average center depth of 30 feet deep with levees on both sides. The canal would have required an approximately 1,000-foot right-of-way. The proposed canal had a total carrying capacity of 23,300 cubic feet per second (cfs) and included 12 facilities along the canal to provide water releases to meet water quality objectives. The Peripheral Canal also included four large siphons (18 to 25 feet in diameter) to move water under the Mokelumne River, San Joaquin River at Stockton Deep Water Channel, Disappointment Slough, and Old River. Water conveyance would have relied entirely on pumps. The Peripheral Canal proposal included a 23,300 cfs design capacity at the intake, which included 1,500 cfs reserved for the proposed future federal Hood-Clay Connection to the Folsom South Canal. The capacity would have decreased in three steps to 18,300 cfs at the outlet of the canal at Clifton Court Forebay. It also would have included one fish screen to keep salmon and striped bass out of the canal. The Peripheral Canal would have permanently impacted approximately

5,800 acres of agricultural land in the eastern Delta, not including land that would have been impacted by disposal of dirt and material during construction.

Relative to the Peripheral Canal with 23,300 cfs maximum diversion, the proposed project (Alternative 4A), would include three smaller intakes with a total maximum diversion capacity of 9,000 cfs, and state of the art fish screens meeting National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) standards. The water conveyance facilities would create a much smaller permanent surface footprint than the Peripheral Canal by conveying water through two 35-mile long underground tunnels to a modified Clifton Court Forebay and pump station at that location. Under certain conditions, water could be conveyed through the proposed project entirely by gravity. The proposed project would maintain existing capability for through-Delta operations, allowing for greater operational flexibility. The proposed project would permanently impact approximately 3,900 acres of agricultural land, including the conveyance facility footprint and areas that would be used for storage of Reusable Tunnel Material.[280]

Operations and Adaptive Management

The Peripheral Canal would have been operated to transport up to 9 million acre feet of water per year at full development. The proposed project would be designed to transport between 4.7 and 5.6 million acre feet per year depending on hydrology and other factors. While the Peripheral Canal would have been operated to meet water quality criteria, it did not include operational provisions explicitly intended to reduce effects on fish species. The proposed project includes specific operational criteria related to Old River and Middle River flows, Head of Old River gate operations, Delta outflow, and north Delta bypass flows to meet water quality and fisheries needs.

Because scientific uncertainty is inherent in a project of this scope and detail, the California Department of Water Resources, the Bureau of Reclamation, the California Department of Fish and Wildlife, USFWS, NMFS, and the public water agencies will establish and participate in an adaptive management and monitoring program. Collaborative science and adaptive management will support the proposed project by helping to address scientific uncertainty and improve the design of fish facilities including the intake fish screens, operation of water conveyance facilities, and habitat restoration and other mitigation measures required under the biological opinion and Fish and Game Code Section 2081(b) permit. Adaptive management was absent from the 1982 Peripheral Canal proposal.

[280] For additional information on the benefits of reusing tunnel material, see Master Response 12, *Reusable Tunnel Material*.

Master Response 37: Water Storage

This master response discusses why the proposed project does not include new water storage facilities and why specific suggested storage components are beyond the scope of the lead agencies' review of the proposed project and alternatives.

Although water storage is a critically important tool for managing California's water resources, developing new water supplies and including new storage is not part of either the California Department of Water Resources' (DWR's) fundamental purpose or project objectives or the Bureau of Reclamation's (Reclamation's) purpose and need for the proposed project, which are focused on fixing problems with the current conveyance system for the State Water Project (SWP) rather than expanding the system with new storage facilities. As stated in Chapter 2, *Project Objectives and Purpose and Need*, Section 2.3, *Project Objectives*, "DWR's fundamental purpose in proposing the proposed project is to make physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and Central Valley Project (CVP) south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations" (see also Master Response 3 for additional discussion of the project objectives and purpose and need.) Among the specific project objectives necessary to pursue this fundamental purpose are the following:

- Address adverse effects to state and federally listed species related to:
    - The operation of existing SWP Delta facilities and construction and operation of facilities for the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the southern Delta.
    - The implementation of actions to improve SWP and/or CVP conveyance that have the potential to result in take of species that are listed under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA).
- Improve the ecosystem of the Delta by reducing the adverse effects to certain listed species of diverting water by siting additional intakes of the SWP and coordinated operations with the CVP.
- Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements.

In addition to the project objectives enumerated above, the project objectives listed below guide the development of the proposed project and alternatives.

- To meet the standards identified in the ESA and the California Fish & Game Code, including the CESA or Natural Community Conservation Planning Act (NCCPA), by, among other things, minimizing and fully mitigating the impacts of take, and, if possible, protecting, restoring, and enhancing aquatic and terrestrial natural communities and ecosystems that support listed and sensitive species within the geographic scope of the proposed project.
- To make physical improvements to the conveyance system in anticipation of rising sea levels and other reasonably foreseeable consequences of climate change.

- To make physical improvements to the conveyance system that will minimize the potential for public health and safety impacts resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the SWP and CVP pumping plants operate in the southern Delta.
- To develop projects that restore and protect water supply and ecosystem health and reduce other stressors on the ecological functions of the Delta in a manner that creates a stable regulatory framework under the ESA and either the CESA or NCCPA.
- To identify new operations and a new configuration for conveyance of water entering the Delta from the Sacramento River watershed to the existing SWP and CVP pumping plants in the southern Delta by considering conveyance options in the north Delta that can reliably deliver water at costs that are not so high as to preclude, and in amounts that are sufficient to support, the financing of the investments necessary to fund construction and operation of facilities and/or improvements.

(See Chapter 2, Section 2.3, *Project Objectives*.)

The federal agency purpose of the proposed action is to improve the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the south Delta in a manner that minimizes or avoids adverse effects to listed species, supports coordinated operation with the SWP, and is consistent with the project objectives described above, which in summary includes:

1. Restoring and protecting aquatic, riparian and associated terrestrial natural communities and ecosystems of the Delta, and
2. Restoring and protecting the ability of the SWP and CVP to deliver up to full contract amounts of CVP water, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of applicable state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements.

As is evident, these objectives focus on the need for physical improvements to make the existing SWP system work better, rather than on a major expansion to the system, such as would occur with major new storage facilities. Regardless of whether new storage is pursued separately in the future, the proposed project would serve the useful purpose of modernizing and upgrading the current SWP system – an undertaking that has its own "independent utility." Please also see Master Response 8, *Analysis of Project as a Whole*.

In light of these project purposes and objectives, additional water storage was eliminated from consideration in the Draft EIR/S and RDEIR/SDEIS through the alternatives development and screening process (discussed below and in Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*). Although the proposed project would be part of an overall statewide water system of which new storage could someday also be a part, Alternative 4A and the other action alternatives would be stand-alone projects that demonstrate independent utility, just as future storage projects would demonstrate. Nothing in either CEQA or NEPA precludes agencies such as DWR and Reclamation from pursuing and studying the proposed project separately from possible future storage facilities that could someday embody an expanded SWP system or become part of an expanded CVP system.

Additional reasons why the proposed project does not include new water storage facilities as an element are discussed in Final EIR/EIS Appendix 1B, *Water Storage*. Notably, however, nothing

about the proposed project would preclude future pursuit of water storage projects. As explained in Appendix 1B, "water storage is a critically important tool for managing California's water resources," but it is not a part of this proposed project. Although the physical facilities contemplated by the proposed project, once up and running, would be part of an overall statewide water system of which new storage could someday also be a part, the California WaterFix is a stand-alone project for purposes of CEQA and NEPA, just as future storage projects would be. (For more discussion of how the proposed project, its component parts, and action alternatives were formulated, see Master Responses 4, *Alternatives Development*, and 6, *Demand Management*.

Additional Storage Screening Analysis

During the time period in which the lead agencies were actively preparing the Draft EIR/EIS, a number of parties suggested that the document include potential alternatives with storage components. The following three proposals were actively considered but ultimately rejected for reasons described in the screening analysis set forth in Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1.*

- The Natural Resources Defense Council (NRDC) proposed a *Portfolio-Based BDCP Conceptual Alternative* in January 2013 (NRDC 2013), referred to herein as the Portfolio-Based Proposal.
- United States Representative Garamendi proposed *A Water Plan for All of California* in March 2013 (Rep. Garamendi 2013), referred to herein as Congressman Garamendi's Water Plan.
- Robert Pyke proposed the *Western Delta Intake Concept* in January 2012, herein referred to as the Pyke Proposal.

For reasons described in more detail below, these elements are beyond the purpose and scope of the project.

Portfolio-Based Proposal

The Portfolio-Based Proposal includes the following water storage action.

- Increase water storage capacity in areas located south of the Delta to store increased Delta diversions in wet years and provide water supplies in drier years.

This action is beyond the scope of the proposed project. Although the lead agencies agree that such new storage should be part of an overall water supply program for California in coming decades, as is made clear in Appendix 1B, *Water Storage,* this general support for supply augmentation cannot transform the proposed project from a limited conveyance project into a dramatic expansion of the SWP.

Congressman Garamendi's Water Plan

Similar to the Portfolio-Based Proposal, Congressman Garamendi's Water Plan would 1) require changes in the manner in which local and regional water managers use their supplies, 2) involve unfunded levee improvements that are unrelated to restoration of the Delta ecosystem, and 3) include new storage projects outside of the Delta that are beyond the scope of the proposed project. As with the Portfolio-Based Proposal, the Congressman's Water Plan is also akin to a statewide water plan that would treat California as a single water planning unit and include steps about how to increase water use efficiency and water supplies throughout the entire state. Although these steps

may have merit from a statewide water management standpoint, they are outside the scope of the BDCP as an HCP/NCCP for the Delta and the more narrowly focused conveyance project under the California WaterFix.

Pyke Proposal

The Western Delta Intake Concept proposed by Robert Pyke (the Pyke Proposal) includes the following actions (Pyke 2012, Pyke 2013):

- New Brushy Creek Reservoir near Clifton Court Forebay (with a capacity of at least 1 million acre-feet [MAF]), which could be used to store water diverted from Sherman Island when the total Delta exports exceed the 15,000 cfs capacity of the SWP and CVP pumping plants. A conveyance could be constructed between Brushy Creek Reservoir and Los Vaqueros Reservoir for additional storage capacity. If Los Vaqueros Reservoir is expanded (to a capacity of at least 1 MAF), the two reservoirs could be designed with a pumped storage hydro-electric facility.
- Construction of storage facilities south of the Delta, including additional groundwater storage and western San Joaquin Valley surface water storage facilities.

The Pyke Proposal goes beyond the scope of the proposed project, as was the case with similar elements in the Portfolio-Based Proposal and Congressman Garamendi's Water Plan.

Local/Regional/State Water Storage

DWR recognizes that water storage is a tool that may be considered by regional/local water agencies as one element of a diversified approach to water supply options intended to meet water supply demands. Such options may include development of groundwater resources, regional/local surface storage, or participation with the state on larger system projects. Additional detail on potential surface storage in California is discussed in DWR's *California Water Plan Update 2013*, Volume 3, *Resource Management Strategies* (California Department of Water Resources 2013).

Potential Surface Storage

Although new water storage is not proposed either in the California WaterFix or in the original BDCP, there are numerous additional and increased storage projects in California. Examples include the five potential surface storage reservoirs, below, that were identified in the CALFED Record of Decision (2000) and are in various stages of study.

- **Shasta Lake Water Resources Investigation (SLWRI)**: The study is investigating enlargement of the existing Shasta Dam and Lake. Reclamation is leading the investigation in consultation with DWR and local water interests and stakeholders. State funding for the investigation ended in 2005. Alternative project sizes are under study including 6.5-, 12.5-, and 18.5-foot raises of Shasta Dam. DWR's participation in the SLWRI is limited due to California Public Resources Code Section5093.542, which seeks to avoid adverse effects on the free-flowing condition of the McCloud River. Increased capacity in Shasta Lake could store greater amounts of water during wet years, providing more flexibility and greater supplies in subsequent years, and could help to increase and maintain a cold water pool in the future as warming temperatures due to climate change increase the challenge of maintaining water temperatures in the northern part of the Sacramento River that can support cold-water salmonid species (e.g., winter run Chinook salmon). The primary objectives of SLWRI are to increase the survival of anadromous fish

populations in the Sacramento River, primarily upstream from the Red Bluff Diversion Dam and increase water supplies and water supply reliability for agricultural, M&I, and environmental purposes to help meet future water demands. Reclamation completed and released a preliminary draft EIS and a draft feasibility report for the SLWRI on February 6, 2012. Reclamation released the Final EIS to the public on July 29, 2015. The Notice of Availability was published on August 7, 2015 in the Federal Register, and Reclamation filed the EIS with the federal Environmental Protection Agency on August 7, 2015.

- **North-of-the-Delta Offstream Storage (NODOS):** DWR, Reclamation, and local partners are evaluating the feasibility of Offstream Storage North-of-the-Delta in the northern Sacramento Valley to improve water supply and water supply reliability, increase survival of anadromous fish and other aquatic species in the Sacramento River and the Delta, improve Delta water quality, and provide flexible generation benefits to integrate renewable energy generation into California's electric grid. Among several alternative sites under study, Sites appears to be the most promising location. Current investigation focuses on 1.2 MAF and 1.8 MAF reservoir sizes. The reservoir would store diversions from the Sacramento River. In August 2010, Glenn-Colusa Irrigation District, Reclamation District 108, Tehama-Colusa Canal Authority, Maxwell Irrigation District, Yolo County Flood Control and Water Conservation District, Glenn County and Colusa County formed the Sites Joint Powers Authority (Sites JPA) for the purpose of developing, constructing, and managing operation of Sites Reservoir. In August 2011, the State Water Resources Control Board approved $1.75 million in Proposition 204 funds to the Sites JPA to assist DWR in completing the environmental documents for the NODOS Investigation. DWR, Reclamation, and the Sites Powers Authority are completing a draft EIR/EIS and draft feasibility report for the NODOS investigation. The preliminary Administrative Draft EIR released in May 2014 and the December 2013 progress report on the feasibility study are available online.

- **Upper San Joaquin River Basin Storage Investigation:** While different alternatives are under investigation, the Temperance Flat Reservoir site on the San Joaquin River at river mile 274 could provide up to 1.26 MAF storage capacity (Bureau of Reclamation 2008). Under current Delta regulatory conditions, San Luis Reservoir cannot be filled in most years. Added storage on the San Joaquin River could be integrated with the SWP, adding south-of-the-Delta Storage to the CVP and SWP systems. Under an operations integration concept, some SWP or CVP water supplies from the Delta that are diverted to San Luis Reservoir would instead be diverted to water users in the CVP Friant Division, while San Joaquin River water would be stored in the new reservoir. During wet periods, this would increase the storage space available in San Luis Reservoir and allow capture of additional SWP and CVP supplies from the Delta. Accumulated San Joaquin River water would be supplied through exchange to SWP and CVP south-of-Delta water users, reducing the demand on the Delta during dry periods. Added San Joaquin Surface Storage also facilitates increased groundwater storage operations in the southern central valley. Reclamation released a draft feasibility report in February 2014, and a draft EIS on September 5, 2014.

- **Los Vaqueros Reservoir Expansion:** The Contra Costa Water District (CCWD) expanded its Los Vaqueros Reservoir from 100 thousand acre-feet (TAF) to 160 TAF. The reservoir is filled by diversions from the Delta under CCWD's existing federal water project contract and its own water right. Additional investigations by Bay Area water users are underway to further expand the reservoir from 160 TAF to 500 TAF. The Los Vaqueros Reservoir provides emergency storage and water quality benefits for CCWD and other regionally integrated Bay Area water users. Added surface storage also provides supply reliability by allowing CCWD to divert during

times of Delta abundance and reduce its demands during times of scarcity or ecosystem sensitivity.

Regional/Local Surface Storage

Many California water agencies rely on surface storage as part of their water management portfolios. Regional/local surface storage can provide multiple benefits and can increase the benefits of other water management tools. Many water agencies rely on large reservoirs that provide water supply over several regions and regional/local reservoirs that provide water supply only within a region.

Justification for increased regional/local surface storage is based specifically on the needs within each region. The *California Water Plan Update 2013* provides resource management strategies to meet the water-related resource management needs of regions and the state. The plan did not attempt to estimate potential additional regional surface storage capacities and costs because the need for additional surface storage greatly depends on the characteristics of each region, other available water management tools, the use for the potential storage, and the acceptable risk contained in each integrated regional water management plan (IRWM). It suggests that the need for additional local surface storage may be greatest in the mountainous areas of the state. Although much of the water used in the state originates in the mountains, these mountainous areas generally have limited groundwater supplies and a smaller array of available management strategies to meet local needs.

As described in the *California Water Plan Update 2013,* local storage development that could address this issue includes the reoperation of existing reservoirs in coordination with downstream reservoirs. While many existing reservoirs were built for hydropower, flood control, and consumptive water uses, new surface storage could also be considered for the following additional benefits:

- Water quality management
- System operational flexibility
- Ecosystem management
- Sediment transport management
- River and lake recreation
- Water supply augmentation including water transfer and conjunctive use facilitation
- Emergency water supply

South of the Delta Storage

Under most water year types, there is available storage South of the Delta to store water that is not directly delivered to municipal, industrial, and agricultural water users. In extremely wet periods, existing south of the Delta reservoirs operated by CVP and SWP water users are filled and San Luis Reservoir is filled. However, the frequency of this occurrence is related to available Delta conveyance capacity and the availability of source water. From the perspective of the proposed project and its alternatives, the usefulness of additional storage south of the Delta is dependent upon the operational criteria and conveyance capacity of the alternatives, which affect available water for south of the Delta exports. Based upon the analysis presented in the Final EIR/EIS, under

the proposed project, Alternative 4A, average annual end of September San Luis Reservoir storage as compared to Existing Conditions would decrease. This decrease primarily would occur due to sea level rise, climate change, and increased north of Delta demands.

Master Response 38: Length and Complexity of the EIR/EIS

This master response discusses how the lead agencies adequately presented information in the BDCP, Draft EIR/EIS, RDEIR/SDEIS, and the Final EIR/EIS, and how the approach is fully consistent with the procedural and informational requirements of CEQA and NEPA.

Because of the highly technical and complex nature of the proposed project and the importance of the Delta as a natural resource and to the California water supply, the environmental documents contain considerable amounts of information. The lead agencies focused on presenting information in plain language and in a clear format with emphasis on information that is useful to the public, agencies, and decision-makers.

Commenters questioned the size and complexity of the 2013[281] Draft BDCP EIR/EIS, which totaled approximately 35,000 pages. The draft documents cover impacts on 14 natural communities and land use types, 149 special-status wildlife and plant species, 11 covered fish species, 9 non-covered fish species, and other resources. The analyses provide for describing impacts and proposed mitigation in an ever-changing and complex aquatic and unique land based study area. The documents reflect 7 years of collaboration, responses to requests for additional information, careful thought, accumulation of the latest scientific information, and thorough analyses needed to develop and conduct an environmental review of a project that impacts the Delta estuary and water supplies for million Californians. Consequently, these draft documents necessarily address numerous competing interests in the Delta and throughout the state. The size and complexity of these documents reflect an unprecedented effort to analyze project alternatives under both state and federal laws for a habitat conservation plan along with 15 alternatives. In addition, the RDEIR/SDEIS contained approximately 9,300 pages, including descriptions and analyses of the new proposed project (Alternative 4A) and two additional alternatives. Contrary to the suggestions of some commenters, CEQA imposes no mandatory limit on the length of a draft EIR. Although the State CEQA Guidelines encourage, but do not require, EIRs for proposals of unusual scope or complexity to "normally" be less than 300 pages,[282] in practice the page limits recommended by the State CEQA Guidelines are frequently exceeded[283] because CEQA places a greater focus on adequacy of the analysis and the readability of the document than on document length. An EIR should be analytic

[281] The lead agencies have to strike the balance of public comments and demand for information and the length/readability of the EIR/EIS. Many summary documents, tables and outreach materials were prepared to assist readers in navigating the materials that were progressively updated as comments and requests were received from 2010 to 2015.

[282] State CEQA Guidelines, § 15141 ("[t]he text of draft EIRs should normally be less than 150 pages and for proposals of unusual scope or complexity should normally be less than 300 pages.")

[283] 1 Practice Under the California Environmental Quality Act (Cont.Ed.Bar 2012), § 11.9, p. 545 (the page limits recommended by State CEQA Guidelines Section 15141 are "frequently ignored"); *Laurel Heights Improvement Assn. v. Regents of University of California* (1993) 6 Cal.4th 1112, 1145 (nearly 900 page draft EIR, including appendices, for University expansion project); *River Valley Preservation Project v. Metropolitan Transit Development Bd.* (1995) 37 Cal.App.4th 154, 175 (approximately 500 page draft EIR for light rail transit project]; *City of Fremont v. San Francisco Bay Area Rapid Transit Dist.* (1995) 34 Cal.App.4th 1780, 1784 [800 page draft EIR for 7.8-mile transit-line extension project); see also e.g., the *Revised Draft EIR/EIS for the Fresno to Bakersfield Section of the High Speed Train*, which totals approximately 21,800 pages (available at: www.hsr.ca.gov/Programs/Environmental_Planning/draft_merced_fresno.html [as of March 3, 2014]).

rather than encyclopedic.[284] It should also be organized and written in a manner that will make it "meaningful and useful to decision-makers and to the public.[285] An EIR should focus on the significant environmental impacts of the alternatives and mitigation measures to avoid or substantially reduce those impacts.[286] The sufficiency of an EIR is judged "in the light of what is reasonably feasible . . . . The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure."[287]

Similar to CEQA, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail with emphasis on the portions of the EIS that are useful to decision-makers and the public.[288] Likewise, environmental impact statements shall be analytic rather than encyclopedic[289] and shall be written in plain language and may use appropriate graphics so that decision-makers and the public can readily understand them.[290] An EIS must translate technical data into terms that render it an effective disclosure of the environmental impacts of a proposed project to all of its intended readership.[291]

Although the science and analyses that support the proposed project is complex, the lead agencies have made every attempt to present the information in plain language and in a clear format with emphasis on the information that is useful to the public, agencies, and decision-makers. Both CEQA and NEPA also recommend summarizing information to reduce paperwork and to make the environmental document understandable to the public and decision-makers.[292] These efforts include: preparation of required executive summaries for the Draft EIR/EIS, RDEIR/SDEIS and this Final EIR/EIS; providing reader's guides for a number of the chapters; including alternative comparison tables at the beginning of each EIR/EIS resource chapter; and providing numerous outreach fact sheets and summaries to aid readers in understanding the project and the environmental analyses. In drafting the EIR/EIS, the lead agencies have followed, to the extent practicable, the recommendations of the State CEQA Guidelines and the NEPA Regulations to reduce paperwork and avoid delay. For example, both CEQA and NEPA recommend that the requirements of CEQA and NEPA should be combined where applicable.[293] Consistent with these recommendations, the Final EIR/EIS, in addition to the 2013 Draft EIR/EIS and the 2015 RDEIR/SDEIS, have been prepared as a joint CEQA/NEPA document. For this reason, the Final EIR/EIS discloses the impacts of each alternative at a similar level of detail, although, to reduce

[284] State CEQA Guidelines, § 15006, subd. (o).

[285] Public Resources Code, § 21003, subd. (b).)

[286] See State CEQA Guidelines, §§ 15126.2, subd. (a) ("[a]n EIR shall identify and focus on the significant environmental effects of the proposed project."

[287] State CEQA Guidelines, § 15151.

[288] 40 C.F.R. § 1500.1.

[289] 40 C.F.R. § 1502.2.

[290] 40 C.F.R. § 1502.8.

[291] *Oregon Environmental Council v. Kunzman*, 614 F. Supp. 657 (D. Ore. 1985).environmental effects of the proposed project"), 15126.4, subd. (a)(1) "[a]n EIR shall describe feasible measures which could minimize significant adverse impacts); § 15147 (technical data should be summarized).

[292] State CEQA Guidelines, §§ 15147 (technical data should be summarized), 15006 (means of reducing delay and paperwork; 40 C.F.R. § 15004.4, subd. (h) (EIS shall reduce paperwork by "[s]ummarizing the environmental impact statement (§1502.12) and circulating the summary of the environmental impact statement if the latter is unusually long (§ 1502.19).)

[293] State CEQA Guidelines, §§ 15006, subd. (j), 15227; 40 C.F.R. § 1504, subd. (k).

unnecessary duplication of analyses, the EIR/EIS notes where impacts of alternatives are similar to avoid duplicating the analyses.

The State CEQA Guidelines also recommend that lead agencies should consult with state and local responsible agencies before and during preparation of an EIR so that the document will meet the needs of the agencies which will use it.[294] Often this resulted in requests for additional analysis and information. Similarly, NEPA emphasizes "interagency cooperation before the environmental impact statement is prepared, rather than submission of adversary comments on a completed document" in order to reduce delay and paperwork.[295] In exceedance of this guidance and in recognition of the significance and size of the EIR/EIS, the state released two preliminary drafts over the years leading up to the publication of the Draft EIR/EIS to give decision-makers, agencies, elected officials, and the general public an opportunity to learn about these documents and recommend improvements to the documents as they were developed. By involving the public and agencies in the preparation of the Draft EIR/EIS, the lead agencies were able to focus the EIR/EIS on issues of important concern to the public and agencies, such as recommendations concerning the preferred alternative, prior to the release of the Draft EIR/EIS and RDEIR/SDEIS, rather than waiting to respond to such issues in responses to comments in the Final EIR/EIS.

The RDEIR/SDEIS fulfills two different but related roles: It describes and analyzes three new alternatives (Alternatives 4A, 2D, and 5A) and it provides revisions to the Draft EIR/EIS and BDCP that were released in 2013. Because the RDEIR/SDEIS does not revisit the entire Draft EIR/EIS, a different approach to numbering was taken. The RDEIR/SDEIS contains sections rather than chapters to make clear the material is new since preparation of the Draft EIR/EIS. Revisions to the Draft EIR/EIS are contained in RDEIR/SDEIS Appendix A, whose chapter numbering scheme matches that of the Draft EIR/EIS so that readers may easily compare the revisions with the original Draft EIR/EIS.

To assist reviewers, the lead agencies provided a "Document Review Road Map" at the beginning of the RDEIR/SDEIS. The road map is similar to an illustrated table of contents and shows how the RDEIR/SDEIS correlates to the Draft EIR/EIS. In addition, RDEIR/SDEIS Section 1.3, *Contents of the RDEIR/SDEIS*, describes the contents of the document and provides references to the locations where readers may find specific discussions and analyses. Table 1-2 in the RDEIR/SDEIS identifies the exact portions of the Draft EIR/EIS that are modified in the RDEIR/SDEIS. The lead agencies did not provide the entire Draft EIR/EIS within the RDEIR/SDEIS because doing so would have resulted in reviewers having to wade through thousands of pages that were completely unchanged since the release of the Draft EIR/EIS in 2013. Because the entire Draft EIR/EIS was not presented a second time and because the lead agencies wished to avoid unnecessarily reproducing lengthy portions of the Draft EIR/EIS, the RDEIR/SDEIS contains cross-references to the earlier document. These cross references are clearly labeled to guide reviewers to the appropriate document (e.g., "See Section 6.2.2.4 in Chapter 6, *Surface Water*, of the Draft EIR/EIS"). The 2015 RDEIR/SDEIS provides new information and project changes in standalone essays, with each essay discussing a discrete topic that has received substantive comment. The standalone essays are intended to make the document user friendly and avoid reprinting thousands of pages of text on which minor modifications were made.

[294] State CEQA Guidelines, § 15006, subd. (g).

[295] 40 C.F.R., § 1500.5, subd. (b); see also 40 C.F.R., § 1500.4, subd. (g) (EIS should use scoping process to narrow the scope of the EIS in order to reduce paperwork).

The Final EIR/EIS contains the full contents of the revised Draft EIR/EIS and appropriate portions of the RDEIR/SDEIS, with necessary corrections and updates. Cross-references in the Final EIR/EIS are to chapters, sections, tables, figures, and appendices in the Final EIR/EIS itself.

Chapter 32, *Public Involvement, Consultation, and Coordination*, and the Executive Summaries of the Draft EIR/EIS, the RDEIR/SDEIS and the Final EIR/EIS provide overall guides and background to the documents and history of public meetings and outreach efforts over the past 9 years. With the release of the 2013 public draft BDCP, highlight documents for both the BDCP and its EIR/EIS were published and access to background documents and FAQs continue to be available online.

As can be seen, the lead agencies, in preparing the BDCP, the Draft EIR/EIS, the RDEIR/SDEIS, and the Final EIR/EIS, attempt to balance readability, the need for accurate and thorough technical analyses of the numerous complex issues involved for each resource potentially affected by the project, and responses to public and agency requests for information. This balance has been accomplished through combining analyses and referencing similar information for alternatives. Most details appear in the discussions of Alternative 1A, Alternative 4, and Alternative 4A (the proposed project), and there are many references to BDCP Chapter 5, *Effects Analysis*, and appendices. Extensive graphs, tables and figures have been prepared to assist with simplifying the complex analysis required to assess impacts. A summary comparison of alternatives is provided at the beginning of each EIR/EIS resource chapters and the longest and most complex chapters include a Readers' Guide to help navigate through the materials and provide an outline for the chapter. Furthermore, for certain resources, the analysis described in the EIR/EIS are supported by more detailed and technical analyses contained in the corresponding appendices. These efforts to eliminate duplication and avoid inclusion of highly technical analyses in the text of the EIR/EIS are consistent with CEQA's and NEPA's focus on the readability of the document and reduction in paperwork, while still presenting adequate information to analyze and disclose the significant and adverse environmental impacts and effects of the project and its alternatives.

In summary, legal sufficiency of the EIR/EIS depends on the substantive content, procedural compliance, and the overall quality and readability of the documents. As discussed in this master response, the lead agencies involved the public and agencies throughout the preparation of the 2013 Draft BDCP and its Draft EIR/EIS, as well as the 2015 RDEIR/SDEIS and this Final EIR/EIS in order to identify significant environmental issues and alternatives deserving of study, to deemphasize insignificant issues, and to narrow the scope of the document. Nevertheless, because of the highly technical and complex nature of the proposed project and because of the importance of the Delta as a natural resource and to the California water supply, the 2013 Draft EIR/EIS, 2015 RDEIR/SDEIS, and this Final EIR/EIS contain considerable amounts of information. In preparing the BDCP, the Draft EIR/EIS, the RDEIR/SDEIS, and the Final EIR/EIS, the lead agencies focused on presenting information in plain language and in a clear format with emphasis on information that is useful to the public, agencies, and decision-makers.[296] As noted, the EIR/EIS combines the informational requirements of CEQA and NEPA, summarizes relevant information, focuses on the significant environmental impacts of the alternatives and mitigation measures to avoid or substantially reduce those impacts, avoids duplication, and utilizes technical appendices to avoid including highly technical analysis in the text of the EIR/EIS. This approach balances the need for technical information and readability of the EIR/EIS and is fully consistent with the procedural and informational requirements of CEQA and NEPA.

[296] See State CEQA Guidelines, § 15006, subds. (q)(r), & (s); see also 40 C.F.R., § 1500.4, subd. (c),(d),(e),(f).

Master Response 39: Public Review Period Duration

Public participation is an essential part of the CEQA and NEPA processes.[297] To achieve this goal, CEQA and NEPA generally require a 45-day public review period of a draft EIR or EIS, respectively.[298] The lead agencies may, but need not, extend the review period.[299] The State CEQA Guidelines provide, however, that the public review period on a draft EIR should not be longer than 60 days "except in unusual circumstances."[300] The duration of and method employed to announce any extension is left to the discretion of the lead agencies.

Accordingly, this master response addresses all comments received that requested additional public review opportunities with respect to the Draft BDCP, Draft EIR/EIS, Draft BDCP Implementing Agreement, and Partially Recirculated Draft EIR/Supplemental Draft EIS (RDEIR/SDEIS).

Draft BDCP and Draft EIR/EIS

Granting Extension Requests

Although neither the State CEQA Guidelines nor case law interpreting CEQA have defined "unusual circumstances" that may justify granting an extension for a longer public review period, the California Department of Water Resources (DWR) determined that in light of such factors as the statewide significance of the proposed project, the length and complexity of the BDCP[301] and Draft EIR/EIS, and the requests from the public for more time to review the documents, such factors combined represent an "unusual situation" warranting an extended public review period. The federal lead agencies concurred that a longer review period was advisable. Therefore, the state and federal lead agencies initially released the Draft BDCP and associated Draft EIR/EIS on December 13, 2013 for a 120-day review period. Thereafter, on February 21, 2014, the lead state and federal agencies extended the public comment period by an additional 60 days. Again, on May 30, 2014, the comment period was extended for an additional 46 days for a total review period of 229 days. The Draft BDCP and associated Draft EIR/EIS review period closed on July 29, 2014.

Hence, the public review period for the Draft EIR/EIS was more than three times the maximum 60-day review period that the State CEQA Guidelines recommend except for in "unusual circumstances," and five times the typical 45-day period required by CEQA and NEPA.[302] In conclusion, the original 120-day public comment period and it subsequent extensions to 229 days for the Draft BDCP and Draft EIS/EIR far exceeded all public review period requirements under CEQA and NEPA.

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[297] State CEQA Guidelines, § 15201; *State of California v. Block* (9th Cir. 1982) 690 F.2d 753, 771.

[298] State CEQA Guidelines, §§ 15105, subd. (a), 15087, subd. (e); 40 Code of Federal Regulations (CFR) §1506.10(c).

[299] 40 CFR § 1506.10(d).

[300] State CEQA Guidelines, §§ 15105, subd. (a), 15087, subd. (e).

[301] In accordance with the California Natural Community Planning Act and Section 10 of the federal Endangered Species Act, the Draft BDCP has been made available for public review and comment along with the Draft EIR/EIS. (See Cal. Fish & G Code, § 2815, § (a); see also 16 U.S.C., § 1539(c)); 50CFR § 17.22(c) (U.S. Fish and Wildlife Service implementing regulations); *id*. at § 222.307(c) (National Marine Fisheries Service implementing regulations).

[302] (See *Kootenai Tribe of Idaho v. Veneman* (9th Cir. 2002) 313 F.3d 1094, 1118–1119, overruled in part on other grounds in *Wilderness Soc'y v. United States Forest Serv.* (9th Cir. 2011) 630 F.3d 1173, 1180 [affirming that an EIS could not be challenged on the basis of an allegedly inadequate opportunity to comment when the public comment period substantially exceeded the 45-day statutory requirement).)

Facilitating Public Review during Comment Period and Extensions

Although the Draft BDCP and Draft EIR/EIS are very large, comprehensive documents containing a wealth of information on a variety of important topics, every effort was made to facilitate the ease of public review and comment. For instance, both documents were made available online and at more than 120 document repositories throughout the State of California and DVDs containing the documents were provided upon request at no cost to the requestor. The Draft BDCP and Draft EIR/EIS include chapter summaries, reader guides, and numerous technical appendices that provided details about how the chapters were developed, how analyses were conducted, modeling results, data on species, and policy guidance, to name a few. A number of useful factsheets and materials were made available to help guide readers through the documents and to identify topics of interest for further review in the documents. Informational videos designed to help the public navigate the Draft BDCP and Draft EIR/EIS, find information, and learn more about the proposed project and its alternatives were posted on the website as well.[303]

In addition, individuals seeking assistance in locating specific topics within the Draft BDCP and/or Draft EIR/EIS were able to contact staff with questions via phone, e-mail, and Twitter[304] and staff replied to these requests with specific advice on where in the documents the individuals should look for information on the topics of particular interest to them. The lead agencies also established a multi-lingual informational hotline providing information in English, Spanish, Tagalog, Vietnamese, Hmong, Cambodian and Mandarin[305]. Public open house meetings were held throughout California in January and February of 2014, to provide further opportunities for the public to learn about the contents of the documents, to speak directly to the authors and technical experts, and to submit official public comments.

It bears emphasizing, moreover, that the formal public review period for the Draft BDCP and Draft EIR/EIS represents only one component of the extraordinarily extensive and transparent public input process on the BDCP and the Draft EIR/EIS that substantially surpassed CEQA and NEPA requirements for public participation. A total of 22 scoping meetings were conducted during 2008 and 2009, throughout California to provide input on the scope of the EIR/EIS. More than 1,200 attendees registered for these scoping meetings and a total of 2,950 separate comments were received. In addition to the required public participation opportunities, such as scoping, that were conducted, the lead agencies provided numerous other ways for individuals, stakeholders, and

[303] These videos are available at: http://baydeltaconservationplan.com/Library/BDCPLibrary/InformationalMaterials/InformationalEpisodes.aspx (as of November, 2016). Video topics on the Draft BDCP: BDCP Introduction; Chapter 3 – Conservation Strategy; Conservation Measure 1 – Water Facilities and Operation; Conservation Measures 2-22 – Habitat and Other Stressors; Chapter 5 – Effects Analysis; Chapters 6 and 7 – BDCP Implementation; Chapter 8 – Implementation Costs and Funding Sources; Chapter 9 – Alternatives to the BDCP. Video topics on the Draft EIR/EIS include: Draft EIR/EIS Overview; Water Supply, Surface Water, Groundwater, and Water Quality; Land Use, Agriculture, and Recreation; Socioeconomics, Growth Inducement, Environmental Justice, and Public Health; Geology and Seismicity, Soils, and Minerals; Fish and Aquatic Resources, and Terrestrial Biological Resources; Aesthetics and Visual Resources, Noise, Cultural Resources, and Paleontological Resources; Transportation, Public Services and Utilities, Hazards and Hazardous Materials and Energy; and Air Quality and Greenhouse Gases, and Climate Change.

[304] Twitter users were able to send out a tweet with the hashtag "#WhereinBDCP" and, generally within 72 hours, the @BDCP_CA Twitter handle responded to the tweet with information indicating where the individual may find information relevant to the subject matter of interest.

[305] Multi-Lingual Information Materials are available at: http://baydeltaconservationplan.com/EnvironmentalReview/EnvironmentalReview/2013-2014PublicReview/2013-2014PublicReviewInformationalMaterials/Multi-Lingual.aspx (as of November, 2016).

agencies to participate.[306] Indeed, since 2006, the BDCP has been developed based on sound science, data gathered from various agencies and experts over many years, input from agencies, stakeholder and independent scientists, and more than 600 public meetings, working group meetings, and stakeholder briefings.

Furthermore, since 2010, more than 3,000 documents have been posted online,[307] providing the public with abundant information regarding the BDCP and its environmental review process. Among the most significant of the publicly released documents are the first and second administrative drafts of both the EIR/EIS and the BDCP.[308] Although not required to be made public under CEQA, NEPA, the federal Endangered Species Act (ESA), or the California Natural Community Conservation Planning Act (NCCPA), the lead agencies publically released these two sets of administrative draft documents, the first set in February 2012, and the second set between March and May 2013 in order to give decision-makers, agencies, elected officials, and the general public an early opportunity to learn about and provide feedback on these documents as they were being developed. The lead agencies received many comments on the administrative draft documents from other agencies and members of the public that were considered in the development of the final work product (i.e., Draft EIR/EIS).

This extraordinary, multi-year public input process was a success, in that the process resulted in a better environmental document and proposed project. Written comments on the administrative draft analyses allowed the lead agencies, in response, to improve the quality of the impact analyses and mitigation measures. Stakeholder involvement after release of the administrative draft documents also led to engineering optimization efforts resulting in an improved project design. Revisions made prior to release of the Draft EIR/EIS included, among other things, changes to the proposed water conveyance system that reduced the project's permanent footprint by 50 percent, shifted more than 400 acres of permanent and temporary construction impacts from private to public lands, and otherwise substantially reduced the effects of the project on the Delta residents.[309] Summaries of the changes were provided on the project website.[310] Alternative 4, the preferred alternative for purposes of CEQA, was refined and improved based on scientific work and analysis to provide an optimal balance between ecological and water supply objectives. Summaries of the substantive changes made between the time the administrative draft documents were issued and

[306] See Final EIR/EIS, Chapter 32, *Public Involvement, Consultation, and Coordination*, Section 32.1.2, for a summary of these public participation opportunities.

[307] These documents are accessible on the "Library" page of the BDCP's website at: http://baydeltaconservationplan.com/Library.aspx (as of November, 2016)

[308] In 2010, the first administrative draft of the BDCP was released to the public. In 2012, the second administrative draft BDCP and the first administrative draft of the EIR/EIS were released to the public.

[309] Changes to certain alternatives included: shrinking the new intermediate forebay from 750 acres to 40 surface acres and shifting its location away from the towns of Hood and Courtland and closer to Interstate 5; realigning a segment of the proposed twin tunnels several miles to the east to lands owned by a private non-profit group on Staten Island, away from the Pearson District, Brannan Island, and Walnut Grove; shortening the main tunnels from 35 miles to 30 miles; decreasing from 151 to 81 the number of structures affected by the project; and reducing from 60 feet to 30 feet the height of the intake pumping plants along the Sacramento River by relying on a mobile crane rather than a permanent gantry crane inside each building. For additional information about the changes made to the project between the first administrative draft EIR/EIS and the second administrative draft EIR/EIS go to: http://baydeltaconservationplan.com/news/2010-2014news/2010-2014news/13-08-15/New_Changes_to_BDCP_Would_Reduce_Impacts_to_Landowners_and_Residents.aspx (as of November 2016.)

[310] At: http://baydeltaconservationplan.com/news/2010-2014news/2010-2014news/13-08-15/New_Changes_to_BDCP_Would_Reduce_Impacts_to_Landowners_and_Residents.aspx

the time the official public draft documents were published were made available on the project website.[311]

Although numerous commenters and others expressed dissatisfaction that they were expected to review approximately 35,000 pages of materials in only half a year, this page number total is somewhat misleading. Consistent with established CEQA and NEPA principles, the lead agencies included the most technical information in a series of appendices to the Draft EIR/EIS. Some such appendices contained hundreds of pages of computer outputs and other very technical information, which would be of interest only to the most technically-focused commenters (e.g., state and federal reviewing agencies, and professional consultants retained by stakeholder interests) (see, e.g., Appendices 5A, 7A, 8A through 8N, 10A through 10C, 11C, 11D, 12E, 17A through 17C, 19A, 22A, 22B, 24A, 26A, and 28A of the Draft EIR/EIS). For typical citizens, this highly technical information is not necessary in order to fully understand the alternatives presented, the analysis of potential impacts, and the proposed mitigation measures. Although many commenters were dissatisfied with the very large total number of pages making up the overall Draft EIR/EIS package (approximately 35,000), the Draft EIR/EIS *text* included approximately 13,382 pages and the technical appendices, figures and Mapbooks composed the balance of the document.

The 229-day comment period was intended for focused review of the environmental documents. In light of the extensive overall public input process during the time period in which the documents were being developed, including the public availability of two administrative drafts of the EIR/EIS, the 229-day public review period for the BDCP and the Draft EIR/EIS was reasonable, adequate, and conducive to effective public input. To ensure that commenters were able to make the most of their available time in reviewing and commenting, the lead agencies took the following steps to reduce possible delays during the public review period:

- Ensured that posted documents to the project website were accurate and complete.
- Enabled commenters to download from the project website the documentation either as individual chapters or in full.
- Addressed in a timely fashion any reports of corrupted or missing online files.
- Advertised the availability of the documentation online through multiple advertising sources to reach the public.
- Made available hard copies in numerous libraries. For specific requests, CD-ROMs were provided for free.

As evidenced by the numerous thoughtful, in-depth, and detailed comments received on the Draft BDCP and Draft EIR/EIS, the 229-day public review and comment period was more than sufficient

[311] See BDCP "Substantive Changes in Public Draft (Dec. 2013) since Revised Administrative Draft (March-May 2013)" (December 2, 2013) available at: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/BDCP_Changes_Since_Revised_Administrative_Draft_12-9-13.sflb.ashx (as of November, 2016); and BDCP "Substantive Changes in Public Draft (Dec. 2013) since 2nd Administrative Draft (May 2013)" (December, 2, 2013), available at: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Draft_EIR-EIS_Changes_Since_Second_Administrative_Draft_12-9-13.sflb.ashx (as of November, 2016). For information regarding the changes between the preliminary draft documents and the administrative draft documents, see: http://baydeltaconservationplan.com/news/2010-2014news/2010-2014news/13-08-15/New_Changes_to_BDCP_Would_Reduce_Impacts_to_Landowners_and_Residents.aspx.

for all interested members of the public and agencies to review and provide meaningful comments and recommendations on these documents.

Draft BDCP Implementing Agreement

The Draft Implementing Agreement for the BDCP (Alternative 4) was made available for public review on May 30, 2014, for a 60-day review period, consistent with the NCCPA, ending on July 29, 2014. Implementing agreements are a requirement under the NCCPA and are routinely executed under the ESA Section 10 permitting process for habitat conservation plans (HCP). Because the currently proposed project, Alternative 4A, the California WaterFix, is not an HCP or natural community conservation plan, an implementing agreement was not released for public comment with the RDEIR/SDEIS or Final EIR/EIS.

Partially Recirculated Draft EIR/Supplemental Draft EIS

By the end of the public review period for the Draft BDCP and its Draft EIR/EIS, the lead agencies had received numerous comments on the documents from other agencies and members of the public. Many of these comments included suggestions regarding how, from the commenters' perspectives, the project could be improved.

Consistent with this public input, the lead agencies substantially modified Alternative 4 to reduce its environmental impacts and formulated three non-HCP alternatives, including the proposed project, Alternative 4A (the California WaterFix), that would seek incidental take authorization for a period of less than the 50 years proposed in the BDCP, and would include only limited amounts of habitat restoration to mitigate the impacts of construction and operation. In addition, there was a desire on the part of the agencies to explore multiple regulatory approaches that could facilitate expedited Delta solutions. To that end, a joint RDEIR/SDEIS was prepared.

The 2015 RDEIR/SDEIS was noticed and circulated for public review in the same manner as the 2013 draft documents.[312] The CEQA comment period began on July 10, 2015, for an originally scheduled 45-day comment period and was extended by 60 days for a total of 113 days. The NEPA 45-day comment period for the RDEIR/SDEIS began on July 17, 2015, and was also extended by 60 days for a total review period of 105 days. Two public meetings were held to receive comments on the RDEIR/SDEIS, on Tuesday, July 28, in Walnut Grove, and on Wednesday, July 29, in Sacramento. The public review period ended on October 30, 2015. The RDEIR/SDEIS contains a Document Review Road Map to guide the public in the review of the RDEIR/SDEIS. This diagram identifies the location of the various chapters and sections and their titles.

In conclusion, the comments on the length of the public review period, in and of themselves, do not raise new or significant environmental impact issues or concerns regarding the adequacy, accuracy, or completeness of the analysis or conclusions in the environmental documents. The duration of the comment periods and related extensions, for both the draft documents, and the 2015 RDEIR/SDEIS, substantially exceeded the typical CEQA and NEPA public review period of 45 days and was more than adequate for public review despite the breadth and complexity of the documents. In addition,

[312] A complete description of noticing for the Draft BDCP, Draft EIR/EIS, and the RDEIR/SDEIS is provided in Chapter 32, *Public Involvement, Consultation and Coordination*. Copies of the notices and other outreach materials are provided in Appendix 32B, *Draft EIR/EIS Public Review Summary Report*, and Appendix 32C, *RDEIR/SDEIS Public Review Summary Report*.

the lead agencies have made every effort to facilitate and promote public/agency review of the Draft EIS/EIR, the RDEIR/EIS, and related planning documents/agreement.

Master Response 40: Adequacy of Public Outreach Activities

This master response discusses the public outreach efforts conducted by the lead agencies, including the 2013 Draft EIR/EIS and 2015 RDEIR/SDEIS public open house meetings and additional efforts.

The lead agencies believe that the public outreach efforts summarized here more than adequately satisfy the public outreach goals and requirements under state and federal laws and guidelines.

The proposed project has been developed based on sound science, data gathered from various agencies and experts over many years, input from agencies, stakeholders and independent scientists, and more than 600 public meetings, working group meetings and stakeholder briefings/Q&As. All of the documents, studies, administrative drafts, meeting materials and public drafts—more than 3,000 documents—have been posted online since 2010 in an unprecedented commitment to public access and government transparency. See Master Response 41, *Transparency and Public Involvement*, for more detailed information on project transparency.

Scoping is a public participation element of CEQA and NEPA that is intended to assist the lead agencies preparing an EIR/EIS with determining the topics that the document should address. The scoping process invites public comment during a public review period. Comments received during the public scoping process were considered in the preparation of the EIR/EIS. The lead agencies for the proposed project conducted a total of 22 public scoping meetings throughout California during 2008 and 2009. See Chapter 32 *Public Involvement Consultation and Coordination,* Section 32.1.1 for more detailed information on the EIR/EIS scoping meetings, including dates, locations, meeting format, and participants. Detailed information regarding the scoping meetings and scoping comments can be found in Appendix 1D, *Final Scoping Report*.

The release of the Draft EIR/EIS is not only a major milestone, but also a critical point for public review and involvement that is carefully guided by CEQA and NEPA. The Draft EIR/EIS was circulated for public review on December 13, 2013 for a 228-day comment period that closed on July 29, 2014. In January and February 2014, the lead agencies conducted 12 public meetings throughout California to take comments on the Draft EIR/EIS. See below, as well as Chapter 32, Section 32.1.2, for more information on Draft EIR/EIS public meetings and comments. Copies of meeting invites, reminders and similar information can be found in Appendix 32B, *Draft EIR/EIS Public Review Summary Report*.

In 2015, the California Department of Water Resources (DWR) and the Bureau of Reclamation, as state and federal lead agencies, released the RDEIR/SDEIS. The RDEIR/SDEIS introduced three new alternatives that were developed in response to public and agency input, including Alternative 4A (California WaterFix), which was identified as the new preferred alternative. The RDEIR/SDEIS was released on July 10, 2015 for a 112-day comment period that closed on October 30, 2015. Two public meetings were held in Sacramento and the Delta to take comments on the RDEIR/SDEIS. See below, as well as Chapter 32, Section 32.1.3, for more information on RDEIR/SDEIS public meetings and the public comment process. Copies of meeting reminders and similar information can be found in Appendix 32C, *RDEIR/SDEIS Public Review Summary Report*. See also Master Response 42, *Responses to Comments on the Draft EIR/EIS and RDEIR/SDEIS*, and Master Response 39, *Public Review Period Duration*, for more information on the public comment period and process for the

Draft EIR/EIS and RDEIR/SDEIS, and Master Response 41, *Transparency and Public Involvement*, for information regarding the posting of comments and correspondence to the project website.

The Final EIR/EIR contains responses to substantive public and agency comments on the Draft EIR/EIS and RDEIR/SDEIS. DWR is responsible for certifying the EIR as adequate by issuing a Notice of Determination in compliance with CEQA. The Bureau of Reclamation is responsible for issuing a Record of Decision following a 30-day period after a Notice of Availability for the EIS has been published with the U.S. Environmental Protection Agency. The agencies will use the EIR/EIS in addition to federal Endangered Species Act Section 7 consultation, California Endangered Species Act consultations for take authorization as allowed under Section 2081(b) of the California Fish and Game Code, and other appropriate information to make a decision on selecting which alternative to implement when considering project approval.

Locations of Public Open House Meetings

2013 Draft EIR/EIS

Twelve public open house meetings were held throughout the state in January and February 2014. These meeting locations were selected and deemed appropriate because they reflect the same robust level outreach that was completed for the EIR/EIS scoping meetings in 2008 and 2009. Additionally, the meeting locations were selected to be accessible to people from all regions of the state. To the extent feasible, locations were selected to be central to a specific region and accessible by public transportation. Meetings were held in the late afternoon and evening hours to accommodate different schedules. Public open house meetings were held in the following communities:

- Fresno, Wednesday, January 15, 2014
- Bakersfield, Thursday, January 16, 2014
- Stockton, Tuesday, January 21, 2014
- San Jose, Wednesday, January 22, 2014
- Redding, Thursday, January 23, 2014
- Fairfield, Tuesday, January 28, 2014
- Walnut Grove, Wednesday, January 29, 2014
- Sacramento, Thursday, January 30, 2014
- Los Angeles, Tuesday, February 4, 2014
- Ontario, Wednesday, February 5, 2014
- San Diego, Thursday, February 6, 2014
- Clarksburg, Wednesday, February 12, 2014

2015 RDEIR/SDEIS

Based on the attendance at the Draft EIR/EIS public open house meetings and recent changes to the proposed project, the lead agencies determined that the RDEIR/SDEIS open house meetings should be located in the areas where there was the greatest community and stakeholder interest in the

proposed project. For these reasons, the lead agencies held the meetings in the Delta region; Sacramento, CA and Walnut Grove, CA on July 28 and 29, 2015, respectively. Meetings were held in the late afternoon and evening hours, from 3:00 to 7:00pm, to accommodate different schedules.

Information Provided at the Public Open House Meetings

The objectives of the public open house meetings included:

- Explain what the proposed project is, what it intends to accomplish.
- Explain the purpose and need of the Draft EIR/EIS (or RDEIR/SDEIS) and the environmental process.
- Explain the public process for the Draft EIR/EIS and BDCP (or RDEIR/SDEIS), and how the documents have changed.
- Provide an opportunity for the public to get information and answers from state and federal agency staff and consultants.
- Offer a public venue for submittal of formal written comments on the Draft EIR/EIS and Draft BDCP (or RDEIR/SDEIS).

Meetings were open house-style format with stations for different parts of the BDCP and resource areas of the EIR/EIS (or RDEIR/SDEIS). State and federal agency staff, and technical consultants were available to speak individually to members of the public to answer questions, provide information on the BDCP and/or EIR/EIS (RDEIR/SDEIS), and provide information to help the public find information and prepare public comments. The public open house meetings provided a public venue for submittal of formal written comments on the Draft EIR/EIS, RDEIR/SDEIS, and Draft BDCP and for oral comments submitted to a court reporter. No formal public hearing was held and no presentations were given. Materials and display boards were designed to help guide the public through the components of the proposed project, and were not intended to summarize all the information from those documents. All materials and display boards from the public open house meetings for BDCP and California WaterFix were made available on the BDCP website, www.BayDeltaConservationPlan.com.

The BDCP/California WaterFix is one component of California's water resources portfolio and is a long-term strategy to secure California's water supplies and improve the ecosystem of the Sacramento-San Joaquin River Delta. The proposed project includes new water conveyance facilities to address environmental and water supply concerns with the current State Water Project. The education and outreach conducted related to the BDCP/California WaterFix matches the scope of the project itself and meets the requirements of state and federal environmental laws and regulations.

Other Outreach and Education Activities

As state agencies, DWR and the California Natural Resources Agency have a duty to provide the public with educational information that is rooted in fact, based on reasonable assumptions supported by facts and expert opinions substantiated by facts. The BDCP and California WaterFix websites, blog, Your Questions Answered, and social media platforms have been the primary vehicle for communicating important project information and correcting misinformation. Brochures, factsheets, webinars and videos are other tools the state has employed to educate the public about

the proposed BDCP/California WaterFix and the EIR/EIS process. Representatives from the state have also held hundreds of meetings and briefings around the state to educate stakeholders and provide them with critical information about project developments and the EIR/EIS process. Brochures, factsheets, webinars, reports and other information are kept on the project websites, www.BayDeltaConservationPlan.com and www.californiawaterfix.com and are available for review; many of these materials are also available in Appendix 32B, *Draft EIR/EIS Public Review Summary Report*, and Appendix 32C, *RDEIR/SDEIS Public Review Summary Report*. Historic (outdated) materials remain available for review on the BDCP website and are labeled as archived or superseded. For more information related to the length and complexity of the documents please refer to Master Response 38, *Length and Complexity of the EIR/EIS*.

DWR also maintained a library of educational information in Spanish on its website. For additional information regarding environmental justice and outreach to non-English speakers, please see Chapter 32, Section 32.1.4.4, and Master Response 27, *Environmental Justice*.

Master Response 41: Transparency and Public Involvement

This master response describes the steps the lead agencies have taken to ensure transparency and public involvement in developing the BDCP and Final EIR/EIS.

The Lead Agencies Have Met and Exceeded the Legal Requirements for Transparency and Public Involvement in Developing the BDCP and EIR/EIS

Since 2006, the BDCP/California WaterFix has been developed based on sound science, data gathered from various agencies and experts over many years, input from agencies, stakeholders and independent scientists, and more than 600 public meetings, working group meetings and stakeholder briefings. Chapter 32, *Public Involvement, Consultation, and Coordination*, Section 32.1.4.5, *Additional and Ongoing Public Participation Opportunities*, details use of the project's website.

All of the documents, studies, administrative drafts, and meeting materials—more than 3,000 documents—have been posted online since 2010 in an unprecedented commitment to public access and government transparency. In addition, informational videos and webinars are available online. The lead agencies have exceeded the goal of State CEQA Guidelines Section 15201 by "making environmental information available in electronic format on the Internet, on a website maintained or utilized by the public agency." There are three websites to which the public can avail themselves when seeking information on the proposed project and its alternatives, as well as to contact the lead agencies:

- Bay Delta Conservation Plan: http://baydeltaconservationplan.com/Home.aspx
- California WaterFix Project: https://www.californiawaterfix.com/
- Bureau of Reclamation's (Reclamation's) Bay-Delta Office: http://www.usbr.gov/mp/BayDeltaOffice/

The lead agencies have exceeded the requirements of the Endangered Species Act, Natural Community Conservation Planning Act, CEQA and NEPA by also publishing working and administrative drafts. In 2010, a working draft of the BDCP was released to the public. In 2012, the second administrative draft of the BDCP and the first administrative draft of the EIR/EIS were released to the public. Prior to the December 2013 release of the public review Draft BDCP and Draft EIR/EIS, the proposed project was significantly revised in response to stakeholder involvement and engineering optimization efforts. In 2013, the California Department of Water Resources (DWR), as the state lead agency, continued to review proposed alternatives during this drafting process, including the Portfolio Approach. Chapter 3 describes the alternatives reviewed in the EIR/EIS and the alternatives considered but dismissed from further evaluation. In April 2014, the lead agencies (DWR and Reclamation) announced a new alternative—Alternative 4A—to replace Alternative 4 (the BDCP) as the proposed project that would be evaluated in the RDEIR/SDEIS along with two additional alternatives. In July 2015, the RDEIR/SDEIS was issued by the lead agencies to provide the public and interested agencies an opportunity to review engineering refinements made to the

water conveyance facilities; to introduce new alternatives: Alternatives 4A (California WaterFix), 2D and 5A; to explore multiple regulatory approaches; and, to include updated environmental analyses that, in part, were conducted in response to issues raised in the more than 18,000 comments received on the Draft EIR/EIS.

Posting Comments to the Website

After the conclusion of scoping under CEQA and NEPA and prior to the release of BDCP and associated Draft EIR/EIS for public review and comment, the lead agencies sought to ensure transparency and public access throughout the interim planning years (2009–2013) by hosting public meetings, steering committee meetings, working group meetings and publication of preliminary and administrative drafts of both the BDCP and the EIR/EIS for informal public review online[313]. Although there is no specific requirement or guidance under state and federal environmental review laws or policies to do so, meeting materials, meeting notes, meeting presentations, audio recordings of meetings, draft documents, and comment letters were made available to the public on the BDCP website. The correspondence on the website included letters and reports from local governments', local, state and federal agencies, water and reclamation districts, elected officials, environmental non-governmental organizations, landowners and other stakeholders. Schedules and procedural steps were also stated at meetings and on the web throughout this entire process.

Comments received during the scoping period were posted online regardless of whether the commenter was critical or supportive of the BDCP. The opinion that differing viewpoints were restricted online and not addressed in the environmental documentation by not providing comments and information for public and agency review is unfounded. The hallmark of both CEQA and NEPA is full public disclosure of the potentially significant project-specific and cumulative impacts (including in those areas of analyses where there is disagreement amongst the experts), and the potentially feasible alternatives and mitigation measures to avoid or lessen significant impacts attributable to each project alternative.

Furthermore, once the public review periods for the Draft EIR/EIS and RDEIR/SDEIS were closed on July 29, 2014 and October 30, 2015, respectively, all incoming correspondence was considered a formal comment on the BDCP, the California WaterFix, Draft EIR/EIS, and RDEIR/SDEIS. All formal comments must be processed, internally reviewed, and responded to by the lead agencies first. Public comments submitted during the Draft EIR/EIS public comment period[314], December 13, 2013 through July 29, 2014, as well as those comments received on the RDEIR/SDEIS during the July 10, 2015 through October 30, 2015 comment period are made available with responses to every comment in the Final EIR/EIS. All of the comments on the RDEIR/SDEIS were also made available on

[313] Scoping: NOP/NOI Comment Letters and Transcripts from Public Meetings: http://baydeltaconservationplan.com/EnvironmentalReview/EnvironmentalReview/Scoping/Scoping2009/EIREISPublicComments.aspx and http://www.water.ca.gov/deltainit/comments.cfm.

[314] Draft EIR/EIS: It is noted at http://baydeltaconservationplan.com/Library/2007-2014Correspondence.aspx the following information:

> Consistent with the requirements of the California Environmental Quality Act (CEQA) (CEQA Guidelines §15088) and the National Environmental Policy Act (NEPA) (Council on Environmental Quality § 1503.4) and policies held by all Lead Agencies governing the implementation of CEQA and NEPA; public comments submitted during the official public comment period, December 13, 2013 through June 13, 2014, will be made available to the public upon the release of the Final EIR/EIS. The Final EIR/EIS will include all comments received during the official comment period and responses to substantive comments.

the project website[315]. The Final EIR/EIS contains all comments received during both of the official comment periods and responses to all comments.[316]

Submitting Comments to an Online Docket

Posting comments in an online docket is not a requirement of CEQA or NEPA (State CEQA Guidelines Section15088; 40 Code of Federal Regulations Part 1503.4), or policies of the respective lead agencies governing their implementation of CEQA and NEPA. For example, during the NEPA process, Reclamation filed notices of availability of the Draft EIR/EIS[317] and the RDEIR/SDEIS[318] in the Federal Register via the Office of Federal Activities, EPA. These notices were posted online and directed potential commenters to contact either the representatives of federal agencies involved with the BDCP (for the Draft EIR/EIS) or the ICF consultant representative responsible for collecting the comments on the RDEIR/SDEIS for the California WaterFix. Nowhere in those notices or in the Reclamation's NEPA Handbook[319] is there a suggestion or requirement that written comments should or shall be posted in an online docket such as those dockets created by other federal agencies at www.regulations.gov. As noted in Chapter 32, *Public Involvement, Consultation, and Coordination*, there were many opportunities and venues in which individuals, organizations, and public agencies could submit letters of comment, emails, and public testimony to the lead agencies rather than only through an online docket.

[315] 2015 RDEIR/SDEIS Comment Letters (the website page also includes a comment letter index): http://baydeltaconservationplan.com/2015PublicReview/PublicReviewRDEIRSDEIS_Comments.aspx.

[316] Additional information detailing how the lead agencies have responded to comments submitted on the Draft EIR/EIS and RDEIR/SDEIS is in Master Response 42 *Response to Comments on the Draft EIR/EIS and RDEIR/SDEIS.*

[317] Federal Register announcement for Draft EIR/EIS for BDCP: https://www.gpo.gov/fdsys/pkg/FR-2013-12-13/pdf/2013-29779.pdf.

[318] *Federal Register* announcement for Draft Supplement to BDCP/California Water Fix: http://energy.gov/sites/prod/files/2015/07/f25/EIS-0463-EPANOA-DEIS-2015.pdf.

[319] Bureau of Reclamation. 2012, Updated NEPA Handbook at http://www.usbr.gov/nepa/.

Master Response 42: Responses to Comments on the Draft EIR/EIS and RDEIR/SDEIS

This master response discusses the Draft EIR/EIS and RDEIR/SDEIS comment response process. The master response explains how public comments were considered in the planning process, the approach for following up on comments provided during scoping and on the Draft EIR/EIS and RDEIR/SDEIS, and discusses the number of comments received during each review period.

Public Comments and their Relationship to the Environmental Review and Project Planning Processes

One of the key tenets of CEQA and NEPA is meaningful public participation. Comments received from the public during the formal public review periods that raise new significant environmental issues can provide pertinent information, which in turn can be considered by the lead agencies' decision makers prior to action taken on the proposed project. All participants and stakeholders benefit when the environmental documentation is based on substantial evidence and comprehensive analysis, thus enabling decision-making based on sound evidence and analysis with input from informed and participatory citizens.

Comments on both the 2013 Draft EIR/EIS and 2015 RDEIR/SDEIS have been considered by the lead agencies during the ongoing design and planning phases in modifying the proposed project to lessen the project's potentially significant impacts on the environment. In the case of the evolving stages from the BDCP to the California WaterFix as the preferred alternative, 15 project alternatives and three new alternatives were analyzed extensively in the Draft EIR/EIS and the RDEIR/SDEIS, respectively. In light of comments received, the process has resulted in substantially reduced environmental impacts. Other proposals submitted by public and private individuals and organizations have also been evaluated and described in Chapter 3, *Description of Alternatives*.

Overall, the process of soliciting, receiving and responding to comments on both the Draft EIR/EIS and RDEIR/SDEIS ensures that the lead agencies have environmental documentation compliant with CEQA/NEPA requirements, that the ultimate decision is based on evidence that is open and vetted by the public, and that the public's interactions in the environmental review process have been meaningful.

The lead agencies (the California Department of Water Resources [DWR] and the Bureau of Reclamation [Reclamation]) have responded to all substantive comments received on the Draft EIR/EIS and RDEIR/SDEIS scope, analysis, or process pursuant to State CEQA Guidelines Section 15088 and the Council on Environmental Quality NEPA Regulations at 40 Code of Federal Regulations Section 1503.4. DWR and Reclamation are responsible for receiving all comment letters, emails, and oral comments on the Draft BDCP, Draft EIR/EIS and RDEIR/SDEIS. Comments have been sorted by environmental categories or project components, coded by themes, and logged into a tracking system. The comments were reviewed and responses to all individual comments prepared. In some cases, the same or similar comments are received multiple times by numerous parties. For these types of similar comments, the lead agencies have prepared master responses, such as this one. Master responses are detailed responses that provide in-depth explanations of the content and analysis in the environmental documents. The comments have been assessed and considered

individually and collectively to determine if revisions to the EIR/EIS analyses are warranted. If the text in the EIR/EIS is modified to clarify an issue raised in a comment, these changes are referenced in the responses and updated in the appropriate EIR/EIS chapter. The Final EIR/EIS also includes copies of the comments letters received on the Draft EIR/EIS and RDEIR/SDEIS. Responses to comments on the Draft BDCP document include a master response to address important topics and themes as well as individual comment responses.

The public review process for the Draft EIR/EIS and RDEIR/SDEIS provided an opportunity for formal public comment on the proposed project and project alternatives. Comments received on the Draft EIR/EIS and RDEIR/SDEIS have resulted in further refinement of the proposed project and alternatives and the analysis in the EIR/EIS. All comments received on the Draft EIR/EIS and RDEIR/SDEIS were considered in the decision-making process. Any comments received on the noticing of the Final EIR/EIS will be reviewed and considered prior to completion of the CEQA/NEPA and project approval processes. Please refer also to Master Response 39, *Public Review Period Duration*, that also details how public comments led to modifications of certain elements in some of the alternatives.

Approach to Responding to Questions Raised Outside of the Formal Public Review Periods

As indicated in Chapter 32, *Public Involvement, Consultation and Coordination*, considerable effort has been made in conducting numerous public outreach meetings prior to publication of the Draft EIR/EIS and RDEIR/SDEIS and during public review period meetings (refer also to Master Response 39 regarding the public review process). During these events, many questions have been received. To follow up on these inquiries, DWR staff and the public outreach team conducted a series of "Delta Office Hours" in communities throughout the Sacramento-San Joaquin Delta. These office hours, held in 2013, served as a resource for Delta citizens and community members in need of additional information or who were interested in providing input to the planning and environmental compliance effort. More than 150 people attended the office hours. DWR and consultant staff spoke to attendees individually and in small groups as time and space allowed. In many instances, attendees had questions outside the scope of the project that staff committed to following up on. Such comments and questions were recorded and DWR staff attempted to follow up with participants whenever possible. In some circumstances, such as being unable to identify whom to follow up with when participants met in small groups, DWR staff was not able to follow-up with all participants. Contact information for the DWR landowner liaison was provided to all participants, and was made available online for any Delta landowners to contact outside of the scheduled office hours. DWR was able to reach many Delta landowners and participants to follow up on outstanding questions and comments. In addition, the lead agencies also conducted multiple public meetings during the public review period in communities across California. The question-and-answer format of the meetings was intended to answer specific questions about the proposed project and environmental analyses. The outreach team also has provided a series of project fact sheets, videos and informational webinars, project documents, and project updates on the project websites: www.baydeltaconservationplan.com and www.CaliforniaWaterFix.com.

Receipt of Comments during Scoping and Public Review Periods

The formal comment period on the Draft EIR/EIS was December 13, 2013 through July 29, 2014; and the comment period for the RDEIR/SDEIS was July 10, 2015 through October 30, 2015. All

comments received during these periods have been processed, reviewed, and responded to by the lead agencies, and are found in the Final EIR/EIS. For a summary of the types of comments received during those review periods, please refer to Chapter 32, *Public Involvement, Consultation and Coordination*.

Public comment received on the Draft EIR/EIS and the Draft BDCP comprised a total of 12,204 comment letters—1,518 unique letters from individual members of the public and 432 letters from agencies, organizations, and stakeholder groups. The balance of comments consisted of form letters sent by individuals and organized by various organizations. A total of 18,532 separate comments on the draft documents were received during the public review period. All the comments were considered in the decision to recirculate the environmental review documents.

Additionally, public comment received on the RDEIR/SDEIS comprised more than 21,700 comment letters—5,920 unique letters from individual members of the public, 36 from elected officials, 117 letters from governments or public agencies, and 464 from non-governmental organizations and stakeholder groups. The balance of comments consisted of form letters sent by individuals and organized by various organizations. A total of 12,492 separate comments on the recirculated documents were received during the public review period. Formal responses to the comments received on the Draft BDCP, the Draft EIR/EIS, and the RDEIR/SDEIS are included in this Final EIR/EIS.

Correspondence submitted to the lead agencies prior to or after the public review periods has been considered and in some cases used to inform the planning process and the development and refinement of the recirculated and final environmental documentation. With respect to the initial scoping process, its purpose back in 2008 and 2009 was to solicit early input from the public and affected public agencies on:

- Scoping issues and comment topics.
- Extent of the action.
- Reasonable range of alternatives.
- Methodologies for impact analyses.
- Types of impacts/effects to evaluate.
- Provide mitigation strategies.

Hence, the information gathered from the scoping sessions was used to help guide the lead agencies in the development and analysis of the environmental review process, along with providing suggestions on refining the project and its alternatives. CEQA and NEPA do not require that the lead agencies respond in writing to scoping comments. However, the intent is to have an environmental review that is comprehensive and complete as much as possible. Therefore, these scoping comments are a critical component of the environmental review process. For more details on the scoping comments raised, refer to DWR's website link: http://baydeltaconservationplan.com/Library/2009-2014EnvironmentalReview.aspx.

DWR and Reclamation appreciate the public's input during this process and acknowledge the time and resources devoted to participate. Valuable feedback was received and considered during the environmental and project planning process that helped to improve the proposed project, the range and depth of the alternatives, and the overall environmental analyses.

Master Response 43: Water Transfers

This master response explains how water transfers are evaluated in the Final EIR/EIS and the environmental and administrative process in place to evaluate the impacts of water transfers.

Water transfers are voluntary actions proposed by willing buyers and sellers. The California Department of Water Resources (DWR) is one of several public agencies involved in approval and management of proposed water transfers in California, and DWR's involvement is due to its management of the State Water Project (SWP) export facilities in the Delta. Other public agencies involved with water transfers include the State Water Resources Control Board (State Water Board), the California Department of Fish and Wildlife (CDFW), U.S. Bureau of Reclamation (Reclamation), U.S. Fish and Wildlife Service, National Marines Fisheries Service, county governments, and local and regional water districts. DWR's jurisdiction is limited to transfers affecting the Delta export facilities of the SWP, which represents a small fraction of statewide transfers.

Involved public agencies must ensure that water transfers meet specific legal requirements. Approval of transfers must consider water rights, environmental impacts, area of origin impacts, storage and conveyance agreements, and other issues; the complexity of the situation and the extent of necessary inter-agency coordination will dictate the particular issues that might arise with a particular transfer. In coordination with other agencies, DWR's primary role is to approve and facilitate responsible transfers within its area of jurisdiction and coordinate with and provide guidance to buyers and sellers. See http://www.water.ca.gov/watertransfers/ for more detail on water transfers in general.

Evaluation of Water Transfers in the EIR/EIS

Beyond those currently expected to occur, water transfers are not proposed as part of the operations of the California WaterFix Project; neither the proposed project nor alternatives are expected to impact existing and future levels of water transfers. For the proposed project and alternatives, water transfer assumptions were consistent with the No Action Alternative. The environmental consequences in the Delta of water transfers for the No Action Alternative the proposed project, and alternatives are considered in Chapter 5, *Water Supply*, Section 5.3. Other environmental considerations of water transfers are discussed in Chapter 30, *Growth Inducement and Other Indirect Effects*, Section 30.3.6, *Environmental Impacts Relating to Water Transfers*. Please also see Chapter 7, *Groundwater*, for more analysis about groundwater impacts and water transfers.

The Final EIR/EIS anticipates that compared to existing conditions, upstream Delta consumptive water use will increase in the future with or without the California WaterFix facilities, which will likely result in less water available for SWP and Central Valley Project (CVP) deliveries. This in turn could result in an increase in demand for water transfers from SWP/CVP contractors south of the Delta from sellers north-of-the Delta. However, the increase in transfer demand under the No Action Alternative could be offset by increases in flexibility of SWP/CVP deliveries with the construction of the California WaterFix facilities, depending on specific operations and water year types. As a result, transfer abilities could improve, independent of the south-of-Delta transfer demand because of the new transfer capacity provided by the California WaterFix facilities and the removal of certain timing constraints limiting transfers.

The amount of transferable water that is likely to be made available by willing sellers from areas upstream of the Delta is assumed to be 600,000 acre-feet in any one year, with an additional analysis that examines the possibility that as much as 1,000,000 acre-feet might be made available in an exceptionally dry year. The lower amount of 600,000 acre-feet is generally expected to be the amount of transfer water most likely available in any one year based on recent experience with cross-Delta transfers from Northern California.

The water supply impacts in the Delta of the export of the transferred water are considered to be within the range of export operations for the proposed project operations and those impacts are part of the analysis in Chapter 5, *Water Supply*. As noted above, this analysis is project-level with respect to the operation of new north Delta facilities.

The Final EIR/EIS also provides a quantitative estimate of cross-Delta transfers that could occur with the proposed project and would therefore be relevant to the analysis of the environmental impacts of the proposed project and its alternatives. The analysis includes quantitative estimates of the effects of California WaterFix and other non-HCP alternatives on the demand for water transfers, potential sources of the transfer water, and the relative changes in transfer demand compared to existing conditions and future No Project conditions. The analysis also provides an in-depth historical perspective on transfers, and provides a thorough discussion of the permitting, CEQA and NEPA compliance, and other regulatory constraints on water transfers. Chapter 5, *Water Supply*, integrates the results of the transfers analysis. Appendix 5D, *Water Transfer Analysis Methodology and Results*, provides details of the methodology and numerous tables of results by alternative for two possible water supply scenarios. Appendix 5C, *Historic Background of Cross-Delta Water Transfers and Potential Source Regions*, provides a history of transfers involving the Delta within the framework of state-wide transfer activity, a discussion of the geographic areas where transfers are most likely to be sourced, and a rough estimate of the maximum water quantities that might be obtained if all sources were available in a single year. Appendix 1E, *Water Transfers in California: Types Recent History, and General Regulatory Setting*, provides a discussion of the regulatory framework governing water transfers.

Chapter 5, *Water Supply*, Section 5.1.2.7 states:

> The analyses presented in this section are supported by Appendices 1E, *Water Transfers in California: Types, Recent History, and General Regulatory Setting*, 5C, *Historical Background of Cross-Delta Water Transfers and Potential Source Regions*, and 5D, Water Transfer Analysis Methodology and Results, which primarily focus on cross-Delta transfers. Appendix 1E, *Water Transfers in California: Types, Recent History, and General Regulatory Setting*, provides a general description of the types of water transfers in California, their recent history, and the general regulatory setting for transfers. Appendix 5C, *Historical Background of Cross-Delta Water Transfers and Potential Source Regions*, provides a more complete description of past and present transfer programs with a discussion of the potential source regions for cross-Delta transfers. Both Appendix 5C, *Historical Background of Cross-Delta Water Transfers and Potential Source Regions*, and Chapter 30, *Growth Inducement and Other Indirect Effects*, Section 30.3.6, describe the general types of environmental impacts that could be associated with those transfers. Appendix 5D, *Water Transfer Analysis Methodology and Results*, presents the technical support for the analyses presented in this section.

One of the main objectives of the project, as stated in Chapter 2, *Project Objectives and Purpose and Need*, Section 2.3, is to "[r]estore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements." Individual water transfers are treated

as projects separate from the proposed project , and thus are not analyzed at a project level, because water provided by transfers is not considered part of the SWP's and CVP's supplies, but is instead considered additional water that may be purchased by the projects or their export customers from willing sellers based on availability. Because state law requires DWR to makes its facilities available for use by others, the construction of new diversion and conveyance facilities in the North Delta could provide new opportunities for other entities to engage in water transfers, even though such transfers are separate and independent projects.

Practical considerations also made a project-level analysis of actual future transfers very difficult, and perhaps impossible, to accomplish, as any attempt to determine the actual sources of water that would be used for particular future transfers would necessarily be speculative at this time. Which entities, if any, may be willing to act as sellers for water transfers in a particular year in the future is uncertain because sellers may need to use the water themselves or may not have water available to transfer. Moreover, their interest in selling is likely to be contingent on the price and the hydrologic and regulatory conditions existing at the time, which are variable and uncertain. Likewise, buyers' interest in participating in transfers in any given year is dependent in large part on price, water supply conditions, and cross-Delta conveyance availability. Estimating the exact sources and amounts of water that would actually be provided by willing sellers in any future year would thus be speculative. In addition, the environmental conditions and regulatory requirements in effect at the time any new California WaterFix facilities in the north Delta become operative may differ at that future time as well. Taken together, these variables make project-level analysis of water transfers impractical.

The California WaterFix has "independent utility" separate and apart from the water transfers for several reasons: 1) water transfers are not needed to meet the California WaterFix's objectives; 2) the state and federal lead agencies do not have authority to implement water transfers without agreement of sellers and buyers; and 3) long-term water transfers in the future will be evaluated under CEQA (and perhaps NEPA) as separate projects if and when they occur. CEQA case law recognizes that a lead agency may consider one component of what is arguably a larger planning framework in one CEQA document, and leave for a future analysis other potential components of the larger framework, when the earlier component has "independent utility" that does not depend on later potential components (*Del Mar Terrace Conservancy, Inc. v. City Council* (1992) 10 Cal.App.4th 712 [*Del Mar*]).

In *Del Mar*, the City of San Diego approved an EIR to expand a portion of State Route 56. Appellant claimed that the City improperly segmented the project because there were existing intentions to expand other portions of the same highway system and the EIR should have included those other expansion plans in this EIR. The court held that the City did not improperly segment the project because the project that was approved "did not commit the City and Caltrans to a definite course of action in regard to any other project" (Id. at p. 734). The court recognized that "where a proposed project is fully evaluated in an EIR, it is not improper to omit discussions of other separate projects" (Id. at p. 735). The court found that the approved project had "substantial independent utility" from the potential future related project (extension of other portions of the same highway system) (Id. at p. 733).

Del Mar's substantial independent utility test has been relied on by other courts which have also rejected segmentation claims (see *Banning Ranch Conservancy v. City of Newport* (2012) 211 Cal.App.4th 1209, 1224-1227 [park project adjacent to planned development had utility independent of that future development]; *Planning and Conservation League v. Castaic Lake Water*

Agency (2009) 180 Cal.App.4th 210, 237 [one water transfer had substantial independent utility from a larger contractual issue governing other water transfers]; *Sierra Club v. West Side Irr. Dist.* (2005) 128 Cal.App.4th 690, 699–700 [assignment of different water rights by different agencies had independent utility]; *Christward Ministry v. County of San Diego* (1993) 13 Cal.App.4th 31, 41–42 [approved landfill had independent utility from other potential landfills]). In summary, the California WaterFix Final EIR recognizes that California WaterFix is a project independent of water transfers, that water transfers may take place in the future, and the Final EIR/EIS properly analyzes water transfer at an appropriate level of detail given the uncertainties involved with water transfers.

Some of the potential transfer sources identified in Appendix 5C, *Historical Background of Cross-Delta Water Transfers and Potential Source Regions*, have been addressed in previously adopted NEPA and CEQA EIS and EIR documents. For example, the Yuba Accord water transfer program was evaluated in a 2007 EIS/EIR available at http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=2549, covering the period through 2025. In 2015, Reclamation and the San Luis & Delta-Mendota Water completed an EIS/EIR on transfers from areas of Northern California that would be conveyed across the Delta to water users south of the Delta, available at http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=18361. The period of analysis for those Reclamation transfers is cited as 2015 through 2024.

Environmental and Administrative Review of Individual Water Transfers

The impacts of each water transfers that will make use of the proposed project to convey the transferred water will be subject to separate environmental and administrative review at the time of the transfer. Most future water transfers through the Delta will involve local public water agencies and will be considered discretionary actions under CEQA, which will generally subject these transfers to CEQA review as appropriate (and NEPA review if federal action is required). Any environmental impacts on the source area and service area would be analyzed through these processes. Each water transfer would have to comply with its own project-level CEQA or NEPA analysis unless statutorily exempt or covered by an equivalent State Water Board review process. Such analysis may incorporate information from this Final EIR/EIS about Delta and other impacts.

Reclamation and the San Luis & Delta-Mendota Water Authority prepared a joint Long-Term Water Transfers EIS/EIR to analyze the effects of water transfers from public water agencies in northern California to water agencies south of the Delta and in the San Francisco Bay Area. The EIS/EIR addresses transfers CVP and non-CVP water supplies that require use of CVP or SWP facilities to convey the transferred water. Individual and multi-year transfers from 2015 through 2024 were evaluated in that EIS/EIR. Reclamation signed the Record of Decision on May 1, 2015. Transfers of CVP water in the future may use information from the Long-Term Water Transfers EIR/EIS to evaluate the environmental impacts of these transfers.

In addition, all transfers involving post-1914 water rights would be subject to the State Water Board's review and processes at the time the transfer is proposed. The State Water Board review process contains safeguards to protect environmental resources for both short-term water transfers (less than one year) under Water Code Sections 1725–1732, and long-term transfers (greater than one year) under Water Code Sections 1735–1736. The State Water Board may only approve transfers upon finding that they would not result in an injury to legal users of water or an

unreasonable impact to fish and wildlife or unreasonably affect the overall economy or the environment of the county from which the water is being transferred. To enforce these requirements, the State Water Board may impose conditions in the transferor's water rights that would be subject to administrative and judicial enforcement. As part of the review, CDFW would receive notice of the transfer and may make recommendation to the State Water Board to mitigate potential impacts to fish and wildlife that may arise from transfers. Short term transfers are exempt from CEQA under Water Code Section 1729, but such transfers are still subject to State Water Board and CDFW review.

In addition, Water Code Section 1810 provides that available unused capacity in any regional or local publicly owned water conveyance facilities, including in the California Aqueduct, must be made available for bona fide transfers, provided fair compensation is paid. The owner of the conveyance facility, however, must make written findings that the transfer can be made without injuring any legal user of water and without unreasonably affecting fish, wildlife, or other instream beneficial uses and without unreasonably affecting the overall economy or the environment of the county from which the water is being transferred. Water transfers through the Delta using the California Aqueduct will require review by DWR under Section 1810, including evaluating the effects on fish, wildlife, and other instream beneficial uses.

Master Response 44: Decision Tree Approach

This master response discusses how the decision tree approach was developed and the subsequent refinement of the decision tree approach.

Decision Tree Approach Presented for Alternative 4

Alternative 4, which is a BDCP alternative and not the preferred alternative, is presented in the Final EIR/EIS as explicitly including the decision tree approach. The purpose of the decision tree is to define a specific process relevant to the selection of fall and spring Delta outflow criteria, because the question of what outflows are needed for delta smelt (in fall months) and longfin smelt (in spring months) is an area of scientific uncertainty. The decision tree process is a structured methodology that provides focused testing to reduce uncertainty regarding the outflow needs of delta and longfin smelt. To address scientific uncertainty regarding the amount and timing of spring outflow for longfin smelt and fall outflow for delta smelt, the decision tree approach described in the 2013 Draft EIR/EIS presents alternative operating criteria that would be further evaluated prior to the selection of a specific set that would be used at the time the north Delta intakes become operational. The decision trees set specific criteria for spring outflow and fall outflow. Under the decision tree structure, one of four possible operational criteria would be implemented initially based on the results of targeted research and studies. Targeted research and studies would proceed until the north Delta intakes become operational, with the results of those studies forming the basis for determining the outcome of each decision tree. Operating criteria may also be modified after that time through an adaptive management process.

The alternative decision trees operational criteria consist of two alternative criteria each for spring and fall outflow, for a total of four possible outcomes for initial water operational scenarios. The alternative fall outflow scenarios are with and without outflows pursuant to the U.S. Fish and Wildlife Service's *Biological Opinion on the Effects of Long Term Coordinated Operations of the Central Valley (CVP) and State Water Project (SWP) on Delta Smelt and its Designated Critical Habitat* for Fall X2 (Fall X2). The alternative spring outflow scenarios are with and without the March–May "High Outflow" criteria (enhanced spring outflow). The four decision trees scenarios are:

- "H1" – no Fall X2 and no enhanced spring outflow.
- "H2" – no Fall X2 but includes enhanced spring outflow.
- "H3" – includes Fall X2 but no enhanced spring outflow.
- "H4" – includes Fall X2 and includes enhanced spring outflow.

This decision tree process would involve 1) the identification of specific scientific hypotheses regarding the amount and timing of spring outflow for longfin smelt and the need for fall outflow for delta smelt; 2) a science plan and data collection program to test these hypotheses; 3) a scientific evaluation of the results of this multi-year data collection program; and 4) a determination based on these results of the initial water operations criteria for spring and fall Delta outflow by the National Marine Fisheries Service (NMFS), USFWS, and the California Department of Fish and Wildlife (CDFW) at the time the north Delta intakes become operational.

Although the 2013 Draft EIR/EIS only described the decision tree approach with Alternative 4, the decision tree could be implemented with any other project alternative in order to create a hybrid alternative within the bookends created by the entire range of alternatives addressed in the Final EIR/EIS. As discussed in Section 3A.10.6.3 in Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, if such a hybrid alternative were ultimately identified, the analysis of Alternative 4 in the EIR/EIS would provide important analysis to assist the public and decision makers with determining the relative impacts of the hybrid in combination with such outflow criteria.

Refinement of Decision Tree Approach

Alternative 4A, as well as Alternatives 2D and 5D, which were first added and described in the 2015 RDEIR/SDEIS, do not explicitly call out the decision tree approach, although the basic concept has been retained. Through continued discussions with USFWS, NMFS, and CDFW, it was recognized that necessary listed species authorizations under the Endangered Species Act Section 7 consultation and California Fish and Game Code Section 2081(b) permitting processes would be better facilitated around a specific set of assumed initial operating criteria rather than around the four decision trees. This would not preclude, however, the same program of targeted research and studies that had been proposed under Alternative 4. The targeted research and studies could still proceed until the north Delta intakes become operational, with the results of those studies forming the basis for possible changes and refinements in the evaluated initial operations criteria.

Prior to the start of construction, specific initial operating criteria will be determined through the Section 7 consultation process and Section 2081(b) permit. Because at this time the California WaterFix biological opinion has not been issued, Appendix 5E, *Supplemental Modeling Related to the State Water Resources Control Board*, and Appendix 5F, *Comparison of FEIRS Alternatives 2D, 4A, and 5A Modeling Results to RDEIR/SDEIS Modeling Results*, presents a range of operational scenarios to depict potential operations. An adaptive management program, which includes a monitoring and reporting program, will be implemented to develop additional science during the course of project construction and after initial operations to inform and improve conveyance facility operations. The initial range of operations that is expected to be authorized through the Section 7 consultation and Section 2081(b) permit processes range between Operational Scenarios H3 and H4 at the early long-term (ELT) time period. In order to facilitate an efficient analysis of impacts associated with a potentially large range of different operations that could be selected between H3 and H4, the analysis of Alternative 4A utilized Operational Scenario H3 plus enhanced spring outflow (H3+) as an operational impact analysis starting point, to be consistent with the assumptions in the BA, which were being completed at the time of the Alternative 4A analyses. While the analysis for Alternative 4A in the resource chapters utilizes H3+ modeling results, actual operations will ultimately depend on the results of the adaptive management program. Operations between H3 and H4 have been fully analyzed for Alternative 4A in the Final EIR/EIS. Appendix 5E, *Supplemental Modeling Related to the State Water Resources Control Board*, includes the results of H3 and H4 modeling. Modeling information for Alternative 4A with Operational Scenarios H1 and H2 (which is the same as Alternative 4 at ELT) is provided in Appendix 11G, *Supplemental Modeling Results at ELT for Alternative 4 at H1 and H2*.

Master Response 45: Required Project Approvals and Other Related Actions

This master response discusses the regulatory approvals and permits needed before the project could be implemented. It also describes the role of responsible and cooperating agencies related to approval of the California WaterFix and other related actions that would be implemented concurrently, but separately, from California WaterFix.

This Final EIR/EIS provides an overview, in Chapter 1, *Introduction*, of the responsible, trustee, and cooperating agencies and their regulatory review and approval responsibilities related to implementation of the proposed project and alternatives. Table 1-1 in Chapter 1 lists the anticipated permits, decisions, approvals or other actions that may be taken by public agencies related to approval of the proposed project or alternatives.

Public agencies with special expertise, jurisdiction, or authority related to a project proposal, other than the lead agencies, are referred to as responsible agencies and trustee agencies under CEQA[320] and cooperating agencies under NEPA. CEQA defines responsible agencies as state or local public agencies other than the CEQA lead agency that have discretionary approval over the project. CEQA generally requires a responsible agency to use the lead agency's CEQA document to support its own CEQA compliance requirements within its decision-making process[321]. Trustee agencies are state agencies that have jurisdiction by law over natural resources affected by a project that are held in trust for the people of California. As described in the Council on Environmental Quality's NEPA regulations[322], federal agencies other than the NEPA lead agency that have jurisdiction by law or special expertise with respect to the environmental effects anticipated from the project can be included as cooperating agencies. Federal agencies may use the lead agency's NEPA document to support their own decision-making process, if appropriate. A cooperating agency participates in the NEPA process and may provide input (i.e., expertise) during preparation of the NEPA document. Federal agencies may designate and encourage nonfederal public agencies, such as state, local, and tribal agencies that meet the same criteria as federal cooperating agencies, to participate in the NEPA process as cooperating agencies[323] as well. Other federal and state agencies may contribute to and rely on information prepared as part of the environmental compliance process for the proposed project, including, but not limited to, this EIR/EIS, and supporting materials.

The key cooperating, responsible and trustee agencies and their respective review/approval responsibilities for Alternative 4A, the CEQA and NEPA preferred alternative, are:

- U.S. Fish and Wildlife Service: Endangered Species Act Compliance under Section 7/Issuance of Biological Opinion; Migratory Bird Treaty Act compliance.
- National Marine Fisheries Service: Endangered Species Act Compliance under Section 7/Issuance of Biological Opinion; Magnuson-Stevens Fisheries Conservation and Management Act (essential fish habitat effects).

[320] State CEQA Guidelines Sections 15381 and 15386.

[321] State CEQA Guidelines Section 15096.

[322] 40 Code of Federal Regulations 1501.6.

[323] 40 Code of Federal Regulations 1508.5.

- U.S. Army Corps of Engineers (USACE): Section 404 of the Clean Water Act (fill of wetlands and other waters of the United States); Section 10 of the River and Harbors Act (construction affecting navigable waters); Section 14 of the Rivers and Harbor Act (modification of federally constructed levees); Compliance with Section 106 of the National Historic Preservation Act (effects on historic properties: cultural resources).
- Environmental Protection Agency: Section 404 of the Clean Water Act (guidance and review of USACE's Clean Water Act Section 404 permit); NEPA (review and comment on Draft EIS).
- California Department of Fish and Wildlife: Fish and Game Code Section 2081 (b) (incidental take permit for state listed species); Lake and Streambed Alternation Agreement under Fish and Game Code Section 1602.
- State Water Resources Control Board: Change in Point of Diversion (approval to add points of diversion in DWR and Reclamation's water right permits); Clean Water Act Section 401 Water Quality Certification (compliance with state water quality standards) and Waste Discharge Requirements (Porter-Cologne Act). Regional Water Quality Control Board: Clean Water Act Section 402 National Pollutant Discharge Elimination System (NPDES) Permit Compliance and NPDES Construction Stormwater General Permit.
- Regional Air Pollution Control Districts: Clean Air Act; Permit to Operate an Internal Combustion Engine; Stationary Source Permit; Use of Portable Equipment During Construction.
- Delta Stewardship Council: Process to Review Consistency with the Delta Plan

Additionally, other federal and state agencies may contribute to and rely on information prepared as part of the environmental compliance process, including this Final EIR/EIS and supporting materials. Please see Chapter 1, *Introduction*, and Table 1-1 for additional agency review and approval responsibilities.

The timing for these public agency reviews and approvals is generally concurrent with preparation of this EIR/EIS to ensure that the environmental review process and other necessary approvals are coordinated as much as possible between the lead agencies and responsible, trustee, cooperating and other agencies. For example, USACE is currently using the EIR/EIS to inform and support the Clean Water Act Section 404 compliance process. Coordination with USACE has allowed for feedback that has helped to modify the project to reduce effects on wetlands and other waters of the United States by relocating conveyance facility components to avoid or minimize these effects. Similarly, coordination of the federal Endangered Species Act and California Endangered Species Act compliance process with the EIR/EIS review has led to conveyance facility operational improvements that reduce effects on fish and aquatic resources.

This agency permit coordination also has not predetermined that Alternative 4A, the preferred alternative, will be approved. That decision will happen only at the conclusion of the environmental review and permitting process. The state and federal lead agencies have not taken any steps that irrevocably commit to Alternative 4A or foreclose on the lead agencies' ability to evaluate or approve other alternatives. Please refer also to Master Response 4, *Alternatives Development*, for a discussion of pre-commitment to an alternative.

Other state actions that are separate but related to the California WaterFix are also being implemented concurrently to improve water supply management and the Delta ecosystem (see Chapters 5 through 27 for specific discussion of cumulative impacts by resource topic and Master

Response 9, *Cumulative Impact Assessment*, for additional discussion of the approach to cumulative impact analysis):

- California Water Action Plan. The California Water Action Plan spells out a suite of actions in California to improve the reliability and resiliency of water resources and to restore habitat and species—all amid the uncertainty of drought and climate change. The California Water Action Plan was developed to meet three broad objectives: more reliable water supplies; the restoration of important species and habitat; and a more resilient, sustainably managed water resources system (water supply, water quality, flood protection, and environment) that can better withstand inevitable and unforeseen pressures in the coming decades. The California Water Action Plan lays out a roadmap for the next 5 years for actions that would fulfill 10 key themes.
    - Make conservation a California way of life.
    - Increase regional self-reliance and integrated water management across all levels of government.
    - Achieve the co-equal goals for the Delta.
    - Protect and restore important ecosystems.
    - Manage and prepare for dry periods.
    - Expand water storage capacity and improve groundwater management.
    - Provide safe water for all communities.
    - Increase flood protection.
    - Increase operational and regulatory efficiency.
    - Identify sustainable and integrated financing opportunities.
- California EcoRestore. California EcoRestore, ,led by the Delta Conservancy ,, will accelerate and implement a suite of Delta restoration actions prescribed in the 2014 California Water Action Plan by 2020. Under EcoRestore, the state will pursue restoration of more than 30,000 acres of fish and wildlife habitat. This habitat restoration will include creating 3,500 acres of managed wetlands; restoring 9,000 acres of tidal and sub-tidal habitat; restoring more than 17,500 acres of floodplain; and restoring more than 1,000 acres of aquatic, riparian, and upland habitat projects, as well as flood management projects. EcoRestore will implement multiple fish passage improvement projects in the Yolo Bypass and other key locations, and will provide coordination with existing local Habitat Conservation Plans and Natural Community Conservation Plans.

Because these and other actions/programs are currently being implemented to improve water supply management in California and restore the Delta, the California WaterFix should be thought of as one separate but related component, albeit an important component, that is needed to meet the stated goals of the California Water Action Plan and California EcoRestore. In this context, consideration of the California WaterFix as defined in the EIR/EIS is a logical and legally adequate approach for purposes of CEQA/NEPA compliance and other permit approvals.

Master Response 46: Recirculation and Scoping

This master response describes why a new EIR/EIS and scoping period is not required in consideration of the new sub-alternatives added in 2015 and first presented in the Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS), in response to public and agency comments to consider an alternative implementation strategy. In addition, this master response discusses why new modeling and information presented in the Final EIR/EIS does not require further recirculation.

Scoping is not Required for Recirculated Environmental Documents

State CEQA Guidelines Section 15082 requires a Notice of Preparation (NOP) once the lead agency determines that an EIR should be prepared for a project. The purpose of the NOP is to solicit guidance from other agencies on the scope and content of the environmental information to be included in the EIR. When a lead agency revises its published draft environmental document and recirculates it, the procedural step related to the NOP has already been completed. A lead agency preparing a recirculated, revised draft EIR must provide notice under State CEQA Guidelines Section15087 that the EIR is available for review and comment and also consult with, and request comments from, other public agencies pursuant to State CEQA Guidelines Section15086 (as stated in Section15088.5(d)). However, no additional scoping is required, i.e., a new or amended NOP is not required. As noted in State CEQA Guidelines Section 15003, subd. (g): "The purpose of CEQA is not to generate paper, but to compel government at all levels to make decisions with environmental consequences in mind. (*Bozung v. LAFCO* (1975) 13 Cal.3d 263)"

The California Department of Water Resources filed a notice of availability (NOA) with the State Clearinghouse on July 10, 2015 and the Bureau of Reclamation filed the RDEIR/SDEIS with the Environmental Protection Agency on July 10, 2015 and submitted an NOA to the Federal Register on July 10, 2015 announcing the availability of the document for public review. Responsible, trustee, and cooperating agencies have been working with the lead agencies in determining the scope and content of the environmental document from early on during this multi-year process, and CEQA does not require the lead agencies to recreate the process merely because additional alternatives are added for consideration in a recirculated draft EIR/EIS or because the preferred alternative has changed from the original draft EIR/EIS.

Recirculation of Additional Information Contained within the Final EIR/EIS is not Required

CEQA requires a lead agency to recirculate a draft EIR or portions thereof when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review, but before certification (State CEQA Guidelines Section 15088.5, subds. (a), (c)).

As described in Chapter 1, *Introduction*, Sections 1.1 and 1.7.3, the lead agencies recirculated portions of the Draft EIR/EIS that were revised, after determining that the new information added to the draft met the test for recirculation as defined in State CEQA Guidelines Section 15088.5, subd. (a). During the time between issuance of the RDEIR/SDEIS and completion of the Final EIR/EIS, new

data, revised impact analysis, and revised modeling information became available and was added to the EIR/EIS to present the public and decision-makers with the most current information related to certain environmental impacts of the proposed project and alternatives. The lead agencies have included this updated information within the Final EIR/EIS; however, this updated information clarifies and provides additional evidentiary support for the analyses in the previously issued EIR/EIS documentation and is not significant new information requiring recirculation.

No new information or change in the proposed project or mitigation was included in the Final EIR/EIS that would result in:

1. A new significant environmental impact resulting from the project or from a new mitigation measure proposed to be implemented (see *Laurel Heights Improvement Association v. Regents of University of California* ("*Laurel Heights II*") (1993) 6 Cal.4th 1112, 1129);
2. A substantial increase in the severity of an environmental impact unless mitigation measures are adopted that reduce the impact to a level of insignificance; and/or
3. A feasible project alternative or mitigation measure considerably different from others previously analyzed were added that would clearly lessen the environmental impacts of the project.

All information included in the Final EIR/EIS merely clarifies, amplifies, or makes insignificant modifications to the analysis in the Draft EIR/EIS and RDEIR/SDEIS (See *Laurel Heights II, supra*, 6 Cal.4th 1112, 1129–1130).

Updated Modeling Results Do Not Trigger Recirculation

As provided in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, and as further explained in the Final EIR/EIS, the range of operational criteria and scenarios presented in the updated modeling is within the scope of the modeling data that was available during preparation of the Draft EIR/EIS and RDEIR/SDEIS. This additional information related to the range of modeled scenarios confirms or adds additional support for the lead agencies' original determination that sufficient information already presented in the Draft EIR/EIS and the RDEIR/SDEIS adequately supports the conclusions about the potential environmental impacts of all action alternatives considered. CEQA case law is clear that information of this kind, even if it is voluminous, may be added to a Final EIR without triggering recirculation (see, e.g., *San Francisco Baykeeper v. California State Lands Comm.* (2015) 242 Cal.App.4th 202, 224-225 [recirculation not required where lead agency added new modeling to final EIR confirming conclusions in draft EIR]; *Beverly Hills Unified School Dist. v. Los Angeles County Metropolitan Transportation Authority* (2015) 241 Cal.App.4th 627, 660-663 [recirculation not required where lead agency added numerous new seismic studies to final EIR]).

Alternatives 4A, 2D and 5A Do Not Require a New EIR/EIS

The new sub-alternatives for the alternative implementation strategy were presented in the RDEIR/SDEIS to explore alternative regulatory approaches that may facilitate expeditious progress on Delta solutions. By creating new sub-alternatives, the lead agencies have demonstrated a willingness to work with public agencies and the public to develop and fine tune the original proposed project to further meet the lead agencies' goals and objectives and purpose and need and to continue to further avoid, reduce, or minimize the project's potentially significant adverse

impacts/effects. This evolving process is the epitome of what CEQA and NEPA are intended to accomplish. Endless paperwork, however, is not the goal of these environmental laws.

The CEQA and NEPA preferred alternative, Alternative 4A, includes the construction and operation of north Delta intakes and associated tunnel conveyance facilities, and the operation of the State Water Project as a dual conveyance facility consistent with Alternative 4, as identified in the Draft EIR/EIS and updated in the RDEIR/SDEIS Appendix A. Alternatives 2D and 5A include conveyance facilities similar to those proposed under Alternatives 2A and 5, but with alignment and other improvements proposed under Alternatives 4 and 4A. Thus, Alternatives 4A, 2D, and 5A do not require an entire new EIR/EIS. When reviewed together with the Draft EIR/EIS and this Final EIR/EIS, the RDEIR/SDEIS sufficiently describes and discloses the effects of implementing Alternatives 4A, 2D, and 5A for purposes of CEQA and NEPA. Where appropriate, the RDEIR/SDEIS references the Draft EIR/EIS. BDCP amendments formulated after publication in December 2013 of the Draft EIR/EIS were compiled in RDEIR/SDEIS Appendix D, *Substantive BDCP Revisions*, which is now Final EIR/EIS Appendix 11F.

Accordingly, the BDCP was not further revised, nor was it re-released to the public for additional comment. However, should the lead agency decision-makers choose not to pursue the alternative implementation strategy, but instead choose the original conservation plan implementation strategy and a corresponding action alternative (e.g., Alternative 4) that includes a habitat conservation plan and natural community conservation plan, the current BDCP documents would be updated as necessary before formal approval of such an approach. Thus, the change of the preferred alternative does not make the existing BDCP alternatives analyzed in the Draft EIR/EIS infeasible. The lead agencies will consider BDCP alternatives, in addition to non-HCP alternatives, in their ultimate selection of the implementation strategy as part of the completion of the project approval process.

Master Response 47: Drought and EIR/EIS Modeling

This master response addresses the sufficiency of the modeling approach used for evaluation of the alternatives in capturing the drought-related effects.

The modeling approach used to evaluate alternatives in the EIR/EIS is described in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*. In general, the alternatives were evaluated using an integrated set of models that can take into account potential future changes to the climate, sea level, Central Valley Project (CVP) and State Water Project (SWP) facilities and operations, and provide an indication of likely changes in the storage, flow, diversion, water temperature, Delta salinity and other parameters, compared to the No Action Alternative. The Final EIR/EIS evaluates long-term operation of the SWP and CVP over an 82-year long hydrologic period with extended wet periods and dry/critically dry periods using the CALSIM II model. The CALSIM II model cannot simulate specific operational decisions that occur in real-time to meet regulatory requirements, including real-time operational decisions to avoid exceeding applicable water quality standards. In addition, the CALSIM II model does not reflect emergency operational criteria such as those approved on a case-by-case basis by the State Water Resources Control Board (State Water Board) in response to Temporary Urgency Change Petitions (TUCPs) filed by the Bureau of Reclamation (Reclamation) and the Department of Water Resources (DWR) to address the drought emergency in 2014 and 2015. As explained in detail in the following subsections, it is not reasonably foreseeable how the various agencies will respond to future droughts, with or without the proposed project, because each drought is different in scope, location and severity, the regulatory setting is likely to be different, and new or altered infrastructure and improved scientific knowledge will all inform future responses to drought. However, the proposed project, the California WaterFix, is not expected to affect how frequently Reclamation and DWR may file TUCPs to address future drought conditions, so it has no impact relative to Existing Conditions in that regard.

Operational decisions modeled in CALSIM II are based upon monthly mathematical relationships that do not reflect real-time decisions that occur on a daily or weekly basis by SWP and CVP operations. Nor do they reflect operations approved under the TUCP Orders issued by the State Water Board for the 2014 and 2015 water years. Instead the model simulates long-term monthly operating criteria per the current regulations for all water year types. As described in Chapter 5, *Water Supply*, the Final EIR/EIS analyses assume continued implementation of regulatory requirements in accordance with the requirements under the CEQA definition of Existing Conditions and under the NEPA definition of the No Action Alternative.

Modeling of action alternatives and the No Action Alternative with projected climate change and sea level rise effects at 2025 and 2060 shows that changes in climate and sea level could result in "dead pool" conditions in SWP and CVP reservoirs upstream of the Delta under both the No Action Alternative as well as the action alternatives.[324] The dead pool conditions presented in the CALSIM II model results in the Final EIR/EIS are based on modeled SWP and CVP water operations under current regulations, future demand assumptions, climate change and sea level rise. When system wide storage levels are at or near dead pool, also described as stressed water supply conditions, the CALSIM II model results should only be an indicator of stressed water supply conditions and should

[324] "Dead pool" refers to the surface water elevation in a reservoir at which no more water can be drained by gravity through the reservoir's outlet works.

not be understood to reflect what would occur in the future under a given scenario. For instance, there may be operational changes and physical solutions that could be implemented to avoid dead pool conditions, but the modeling does not assume such actions would occur because it is not known how regulatory agencies with jurisdiction over the CVP and SWP or other agencies that own and operate reservoirs will respond to climate change, sea level rise and increased water demands.

Instead, consistent with the requirements in CEQA and NEPA to disclose and analyze the reasonably foreseeable project-specific and cumulative impacts of a project, the action alternatives evaluation is a comparative analysis to determine the incremental differences between conditions under the action alternatives and conditions under Existing Conditions and the No Action Alternative. The modeling analyses in the Final EIR/EIS considered changes over a range of hydrologic conditions that include drought periods similar to the 1927–1934, 1976–1977, and 1987–1992 droughts, as described in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*. The comparison between the conditions under the action alternatives and the No Action Alternative indicates the changes caused by each project alternative, including the proposed project, without the influence of climate change, sea level rise, and population growth would have occurred with or without the project.

Past Responses to Drought Emergencies Demonstrate Why It Is Infeasible to Model Project Impacts for Future Responses to Drought

There are many ways that drought can be defined. Some ways can be quantified, such as meteorological drought (period of below normal precipitation) or hydrologic drought (period of below average runoff); others are more qualitative in nature (shortage of water for a particular purpose). There is no universal definition of when a drought begins or ends, nor is there a state statutory process for defining or declaring drought.

Drought is a gradual phenomenon and can best be thought of as a condition of water shortage for a particular user in a particular location. Although persistent drought can be an emergency, it differs from other emergency events such as wildfires and floods insofar as droughts occur over a period of months or years. But as with any emergency, each one is different, and requires an individualized response to lessen the impacts of drought on fish, wildlife and human health and safety. As a result, there is no universal definition of when a drought begins or ends, and no set response for every drought. Drought impacts increase with the length of a drought, as annual carry-over storage in reservoirs decrease and water levels in groundwater basins decline. Droughts that have occurred throughout California's history shape the ways in which DWR and Reclamation meet the needs of both public health standards and urban and agricultural water demand, as well as protecting the ecosystem and its inhabitants. The most notable droughts in recent history are the droughts of 1976–1977, 1987–1992, and 2013–2016 (see also Biological Assessment [BA] for the California WaterFix, Section 3.7.1.1, for additional information on CVP and SWP operations during these droughts).

These periods of drought have helped shape legislation and stressed the importance of maintaining water supplies for all water users. The impacts of a dry hydrology in 1976 were mitigated by reservoir storage and groundwater availability. The immediate succession of an even drier 1977, however, set the stage for widespread impacts. In 1977 CVP agricultural water contractors received 25 percent of their allocations, municipal contractors received 25 to 50 percent, and the water rights

or exchange contractors received 75 percent. SWP agricultural contractors received 40 percent of their allocations and urban contractors received 90 percent.

Managing Delta salinity was a major challenge for the SWP, given the competing needs to preserve critical carry-over storage and also to release water from storage to meet Bay-Delta water quality standards. In February 1977, the State Water Board adopted an interim water quality control plan to modify Delta standards to allow the SWP to conserve storage in Lake Oroville. As extremely dry conditions continued that spring, the State Water Board subsequently adopted an emergency regulation superseding its interim water quality control plan, temporarily eliminating most water quality standards and forbidding the SWP to export stored water. As a further measure to conserve reservoir storage, DWR constructed temporary facilities (i.e., rock barriers, new diversions for Sherman Island agricultural water users, and facilities to provide better water quality for duck clubs in Suisun Marsh) in the Delta to help manage salinity with physical, rather than hydraulic, approaches.

In 1977, SWP and CVP contractors used water exchanges to respond to drought; one of the largest exchanges involved 435,000 acre-feet of SWP entitlement made available by MWD and three other SWP Southern California water contractors for use by San Joaquin Valley irrigators and urban agencies in the San Francisco Bay area. The MWD entitlement supplied water to Marin Municipal Water District via an emergency pipeline laid across the San Rafael Bridge and a complicated series of exchanges under which DWR delivered the water to the Bay Area via the South Bay Aqueduct. Public Law 95-18, the Emergency Drought Act of 1977, authorized Reclamation to purchase water from willing sellers on behalf of its contractors; Reclamation purchased about 46,000 acre-feet of water from sources including groundwater substitution and the SWP. Reclamation's ability to operate the program was facilitated by CVP water rights that broadly identified the project's service area as the place of use, allowing transfers within the place of use. Institutional constraints and water rights laws limited the transfer/exchange market at this time, and transfer activity outside of those exchanges arranged by DWR and Reclamation's drought water bank was relatively small-scale.

The Western Governors' Conference named a western regional drought action task force in 1977 and used that forum to coordinate state requests for federal assistance. Multi-state drought impacts led to increased appropriations for traditional federal financial assistance programs (e.g., U.S. Department of Agriculture assistance programs for agricultural producers), and two drought-specific pieces of federal legislation. The Emergency Drought Act of 1977 authorized the Department of the Interior to take temporary emergency drought mitigation actions and appropriated $100 million for activities to assist irrigated agriculture, including Reclamation's water transfers programs. The Community Emergency Drought Relief Act of 1977 authorized $225 million for the Economic Development Agency's drought program, of which $175 million was appropriated ($109 million for loans and $66 million for grants) to assist communities with populations of 10,000 or more, tribes, and special districts with urban water supply actions. Projects in California received 41 percent of the funding appropriated pursuant to this act.

In California, the Governor signed an executive order naming a drought emergency task force in 1977. Numerous legislative proposals regarding drought were introduced, about one-third of which became law. These measures included authorization of a loan program for emergency water supply facilities; authorization of funds for temporary emergency barriers in the Delta (the barriers were ultimately funded by the federal Emergency Drought Act instead); prohibition of public agencies' use of potable water to irrigate greenbelt areas if the State Water Board found that recycled water

was available; authorization for water retailers to adopt conservation plans; and the addition of drought to the definition of emergency in the California Emergency Services Act.

During the 1987–1992 drought, the state's 1990 population was close to 80 percent of present amounts and irrigated acreage was roughly the same as that of the present, but the institutional setting for water management differed significantly. Delta regulatory constraints affecting CVP and SWP operations were based on State Water Board water right decision D-1485, which had taken effect in 1978 immediately following the 1976-77 drought. In addition to D-1485 requirements on SWP and CVP operations in the Delta, other operational constraints included temperature standards imposed by the State Water Board through Orders WR 90-5 and 91-01 for portions of the Sacramento and Trinity Rivers. On the Sacramento River below Keswick Dam, these orders included a daily average water temperature objective of 56°F during periods of salmon egg and pre-emergent fry incubation. As part of managing salinity during the drought, DWR installed temporary barriers at two South Delta locations – Middle River and Old River near the Delta- Mendota Canal intake — to improve water levels and water quality/water circulation for agricultural diverters.

In response to Executive Order W-3-91 in 1991, DWR developed a drought water bank that operated in 1991 and 1992. The bank bought water from willing sellers and made it available for purchase to agencies with critical water needs. Critical water needs were understood to be basic domestic use, health and safety, fire protection, and irrigation of permanent plantings.

In 1992, the National Marine Fisheries Service (NMFS) issued its first biological opinion for the Sacramento River winter-run Chinook salmon, which had been listed as threatened pursuant to the federal Endangered Species Act (ESA) in 1989. The Central Valley Project Improvement Act of 1992 (CVPIA) was enacted just at the end of the drought, so provisions reallocating project yield for environmental purposes were not in effect for 1992 water operations. The CVPIA dedicated 800,000 acre-feet of project yield for environmental purposes. The regulatory framework for the SWP and CVP has changed significantly in terms of new ESA requirements to protect certain fish species, and State Water Board water rights decisions governing the water projects' operations in the Delta.

When executed in 1994 the Monterey amendments provided that an equal annual allocation would be made to urban and agricultural contractors. The prior provisions in effect during the 1987–1992 drought called for agricultural contractors to take a greater reduction in their allocations during shortages than urban contractors, which had resulted in the zero allocation to the agricultural contractors in 1991.

The institutional setting for water management has changed greatly since the 1987–1992 drought. Some of the most obvious changes have affected management of the state's largest water projects, such as the CVP, SWP, Los Angeles Aqueduct, or Colorado River system. New listings and management of fish populations pursuant to the ESA have impacted operations of many of the state's water projects, including the large projects affected by listing of Central Valley fish species as well as smaller projects on coastal rivers where coho salmon populations have been listed.

The current regulatory framework for CVP and SWP operations is distinctly different from that of 1987–1992. The first biological opinion for the then-threatened winter-run Chinook salmon was issued in 1992, just at the end of the drought; in 1994 winter-run were reclassified as endangered. A significant provision of the initial 1992 biological opinion for winter-run salmon, and also of subsequent opinions, was a requirement to provide additional cold water in Sacramento River spawning areas downstream of Keswick Dam, resulting in increased late-season reservoir storage. Delta smelt were listed as threatened in 1993. Subsequently, other fish species listed pursuant to the

federal ESA or the California Endangered Species Act (CESA) included the longfin smelt, Central Valley spring-run Chinook salmon, California Central Valley steelhead, and Southern distinct population segment of North American green sturgeon.

The biological opinions for operation of the CVP and SWP, together with changes in State Water Board Bay-Delta requirements, represent a major difference between 1987–1992, when State Water Board Water Rights Decision D-1485 governed the projects' Delta operations, and the present. State Water Board Water Rights Decision D-1641 reduced water project exports in order to provide more water for Delta outflow. Requirements of the most recent biological opinions for operation of the CVP and SWP afforded additional protections to listed fish species than D-1641 requirements, further reducing the water projects' delivery capabilities by imposing greater pumping curtailments and Delta outflow requirements. Additionally, the CVPIA mandate to reallocate 800,000 acre-feet of CVP yield for environmental purposes and to provide a base water supply for wildlife refuges was not in effect for 1987–1992 water operations.

Recent Drought Management Processes and Tools

With no significant precipitation in late 2013, Governor Brown formed a state interagency Drought Task Force in December to provide a coordinated assessment of the dry conditions and to provide recommendations on state actions. The continuing absence of precipitation led to a Governor's proclamation of emergency in January 2014 that ordered state agencies to take specified actions and called on Californians to voluntarily reduce their water usage by 20 percent. Among other things, the order called on local urban water suppliers to immediately implement their water shortage contingency plans, directed the state's drinking water program to identify communities in danger of running out of water and to help them address shortages, and directed the State Water Board to take various water rights administrative actions. In March 2014, the Legislature enacted and the Governor signed measures to provide $687.4 million for drought relief, with the largest amount of that funding ($549 million) dedicated to accelerated expenditure of Proposition 84 and Proposition 1E bond funds for grants to local agencies for integrated regional water management projects. In April 2014, the Governor issued an executive order to redouble state drought actions that, among other things, ordered the State Water Board to adopt emergency regulations as necessary to direct urban water suppliers to limit wasteful outdoor water use practices and ordered DWR to conduct intensive outreach to local agencies to increase their groundwater monitoring in areas of significant impacts.

Above-normal late spring 2014 precipitation ameliorated some of the worst-case water supply scenarios that had been considered earlier in the year, including evaluation by DWR of the need to place temporary rock barriers in selected Delta channels to conserve upstream reservoir storage. Hydrologic conditions did not improve sufficiently, however, to avoid record low allocations for some CVP and SWP contractors – zero to the CVP's agricultural contractors both north and south of the Delta, zero to the CVP Friant Division contractors, and 5 percent to SWP contractors. Water year 2014 marked the first time that Reclamation's Friant Division contractors received a zero allocation of their Class 1 water. Reflecting the very dry hydrology, the State Water Board imposed widespread curtailments of diversions in locations including parts of the Sacramento-San Joaquin River watershed and the Eel and Russian River watersheds, another action that had not been taken since 1977.

During the drought, Reclamation and DWR reviewed existing and projected hydrology, exceedance forecasts, and reservoir levels and the ability of the CVP and SWP to meet regulatory requirements,

including those in D-1641, reasonable and prudent alternatives in the NMFS and U.S. Fish and Wildlife Service (USFWS) biological opinions (BiOps) for the long-term coordinated operations of the CVP and SWP issued under the ESA, and the California Department of Fish and Wildlife (CDFW) incidental take permit for longfin smelt issued under CESA.

In response to the emergency drought conditions in 2014, Reclamation and DWR jointly developed proposed modifications to D-1641 and operations consistent with the BiOps and prepared documentation to support the permitting and consultation processes. This included preparation of a TUCP for submittal to the State Water Board, and the ESA and CESA consultation letters and memorandums for exchange with USFWS, NMFS, and CDFW. In addition, as directed by the State Water Board, DWR and Reclamation prepared a 2015 Drought Contingency Plan in the event of continued drought. The process relied heavily on on-going communication and coordination among six agencies (Reclamation, DWR, USFWS, NMFS, CDFW, and the State Water Board) through the Real Time Drought Operations Management Team and frequent meetings of the executive leadership of these agencies. State agencies also provided enhanced monitoring in the Delta. The effectiveness of the actions under the TUCP Order issued by the State Water Board and BiOps and results of the monitoring activities were reviewed and utilized, in light of the species responses, to inform the continued response to drought. DWR and Reclamation made several public presentations before the State Water Board regarding the Drought Contingency Plan and results of changes in operations under the TUCP Order.

Based on lessons learned during the 2013–2016 severe drought and to prepare for future droughts, Reclamation and DWR developed a set of Proposed Drought Procedures for the California WaterFix. These procedures are set forth in the BA and include coordination and communication among state and federal agencies to begin as early as possible (BA Section 3.7.2, available at http://cms.capitoltechsolutions.com/ClientData/CaliforniaWaterFix/uploads/Ch_3_Proposed_Action.pdf [accessed on November 11, 2016]). Those procedures require that on October 1, if the prior water year was dry or critical, then Reclamation and DWR will convene a multi-agency drought management team that includes representatives from Reclamation, DWR, USFWS, NMFS, the State Water Board, and CDFW who are charged with evaluating current hydrologic conditions and the potential for continued dry conditions that may necessitate the need for development of a drought contingency plan for the water year (BA Section 3.7.2).

Under the Proposed Drought Procedures for the California WaterFix, the drought management team will commit to convening at least every month to assess hydrologic conditions and forecast predictions and identify the potential need for development of a drought contingency plan until it is clear that drought conditions for that year will not persist. Information and recommendations from the drought management team will be reported back to the executive leadership of the agencies. These assessments would also inform what actions should be included in a drought contingency plan, depending on the updated hydrology assessment and the magnitude and duration of the preceding dry conditions. Although a drought contingency plan may recommend adhering to the operations as identified in existing regulatory authorizations, in longer periods of dry conditions, the plan could also propose other drought response actions. Such a contingency plan should, at a minimum, include information pertaining to: an evaluation of current and forecasted hydrologic conditions and water supplies; recommended actions or changes needed to respond to drought (including changes to project operations, contract deliveries, and regulatory requirements) and any associated water supply or fish and wildlife impacts; identified timeframes; potential benefits; monitoring needs and measures to avoid and minimize fish and wildlife impacts; and proposed mitigation (if necessary) (BA Section 3.7.2).

If the evaluation of drought conditions indicates that temporary changes to SWP and CVP water right permits should be considered, then DWR and Reclamation would submit a temporary urgency change petition to the State Water Board, which could deny or approve the petition, including approval with additional conditions on operations.

As the above discussion of past drought responses demonstrates, it is not reasonably foreseeable how the various agencies will respond to future droughts, with or without the proposed project. Because each drought is different in scope, location, and severity, the regulatory setting is likely to be different, and new or altered infrastructure and improved scientific knowledge will all inform future responses to drought. Thus, the Final EIR/EIS does not, because it cannot, include modeling or analysis of how the proposed project may impact the environment in severe drought conditions.