

Appendix AA. Response to Comments

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Chapter 1 **Introduction and Approach to Responses to Comments**

This Appendix AA, *Responses to Comments*, contains responses to those comments received on the Draft Environmental Impact Statement (EIS). Prior to acting on the Final EIS and the proposed project, the U.S. Bureau of Reclamation (Reclamation) will consider the responses to comments in Appendix AA, along with the main body and other appendices, all of which are part of the Final EIS. This chapter describes the public participation and comments received on the Draft EIS, the general approach to responding to comments based on the format and types of comments received, the format, content, and organization of, and terminology used in Appendix AA, and the modifications contained in the main body (Chapters 1 through 6) and other appendices.

On July 12, 2019, Reclamation circulated for public comment a draft EIS for the *Reinitiation of Consultation on the Coordinated Long-Term Operation (ROC on LTO) of the Central Valley Project (CVP) and State Water Project (SWP)*. The Draft EIS analyzed potential modifications to the continued long-term operation of the CVP, for its authorized purposes, in a coordinated manner with the SWP, for its authorized purposes. The Draft EIS evaluated alternatives to maximize water supply deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements and to augment operational flexibility by addressing the status of listed species.

This Appendix AA describes the public participation and comments received on the Draft EIS; the general approach to responding to comments based on the format and types of comments received; the format, content, and organization of, and terminology used in Appendix AA; and the modifications to the alternatives and the Draft EIS.

1.1 Public Participation and Comments Received on the Final EIS

The Draft EIS was released for public review on July 12, 2019, for a 45-day public review period that ended on August 26, 2019. Reclamation received approximately 47 letters amounting to about 1,030 comments, from federal, state, and local agencies; tribes, elected officials; stakeholders; and members of the public. Reclamation also conducted three public meetings in Los Banos, Sacramento, and Chico on July 30, July 31, and August 1, respectively, to receive oral comments.

Comments were submitted in many different formats, including petitions, and unique letters. Petitions have multiple signatures on one letter identifying one or more unique comment(s). Unique letters are a single letter with individual unique comments contained therein submitted by a single or multiple commenters. One petition with 438 signatures was received; and 46 unique letters were received (including those received at the public meetings).

The comments covered a broad range of policy and environmental issues. Major topic areas that elicited frequent comments included: consideration of alternatives, impacts associated with Trinity River operations, and impacts to aquatic resources. The responses to comments provided in Appendix AA represent Reclamation's best effort to carefully and objectively review and consider the comments and supporting evidence provided by commenters.

1.2 Regulatory Context

When proposing to undertake or approve a discretionary project, federal agencies must comply with the requirements of the National Environmental Policy Act (NEPA). NEPA applies when a federal agency develops a proposal to take a major federal action. The purpose of public review of the Draft EIS is to evaluate the adequacy of the environmental analysis for compliance with NEPA and to provide comments on the proposed project.

As such, one purpose of the responses to comments contained in Appendix AA is to address those substantial environmental issue(s) raised by commenters. This typically requires clarifications of points contained in the Draft EIS released in July 2019. Lead agencies are not obligated to undertake every suggestion given them, provided that the agency responds to substantive environmental issues and makes a good faith effort at disclosure in a reasoned way. Given the above, Reclamation is not required to respond to comments unrelated or not germane to the alternatives or the evaluation of potential environmental impacts contained in the EIS.

1.3 Approach

Reclamation has made a good faith effort to ensure that all comments were identified, considered, and responded to in Appendix AA of the Final EIS. The Final EIS presents all of the comments received on the Draft EIS during the public review period, along with responses to comments. The following summarizes the approach Reclamation took when identifying, considering, and responding to the comments received.

- Many comments received were related to the Draft EIS but were very general in nature. While Reclamation is not required to respond to comments received that do not raise a substantial environmental issue(s), they provide general responses to those comments in Master Response 1, *Responses to General Comments*.
- In an effort to facilitate the review process by responding only to those comments contained in the comment letters, Reclamation refrained from directing the reader to responses to comments outside of the commenter's specific letter. However, several comments referenced, incorporated by reference, or cited comments sent to Reclamation by other commenters. In these cases, readers should refer to Chapter 2, Indices of Commenters to identify the letter numbers they are interested in reviewing.
- Reclamation provided individual responses to information contained in an *attachment* to a comment letter if the attachment commented on substantive issues related to the environmental analysis contained in the draft EIS. If the attachment did not meet this criterion, no specific response was provided, although the attachment was reviewed and Reclamation provided additional information in the response to assist the commenter (e.g., reference to a master response). Attachments to comment letters are typically indicated using brackets [] in the comment response tables. The number of the attachment in the comment response tables is provided by Reclamation through the coding and review process, and is not the number provided by the commenter. Generally, the first mention of the attachment is noted as a comment but simply reflects the title of the attachment provided. Figures, graphs, charts, maps, and other visual aids provided by commenters are noted as *exhibits* and are sequentially numbered in the comment response tables as they appear in the original comment letter.

- Each of the public meetings was transcribed by a court reporter, and the transcript was reviewed and is included in the responses to comments. Individual public speakers are identified and their transcriptions are classified as unique letters and responded to in the response to comments. In some cases, the transcripts were not clearly understood, likely due to the dynamic and conversational nature oral comments. Every attempt was made to understand the commenters' comments in order to provide a response. However, Reclamation cannot infer the meaning or intent of comments.
- Some presenters and speakers at the three public meetings also submitted written comments via letters or emails. In an effort to be thorough, the Reclamation reviewed all comments from a single commenter, even if that commenter provided comments both verbally (captured in a transcript) and in a written letter. Reclamation reviewed and responded to all unique comments identified in transcripts and written materials and presentations provided at the time the oral comments were given even if they are from the same commenter. In this manner, Reclamation completely reviewed and responded to all comments from the same commenter even if they were made at different times during the public review period and in different formats.
- Reclamation reviewed the comments in the exact form they were provided by commenters. This included review of comments with misspellings, grammatical errors, or writings not clearly understood presented in the comments. Every attempt was made to understand the commenters' comments in order to provide a response. However, Reclamation cannot infer meaning or intent of comments. If the comment was not clearly understood, Reclamation noted it.
- During the process of reviewing and responding to comments on the Draft EIS, multiple clarifications were made to the EIS. These changes included corrections to editorial errors and omissions as well as clarifying text and additional supporting information.

1.4 Organization of Appendix AA

All chapter references that appear in Appendix AA are Final EIS chapter numbers and references, unless otherwise noted. Appendix AA of the Final EIS is organized as follows.

- Chapter 1, *Introduction and Approach to Responses to Comments*, (this chapter) contains a description of the public participation and public comments received on the draft EIS, the approach to reviewing and responding to comments, the format, content, and organization of, and terminology used in Appendix AA.
- Chapter 2, *Indices of Commenters* provides a list of the comment letter numbers and titles of commenters, when provided, from federal agencies and elected officials; tribal governments; state agencies and elected officials; local agencies and elected officials; non-governmental organizations; and members of the public. These indices are organized by organization, commenter name, and letter number. Readers should use these indices to identify the letter number or numbers associated with their submissions and then find the comments and responses in the comment response tables that are contained in Chapter 4, *Responses to Comments*. Indices are organized by commenter type as described in Table 1-1. This chapter also presents the original comment letters received on the Final EIS. Each comment letter is numbered for each letter or email, corresponding to the comment letter numbers presented in the indices in Chapter 2, *Indices of Commenters* and tabular format in Chapter 4, *Responses to Comments*.

Table 1-1 Summary of Indices

Index No	Commenter Type
1	Federal Agencies, Federal Elected Officials, and Tribal Governments
2	State Agencies and Elected Officials
3	Local Agencies and Elected Officials
4	Non-Governmental Organizations
5	Individuals
6	Form Submissions and Petition Signatories

- Chapter 3, *Master Responses*, contains an introduction with a summary table identifying seven master responses and a general description of the topics addressed by each master response. The Draft EIS was the subject of multiple comments on substantially similar topics or reoccurring comment themes or issues. The master responses were prepared to provide responses to these frequently raised topics, themes, or issues to avoid repetition and to provide a comprehensive response. Each master response provides a brief overview of the topics, issues, or themes the master response addresses, a table of contents to orient the reader to specific subtopics, followed by the responses. The individual responses to comments reference the master responses as appropriate. Master responses are presented in Chapter 3 (before the presentation of responses to individual comments in Chapter 4) to familiarize readers with some of the most commonly raised topics and responses. If there are conflicts between specific responses to individual comments in Chapter 4, the master responses in Chapter 3 prevail. References for each master response are contained at the end of the master response.
- Chapter 4, *Responses to Comments*, presents comments and responses in a tabular format organized in chronologic numeric order. Any misspellings, grammatical errors, or unintelligible writings in the comment field of these tables are the true and accurate representation of the comment provided to Reclamation. Comment letters, emails, and other written or transcribed comments were assigned an identifying letter number as they were received and processed by Reclamation. Letters were given a number starting with “ROC001” as an identifier.

1.5 References Cited

None.

Chapter 2 Indices of Commenters

The following indices list the comment letter numbers and titles of commenters, when provided, from federal agencies and elected officials; tribal governments; state agencies and elected officials; local agencies and elected officials; non-governmental organizations; and members of the public, and include form plus letters and form letter commenters. These indices are organized by organization, commenter name, and letter number. Readers should use these indices to identify the letter number or numbers associated with their submissions and then find the comments and responses in the comment response tables that are contained in Appendix AA, Chapter 4, *Responses to Comments*. Indices are organized by commenter type as described in Table 2-1. If a “/” is shown in the table, it is meant to indicate that the information was not provided or was not legible if it was handwritten. Similarly, if a blank is shown in the table, the information was not provided or was not legible.

Table 2-1. Summary of Indices

Index No	Commenter Type
1	Federal Agencies, Federal Elected Officials, and Tribal Governments
2	State Agencies and Elected Officials
3	Local Agencies and Local Elected Officials
4	Non-Governmental Organizations
5	Individuals
6	Form Submissions and Petition Signatories

2.1 Index 1: Federal Agencies, Federal Elected Officials, and Tribal Governments

Letter Number	First Name	Last Name	Title	Organization Name	Org Type
7	Stephanie	Suess	Community & Resources Development Director	Chicken Ranch Rancheria of Me-Wuk Indians	Tribal Government/Elected Official/Agency
7	Lloyd	Mathiesen	Tribal Chair	Chicken Ranch Rancheria of Me-Wuk Indians	Tribal Government/Elected Official/Agency
9	Joseph	James	Yurok Tribal Chairman	Yurok Tribe	Tribal Government/Elected Official/Agency
12	Connell	Dunning	Acting Manager, Environmental Review Branch	U.S. EPA, Region IX	Federal Agency/Elected Official
15	Robert	Franklin	Water Division Lead	Hoopa Tribal Fisheries	Tribal Government/Elected Official/Agency
16	Sherri	Norris	Executive Director	California Indian Environmental Alliance (CIEA)	Tribal Government/Elected Official/Agency

Letter Number	First Name	Last Name	Title	Organization Name	Org Type
22	Stephan	Volker	Legal representative for	Winnemem Wintu Tribe	Tribal Government/Elected Official/Agency
24	Chief Caleen	Sisk	Spiritual Leader	Winnemen Wintu Tribe	Tribal Government/Elected Official/Agency
30	Chief Caleen	Sisk	Spiritual Leader	Winnemen Wintu Tribe	Tribal Government/Elected Official/Agency
40	Stephan	Volker	Legal representative for	Winnemem Wintu Tribe	Tribal Government/Elected Official/Agency

2.2 Index 2: State Agencies and Elected Officials

Letter Number	First Name	Last Name	Title	Organization Name	Org Type
5	Joshua	Grover	Water Branch Chief	California Dept. of Fish and Wildlife	State Government Agency/Elected Official
17	Jeff	Henderson	Deputy Executive Officer	Delta Stewardship Council	State Government Agency/Elected Official
47	Diane	Riddle	Environmental Program Manager	State Water Resources Control Board	State Government Agency/Elected Official

2.3 Index 3: Local Agencies and Elected Officials

Letter Number	First Name	Last Name	Title	Organization Name	Org Type
11	Marcus	Yasutake	Director of Environmental Utilities	City of Folsom	Town/City Government Agency/Elected Official/Assoc.
11	Sean	Bigley	Director of Environmental Utilities	City of Roseville	Town/City Government Agency/Elected Official/Assoc.
11	Anne	Sanger	Policy & Legislative Specialist	City of Sacramento	Town/City Government Agency/Elected Official/Assoc.
19	Ryan	Hernandez	Manager, Contra Costa County Water Agency	Contra Costa County	County/Government Agency/Elected Official/Assoc.
41	Paul	Gosselin	Director	Butte County Water & Resource Conservation	County/Government Agency/Elected Official/Assoc.

2.4 Index 4: Non-Governmental Organizations

Letter Number	First Name	Last Name	Title	Organization Name	Org Type
2	Steve	Chedester	Executive Director	San Joaquin River Exchange Contractors Water Auth.	Water Association
6	John	Herrick	Counsel & Manager	South Delta Water Agency	Water Association
10	Meredith	Nikkel	Legal Representative for	Sacramento River Settlement Contractors	Water Association
10	Andrew	Hitchings	Legal Representative for	Sacramento River Settlement Contractors	Water Association
11	Steve	Nugent	General Manager	Carmichael Water District	Water Association
11	Paul	Helliker	General Manager	San Juan Water District	Water Association
11	Dan	York	General Manager	Sacramento Suburban Water District	Water Association
11	Dave	Underwood	Principal Engineer	Sacramento County Water Agency	Water Association
11	Andy	Fecko	Director of Strategic Affairs	Placer County Water Agency	Water Association
11	Jim	Abercrombie	General Manager	El Dorado Irrigation District	Water Association
14	William	Phillimore	Board Member	Coalition for a Sustainable Delta	Place-Based Group
18	Jennifer	Pierre	General Manager	State Water Contractors	Water Association
20	Melinda	Terry	Manager	North Delta Water Agency	Water Association
21	Justin	Fredrickson	Environmental Policy Analyst	California Farm Bureau Federation	Agriculture Industry or Association
21	Erin	Huston	Policy Advisor	California Farm Bureau Federation	Agriculture Industry or Association
22	Stephan	Volker	Legal representative for	San Francisco Crab Boat Owners' Association	Business (affected business) or business group
22	Stephan	Volker	Legal representative for	Pacific Coast Federation of Fishermens Association	Business (affected business) or business group
22	Stephan	Volker	Legal representative for	Attorney for North Coast Rivers Alliance	Preservation/Conservation
22	Stephan	Volker	Legal representative for	Institute for Fisheries Resources	Preservation/Conservation
23	Leah	Orloff	Water Resources Manager	Contra Costa Water District	Water Association
26	Scott	Petersen	Director of Water Policy	San Luis & Delta-Mendota Water Authority	Water Association

Letter Number	First Name	Last Name	Title	Organization Name	Org Type
27	Konrad	Fisher		Water Climate Trust	Preservation/ Conservation
28	Deirdre	Des Jardins		California Water Research	Other or Unidentified Organization
32	James	Brobeck		AquAlliance	Preservation/ Conservation
35	Barbara	Vlomis	Executive Director	AquAlliance	Preservation/ Conservation
36	Regina	Chichizola		Save California's Salmon	Preservation/ Conservation
38	Jeffrey	Sutton	General Manager	Tehama Colusa Canal Authority	Water Association
39	Tom	Stokely	Co-Director	Save California Salmon	Preservation/ Conservation
39	Regina	Chichizola		Save California's Salmon	Preservation/ Conservation
39	Noah	Oppenheim		PCFFA	Recreation/Conservation Organization
40	Stephan	Volker	Legal representative for	Pacific Coast Federation of Fishermens Association	Business (affected business) or business group
40	Stephan	Volker	Legal representative for	Institute for Fisheries Resources	Preservation/ Conservation
40	Stephan	Volker	Legal representative for	San Francisco Crab Boat Owners' Association	Business (affected business) or business group
40	Stephan	Volker	Legal representative for	Attorney for North Coast Rivers Alliance	Preservation/ Conservation
42	John	Herrick	Counsel & Manager	South Delta Water Agency	Water Association
43	Michael	Jackson	Legal representative for	C-WIN, CSPA, and AquAlliance	Water Association
43	Chris	Shutes	Water Rights Advocate and FERC Projects Director	California Sportfishing Protection Alliance	Recreational (non-specific)
43	Bill	Jennings	Executive Director/Chairman	California Sportfishing Protection Alliance	Recreational (non-specific)
44	Bill	Jennings	Executive Director/Chairman	California Sportfishing Protection Alliance	Recreational (non-specific)
44	Barbara	Vlomis	Executive Director	AquAlliance	Preservation/ Conservation
44	Carolee	Krieger	President & Executive Director	California Water Impact Network	Water Association
44	James	Brobeck		AquAlliance	Preservation/ Conservation

Letter Number	First Name	Last Name	Title	Organization Name	Org Type
45	Chris	Shutes	Water Rights Advocate and FERC Projects Director	California Sportfishing Protection Alliance	Recreational (non-specific)
45	Jon	Rosenfield	Senior Scientist	San Francisco Baykeeper	Preservation/Conservation
45	Rachel	Zwillinger		Defenders of Wildlife	Preservation/Conservation
45	Gary	Bobker	Program Director	The Bay Institute	Preservation/Conservation
45	John	McManus	President	Golden Gate Salmon Association	Recreational (non-specific)
45	Drev	Hunt	Senior Attorney	Natural Resources Defense Council	Preservation/Conservation

2.5 Index 5: Individuals

The following index includes comments submitted by individuals. Responses to comments are found in Chapter 4, *Responses to Comments Tables*.

Letter Number	First Name	Last Name	Title	Organization Name	Org Type
1	Francis	Coats			Individual
4	Richard	Morat			Individual
13	Elissa	Englert			Individual
25	Theo	Claire			Individual
33	Ali	Meders-Knight		Citizen of Chico	Individual
37	Grant	Gilkison			Individual

Chapter 3 Master Responses

This chapter provides master responses to comments made on the Draft EIS. Master responses were crafted for comments that were typically made multiple times by different agencies, organizations, entities, or members of the public or were prepared because multiple but related subtopics could be addressed by one topical master response. Table 3-1 summarizes the master response numbers, titles, and topics covered.

If a master response is referenced in a comment response table for a particular individual comment in Appendix AA, Chapter 4, *Responses to Comments*, the response to that particular comment is found within the identified master response.

Table 3-1. Summary of Master Responses

Master Response Number	Master Response Title	Topics Addressed
1	<i>Responses to General Comments</i>	<ul style="list-style-type: none"> • Adequacy of public outreach • Supplementation of the Draft EIS • Other regulatory processes • Purpose and Need • Level of Analysis • Water Rights • Relationship to Other Ongoing Plans, Programs or Policies • Development of Alternatives • Adequacy of Analysis • Aquatic Resources
2	<i>Related Regulatory Processes</i>	<ul style="list-style-type: none"> • 2019 Biological Assessment process • The 2019 Biological Opinion process • The Timing and Preparation of the Biological Assessment, the Issuance of the Biological Opinion, and the NEPA Review
3	<i>Baseline and No Action</i>	<ul style="list-style-type: none"> • No Action Alternative (clarification regarding what is included in the No Action Alternative)
4	<i>Alternatives Formulation</i>	<ul style="list-style-type: none"> • Formulation of alternatives • Level of detail provided in the descriptions of each alternative. • Refinements to Alternative 1 since the Draft EIS.
5	<i>Adequacy of Analysis and Mitigation</i>	<ul style="list-style-type: none"> • Adequacy of Analysis (use of a combined program and project level NEPA assessment, application of

Master Response Number	Master Response Title	Topics Addressed
6	<i>Hydrologic Modeling and Surface Water Resources</i>	<p>the best available science, and how impact determinations were made including application of significance thresholds)</p> <ul style="list-style-type: none"> • Cumulative Analysis (approach and rationale for cumulative impact analysis) • Mitigation (applicability of mitigation proposed in the EIS and the process for adopting those measures)
7	<i>Aquatic Resources</i>	<ul style="list-style-type: none"> • Aquatic analysis (level of detail requested by commenters, additional modeling and analysis, and use of quantitative versus qualitative analysis). • Application of modeling results for evaluation of potential impacts on aquatic resources (including modeling of Delta outflow, summer and fall habitat modeling, and water temperature modeling). • Evaluation of project-level and program-level impacts (including potential changes to Longfin Smelt abundance and South Delta entrainment risk, considerations for Sacramento River actions [seasonal operations, spring pulse flows, and cold water pool management], and water quality effects from the Stanislaus River compliance point relocation).

3.1 References Cited

None.

Master Response 1: Responses to General Comments

Overview

Reclamation has the responsibility to comply with, and follow the NEPA requirements. An environmental impact statement is supposed to inform the decision makers before a decision is made. The Reclamation will objectively consider the record of this proceeding, including all comments made and received during the public meetings and comment period. 40 C.F.R. § 1503.4.

The purpose of each response to a comment on the Draft EIS is for the lead agency to address the substantive environmental issue(s) that may be raised by each comment. According to the regulations, possible responses include modifying the alternatives, including the proposed action; developing and evaluating new alternatives; making factual corrections; or explaining why the comments do not warrant further agency response. 40 C.F.R. § 1503.4. One of the purposes of public review of the Draft EIS is to evaluate the adequacy of the environmental document and its analysis for compliance with NEPA 40 CFR § 1503.4.

Through this master response, Reclamation is providing general responses to general comments, assertions, and questions related to the action alternatives and the analysis in the EIS. Reclamation is not addressing comments that are beyond the scope of the environmental analysis in the EIS or which do not raise environmental concerns. Council on Environmental Quality (CEQ) guidelines state that comments on an EIS “shall be as specific as possible and may address either the adequacy of the statement or the merits of the alternatives or both” (40 CFR § 1503.3(a)). Topics outside the scope of the EIS include comments on the Biological Assessment and adequacy of the Biological Opinions under Section 7 of the Endangered Species Act issued by National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), the Coordinated Operations Agreement, and comments on other ongoing efforts (e.g., the State Water Resources Control Board’s (SWRCB’s) Scientific Basis Report for the unimpaired flow approach, and other comments that are outside the jurisdiction of Reclamation (e.g. requests for new legislation). Reclamation is not responding to those comments.

Reclamation reviewed all general comments on the draft EIS and developed this master response to address recurring comments and common themes. Specifically, each subsection of this master response summarizes and addresses comments that were general in nature in that they fit one or more of the following categories:

- Opposed or supported the proposed project but did not (1) provide any rationale, or (2) raise any issues related to the adequacy of the environmental impact analysis.
- Questioned the adequacy of the environmental impact analysis but did not provide a rationale.
- Made other conclusory statements but did not provide rationale or supporting information.
- Made additional recommendations beyond the scope of the document

Substantive comments are addressed in either topic-specific Master Responses or the individual unique responses in Appendix AA, Chapter 4 Responses to Comments Tables.

Written or verbal general comments often included introductory information about the commenter's agency or organization's mission, background, or the importance of the proposed project to the agency or organization. Multiple commenters provided a variety of personal and professional background information in their comments. This type of information is not a general comment on the EIS; therefore, it does not require a response. Reclamation acknowledges receipt of this information. Additionally, commenters often paraphrased or quoted directly from the Draft EIS. Again, Reclamation acknowledges receiving this information but provided responses only to the portions of the comments that raised substantive environmental issues or made a general comment on the EIS. Reclamation also acknowledges receipt of comments in general support of one or more of the action alternatives as well as those in general opposition to one or more of the action alternatives.

While this master response addresses general public comments, these comments were often related to additional subjects addressed in other master responses. Accordingly, this master response references related master responses, as appropriate, where recurring comments and common themes overlap with other subject matter areas.

This master response includes, for ease of reference, a table of contents on the following page to help guide readers to specific subject areas. The table of contents is based on general recurring and common themes found in the comments that were received. It is provided to help guide readers in finding where the topics of their concern are addressed.

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Adequacy of Public Outreach

This section addresses common issues raised regarding the public review and comment process.

Adequacy of Public Outreach and Availability of the Draft EIS

Some commenters suggested that the notification process for the Draft EIS was insufficient and didn't meet the requirements under 40 CFR § 1506.6. In compliance with 40 CFR Section 1506.6, the Notice of Availability of the Draft EIS was published in the *Federal Register* on Friday, July 12, 2019 and notifications regarding the availability of the Draft EIS for review were distributed to the project email list. Reclamation also issued a press release announcing the availability of the Draft EIS for review and comment. The Draft EIS was made available on the project website at <https://www.usbr.gov/mp/bdo/lto.html>. Printed copies of the Draft EIS were available at no cost for review at the Regional Reclamation Office and the Bay-Delta Office.

Duration of Comment Period

Multiple commenters stated that the duration for the comment period was insufficient given the amount of material contained in the Draft EIS for review and requested an extension of the comment period. Council on Environmental Quality (CEQ) regulations require a minimum of 45 days for public review and comment of an EIS 40 CFR § 1502.19. Reclamation circulated the Draft EIS for public review in compliance with NEPA for an initial comment period of 45 days. Upon request, Reclamation granted a one-week extension to specific commenters.

Public Meetings

Some commenters raised concerns regarding the location of the public meetings and suggested additional meetings would be held. Three public meetings were held, one in Los Banos on July 30, 2019, one in Sacramento on July 31, 2019, and one in Chico on August 1, 2019, to solicit public comments on the Draft EIS. The public meeting locations were consistent with those of scoping for the EIS. During scoping, Reclamation received several requests for a meeting to be held in Chico. During scoping for the previous LTO (2015) a meeting was specifically requested for Los Banos. The Sacramento meeting location was selected to be accessible to state and regional agencies and non-governmental organizations with an interest in the Draft EIS. CEQ Regulations state that the "Agencies shall: (a) Make diligent efforts to involve the public in preparing and implementing their NEPA procedures" 40 CFR § 1506.6 (a). and that they should "Hold or sponsor public hearings or public meetings whenever appropriate..." including when there is "substantial environmental controversy concerning the proposed action or substantial interest in holding the hearing" 40 CFR § 1506.6 (c) and (c)(1). NEPA does not require that meetings be held throughout the state.

Requests for Information

Some commenters requested they be placed on the distribution list for future notifications about the project or that their contact information be updated. Reclamation has continually made requested additions and changes to the contact information used to provide notifications regarding project updates and milestones.

Recirculation or Supplementation of the EIS

Some commenters requested that the Draft EIS be revised and recirculated for public review. Comments that provided specific additional information in support of a supplemental EIS are addressed in topic-specific master responses or in the individual unique responses in Appendix AA, Chapter 4. Please see Section 1.13, *Adequacy of Analysis*, of this master response for responses to comments that generally stated that the EIS analysis is insufficient and must be re-analyzed and distributed for additional public review. Please see Master Response 3, *Baseline and No Action*, for information regarding the selection of an appropriate and sufficient baseline. Please see Master Response 4, *Alternatives Formulation*, regarding the sufficiency of the action alternatives evaluated. Please see Master Response 5, *Adequacy of Analysis and Mitigation*, for additional discussion related to the use of best available science, sufficiency of the analysis, cumulative impacts analysis, impact conclusions, and mitigation.

Under NEPA, action agencies shall prepare and circulate a supplement to a draft or final EIS when (40 CFR § 1502.9):

- An agency makes substantial changes to the proposed action that are relevant to environmental concerns; or
- There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

As described in Master Response 4, *Alternatives Formulation*, Alternative 1 has been refined between the Draft EIS and Final EIS in response to agency and public input. Some refinements were made as a result of consultation with the USFWS and NMFS, which is discussed in Master Response 2, *Related Regulatory Processes*. The NEPA process takes into account agency flexibility to modify alternatives to reflect such input. These refinements do not substantially change the proposed action relative to the environmental resources analyzed. Modeling of the refined proposed action are provided in Appendix F, Modeling, Attachment 1 of the Final EIS. Analysis of the revised modeling does not reveal any new significant impacts, any substantial increases in the severity of an impact, or result in a new feasible alternative or mitigation measure that is dramatically different from what was analyzed in the Draft EIS. As a result, the Draft EIS provided the information necessary to allow for meaningful public review and comment on substantial adverse environmental effects and ways to mitigate or avoid such impacts. Therefore, a supplemental EIS is not necessary.

Other Regulatory Processes

California Environmental Quality Act Review

In April 2019, DWR issued a letter notifying interested parties that the state would commence preparation of an environmental impact report (EIR) for the Long-Term Operations of the SWP pursuant to the requirements of the CEQA. As described in the Notice of Preparation letter, DWR operates the SWP in accordance with the 2008 USFWS Biological Opinion, the 2009 NMFS Biological Opinion, and in compliance with the California Endangered Species Act (CESA) pursuant to section 2080.1 of the California Fish and Game Code. In the Notice of Preparation DWR states that it intends to seek a new Incidental Take Permit from CDFW which would provide CESA authorization for SWP operations regardless of whether there are changes to federal law during the term of the Incidental Take Permit. (DWR 2019). Reclamation does not have CESA compliance obligations and Reclamation and DWR have elected to meet their respective environmental review

requirements independent of one another. Separate publication and release for public review of a document by DWR as the lead agency in compliance with CEQA is expected at a later date.

Related Regulatory Processes

On August 2, 2016, Reclamation requested the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP). Reclamation's reinitiation letters to USFWS and NMFS stated that reinitiation was requested because of recent data demonstrating a decline in the status of several listed species, new information related to recent multiple years of drought, and new information available and expected to become available as a result of ongoing work through collaborative science processes. The USFWS accepted the reinitiation request on August 3, 2016, and NMFS accepted the reinitiation request on August 17, 2016. General concerns raised related to the previous Biological Opinions as well as the current process to develop the Biological Assessment and Biological Opinions for the proposed action are addressed in Master Response 2, *Related Regulatory Processes*.

Overview of Approval Process

Some commenters requested clarification regarding the next steps and approvals for the EIS process or provided opinions about what was required for final approval. This section addresses comments regarding the next steps and approval process for the EIS. Upon publication of the Final EIS, Reclamation will prepare a Record of Decision (ROD). The ROD will specify Reclamation's decision on a selected preferred action, discuss the action alternatives considered, and explain the rationale for the ultimate decision. The ROD will also discuss mitigation for avoiding or reducing environmental impacts considered and what mitigation measures, if any, were adopted. (40 CFR § 1505.2). The ROD will be issued no sooner than 30 days after the USEPA has published the Final EIS in the *Federal Register*. (§ 1506.10 (b)(2)).

Purpose and Need

Many commenters suggested that the purpose and need for Reclamation's action is overly narrow and not sufficiently inclusive of the broad range of statutory obligations and legal authorities under which Reclamation operates. For example, commenters suggested that the purpose and need doesn't allow for an evaluation of a reasonable alternative that would not increase water supply. The purpose of the action considered in the EIS is to continue the operation of the CVP in coordination with the SWP, for their authorized purposes, in a manner that enables Reclamation and DWR to maximize water deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements, and to augment operational flexibility by addressing the status of listed species. The need of the action, as described in Chapter 2, Purpose and Need, of the EIS, is for continued operation of the CVP to provide river regulation and navigation; flood control; water supply for irrigation and domestic uses; fish and wildlife mitigation, protection, and restoration; fish and wildlife enhancement; and power generation. The need for the action is to use updated scientific information to better meet the statutory responsibilities of the CVP and SWP.

The purpose and need considers all purposes for which the CVP and SWP were authorized, consistent with applicable laws, contractual obligations, and agreements. Applicable laws include federal laws such as the Endangered Species Act (ESA) and the Central Valley Project Improvement Act (CVPIA), as well as state water law and the terms of applicable water right licenses and permits.

The purpose and need explicitly includes the following language "consistent with applicable laws, contractual obligations, and agreements." Re-negotiating existing contracts and agreements was outside the scope of the purpose and need. Applicable laws include state water rights decisions per Section 8 of the Reclamation Act, as well as federal laws including the CVPIA and the ESA. Section 3406(a)(2) of the CVPIA provides that the CVP "shall be used first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and fish and wildlife mitigation, protection, and restoration purposes; and third, for power and fish and wildlife enhancement." Reclamation proposes to operate the CVP consistent with those authorized purposes. The statutes authorizing the CVP establish three hierarchical categories of project purposes. Those statutes require Reclamation to operate the CVP first for the primary purposes of river regulation, navigation, and flood control; then for the secondary purposes of water supply for irrigation and domestic uses and fish and wildlife mitigation, protection, and restoration; and finally for the tertiary purposes of power and fish and wildlife enhancement.

There is no minimum number of alternatives required to be considered in an EIS. The alternatives considered in the EIS include multiple options considered under each alternative. NEPA does not require the EIS to consider every conceivable combination of flow and non-flow measures. The EIS compares conditions under a range of CVP and SWP water delivery scenarios and a range of Delta exports, including a scenario that would reduce Delta exports. The action alternatives were developed to continue to meet the CVP and SWP authorized purposes and regulatory requirements related to the CVP and SWP operations, including Decision 1641 (D-1641), which implements the 1995 Water Quality Control Plan for the Delta. While Reclamation must operate in accordance with applicable laws, contractual obligations, and agreements such as the ESA, CVPIA, and state water right permits per Section 8 of the Reclamation Act, a reasonable alternative is to operate solely in accordance with D-1641, as D-1641 considers all beneficial uses including fish and wildlife, which the ESA and CVPIA are also intending to protect. Alternative 2 was developed to satisfy these requirements. Alternative 2 includes water for fish and wildlife purposes as defined in D-1641, in addition to water supply for irrigation and domestic uses, flood control, river regulation and navigation, and power generation. Alternative 2 comes the closest to meeting the maximum contractual water supply quantities in CVP contracts. Alternative 3 includes habitat restoration and infrastructure improvement actions in addition to the flows of Alternative 2. Alternative 4 was developed in response to scoping comments that suggested more emphasis on instream flows and increases the focus on operation for cold water pool management and instream flows for fish and wildlife purposes and also ongoing discussions about unimpaired flow criteria in CVP streams. Alternative 4 includes substantial flows for fish and wildlife above those required by D-1641 and results in less combined CVP and SWP water supply than current operations provides. The EIS does not "foreclose consideration of alternatives that would reduce water diversions in order to meet the requirements of the ESA." Alternative 4, in fact, would reduce water deliveries from current deliveries.

Reclamation has not limited the action alternatives to those that would increase water deliveries from the Delta and as such, purpose and need is not overly narrow or biased.

Level of Analysis (Program-Level vs. Project-Level)

Some commenters raised concerns regarding the appropriateness of mixing program-level and site-specific, or project-level, analysis or requested clarification regarding which project elements were evaluated at a program-level and which were evaluated at a project-level. Additional discussion regarding the level of analysis is provided in Master Response 5, *Adequacy of Analysis and Mitigation*.

NEPA recognizes that different types of documents may be appropriate depending on the particular circumstances of the action being reviewed and affords agencies discretion to determine what type of analysis is appropriate (40 CFR § 1500.4(i)). The regulations authorize tiering for different stages of actions (40 CFR § 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 § 1508.28). Further, nothing in NEPA prohibits agencies from mixing programmatic and site-specific (i.e., project-level) elements in a single document. Appendix D, *Components of the Reinitiation of Consultation on Long-Term Operations*, Attachment 1, lists the Site-Specific Actions and the Program-Level components used for alternatives formulation along with supporting performance analysis.

Water Rights

Some commenters raised concerns or sought clarity regarding the relationship to the alternatives analyzed and existing water rights, specifically SWRCB’s D-1641 and Water Rights Order 90-5. All Draft EIS action alternatives include meeting Reclamation and DWR’s obligations under SWRCB’s D-1641, which requires releases of water for meeting water quality standards for beneficial uses in the Delta. Alternative 1 includes operating in accordance with all of Reclamation’s water rights permits and licenses, although it proposes to adjust the dissolved oxygen compliance point on the Stanislaus River under Reclamation’s Stanislaus River water right to the location of the fish and wildlife resource that the dissolved oxygen standard is intended to protect. Alternatives 2, 3, and 4 include all applicable water right requirements. As stated in Chapter 3, *Alternatives*, of the EIS, Reclamation will continue operating in accordance with Water Right Order 90-5. Additional information regarding operations in accordance with Water Right Order 90-5 is provided in Chapter 3, *Alternatives*, Section 3.4.1.4.1, *Cold Water Pool Management*., Table 3.5-1, Components of Alternative 2, and Table 3.6-1 Components of Alternative 3.

Relationship to Other Ongoing Plans, Programs, or Policies

The following section addresses commonly raised comments regarding the relationship of the Reinitiation of Consultation on the Coordinated Long-Term Operation of the CVP) and SWP to other water-related federal and California plans and programs. Multiple commenters expressed opposition to the proposed action in favor of other options, such as conservation, addressing water waste resulting from leaky infrastructure, prioritizing environmental needs over consumptive needs, groundwater recharge, pursuing desalination projects, or amending water rights to reallocate surface water resources. Other comments suggested that new legislation was needed to address water management needs. Several comments suggested that Reclamation should align more closely with the policies and priorities California State Agencies have identified such as the Delta Reform Act and the Water Resilience Portfolio. A number of commenters also raised issues related to the relationship between Reclamation’s action and California’s public trust and reasonable use requirements. Commenters generally stated that Reclamations action is a violation of public trust and reasonable use doctrine.

There is no question that California is facing a multitude of water management challenges. However, comprehensively addressing all of California’s water management needs is outside of Reclamation’s authority and beyond the scope of the analysis in this EIS. NEPA does not require that the action’s objectives or purpose and need include a modification of how water is regulated in California and does not require Reclamation consider alterations in human consumption or other beneficial uses of

water that is lawfully diverted under federal and California water law as part of its consideration of a particular proposal for action. However, in Reclamation's view, its proposed range of alternatives is consistent with California's Public Trust and Reasonable Use requirements.

The EIS action alternatives include different strategies for meeting the fish and wildlife purposes of the CVP, through existing water right obligations that include requirements for fish and wildlife uses, increased habitat restoration and facility improvements, improved cold water pool management, increased instream flow, and intervention actions in times of drought. While different strategies are included in each action alternative, each alternative has some consideration for the fish and wildlife purposes of the CVP. The EIS action alternatives all provide water deliveries for reasonable uses of water that are defined as beneficial uses by the SWRCB California State policies such as the Delta Reform Act and the Water Resilience Portfolio include directives applicable to state agencies and do not apply to Reclamation, but Reclamation's proposed action is consistent with California's objectives of ensuring safe and reliable water supplies, flood protection and healthy waters for the state's communities, economy and the environment..

State Water Resources Control Board's Update to the Bay-Delta Water Quality Control Plan

Multiple commenters raised concerns related to the SWRCB's process to update the water quality control plan for the Bay-Delta. Commenters generally stated that Reclamation did not sufficiently consider the unimpaired flow approach outlined by the SWRCB. Some commenters stated that the alternatives were insufficient because they did not accurately include the water quality control plan amendments adopted for the lower San Joaquin River and the eastside tributaries. Other commenters cautioned Reclamation against approving an action that would in any way hinder the ongoing voluntary agreement process between water contractors and state agencies.

The SWRCB Bay-Delta Plan update process is an ongoing process. The SWRCB adopted plan updates including new flow and salinity objectives for the lower San Joaquin River and the South Delta. However, these new objectives are currently unimplemented through any particular water right holders. Implementation may require, at a minimum, a future water right hearing and decision.

With respect to the Sacramento River, its tributaries and the Delta, the SWRCB has only issued a Framework for a future plan update, but has not issued any draft or final plan updates, and, therefore, implementation is not yet defined. Stakeholders are discussing voluntary agreements which could forego a water right hearing and result in earlier implementation. Reclamation's Alternative 4 in the Draft EIS is consistent with many of the objectives identified in the voluntary agreements and includes substantial instream flows for fish, and also prioritizes cold water pool management in reservoirs over instream flows. As described in Appendix F, *Modeling*, Alternative 4 includes 55% instream flows in the Feather River in the wettest 65% of years, and in the American River watershed in only the wettest 40% of years. Reclamation is further aware of the voluntary agreement efforts with respect to habitat restoration projects and have included them in this EIS. However, as the details and ultimate success of voluntary agreements have yet to be determined, they have not been modeled for this EIS.

Sustainable Groundwater Management Act

Some commenters raised concerns regarding the water supply analysis, suggesting Reclamation did not consider the effects of SGMA or that there would be more severe impacts associated with undelivered water because SGMA will make it impossible to replace surface water supplies with

groundwater supplies in the future. Other commenters suggested that the reconsultation on long-term operations should occur after Groundwater Sustainability Plans have been approved by the state. The Sustainable Groundwater Management Act (SGMA) requires groundwater sustainability agencies to obtain sustainable groundwater levels in their basins by 2040 or 2042, which is beyond the period covered by this consultation (2030). Because groundwater sustainability plans for areas in the Central Valley have not been developed or adopted yet, the details of sustainable management under SGMA for each basin and subbasin are not yet known, and are not reasonably foreseeable. The Draft EIS analyzes the effects of the action alternatives on groundwater levels in Section 5.4, *Groundwater Resources*, and Appendix I, *Groundwater Technical Appendix*. SGMA, and the schedule of required activities, is directed at regional and local California entities and does not apply to Federal Agencies.

Coordinated Operations Agreement

Multiple commenters objected to the use of assumptions for the revised COA in the EIS modeling, stating that the COA was flawed and should be revised prior to Reclamation finalizing the LTO. The Coordinated Operations Agreement (COA) is discussed in Chapter 3, *Alternatives*, of the EIS. The COA adopted in 2018 is considered part of the No Action Alternative as an existing condition and is incorporated as a baseline operation in the action alternatives. The 2018 revision to COA was separately considered in an Environmental Assessment pursuant to NEPA.

San Joaquin River Restoration Program

Some commenters were unclear about whether or not San Joaquin River Restoration flows were included in the analysis. As described in Chapter 3, *Alternatives*, the San Joaquin River Restoration Program (SJRRP) implements the San Joaquin River Restoration Settlement Act in Title X of Public Law 111-11. The SJRRP flows are included in the No Action Alternative and are incorporated in all of the action alternatives.

Central Valley Project Improvement Act

As discussed in Section 1.5, Purpose and Need, many commenters suggested that the purposes and need is overly narrow because it fails to address the myriad of project purposes for which Reclamation is obligated to operate the CVP. Specifically, many commenters cited to CVPIA as the legally binding legislation that requires Reclamation to operate the CVP for agriculture, municipal and fish and wildlife needs equally. Through the CVPIA, Congress directed the Secretary, "To achieve a reasonable balance among competing demands for use of Central Valley Project water, including the requirements of fish and wildlife, agricultural, municipal and industrial and power contractors." CVPIA Section 3406(a)(2) provides that the CVP "shall be used first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and fish and wildlife mitigation, protection, and restoration purposes; and third, for power and fish and wildlife enhancement." As the statute makes clear, only the specific fish and wildlife mitigation, protection, and restoration purposes may be considered on par with the CVP's irrigation, and domestic use purposes. The CVP may be operated for the enhancement of fish and wildlife, but Congress placed enhancement purposes below the CVP's irrigation and domestic use purposes and on par with the CVP's power purposes. The range of alternatives considered by Reclamation is consistent with the CVPIA.

As discussed in Chapter 3, *Alternatives*, Reclamation would continue to operate in accordance with its obligations under CVPIA, including Section 3406(b)(2). Section 3406(b)(2) directs the U.S. Secretary of the Interior to dedicate up to 800,000 acre-feet of project yield annually for the primary

purpose of benefiting fish and wildlife. Section 3406(b)(2)(D) authorizes the Secretary to make water available for other project purposes if it is not needed for the purposes identified in Section 3406 (b)(2) based on findings by the Secretary.

Development of Action Alternatives

Some commenters raised concerns about the range and appropriateness of the alternatives evaluated, the methods for selecting the alternatives and the level of detail provided for each alternative. Responses to these common concerns are addressed in Master Response 4, *Alternatives Formulation*. Additionally, Master Response 4 provides information regarding refinements made to the proposed project since the release of Draft EIS.

Adequacy of Analysis

Some commenters raised concerns regarding the overall adequacy of the analysis contained in the EIS as well as the cumulative analysis and mitigation. Responses to these common concerns are addressed in Master 5, *Adequacy of Analysis and Mitigation*.

Aquatic Resources

Many commenters raised concerns regarding the level of detail provided in the aquatics analysis, the application of modeling results to evaluate potential impacts, as well as concerns related to the evaluation of program-level and project-level impacts to aquatic resources. Responses to these common concerns are provided in Master Response 7, Aquatic Resources.

References Cited

California Department of Water Resources (DWR). 2019. Notice of Preparation of an Environmental Impact Report for Long-Term Operations of the State Water Project. Sacramento, CA.

Master Response 2: Related Regulatory Processes

Overview

This master response is based on general, recurring, and common themes found in the comments that were received. The topics of discussion in this response include, but are not limited to, the following:

- The Biological Opinions issued by U.S. Fish and Wildlife Service (2008) and National Marine Fisheries Service (2009), litigation, and the 2015 Coordinated Long-Term Operation of the Central Valley Project and State Water Project Final Environmental Impact Statement (2015 LTO EIS).
- The 2016 to 2019 Biological Assessment process.
- The 2019 Biological Opinion process.

The Timing and Preparation of the Biological Assessment, the Issuance of the Biological Opinion, and the NEPA Review

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Previous Biological Opinions

U.S. Bureau of Reclamation (Reclamation) operates the Central Valley Project (CVP) in accordance with biological opinions issued by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) in 2008 and 2009, respectively.

The 2008 USFWS BO concluded that “the coordinated operation of the CVP and SWP, as proposed, [was] likely to jeopardize the continued existence of the Delta Smelt” and “adversely modify Delta Smelt critical habitat.” The BO included a reasonable and prudent alternative (RPA) for long-term operation of the CVP and SWP designed to allow the projects to continue operating without causing jeopardy to Delta Smelt or adverse modification of designated critical habitat.

On December 15, 2008, Reclamation provisionally accepted and began implementing the USFWS RPA. On June 4, 2009, NMFS issued a BO analyzing the effects of the coordinated long-term operation of the CVP and SWP on listed salmonids, Green Sturgeon, and Southern Resident Killer Whale and their designated critical habitats. The NMFS BO concluded that the long-term operation of the CVP and SWP, as proposed, was likely to jeopardize the continued existence of Sacramento River Winter-Run Chinook Salmon, Central Valley Spring-Run Chinook Salmon, California Central Valley Steelhead, Southern DPS of North American Green Sturgeon, and Southern Resident Killer Whale. Further, the BO concluded that the proposed action would destroy or adversely modify critical habitat for Sacramento River Winter-Run Chinook Salmon, Central Valley Spring-run Chinook Salmon, California Central Valley Steelhead, and the 2009 Conference Opinion on Southern DPS of North American Green Sturgeon proposed critical habitat. The 2009 NMFS BO included an RPA designed to allow the CVP and SWP to continue operating without causing jeopardy to the analyzed species or adverse modification of their designated critical habitat. On June 4, 2009, Reclamation provisionally accepted and began implementing the NMFS RPA.

In 2008 and 2009 Reclamation provisionally accepted and began implementing the BOs on the continued long-term operation of the CVP, in coordination with the operation of the SWP, issued by USFWS and NMFS, respectively, pursuant to the ESA as amended (United States Code [U.S.C.] 1531 et. seq.).

Reclamation completed the LTO EIS in 2015 (Reclamation 2015). The EIS evaluated a No Action Alternative, which included implementation of the 2008 and 2009 RPAs, and several action alternatives. Reclamation signed a Record of Decision in January 2016 to implement the No Action Alternative.

Biological Assessment Process

On August 2, 2016, Reclamation and the California Department of Water Resources jointly requested the reinitiation of consultation on the coordinated long-term operation of the CVP and SWP. Reclamation’s reinitiation letters to USFWS and NMFS stated that reinitiation was requested due to recent data demonstrating a decline in the status of several listed species, new information related to recent multiple years of drought, and new information available and expected to become available as a result of ongoing work through collaborative science processes. The USFWS accepted the reinitiation request on August 3, 2016, and NMFS accepted the reinitiation request on August 17, 2016.

Throughout 2017 and 2018, Reclamation conducted initial brainstorming with key stakeholders, including water users, power customers, federal and state agencies, and tribes. Appendix Z, *ROC on LTO Consultation and Coordination*, provides a list of coordination meetings and brainstorming workshops held. These meetings were used, in addition to the scoping comments provided in early 2018 as part of the NEPA process, to develop the proposed action for the Biological Assessment.

Recognizing the importance of the Projects to the nation, on October 19, 2018, the White House issued a memorandum to accelerate the process initiated in 2016. The memorandum directed the Secretary of the Interior to complete the biological assessment no later than January 31, 2019. The memorandum also directed the Secretary of the Interior and Secretary of Commerce to issue final biological opinions for ROC on LTO on June 17, 2019, within the 135-day ESA statutory timeframe. The memorandum envisioned that the Services would coordinate their consultations and resulting BOs to ensure consistency so that the Projects are better able to meet their authorized purposes. The biological assessment also fulfills consultation requirements for the Magnuson-Stevens Fishery Conservation and Management Act of 1976 for Essential Fish Habitat (EFH).

In developing Alternative 1, Reclamation relied on its experience from 10 years of implementing both RPAs and incorporated numerous components of the RPAs that are either the same, or are new but similar to the previous RPA actions and are intended to provide a similar level of protection as the No Action Alternative. Alternative 1 in the Draft EIS is also the proposed action in the January 2019 Biological Assessment that Reclamation submitted to USFWS and NMFS regarding the coordinated long-term operation of the CVP and SWP.

Biological Opinion Process

Reclamation transmitted the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project Biological Assessment (Biological Assessment) to the Regional Director of the USFWS and the Regional Administrator of NMFS on January 31, 2019 (Reclamation 2019). From February through June, Reclamation worked through the formal consultation process with USFWS and NMFS to clarify aspects of the proposed action, modify the proposed action to address USFWS and NMFS concerns, and provide supplemental biological modeling to support the 2019 draft USFWS and NMFS BOs. In particular, the Services' initial analysis of Reclamation's January 2019 preliminary proposed action identified significant adverse effects to ESA-listed fish species, and the three agencies determined that more time would be needed to complete the consultation. Through ongoing consultation over the following four months, Reclamation and DWR continued to clarify and refine the proposed action to address these concerns. This resulted in a final proposed action, transmitted to the Services on October 17, 2019. The Services relied on these modifications and clarifications to substantially revise their analyses of anticipated effects. On October 21, 2019, the Services transmitted their conclusions to Reclamation and DWR that the proposed action is consistent with the requirements of the ESA. The final proposed action evaluated in the BiOps is the preferred alternative (Alternative 1) in the final EIS.

In accordance with the WIIN Act Section 4004, Reclamation transmitted multiple drafts of the BOs to CVP and SWP water users for their review throughout 2019. USFWS and NMFS also sent their BOs to a peer review panel for comments. In late June, it became apparent that additional time was required to address water user comments and improve the internal consistency and defensibility of the BOs. A team consisting of fisheries biologists, environmental compliance experts, project operators, and lawyers from Reclamation, NMFS, USFWS, NOAA, and the DOI Solicitor's Office staff began in late June 2019 to review the draft BOs from the USFWS and NMFS, provide fresh

perspective, and finalize the documents. The revised Biological Opinions went to a second peer review in August 2019.

On October 21, 2019, USFWS issued a non-jeopardy BO on the coordinated operation of the CVP and SWP for Delta Smelt, and on the same day, NMFS issued a non-jeopardy BO for Winter-Run Chinook Salmon, Spring-Run Chinook Salmon, Central Valley Steelhead, Green Sturgeon, and Killer Whale.

Timing and Preparation of the Biological Assessment, Issuance of the Biological Opinion, and NEPA Review

Multiple commenters raised concerns regarding the timing and sequence of the NEPA and ESA consultation processes. Generally, commenters offered opinions and suggestions as to which order and sequence the processes should follow. The Draft EIS is a document that was prepared and made available pursuant to NEPA, whereas the Biological Assessment and BO are documents that are prepared pursuant to ESA Section 7. Although the proposed project triggers NEPA, as well as ESA Section 7, these are separate statutory schemes and processes. Reclamation has proceeded with ESA compliance, in addition to NEPA review, the various documents prepared pursuant to the respective statutory schemes were completed and made available consistent with the applicable legal requirements.

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. 50 CFR § 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."

Recognizing that Section 7 consultation must occur, Reclamation 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 before there is any federal action to carry out the proposed project.

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 require agencies to prepare any documents in a specific order.

Reclamation complied with 40 CFR § 1502.25(a) by coordinating NEPA review and ESA studies. The EIS and BiOps rely on the same information and include the best available science in evaluating the effects of the proposed action.

Requirements for the ESA and NEPA Process

Neither NEPA nor the ESA includes a legal requirement regarding the timing of biological opinions or biological assessments. There likewise is no requirement that USFWS and NMFS publicly circulate biological opinions or biological assessments. Reclamation coordinated NEPA review with the ESA studies and followed a process that is consistent with the general timing principles governing Section 7 consultation. The Final FWS BiOp recognized that Reclamation was continuing to evaluate the proposed action and other alternatives pursuant to NEPA, and that the proposed action could be modified, which could in turn result in Reinitiation of consultation on the modified proposed action. Likewise, the Final NMFS BO recognized that if changes to the proposed action were made through the NEPA process beyond the effects analyzed in the BO, Reclamation would reinitiate consultation on the modified proposed action, as appropriate. The incidental take statement in both the FWS and NMFS BOs provided that incidental take exemptions would become effective only upon Reclamation's issuance of the Record of Decision.

References Cited

National Marine Fisheries Service (NMFS). 2019. Non-jeopardy Biological Opinion for Winter-Run Chinook Salmon, Spring-Run Chinook Salmon, Central Valley Steelhead, Green Sturgeon, and Killer Whale.

U.S. Fish and Wildlife Service (USFWS). 2008. 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. December. [City], [STATE (two-letter abbrev.)]

U.S. Fish and Wildlife Service (USFWS). 2019. Non-jeopardy Biological Opinion on the coordinated operation of the CVP and SWP for Delta Smelt.

U.S. Department of the Interior, Bureau of Reclamation (Reclamation). 2015. *Coordinated Long-Term Operation of the Central Valley Project and State Water Project Final Environmental Impact Statement*. Mid-Pacific Region Bay-Delta Office. November. [City], [STATE (two-letter abbrev.)]

U.S. Department of the Interior, Bureau of Reclamation (Reclamation). 2019. Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project Final Biological Assessment. Central Valley Project, California Mid-Pacific Region. Prepared by ICF. Sacramento, CA.

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No Action Alternative

Under the definition of the No Action Alternative in the National Environmental Policy Act (NEPA) regulations (43 CFR § 46.30), Reclamation's NEPA Handbook (Section 8.6), and Question 3 of the Council of Environmental Quality's Forty Most Asked Questions, the No Action Alternative could represent a future condition with "no change" from current management direction or level of management intensity, or future "no action" conditions without implementation of the actions being evaluated in the environmental impact statement (EIS). The No Action Alternative in this EIS is consistent with the definition of "no change" from current management direction or level of management. Therefore, the Reasonable and Prudent Alternatives (RPAs) were included in the No Action Alternative because Reclamation had been implementing the National Marine Fisheries Service (2009) and U.S. Fish and Wildlife (2008) Biological Opinions and RPA actions as part of Central Valley Project (CVP) operations for approximately 8 years at the time the Notice of Intent was issued in December 2017.

The No Action Alternative in the EIS is described in detail in Section 3.3, *No Action Alternative*. Detailed modeling assumptions are also provided in Appendix F, *Modeling*. The No Action Alternative represents a continuation of existing policy and management actions at the time of the publication of the Notice of Intent in December 2017. Also, the No Action Alternative represents a continuation of existing policy and management actions through 2030. Therefore, projects that have not completed Records of Decision are not included in the No Action Alternative, nor are projects that would not be operating by 2030.

References Cited

National Marine Fisheries Service (NMFS). 2009. *Biological Opinion on the Long-Term Central Valley Project and State Water Project Operations Criteria and Plan*. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Fisheries Service Center, Long Beach, CA.

U.S. Fish and Wildlife Service (USFWS). 2008. *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*. December.

Master Response 4: Alternatives Formulation

Overview

This master response includes a description of the process used to identify, evaluate, refine, and select a reasonable range of feasible alternatives to be evaluated in the Draft Environmental Impact Statement (EIS) and Final EIS. The topics of discussion include, but are not limited, to the following:

- Formulation of alternatives (process used to identify alternatives, sufficient range of alternatives, and the feasibility of the alternatives identified).
- Level of detail provided in the descriptions of each alternative.
- Refinements to Alternative 1 since the Draft EIS.

This master response includes for ease of reference a table of contents on the following page to help guide readers to specific subject areas. The table of contents is based on general recurring and common themes found in the comments that were received. It is provided to help guide readers in finding where the topics of their concern are addressed.

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Development of Alternatives

Some commenters expressed concern with the alternatives evaluated in the Draft EIS. This included concerns with the process used by Reclamation to formulate the alternatives, the specific alternatives, the range of the alternatives, and the feasibility of the alternatives included in the EIS.

Process Used to Identify Alternatives

Some commenters communicated general concern with the process implemented by Reclamation to identify the alternatives. Issues identified by such comments were often general in nature and offered questions on how Reclamation had considered suggestions provided during scoping, suggestions identified in earlier studies and programs, and compliance with regulatory requirements in its formulation of the alternatives presented in the Draft EIS.

To satisfy the requirements of the National Environmental Policy Act (NEPA), an EIS must include a range of reasonable alternatives that would meet the purpose and need and all or most of the project's objectives (see 42 United States Code Section 4332(2)(C)(iii); 40 CFR §§ 1502.14, 1502.13). Accordingly, the purpose and need statement are the starting points for the federal agency in developing the range of reasonable alternatives to be evaluated in detail in an EIS (40 CFR Part 1502.13). Additional discussion regarding the purpose and need statement is provided in Master Response 1, Responses to General Comments.

Reclamation conducted a lengthy process to formulate the alternatives evaluated in the EIS as summarized in Chapter 3 and detailed in Appendix D, *Alternatives Development Technical Memorandum*. With the project's purpose and need in mind, Reclamation undertook a year-long process to select an appropriate range of alternatives to be analyzed in the Draft EIS (and presented in the Final EIS) that fully complied with all applicable legal requirements. This process included multiple scoping meetings and outreach to obtain input and review from water contractors, resource agencies, nongovernmental organizations, and stakeholders. Resource agencies and water contractors were involved at a detailed level, including participation in meetings to identify the range of potential alternatives. Interested members of the public were also able to participate in the process through three scoping meetings held in 2018.

After the public scoping process, Reclamation synthesized initial components that could help achieve the purpose and need of the project. A component is a project or plan that could contribute to meeting the purpose and need but may not be able to fully accomplish it independently. Reclamation added to the list of components suggested at scoping by identifying components from scientific research, asking resource agencies and water contractors, and building on the technical understanding of the project team. The scoping process is described in the Scoping Report which is available on the project website. During scoping, three public meetings were held and a total of 711 written and verbal comment documents were received. In an effort to include consensus-based alternatives consistent with the purpose and need of the proposed project that were proposed by stakeholders, Reclamation added Alternative 4 as result of the comments received during the scoping process.

After identifying a list of 86 initial components based on input from stakeholders, Reclamation screened the components to identify the ones that could meet the purpose and need and help form a range of reasonable alternatives for analysis in the EIS. The components remaining after screening were combined into alternatives. Section 2.2 of Appendix D lists the components, Chapter 3 of

Appendix D describes the screening effort, and Chapter 4 of Appendix D describes the range of alternatives moved forward for analysis in the EIS.

Appendix D also presents the process completed by Reclamation to evaluate these initial components against a series of screening criteria that tested whether the component was within the study area, was within the project scope of increasing flexibility for maximizing water deliveries and managing listed species through operational changes to the Central Valley Project (CVP) and State Water Project (SWP), and contributed to the purpose and need. Table 3.1-1 in Appendix D shows the results of the alternative screening effort and includes notes that help explain why certain components were not retained for further evaluation.

Sufficient Range of Alternatives

Some commenters communicated general concern with the range of alternatives evaluated in the EIS. Issues identified by such comments were often general in nature and indicated that the alternatives evaluated were not reasonable because they did not include measures the commenters felt were necessary to ensure compliance with regulatory requirements and legal obligations.

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 (CEQ 1981). The goal of the project defines the range of reasonable alternatives to be considered. Nor does NEPA require the agency to consider a minimum number of alternatives. Alternatives that do not advance the purpose and need of the proposed federal action are not reasonable alternatives and 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.

The Department of the Interior (DOI) (which includes Reclamation) obtains 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 (see Table 3.1-1 in Appendix D). The CEQ guidance also states that what constitutes a range of reasonable alternatives depends on the nature of a proposed federal action and the facts of a particular case.

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 NEPA, therefore, an EIS need not consider every possible alternative to a project, but rather a range of reasonable alternatives that will meet all or most of its purpose and need. NEPA emphasizes 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 (CEQ 1981).

Appendix D of the Draft EIS included a wide range of alternative components representing diverse viewpoints and needs based on internal deliberation and public scoping. The alternatives that moved forward for more detailed analysis in this EIS were those that best met the screening criteria described in Appendix D. Through the alternatives formulation process, Reclamation identified a total of 86 individual components for consideration. Among the 86 initial components were a wide range of suggestions that included terminating the CVP entirely, increasing floodplain, dam removal, flow augmentation, and fixing aging infrastructure. The screening criterion were evaluated consecutively and included consideration of; the study area, project scope, and purpose and need. The screening criterion and process is described in Appendix D, Section 3.1. Many components were screened out because they were not within the project scope or did not meet the purpose and need. Table 3.1-1 in Appendix D provides a list of the components and an explanation for why components were screened out or retained as a component to be carried forward.

Following the screening process, 43 of these components were found to satisfy the screening criteria and were carried forward for refinement and incorporation into the four action alternatives presented in the EIS. Table 4.1-1 in Appendix D provides a summary of the various elements of each of the four action alternatives and illustrates how the alternatives represent an appropriate range of environmental impacts. For this EIS, the alternatives are represented by the range of CVP and SWP operations that seek to increase deliveries and the range of actions to protect fish through flow-related actions, habitation restoration, and intervention measures. While some components are common to all alternatives, there are enough differences between alternatives to provide decision-makers clear basis for choice among the options. For example, when combined, the components of Alternative 2 favors water contract deliveries while the components of Alternative 4 favors cold water pool storage and flows for fish and wildlife.

Feasibility of Alternatives Identified

Some commenters communicated general concern with the feasibility of the alternatives evaluated in the EIS. Issues identified by such comments were often general in nature and conveyed the commenter's belief that the alternatives evaluated were not feasible due to their potential impacts on a resource or on multiple resources of importance to the commenter.

Alternatives are not rendered infeasible simply due to their potential to result in environmental impacts; NEPA is a procedural statute that requires only that an agency take a "hard look" at the consequences of its actions. Appendix D presents the full spectrum of individual components considered during the formulation of the alternatives evaluated in the EIS. Appendix D also presents the screening exercise that was completed by Reclamation to support the narrowing and refinement of these components to formulate the alternatives evaluated in the EIS. Reclamation used this process to formulate a range of feasible alternatives with the potential to generate a range of resource effects from changes in the operation of the CVP to support the project's purpose and need.

Alternative 4 as a Reasonable Alternative

Some commenters expressed concern with the components of and reasonableness of Alternative 4. As described in the EIS, Alternative 4 includes management of storage facilities to preserve cold water pool and additional instream flows in the Sacramento River and the Delta as proposed during scoping. Alternative 4 strives to meet instream flow targets by balancing instream flows with carryover storage sufficient to protect fish. Scoping comments proposed meeting a flow objective of 55% of unimpaired flows year-round to mimic the natural hydrograph. However, a 55% requirement following the natural hydrograph results in high releases during winter and spring months, which

constrain Reclamation's ability to meet cold water pool storage targets. Therefore, the flow objectives cannot be met in all conditions. Overall, this alternative prioritizes and attempts to hold water in storage to maintain the cold water pool while increasing instream flows to the extent possible. It would continue flood management and deliveries to senior water right holders. This alternative also would have the CVP and SWP operate to maintain a positive combined OMR from March through May.

Some commenters expressed concern that the flow objective of 55% of unimpaired flows year-round was not being met in all years. This flow objective comes from the proposed Voluntary Agreement that the State Water Resources Control Board (SWRCB) could consider in its Bay-Delta Water Quality Control Plan update for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and Watershed. This proposal is still in a draft stage and is not finalized or approved by the SWRCB. Implementation of this proposed unimpaired flow scenario would require numerous actions that are outside of Reclamation's control.

Reclamation has not included any alternatives that specifically operate in accordance with the SWRCB's 2017 scientific basis report (SWRCB 2017), as some commenters suggested. Updates to the Bay-Delta Water Quality Control Plan have not been adopted and no water rights decision has been made associated with the updates. However, in response to public comments during scoping, Reclamation developed Alternative 4 which includes significant instream flows beyond those in both D-1641 and the 2008 and 2009 Biological Opinions, as well as prioritizing storage for cold water pool management which are consistent with the recommended and new requirements identified in the 2017 scientific basis report. As stated in the EIS, "Alternative 4 would manage reservoir storage for the primary objective of preserving the cold water pool. In addition to managing water temperatures, Alternative 4 would release additional instream flows in the Sacramento River and its tributaries to benefit fish but would balance this operation with the need to preserve the cold water pool." This highlights the most important difference between Alternative 4 and the SWRCB's proposed unimpaired flow criteria. When increasing requirements for in-river flows are added, this has the effect of de-emphasizing storage, reducing abilities to store water in surface water reservoirs for dry seasons and reducing cold water pool for spawning salmonids. Therefore, Reclamation, included Alternative 4 as a reasonable scenario with improved conditions for fish, by adding mechanisms into the modeling to ensure higher storage levels (and therefore improved cold water pool) than what would occur under an unimpaired inflow only alternative.

Level of Detail Provided in the Descriptions of Each Alternative

Some commenters communicated general concern with the level of detail presented in the description of the alternatives evaluated in the EIS. Issues identified by such comments were often general in nature and indicated that the alternative descriptions were insufficient to support their review of the effects analysis detailed in the EIS.

The No Action Alternative and the four action alternatives evaluated in the EIS are summarized in Chapter 3 and described in detail in Appendix D at a level sufficient to support the evaluation of their potential effect on all of the resource areas considered in the EIS. This includes detailed descriptions of each alternatives' components that are evaluated at a project level in the EIS and at a higher summary level for the components evaluated at a programmatic level. The project-level component effects are also detailed in the many resource appendices to support quantitative and qualitative evaluations of the alternatives' interaction with those resources. Subsequent NEPA analyses may be

performed as needed for programmatic actions to analyze site-specific environmental impacts once these actions have been developed at more detail.

Refinements to Alternative 1

Based on agency and public comments on the Draft EIS and during the permit application planning process, Reclamation made a number of refinements to Alternative 1 since July 2019, and as updated in this Final EIS. Alternative 1 has been modified to clarify language, add performance metrics, modify thresholds for compliance, and add several habitat restoration and fish passage projects. The additional habitat restoration projects would increase the area of potential impact to terrestrial species, but all projects would be operated in accordance with the mitigation measures outlined in Appendix A and any in-water work would be done in work windows scheduled when few listed species are present.

These changes are summarized below and discussed in more detail in Section 3.4 and Appendix D. Some of these changes are additions of administrative activities that have no environmental impacts. None of these changes raise environmental concerns beyond those evaluated in the Draft EIS.

Upper Sacramento River:

- Added performance metrics and coordination with the Upper Sacramento Scheduling Team to the Shasta Reservoir spring pulse flows component.
- Clarified cold water management tiers and timing and conservative approach to forecasting.
- Added fall and winter refill and redd maintenance to set minimum late fall and winter flows including modification of rice decomposition operations, modified fall outflow requirements, and flexibility in export operations. These operational components would contribute to increased end of September carryover storage and spring Shasta Reservoir storage levels. Real-time fish monitoring data, operational conditions, and modeling would be shared through the Sacramento River Temperature Task Group.
- Included Shasta Temperature Control Device (TCD) performance evaluation, in coordination with the National Marine Fisheries Service (NMFS), to study function of the TCD under low storage conditions and identify actions/modification, if necessary.
- Added funding commitments for the Battle Creek Salmon and Steelhead Restoration Program and Battle Creek Reintroduction Plan, providing 10 years of support from Reclamation to accelerate implementation of the program which aims to reestablish prime salmon and Steelhead habitat on Battle Creek its tributaries.
- Added funding commitments for the Deer Creek Irrigation Dam fish passage project, providing support towards this project which is already underway by several partners to provide Spring-Run Chinook Salmon and Central Valley Steelhead with unimpeded access to 25 miles of prime spawning habitat. The California Department of Water Resources (DWR) is leading environmental compliance for this project.
- Added funding commitments for Knights Landing Outfall Gate fish passage repair, providing support towards reconstruction of the gates to reduce potential for fish straying into the Colusa Basin Drain.
- Included coordination with U.S. Fish and Wildlife Service (USFWS) to develop and conduct baseline survey for Yellow-billed cuckoo.

Clear Creek:

- Clarified flow release ramping rates to reduce potential stranding risks.
- Included coordination with USFWS to develop and conduct baseline survey for Yellow-billed cuckoo.

American River Division:

- Clarified winter and spring flow reductions, except in cases of flood control operations.
- Included coordination with USFWS to develop and conduct baseline survey for Yellow-billed cuckoo.

Bay-Delta:

- Added clarity to Delta Cross Channel operations.
- Included coordination with DWR and USFWS to develop Delta Smelt minimization measures for the North Bay Aqueduct and Barker Slough Pumping Plant.
- Added clarity to Contra Costa Water District operations to fill Los Vaqueros Reservoir.
- Old and Middle River (OMR):
 - *Revised OMR real-time restrictions and performance objectives for Delta Smelt, aiming to minimize risk to adult Delta Smelt but allowing for flexibility during extended turbidity events at Bacon Island which are not responsive to changes in OMR flows. Reclamation and DWR would use results produced by USFWS approved life cycle models and real-time monitoring to manage the annual entrainment levels of larval/juvenile smelt.*
 - *Revised cumulative and single-year loss thresholds for Natural Winter-Run Chinook Salmon, Hatchery Winter-Run Chinook Salmon, and Natural Central Valley Steelhead.*
 - *Added coordination with independent panels if performance metrics are not met.*
- Added clarity to the Delta Smelt Summer-Fall Habitat Action, to contribute to the recruitment, growth, and survival of Delta Smelt through metrics for low salinity conditions, turbidity, temperature, food availability, and physical habitat. This includes increasing the use of Suisun Marsh Salinity Control Gate operations, additional food enhancement actions, and coordination with DWR and USFWS on modifications, if necessary, to improve salinity management. Reclamation would coordinate with NMFS and USFWS to discuss alternate potential approaches that improve habitat conditions. Reclamation would form a Delta Coordination Group (consisting of Reclamation, DWR, USFWS, NMFS, California Department of Fish and Wildlife, and representatives from federal and state water contractors) to use a structured decision-making model to analyze proposed summer-fall habitat actions and develop a multi-year science and monitoring plan.
- Added multiple studies to understand how operations interact with fisheries, habitat restoration projects, and facility improvements.
- Stanislaus River: Included coordination with USFWS to develop and conduct baseline survey for Yellow-billed cuckoo.
- San Joaquin River: Included coordination with USFWS to develop and conduct baseline survey for Yellow-billed cuckoo.
- Added chartering of independent panels for OMR management measures and life cycle models used to manage Delta Smelt larval/juvenile entrainment and Steelhead Research and Monitoring Actions.

In response these changes and other comments on the Draft EIS, Reclamation completed a sensitivity analysis of the changes to Alternative 1, including modeling of the Delta Smelt Summer-Fall habitat action (which was requested by multiple commenters). This sensitivity analysis is described in Appendix F, Modeling, Attachment 1.

References Cited

CEQ, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, Question 1b, 46 Fed. Reg. 18.026 (March 23, 1981 as amended 1986).

SWRCB (State Water Resources Control Board). 2017. *Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows*. Final. Sacramento, CA. Prepared by SWCRB, California Environmental Protection Agency, with assistance from ICF.
https://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/scientific_basis_phase_ii/201710_bdphaseII_sciencereport.pdf. Accessed: November 7, 2019.

Master Response 5: Adequacy of Analysis and Mitigation

Overview

This master response focuses on providing an overview how the EIS meets NEPA adequacy requirements including the approach on conducting the program and project level impact assessments, the process for conducting the cumulative impact analysis, and mitigation included in the document. This master responses addresses these topics within the following three major sections:

- **Adequacy of Analysis:** This discussion addresses comments raised on the use of a combined program and project level NEPA assessment, application of the best available science as part of the impact assessment, and how impact determinations were made including application of significance thresholds. .
- **Cumulative Analysis:** This discussion outlines the approach Reclamation used in preparing the cumulative impact analysis and why Reclamation believes this approach is an accurate representation of cumulative conditions with the project's study area.
- **Mitigation:** The discussion of mitigation addresses comments raised on the applicability of mitigation proposed in the EIS and the process for adopting those measures as part of Reclamation's decision on the project.

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Adequacy of Analysis

Multiple commenters expressed concerns that the analysis was insufficient, lacking in detail, or otherwise inadequate. Other commenters generally stated that the EIS did not include the correct modeling assumptions, such as the operational assumptions.

The impact analysis provided in the EIS was based on a wide range of information sources that are typically compiled and evaluated for water-based projects similar to the scope and complexity of ROC LTO. This included considering the assessment methods and conclusions contained in other environmental compliance documents similar to the ROC LTO EIS, including prior NEPA analyses completed for the CVP: compiling, reviewing, applying information contained in a broad range of sources including scientific literature and other studies; and considering information available from other federal, state, and local agencies. Once compiled, this information was then considered as part as the overall assessment methodology for each resource considered in the EIS. The assessment methods applied and reported in the EIS are “industry-standard,” and although some may have been modified for application to ROC LTO, most are based on foundational approaches successfully applied to other projects. This approach in conducting the impact analysis was also supplemented by the expertise of the resource specialists assigned to prepare the EIS. These include Reclamation staff supported by qualified consultants. The expertise of the resource specialists responsible for conducting the impact assessments are provided in EIS Appendix A *List of Preparers* of the EIS. The approach used in for analyzing impacts is further explained below. This includes a discussion of the level of analysis provided in the EIS, the use of best available information/science, and how impact determinations were made.

Level of Analysis (Program vs. Project)

This section addresses those comments that raised concerns regarding the appropriateness of mixing program and site-specific level analysis as well as comments that requested clarification regarding which project elements were evaluated at a program-level and which were evaluated at a project level.

Under NEPA (42 U.S. USC § 4321) and the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR §§ 1500-1508), federal agencies are required to prepare an EIS for major federal actions significantly affecting the quality of the human environment. The EIS must rigorously explore and objectively evaluate the environmental effects of a major federal action, including a range of reasonable alternatives, and identify mitigation measures to minimize adverse effects for the range of impacts of the proposal when they propose a major federal action that may have a significant effect on the environment. An EIS should identify and analyze mitigation measures that may reasonably reduce the effects of the proposed action, NEPA does not require a lead agency to use any particular type of EIS to evaluate the environmental effects of an action. Rather, NEPA recognizes that different types of documents may be appropriate depending on the particular circumstances of the action being reviewed. 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) 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)). 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).

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 Reclamation to mix programmatic and site-specific review in a single document.

Appendix D, *Components of the Reinitiation of Consultation on Long-Term Operations*, Attachment 1 lists the Site-Specific Action and the Program-Level components used for alternative formulation along with supporting performance analysis.

Use of Best Available Science

Reclamation acknowledges that there is more than one way to approach modeling and analysis and that there are many data sources available. However, Reclamation is not obligated to conduct an exhaustive analysis using every approach, modeling tool, and data set available. There may be differing opinions as to how to approach an analysis for a given resource or which data sets should be used, but these differing opinions do not equate to inadequacy.

“Best available science” is defined as the best scientific information and data for informing management and policy decisions. Reclamation strived to use the best available science throughout the EIS. These data and information sources are clearly cited within the body of the EIS and bibliographies provided at the end of the EIS and each accompanying appendix. Development of the preferred project and analysis of its environmental impacts utilized a wide range of relevant data, literature, and tools. Reclamation used the best available scientific information to produce analyses of the effects of the project, drawing on a number of scientific and engineering disciplines that include geology, hydrology, biology, ecology, chemistry, engineering, and climatology. The data, models, and literature are publicly available and the methodologies used to apply these tools and information are described in the analyses in Chapters 1 through 6 and the various appendices. The data, models, literature, and analyses have been subjected to review either as part of the customary practices of scientific publication or as part of legal and regulatory processes. The impact analyses produced for the project were themselves subject to review and comment by the general public, experts in relevant scientific disciplines, and expert staff from regulatory agencies having jurisdiction over one or more aspects of the project or its permitting (e.g., NMFS, USFWS, CDFW, DWR and the U.S. Army Corps of Engineers). The modeling conducted for the EIS is credible because it is based on reasonable assumptions and appropriate, widely accepted modeling tools. Additional discussion regarding the modeling used in the EIS is provided in Master Response 6.

NEPA Requirements Regarding Impact Determinations

Under NEPA, a purpose of an EIS is to inform decision makers and the public of the impacts resulting from implement the proposed action and alternatives. The focus of the EIS is to disclose the significant impacts of the proposed action and alternative with less attention given to impacts found to be minor or inconsequential.

Although no thresholds of significance are specified in NEPA, an EIS should identify the direct and indirect effects of an action and the significance of such an effect. The primary approach in determining impacts on a on a specific resources was to determine the intensity and context of an expected change. This approach was applied to most of the broader resource assessments, such as changes in aquatic or terrestrial resources.

Cumulative Analysis

Sufficiency of the Cumulative Analysis

NEPA requires the assessment of cumulative impacts as part of the environmental review process. NEPA also provides guidance regarding the 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). 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. Additional guidance is provided by the Bureau of Reclamation (Reclamation) NEPA handbook, which 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).

One of the purposes of the NEPA compliance process though, is to provide decision makers and the public with enough information to adequately consider the combined impacts of the project.

Reclamation conducted the cumulative effects analysis using the “list” approach, which allowed for a narrowing of the list of projects to only those which could result in a cumulative impact on a specific resource topic (i.e. water quality, air quality, aquatics, etc.). The general list of projects considered in the cumulative impact assessment is included in Final EIS Appendix Y *Cumulative Methodology*. The list of projects included in Final EIS Appendix was based on other past, present, and reasonably foreseeable water supply and water quality and/or ecosystem improvement projects within the alternatives action area(s) described in the Final EIS. The list also includes a brief description of each project listed. The list of projects was created by reviewing other project-level and program-level environmental compliance documents that share some of the characteristics of ROC LTO. The total number of projects included on the list exceeds 170. 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.

Once the list of project was considered for each resource, generally a topic-specific, “two-step” process of determining the potential cumulative impact was then applied. The cumulative analysis

first determined if the effects of an alternative, in combination with those of other past, present, and probable future projects, would be considered cumulatively substantial. If a conclusion was made in the affirmative, the analysis then determined if the contribution made by the proposed project or alternatives would be a considerable part of that combined effect. The EIS concluded that none of the impacts resulting from implementing the proposed project or alternatives would be considered cumulatively considerable.

Inclusion of California WaterFix

At the time the Notice of Intent was issued for ROC LTO, California WaterFix had been approved by the State of California and was a reasonably foreseeable project which was appropriate to include in the cumulative effects analysis.

Although DWR has stopped work on “California WaterFix,” a delta conveyance project remains reasonably foreseeable given California’s statements about the proposal. Governor Newsom’s April 29, 2019 Executive Order regarding how California intended to secure clean and dependable water supplies included direction to plan and modernize conveyance through the Bay-Delta with a new single tunnel project. As part of carrying out the direction provided in the Executive Order, CDWR Director Karla Nemeth indicated in early May 2019 that DWR intended to issue an NOP under CEQA on a revised delta conveyance project. Reclamation believes that these actions by the State of California provide justification for including a delta conveyance project in the cumulative impact assessment as a reasonable foreseeable action. If California determines that it will not proceed with a conveyance project, or that it will move forward with a smaller proposal for a conveyance project than contemplated in the California WaterFix proposal, the cumulative effects will be less than what is analyzed in this EIS.

Mitigation

Specific, feasible measures are proposed when necessary to avoid, reduce, minimize, or compensate for adverse environmental effects of the proposed project. Although NEPA does not impose a substantive obligation on federal agencies to adopt mitigation, analyzing proposed mitigation is consistent with NEPA’s intent that mitigation be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated.

Mitigation is an important mechanism Federal agencies can use to minimize the potential adverse environmental impacts associated with their actions. As described in the CEQ Regulations, agencies can use mitigation to reduce environmental impacts in several ways. Mitigation includes:

- Avoiding an impact by not taking a certain action or parts of an action;
- Minimizing an impact by limiting the degree or magnitude of the action and its implementation;
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating an impact over time, through preservation and maintenance operations during the life of the action; and
- Compensating for an impact by replacing or providing substitute resources or environments.

The Final EIS includes mitigation measures as an outcome of the analysis conducted for each of the resource areas evaluated. The mitigation measures applicable to the impacts identified are provided at the end of each resource area in the main body of the Final EIS. These measures are sometimes

unique to the resource being discussed but also include measures that have been proposed under other resource topics. It was the judgement of the resource specialists conducting the assessments that these measures would also help address those impacts. A detailed description of the mitigation measures are provided in Final EIS Appendix F Mitigation Measures.

The proposed mitigation is commensurate with the severity of the impacts identified in the EIS. In following CEQ guidance addressing the formulation of mitigation, Reclamation necessarily and appropriately relied upon the expertise and experience of their professional staff to assess mitigation needs and develop mitigation measures. Reclamation also drew upon the expertise outside the agency to help identify and develop the measures included in the Final EIS.

The process for identifying the mitigation measures identified in the EIS will be made by Reclamation as part of the process of developing and approving the Record of Decision (ROD). The ROD will clearly identify any environmental commitments which will be implemented by Reclamation. These measures could include performance expectations (i.e. start date, duration, etc.). In addition, mitigation commitments may be implemented by Reclamation or another consenting agency through conditions of approval, grant or permit conditions, or other mechanisms.

Master Response 6: Hydrologic Modeling and Surface Water Resources

Overview

This master response includes a description of models, modeling assumptions, and modeling limitations to address concerns in comments. The topics of discussion include, but are not limited to, the following:

- Modeling concerns about operation, use of specific models, commonly perceived “flaws,” level of detail, and appropriate use of model results.
- Modeling concerns about the inclusion of the most recent drought years and consecutive dry years in the modeling.

This master response includes for ease of reference a table of contents on the following page to help guide readers to specific subject areas. The table of contents is based on general recurring and common themes found in the comments that were received. It is provided to help guide readers in finding where the topics of their concern are addressed.

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Modeling

This section describes operational decisions, use of specific models, commonly perceived flaws, and use of model results to address provided comments.

Common Modeling Concerns about Operation in Extreme Conditions

Despite detailed model inputs and assumptions, the CalSim II results differ from real-time operations under stressed water supply conditions. Such model results occur because of the model's inability to make unique, real-time policy decisions under extreme circumstances, as the actual (human) operators must do. Therefore, results that indicate severely low storage, or inability to meet flow requirements or senior water rights should only be considered an indicator of stressed water supply conditions under that alternative, and should not necessarily be understood to reflect literally what would occur in the future under that alternative. These conditions, in real-time operations, would be avoided by making operational decisions on other requirements in prior months. In actual future operations, as has always been the case in the past, the project operators would work in real time to satisfy legal and contractual obligations given the current conditions and hydrologic constraints.

Use of Specific Models

CalSim II

Reclamation/California Department of Water Resources (DWR) CalSim II planning model was used to simulate the coordinated operation of the Central Valley Project (CVP) and State Water Project (SWP) over a range of hydrologic conditions. CalSim II is a generalized reservoir-river basin simulation model that allows for specification and achievement of user-specified allocation targets, or goals (Draper et al. 2004). CalSim II represents the best available planning model for CVP and SWP system operations and has been used in previous system-wide evaluations of CVP and SWP operations (Reclamation 2015).

Appendix W of Reclamation's 2008 Biological Assessment (BA) on the coordinated long-term operations (Reclamation 2008) included a comprehensive sensitivity and uncertainty analysis of CalSim II results relative to the uncertainty in the inputs. Appendix W provides a good summary of the key inputs that are critical to the largest changes in several operational outputs. Understanding the findings from this appendix may support better understanding of the alternatives.

HEC-5Q

Over the past 15 years, various temperature models were developed to simulate temperature conditions on the rivers affected by CVP and SWP operations (e.g., Sacramento River Water Quality Model [SRWQM], San Joaquin River HEC-5Q model) (Reclamation 2008). Recently, these models were compiled and updated into a single modeling package referred to here as the HEC-5Q model. Further updates were performed under the 2015 *Coordinated Long-Term Operation of the Central Valley Project and State Water Project Final Environmental Impact Statement* (EIS) modeling that included improved meteorological data and subsequent validation of the Sacramento and American River models, implementation of the Folsom Temperature Control Devices and low-level outlet, implementation of the Trinity auxiliary outlet, improved temperature targeting for Shasta and Folsom

Dams, as well as improved documentation and streamlining of the models and improved integration with the CalSim II model (Reclamation 2015).

Portions of the project area may already be modeled with high-resolution modeling software packages different than those used in this analysis. However, these models are not designed for the purposes of this EIS. Typically, such models are not developed to simulate across an 82-year period of varying hydrology, nor are these models developed in coordination with CalSim II assumptions. The HEC-5Q model is the best available model to simulate waterways of interest with CalSim II results as inputs.

DSM2

DSM2 is a one-dimensional hydrodynamic and water quality simulation model used to simulate hydrodynamics, water quality, and particle tracking in the Sacramento–San Joaquin Delta (DWR 2019). DSM2 represents the best available planning model for Delta tidal hydraulic and salinity modeling. It is appropriate for describing the existing conditions in the Delta, as well as performing simulations for the assessment of incremental environmental impacts caused by future facilities and operations (Reclamation 2015).

Commonly Perceived Flaws

Monthly Time Step

Although CalSim II operates on a monthly time step, it is the best available planning model for CVP and SWP system operations. Please see Section 1.1.2.1, *CalSim II*, for more details.

Model Time Period

CalSim II is limited to water years 1922 through 2003. Although this period does not include more recent years, this historical period includes a wide range of hydrology (several droughts and floods). These hydrologic conditions are then projected to future conditions. CalSim II is set up to run through these hydrologic conditions with a constant level of development and set of regulations. Therefore, CalSim II results from different alternatives can be compared in a consistent manner.

Level of Detail

Some aspects of the CVP-SWP system are not modeled in this study. These are described in impact assessment discussions as well as the modeling appendix (Appendix F, *Modeling*). Please see Master Response 1, *Responses to General Comments*, for a discussion regarding the appropriate use of program- and project-level analysis in the EIS. Please see Master Response 5, *Adequacy of Analysis and Mitigation*, for additional discussion regarding the adequacy of the analysis contained in the EIS.

Appropriate Use of Model Results

Because CalSim II optimizes operations over an 82-year period, model results are a function of hydrology and all previous operational decisions. Therefore, examining and comparing model results at a given month or year is inappropriate.

Model results are presented in ways that prevent analysis of a single point in time. Exceedance plots display model output variability across the entire simulation period. Furthermore, water year type

averages of model results are presented as several operations and regulations vary with water year type. Observation of model results reacting to changes in water year type-based operations and regulations are readily visible through these figures.

Sub-Monthly Results

Although there are certain components in the model that are downscaled to a daily time step (simulated or approximated hydrology), such as an air-temperature-based trigger for a fisheries action, the results of those daily conditions are always averaged to a monthly time step. For 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. Operational decisions based on those components are again made on a monthly basis.

All model results are based on CalSim II output. Because CalSim II operates on a monthly time step, analysis of results from any model at a sub-monthly level is inappropriate. CalSim II is the best available tool for assessing changes to the project area. Although several physical, biological, and human resource functions occur at a sub-monthly time step, model results must be compared and assessed at a monthly interval. This model limitation, among others, is addressed through comparative analysis and quantitative discussion of model results.

Modeling as a Comparative Tool (Not Prediction)

CalSim II is a monthly model developed for planning level analyses. The model is run for an 82-year historical hydrologic period, at a projected level of hydrology and demands, and under an assumed framework of regulations. Therefore the 82-year simulation does not provide information about historical conditions, but it does provide information about variability of conditions that would occur at the assumed level of hydrology and demand with the assumed operations, under the same historical hydrologic sequence. Because it is not a physically-based model, CalSim II is not calibrated and cannot be used in a predictive manner. CalSim II is intended to be used in a comparative manner, which is appropriate for the EIS analysis.

Drawing Conclusions from Model Results

The model results are not used to project specific physical, biological, or human resource values. By using the models in a comparative manner, the results of the analysis are less affected by the limitations and uncertainties. The quantitative model results are used in conjunction with the qualitative analyses presented in this EIS to consider the relative changes in the project area.

Drought Analysis

Please see sections below regarding modeling assumptions and output analysis of droughts.

Inclusion of Most Recent Drought Years

CalSim II is limited to water years 1922 through 2003, as noted in Section 1.1.3.2, *Model Time Period*. Although this does not include the most recent drought years, hydrologic conditions over the 82-year historical period include several drought periods (1929-34, 1976-77 and 1987-92). Operations in drought years may be observed through critical water year averages, or at the extreme

of an exceedance plot. Before drawing conclusions, please review Section 1.1.1, *Common Modeling Concerns about Operation in Extreme Conditions*. Exceedance probability graphs are provided in Appendix F, *Modeling*.

Analysis of Consecutive Dry Years

Individual dry periods are too small a sample from which model results may be extracted. Nonetheless, dry periods between the 82-year historical period used in CalSim II (1929-34, 1976-77 and 1987-92) and therefore accounts for individual dry periods. To assess potential model results in a dry period, review exceedance plots provided in Appendix F, *Modeling*. Please review Section 1.1.1 before assessing model results in extreme conditions.

References Cited

- California Department of Water Resources, DSM2: Delta Simulation Model 2 Web Page Last updated September 2019. Available: <https://water.ca.gov/Library/Modeling-and-Analysis/Bay-Delta-Region-models-and-tools/Delta-Simulation-Model-II>. Accessed: October 2019.
- Draper, A. J., A. Munévar, S. K. Arora, E. Reyes, N. L. Parker, F. I. Chung, and L. E. Peterson. 2004. CalSim: Generalized Model for Reservoir System Analysis. American Society of Civil Engineers, *Journal of Water Resources Planning and Management*, Vol. 130, No. 6.
- U. S. Department of the Interior, Bureau of Reclamation (Reclamation). 2008. "Appendix W, Sensitivity and Uncertainty Analysis." In *Biological Assessment on the Continued Long-term Operations of the Central Valley Project and State Water Project*. August 2008.
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Master Response 7: Aquatic Resources

Overview

This Master Response includes a description of commenters' topics that expressed concern regarding aquatic resources and response to the comments by topic. The topics of discussion include, but are not limited to, the following:

- Aquatic analysis (level of detail requested by commenters, additional modeling and analysis, and use of quantitative versus qualitative analysis).
- Application of modeling results for evaluation of potential impacts on aquatic resources (including modeling of Delta outflow, summer and fall habitat modeling, and water temperature modeling).
- Evaluation of project-level and program-level impacts (including potential changes to Longfin Smelt abundance and South Delta entrainment risk, considerations for Sacramento River actions [seasonal operations, spring pulse flows, and cold water pool management], and water quality effects from the Stanislaus River compliance point relocation).

This Master Response includes, for ease of reference, a table of contents on the following page to help guide readers to specific subject areas. The table of contents is based on general recurring and common themes found in the comments that were received. It is provided to help guide readers in finding where the topics of their concern are addressed.

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Response to General Comments Regarding Negative Project Impacts on Salmonids and Other Fishes

Some commenters communicated general concern for negative effects to aquatic resources, including salmonids and sensitive fish species of the San Francisco Bay/Sacramento–San Joaquin Delta (Bay-Delta), potentially resulting from the Project described in the action alternatives. Potential impacts described by such comments were often general in nature and include, for example, concern about further declines in populations of salmonids and other native fishes, or further reductions in flow that native fishes depend on. The evaluation of potential impacts on salmonids and other fishes that could result from the Project is described in the environmental impact statement (EIS) in Chapter 5, *Environmental Consequences*, Section 5.9, *Aquatic Resources*, and in Appendix O, *Aquatic Resources Technical Appendix*, Section O.3, *Evaluation of Alternatives*. Please also see Master Response 1, *Responses to General Comments*, for responses to general comments on the EIS or comments that do not raise specific significant environmental issues.

Some comments that were general in nature regarding aquatic resources communicated that the actions described in the proposed project would not adequately protect sensitive fishery and aquatic species because they do not align with reasonably prudent alternatives (RPAs) of the previous NMFS and USFWS Biological Opinions (BOs) (NMFS 2009; USFWS 2008) and/or do not protect beneficial uses. Other commenters thought reduced releases under the action alternatives would further degrade conditions for listed and other sensitive native species that depend on river flows and Delta outflows, and cited information provided in the State Water Resources Control Board's (SWRCB's) Scientific Basis Report for potential Sacramento/Delta updates to the Bay-Delta Plan to support Lower San Joaquin River flow updates to the Bay-Delta Plan (SWRCB 2012), and suggested that the EIS should evaluate whether such actions described in the action alternatives provide for the reasonable protection of fish and wildlife under state law.

As described in the EIS Chapter 3, *Alternatives*, existing water right requirements such as SWRCB Water Right Decision 1641 (D-1641) and Water Right Order 90-5 contain requirements for fish and wildlife beneficial uses, and these are incorporated into the operations described in Alternatives 1 through 3. Starting in 1993, with the first Winter-Run Chinook Salmon Biological Opinion, Reclamation has had additional requirements for meeting complying with the federal Endangered Species Act (ESA) in addition to water right requirements for fish and wildlife. Please refer to Master Response 1, *Responses to General Comments*, regarding the NEPA process, water rights, and the relationship to other ongoing plans, programs, or policies, including the SWRCB Bay-Delta Plan Amendments. See Master Response 2, *Related Regulatory Processes*, for discussion of the federal ESA permitting process and previous Biological Opinions.

Aquatic Analysis

This Master Response provides response to comments regarding aquatic analyses. In summary, the comments concerned the level of detail provided, requested additional modeling and analysis, expressed concerns over the use of quantitative versus qualitative analysis, and questioned the application of modeling results and evaluation of project-level and program-level effects.

Analysis of potential impacts and benefits to aquatic resources are described in the EIS Chapter 5, *Environmental Consequences*, and in Appendix O, *Aquatic Resources Technical Appendix*. Modeling used in the impact evaluations is described in Section 5.1.5, *Modeling Methodology*, and in Section O.3.1, *Methods and Tools*. Additional details on modeling conducted to support analysis of CVP and SWP long-term operations, including model assumptions, limitation, specifications, and results, are provided in Appendix F, *Modeling*. Detailed evaluation of impacts is described in Section O.3, *Evaluation of Alternatives*, and environmental consequences of the Project, including project-level and program-level effects, are described in Section 5.9, *Aquatic Resources*.

Reclamation received comments communicating concern that aquatic analyses conducted in the EIS were insufficient. Reclamation wrote the EIS to evaluate the action alternatives as objectively and completely as possible. In preparing the EIS, Reclamation has followed the appropriate legal process and is complying with NEPA regulations. Please refer to Master Response 5, *Adequacy of Analysis and Mitigation*, regarding impact conclusions and the sufficiency of analyses included in the EIS, including the use of best available science and requests by commenters for additional detail. Please refer to Master Response 4, *Alternatives Formulation*, which addresses level of detail provided in the EIS for a description of Alternative 1 components and operations. Please also refer to Master Response 1, *Responses to General Comments*, regarding the level of analysis (program-level versus project-level) and level of detail included in the description of the action alternatives.

Some commenters requested additional detail describing the action alternatives' components, including details for description of actions, definitions of thresholds and assessments, and additional mitigation measures. Multiple comments suggested Reclamation conduct additional modeling and analysis beyond what was completed in the EIS. For example, it was suggested that Reclamation conduct sensitivity analyses to more fully evaluate the impacts of project components or operational adjustments. Reclamation acknowledges commenter's requests for additional detail, modeling, and analysis; however, as described below, the analysis provided in the EIS sufficiently discloses the potential effects of the proposed project to decision makers, as required by NEPA.

As described in Master Response 5, *Adequacy of Analysis and Mitigation*, the data, models, and literature used in the EIS are publicly available and the methodologies used to apply these tools and information are described in the analyses in Chapters 1 through 6 and the appendices of the EIS. The data, models, literature, and analyses have been subjected to review either as part of the customary practices of scientific publication or as part of legal and regulatory processes. The impact analyses produced for the proposed project were themselves subject to review and comment by the general public (e.g., NEPA scoping process), experts in relevant scientific disciplines, and expert staff from regulatory agencies having jurisdiction over one or more aspects of the proposed project or its permitting (e.g., NMFS, USFWS, CDFW, and the U.S. Army Corps of Engineers). The modeling conducted for the EIS is credible because it is based on reasonable assumptions and appropriate, widely accepted modeling tools. Discussion of Water temperature models used in the EIS is provided below in the section titled *Justification for Water Temperature Models Used in the Analyses of the EIS*. Additional discussion regarding the modeling used in the EIS is provided in Master Response 6, *Hydrologic Modeling and Surface Water Resources*. Please refer to Master Response 5 and Master Response 6 for further response to comments requesting additional modeling and analysis.

Some commenters expressed concern over the use of qualitative analysis in the EIS and suggested that quantitative analysis be used instead. As described in the EIS Chapter 5, Section 5.1.2, *Environmental Consequences*, "The impact analysis includes quantitative and qualitative analyses depending upon availability of acceptable numerical analytical tools and available information." A primarily qualitative fisheries analysis was performed for some evaluation of fisheries impacts (e.g.,

potential impacts on Fall-Run Chinook Salmon as a result of increased entrainment risk associated with increased exports), and quantitative water supply, groundwater, and economic analyses were performed. Given the monthly and comparative nature of the operations modeling performed, the myriad other factors that are not quantifiable that affect fisheries populations (such as invasive species and contaminants), and the lack of quantitative models with mechanisms that are sensitive to various elements of the action alternatives (such as predator hot spot removal), a qualitative analysis is an appropriate analytical method for fisheries analyses in this document. Therefore, the use of qualitative analysis in the EIS is sufficient in disclosing the potential effects of the proposed project to decision makers, as required by NEPA.

Application of Modeling Results and Evaluation of Project-Level/Program-Level Effects

Some comments regarding the EIS's aquatic analysis questioned the application of modeling results and sufficiency of evaluation of project-level and program-level effects. Topics common to multiple comments included: Delta outflow, summer and fall habitat modeling and summer-fall habitat operations, potential changes to Longfin Smelt abundance and South Delta entrainment risk; water temperature modeling and comparison of water temperature modeling results to criteria; Sacramento River seasonal operations, spring pulse flows, and cold water pool management; and Stanislaus River compliance point relocation to Orange Blossom Bridge. Responses to these comment topics are provided the sections below.

Delta Outflow

Several comments were received to the effect that Delta outflow is an important aspect contributing to the status of aquatic resources in the Bay-Delta and that the proposed project has the potential to worsen this status; the commenters suggest that the proposed project has not been adequately analyzed in the EIS. The analyses included in the EIS assessed potential effects on aquatic resources from changes in Delta outflow, key among which are Delta Smelt summer-fall habitat operations and Longfin Smelt abundance, which are discussed in the following sections.

Summer and Fall Habitat Modeling and Delta Smelt Summer-Fall Habitat Operations

Several comments were received related to the issue of Delta Smelt summer-fall habitat. Some commenters suggested that analysis based on the area of the low salinity zone reflects older science that should be updated based on newer studies suggesting other factors to be of greater importance, whereas others in effect suggested that the proposed project could have adverse effects because it does not include the fall X2 from the USFWS (2008) BO. The EIS based its analyses on the main existing conceptual model for Delta Smelt by IEP MAST (2015); it is acknowledged that advances in science are being made and the 2019 proposed Delta Smelt Summer-Fall Habitat Action would be adaptively managed over time to reflect such advances. With respect to potential negative effects, as identified in the Draft EIS with respect to the size and location of the low salinity zone, it should be noted that the proposed project (Alternative 1) has been refined so that initial operations would have September–October X2 of 80 kilometers (km) following wet and above-normal years, in addition to the already proposed food availability related actions in the north Delta, Sacramento River Deep Water Ship Channel, and Suisun Marsh, which as described in the EIS has the potential for positive effects on Delta Smelt. The State Water Project's (SWP's) California Endangered Species Act (CESA) incidental take permit (ITP) application and associated environmental impact report (EIR) will also need to address how inclusion of Suisun Marsh Salinity Control Gates operation and X2 of

80 km in wet and above-normal years, as included in Alternative 1, would affect Delta Smelt and, in order to assess whether there is need for additional mitigation, would need to fully address effects of Alternative 1.

Potential Changes to Longfin Smelt Abundance and South Delta Entrainment Risk

Several comments were received related to the topic of potential changes in abundance of Longfin Smelt as a result of differences in Delta outflow under the action alternatives. Some commenters suggested that best available science (including quantitative tools) be used in the analysis, that effects from operations were uncertain, and that no mitigation or minimization is proposed. The EIS (Appendix O, *Aquatic Resources Technical Appendix*) suggests that less Delta outflow in April–May under the Alternative 1 has the potential to negatively affect Longfin Smelt through reductions in population abundance relative to the No Action Alternative. The EIS acknowledges best available science in noting that the magnitude of the difference may be limited because of density-dependent effects (Nobriga and Rosenfield 2016), that there is appreciable (several orders of magnitude) variability in the estimates generated by the Nobriga and Rosenfield (2016) model, and other analyses have found stronger correlations with general hydrological conditions rather than Delta outflow specifically (Maunder et al. 2015).

With respect to use of quantitative modeling, on the basis of previous analyses undertaken with the Nobriga and Rosenfield (2016) model, such as the California WaterFix changed point of diversion hearings before the SWRCB (Greenwood and Phillis 2018), it is expected that the predicted differences between operational scenarios would be very small relative to the variability in estimates resulting from parameter uncertainty; operations-related effects typically are small in relation to differences based on hydrological conditions (i.e., different water year types).

Water Temperature

Comparison of Water Temperature Model Results to Existing Water Temperature Criteria and Objectives

A concern regarding water temperature modeling that is raised in comments (e.g., Comment 24 in Letter 15) is the use of the U.S. Environmental Protection Agency (USEPA) maximum 7-day average of the daily maximum water temperatures recommendations (7DADM) (USEPA 2003) as thresholds for evaluating potential water temperature effects of the action alternatives. Similarly, other commenters raised concerns that the EIS did not evaluate potential for impacts using water temperature thresholds for salmonids as described by the North Coast Regional Water Quality Control Board (2018) for the Trinity River.

The maximum 7DADM recommendations, which are specific for each major life stage of several cold water salmonids, were originally developed by USEPA to assist the Pacific northwest states and tribes in developing water quality standards consistent with requirements of the Clean Water Act (CWA) and the federal ESA. The 7DADM was recommended “because it describes the maximum temperatures in a stream” (which are assumed to be most limiting to the fish), “but is not overly influenced by the maximum temperature of a single day” (USEPA 2003). Typically, the maximum 7DADM refers to the maximum for the season and portion of stream in which a life stage occurs (e.g., the warmest 7-day sequence of spawning season at the most downstream location of redds), but it may also refer to the maximum over a number of years (USEPA 2003).

Since release of the USEPA (2003) document, the maximum 7DADM criteria have been widely adopted for other purposes, including, as in this EIS, to evaluate the effects of potential changes in water temperatures on salmonids. Lacking other species- or location-specific criteria, the USEPA 7DADM criteria are generally considered the best standards for evaluating water temperature suitability for Pacific Salmon (USEPA 2003), although their aptness for evaluating temperature effects on salmonids in areas other than the Pacific Northwest has been questioned (Gore et al. 2018).

For planning and permitting documents, use of the maximum 7DADM criteria is often complicated by the fact that predictive temperature models such as those used in impact assessments rarely produce temperature estimates sufficiently fine-grained to precisely estimate daily maximum temperatures. The HEC-5Q model that was used for most of the temperature modeling in this EIS produces water temperature estimates on a monthly time step. A monthly time step is imposed on the HEC-5Q model by the fact that the flow data that the model uses for water temperature computations come from the CalSim II operations model, and CalSim II has a monthly time step. For this EIS, HEC-5Q produced an estimate of average temperature for each month of each of the 82 years included in the CalSim II hydrologic record. The EIS reports the results of the HEC-5Q modeling in several ways: exceedance plots of all 82 monthly temperatures (e.g., Figure 5.9-10 in EIS Section 5.1.1, *Project-Level Effects*), the 82-year averages of the monthly temperatures (e.g. Table 5.9-1 and Figure 5.9-3 in EIS Section 5.1.1, *Project-Level Effects*), and the 82-year maximums of the monthly temperatures (e.g., Figure 5.9-4 in EIS Section 5.1.1, *Project-Level Effects*).

In using the maximum 7DADM temperature recommendations to evaluate the results of the HEC-5Q modeling in this EIS, interpreting differences between the recommendations and the results is complicated by their different time scales, which results in uncertainty. As indicated above, the maximum 7DADM may refer to the maximum over a number of years. However, recognizing the occurrence under natural conditions of occasional years with water temperatures exceeding the suitable temperature range, USEPA (2003) proposed determining attainment of the water temperature standard "...based on the 90th percentile of the yearly maximum 7DADM values calculated from a yearly set of values of 10 years or more. Thus, generally speaking, the numeric criteria would apply 9 out of 10 years, or all but the hottest year." Regardless of whether the maximum or the 90th percentile 7DADM is more appropriate, the estimates obtained from the HEC-5Q modeling that come closest to approximating the maximum 7DADM criteria are the maximums of the monthly temperatures for the months in which the life stage occurs. This conclusion is expressed in the EIS, within Appendix O, Section O.3.2.1.3, *Trinity River Downstream of Lewiston Dam*, as follows:

"The USEPA (2003) recommends use of the maximum 7-day average of the daily maxima (7DADM) as the metric for comparison of water temperature conditions against protective criteria for salmonid uses. While the HEC-5Q output used in this assessment is based on a monthly time step and does not provide daily water temperature predictions, maximum monthly water temperatures from HEC-5Q provide the closest available approximation to the values recommended by USEPA (2003) and are therefore used herein to provide a coarse-level comparative analysis for each alternative."

Comments were received related to water temperatures for specific salmonid life stages, such as requesting water temperature objectives for out-migrating juveniles in the lower Trinity River. Although the Trinity River Record of Decision (Trinity River ROD) does not specify Trinity River water temperature objectives (USDOI 2000), and the Water Quality Control Plan for the North Coast Region only includes temperature targets (measured by Daily Average Not to Exceed) for the lower Trinity River (NCRWQCB 2018), which were evaluated in this EIS. The Trinity River ROD also states the goal of providing suitable temperature regimes for anadromous salmonids (USDOI 2000).

Additional temperature targets exist for the downstream end of the Trinity River (River Mile [RM] 0.0); USFWS et al. (1999) reports salmonid water temperature objectives for the Trinity River by water year type, which are consistent with those reported in Appendix O, Table O.3-1 for the upper Trinity River (NCWQCB 2018).

For Extremely Wet, Wet, and Normal water years, implementation of the Trinity River ROD is expected to provide optimal water temperatures for anadromous salmonid outmigration (<55.4°F prior to May 22 for Steelhead smolts, <59°F prior to June 4 for Coho Salmon smolts, and 62.6°F prior to July 9 for Chinook Salmon smolts) at Weitchpec (RM 0.0). For Dry and Critically Dry water years, implementation of the Trinity ROD is expected to facilitate early outmigration by allowing water temperature to warm and provide at least marginal optimal water temperatures for salmonid outmigration (<59°F prior to May 22 for steelhead smolts, <62.6°F prior to June 4 for coho salmon smolts, and 68°F prior to July 9 for Chinook salmon smolts) at Weitchpec. An additional evaluation has been included in Section O.3, *Evaluation of Alternatives*, of the EIS addressing those targets.

Justification for Water Temperature Models Used in the Analyses of the EIS

As described in Master Response 6, *Hydrologic Modeling and Surface Water Resources*, various models had previously been developed to simulate conditions in waters affected by the project. Portions of the project area may already be modeled with high-resolution modeling software packages different than those used in this analysis. However, these models are not designed for the purposes of this EIS. Typically, such models are not developed to simulate across an 82-year period of varying hydrology, nor are these models developed in coordination with CalSim II assumptions. For these reasons, Reclamation relied on the HEC-5Q model as the best available model to simulate waterways of interest using CalSim II results as inputs.

Some previously developed models (e.g., Sacramento River Water Quality Model [SRWQM], San Joaquin River HEC-5Q model) were compiled and updated into a single modeling package for use in the current assessment. Updates made during the *2015 Coordinated Long-Term Operation of the Central Valley Project and State Water Project Final Environmental Impact Statement* modeling included improved meteorological data and subsequent validation of the Sacramento River and American River models, implementation of the Folsom Temperature Control Devices and low-level outlet, implementation of the Trinity auxiliary outlet, improved temperature targeting for Shasta and Folsom Dams, as well as improved documentation and streamlining of the models and improved integration with the CalSim II model (Reclamation 2015).

Sacramento River Seasonal Operations, Spring Pulse Flows, and Cold Water Pool Management

Several comments (e.g., Comments 3 through 6 in Letter 5) raised concerns regarding potential impacts arising from tradeoffs inherent in providing Shasta Reservoir releases at different times of the year. Other comment concerns (e.g., Comment 4 of Letter 5) included the proposed spring pulse flow component (EIS, Section 3.4.1.2, *Spring Pulse Flow*) to release storage in wetter years, when cold water pool storage is plentiful, to enhance spring pulse flows for emigrating juvenile Spring-Run Chinook Salmon. The commenter suggests that a pulse flow action might provide the most benefit if provided in drier years. This may be true, but it ignores the fact that storage in drier years is generally limited and that releasing storage in the spring of drier years is likely to reduce Reclamation's ability to maintain the cold water pool resources needed in the following summer and fall to protect incubating eggs and alevins of Winter-Run and Spring-Run Chinook Salmon. Thus, spring pulse

flows in wetter years are included in Alternative 1 and spring pulse flows in drier years are not included.

Some comments (e.g., Comments 3, 5 and 6 of Letter 5) concerned the tradeoff between providing sufficient flow in the upper Sacramento River during late fall and winter to avoid potential impacts on salmon from reduced flow (e.g., increased water temperature, reduced dissolved oxygen, reduced spawning and rearing habitat, redd dewatering, juvenile stranding, inadequate juvenile emigration flow) versus reducing fall and winter flow releases to begin rebuilding Shasta Reservoir storage and thereby enhancing the cold water pool resources that may be needed to avoid impacts in the following summer and fall from elevated water temperatures on incubating eggs and alevins of Winter-Run and Spring-Run Chinook Salmon. Comments 3, 5 and 6 focus on the potential impacts of reducing flow in the fall and winter rather than the impacts of insufficient cold water pool resources in the summer and fall. The reductions in storage releases cannot be made too early in the fall because there are still substantial instream diversion demands on the mainstem of the Sacramento River between Keswick Dam and Wilkins Slough, and, depending on conditions, SWRCB Delta requirements may require upstream reservoir releases.

Reclamation recognizes the importance of both the potential immediate impacts and the potential future impacts on salmon related to the levels of flow released in the fall and winter. Every fall and winter in which Shasta storage is limited, Reclamation, in consultation with NMFS and other stakeholders, must weigh the relative benefit of maintaining high Keswick releases to minimize impacts on the current year's salmon eggs, fry, and juveniles against the potential impact on the next year's salmon eggs and fry from an insufficient supply of cold water in the reservoir. Reclamation has, for years, been making this annual balancing of known current fall/winter conditions against projected future spring/summer conditions. The proposed project (Alternative 1) seeks to provide Reclamation with better tools and procedures for gauging the balance.

Additional commenters suggested evaluating use of spring pulse flows in late spring and summer while still protecting cold water resources; the same balancing described above applies to use of storage for later pulse flows versus preserving cold water pool storage for subsequent summer and fall release for the avoidance of impacts on incubation.

Further discussion of the tradeoff between increased flow releases and increased storage is provided in the EIS, Section 3.4.1.4, *Fall and Winter Refill and Redd Maintenance*, and in Appendix O, Section O.3.3.2, *Sacramento River*, under the heading *Potential changes to aquatic resources in the Sacramento River from fall and winter refill and redd maintenance*.

Stanislaus River Compliance Point Relocation to Orange Blossom Bridge

Multiple comment letters addressed the Stanislaus River compliance point relocation to Orange Blossom Bridge. Reclamation appreciates that moving the compliance point for water quality and specifically dissolved oxygen from Ripon to Orange Blossom Bridge may result in a small shift in conditions. Water quality monitoring has shown that the dissolved oxygen is approximately 1 to 2 milligrams per liter (mg/L) higher at Orange Blossom Bridge than at Ripon, which may result in a downstream dissolved oxygen range of between 5 to 6 mg/L, assuming 7 mg/L at Orange Blossom Bridge. Reclamation sees the revision to the compliance point as a more representative location for supporting and maintaining key biological activity. The location also does not create unnecessarily poor conditions and is generally protective of key biological resources.

The specific mechanism for potential impact from moving to the proposed compliance point varies by species, but the overall potential for impact remains low. Steelhead are likely to be absent from the downstream reaches below Orange Blossom Bridge during summer periods when dissolved oxygen concentration would be at its lowest (Kennedy and Cannon 2002; Kennedy and Cannon 2005; Kennedy 2008). A small number of outmigrant steelhead may be exposed temporarily to lower dissolved oxygen concentration, but the energetic requirement to move downstream briefly through these stressful areas that likely have microrefugia of suitable temperature and dissolved oxygen (e.g., margins, undercut banks, etc.) would likely result in negligible differences in overall fitness.

Adult Spring-Run Chinook Salmon, when infrequently present in the Stanislaus River in relatively smaller numbers, arrive during spring high-flow conditions and migrate high into the watershed to hold over the summer. Although rare, returning adult Chinook Salmon may be exposed temporarily to dissolved oxygen concentrations between 5 to 7 mg/L during their upstream migration. Temporary exposure to dissolved oxygen concentrations between 5 and 7 mg/L may result in mild stress but is not likely lead to any impact on reproductive health; however, less than 5 mg/L can pose more notable health issues (Bjornn and Reiser 1991). Most common water quality issues (e.g., warmer water or suboptimal dissolved oxygen concentration) begin after early summer lower in the watershed, where Spring-Run Chinook Salmon would not likely be found. Any holding Spring-Run Chinook Salmon would likely not occur downstream of Orange Blossom Bridge and would likely avoid any condition that may be stressful by moving upstream.

In addition to the justification provided here, Reclamation will engage with the SWRCB regarding regulatory approval for this proposed shift in the compliance location.

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