Long-term Operation of the California State Water Project

Addendum to the Final Impact Report

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Chapter 1
Introduction and Purpose

1.1 Introduction

The California Department of Water Resources (DWR, permittee) is submitting a Minor Amendment Request to the California Department of Fish and Wildlife (CDFW) for its incidental take permit (ITP) for Long-Term Operation of the California State Water Project (SWP) (CDFW 2020, Permit No. 2081-2019-066-00). The ITP provides incidental take coverage for the effects of State Water Project (SWP) operations on four fish species listed under the California Endangered Species Act (CESA), including Longfin Smelt (*Spirinchus thaleichthys*), Delta Smelt (*Hypomeus transpacificus*), winter-run Chinook Salmon (*Oncorhynchus tshawytscha*), and spring-run Chinook Salmon (*O. tshawytscha*) in: (1) the Sacramento River from its confluence with the Feather River downstream to the legal Sacramento-San Joaquin Delta (Delta) boundary at the I Street Bridge in the City of Sacramento; (2) the Delta (i.e., upstream to Vernalis and downstream to Chipps Island); and (3) Suisun Marsh and Bay (see **Figure 1**). DWR requests to modify Condition 8.6.3, *Mid- and Late-season Natural Winter-run Chinook Salmon Daily Loss Threshold* of the ITP.

Condition 8.6.3, *Mid- and Late-season Natural Winter-run Chinook Salmon Daily Loss Threshold*, requires DWR to minimize entrainment, salvage, and take of natural winter-run Chinook Salmon during the peak and end of their migration through the Delta. To minimize entrainment, salvage, and take of natural winter-run Chinook Salmon DWR is required to restrict south Delta exports for five days to achieve a five-day average of Old and Middle River (OMR) flow that are no more negative than -3,500 cfs when daily loss of natural older juveniles at the SWP and CVP salvage facilities exceeds specific thresholds identified for the months of January through May in the 2020 LTO ITP. Daily thresholds are different for each month and are based on a proportion of the January winter-run Chinook Salmon juvenile production estimate (JPE). These thresholds apply to natural-origin older juvenile Chinook Salmon juveniles identified based on the Delta Model length-at-date criteria.

DWR proposes to amend this condition by removing the requirement that older juvenile Chinook Salmon juveniles be identified using the length-at-date criteria. In the place of this requirement, DWR proposes identifying natural winter-run Chinook Salmon using real-time rapid genetic testing techniques and traditional laboratory-based genetic testing techniques. DWR proposes to amend this condition for January through May 2023.

All other aspects of this condition would remain and no changes to SWP facilities or other operations are proposed.

DWR has prepared this Addendum for the proposed change to ITP Condition 8.6.3 to comply with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), augmenting the 2020 Final Environmental Impact Report for Long-Term Operation of the California State Water Project (2020 FEIR) (DWR 2020, State Clearinghouse No. 2019049121). As described in this Addendum, the proposed revisions to the ITP do not require revisions to the conclusions or findings presented in the FEIR because no new or substantially more intense or severe significant environmental impacts or potentially significant environmental impacts would occur.

1.2 Background

The SWP facilities in the Delta provide for delivery of water to areas within and immediately adjacent to the Delta, and to regions south of the Delta consistent with applicable laws, contractual obligations, and agreements. DWR stores, diverts, and conveys water in accordance with DWR's existing water rights to deliver water pursuant to water contracts and agreements up to full contract quantities. The main SWP Delta features are Suisun Marsh and Bay facilities, the Harvey O. Banks Pumping Plant (Banks Pumping Plant), the Clifton Court Forebay (CCF), the Skinner Fish Facility, and the Barker Slough Pumping Plant (BSPP). The SWP also includes the ongoing operation of existing facilities in coordination with the CVP. The locations of the various facilities of the SWP in the Delta are shown in Figure 1.

CDFW approved an ITP on March 31, 2020, for the potential take of four CESA-listed fish species associated with the long-term operation of the SWP facilities in the Delta. DWR's Notice of Determination for the FEIR prepared to support the ITP was filed with the State Clearinghouse on March 30, 2020. The FEIR evaluated six alternatives, including the No Project Alternative. DWR selected Refined Alternative 2b as the environmentally preferred alternative that would be implemented as the long-term operation of the SWP. Refined Alternative 2b includes a suite of operations-related elements to minimize impacts on aquatic species and additional actions to benefit CESA-listed fish species in the Delta.

As explained in the FEIR, seasonal timing of exports differs from historical operations under Refined Alternative 2b, but the total volume of exports would generally be expected to remain the same. Additionally, Refined Alternative 2b includes a collaborative real-time risk assessment approach to OMR flow management that provides CDFW with greater authority to curtail exports to minimize entrainment-related effects on CESA-listed fish species and includes a behavioral modification barrier at Georgiana Slough to minimize emigrating juvenile Chinook Salmon entrance into the Central Delta. Refined Alternative 2b also commits DWR to implementing its proportional share of OMR restrictions when such restrictions are recommended by the Water Operations Management Team (WOMT) or required by CDFW. Refined Alternative 2b also includes adaptive management actions such as convening an Adaptive Management Team (AMT) that will develop and implement an Adaptive Management Program (AMP).

CDFW and DWR will oversee efforts to monitor and evaluate SWP operations and related activities, use structured decision-making to assess the relative costs and benefits of those operations and activities, and will identify changes to those operations and activities, if needed to maintain species protections. The major environmental benefits associated with implementing Refined Alternative 2b, include the shifting of spring maintenance flows to develop up to 150 Thousand Acre-Feet (TAF) of water for use in the Summer-Fall period of the current year or spring-fall of the following year (except if the following year is a "critical" water year), and providing an adaptively-managed 100-TAF block of water to supplement Delta outflow any time between June and October of "wet" and "above normal" water years or deferring a portion of the 100 TAF to the following year for deployment (except if the following year is a "critical" water year).The components of Refined Alternative 2b were included as Conditions of Approval in the ITP. DWR is committed to implementing the Conditions of Approval.

The requested minor amendment to ITP No. 2081-2019-066-00 to revise Condition 8.6.3 is in response to recent releases of approximately 36,000 late fall-run Chinook Salmon (O. tshawytscha) juveniles from the Coleman National Fish Hatchery (CNFH) without having adipose fins clipped

and/or coded wire tags (CWTs) implanted, which is standard practice for hatchery operations. This was a deviation from standard practice in which hatchery staff remove adipose fins from salmonids produced in the hatchery to allow for immediate visual confirmation that the fish are of hatchery origin. Similarly, hatchery produced salmonids are typically implanted with a CWT that can be identified using a scanner, which allows biologists to determine if they are of hatchery origin. Late fall-run Chinook Salmon released by the CNFH without appropriate markings and subsequently salvaged at DWR's John E. Skinner Delta Fish Protective Facility (Skinner Fish Facility) could be misidentified as a natural-origin winter-run Chinook Salmon using the length-at-date identification criteria included in the ITP condition. Therefore, DWR is requesting that salvaged Chinook Salmon be genetically tested to determine whether they are naturally produced winter-run Chinook Salmon, which would trigger OMR management described in the ITP condition.

All other provisions of the ITP would remain in effect, and all operations would continue to comply with applicable laws, contractual obligations, and agreements. All provisions in the ITP and operation of the SWP will continue to protect the four species covered under the ITP after the proposed revisions to the ITP are accepted by CDFW and the ITP is amended.

1.3 Purpose of the EIR Addendum

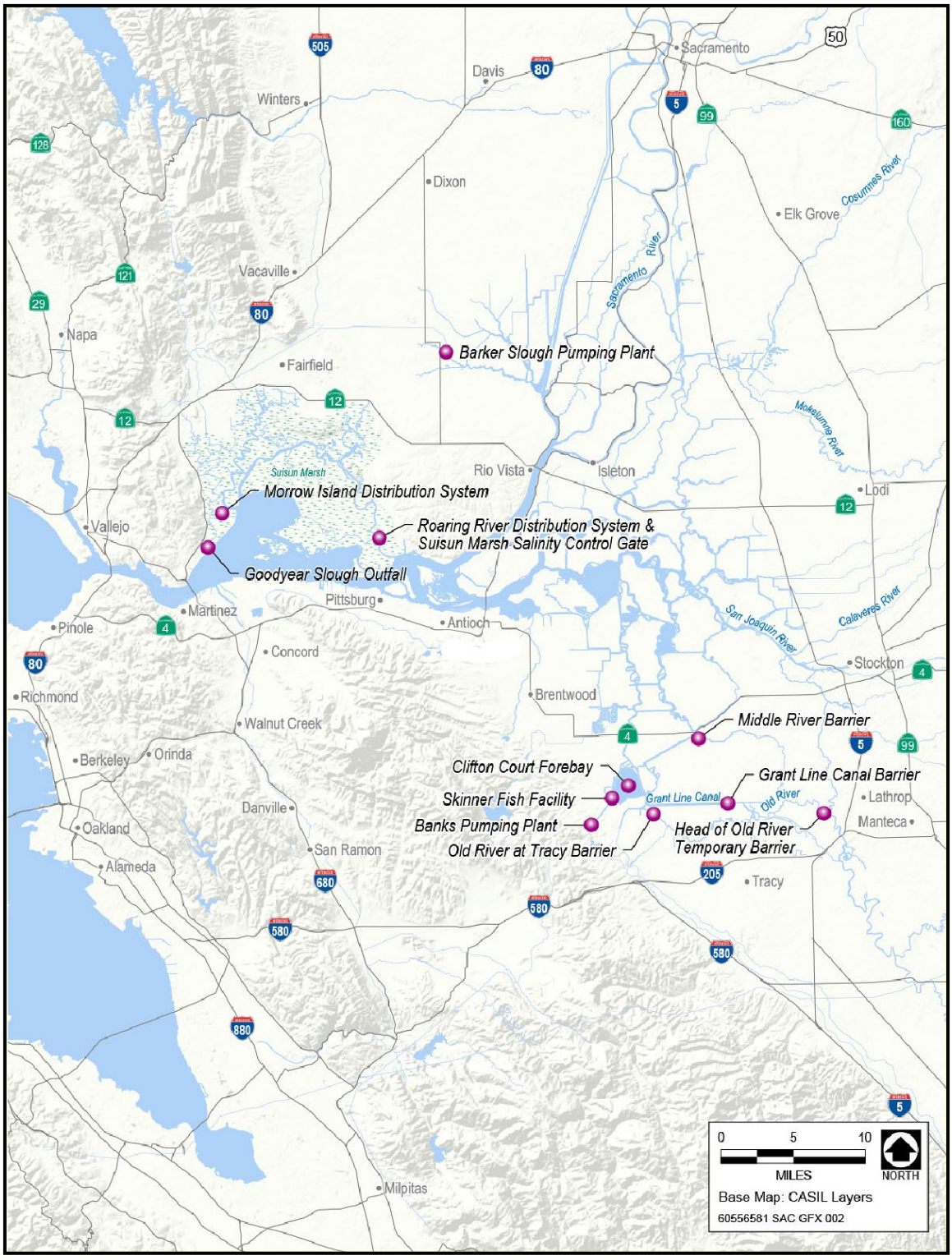
According to Section 15164(a) of the CEQA Guidelines, the lead agency or a responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 requiring preparation of a subsequent EIR have occurred. Section 15162 of the CEQA Guidelines lists the conditions that would require the preparation of a subsequent EIR rather than an addendum. These include the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time of the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
    a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
    b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
    c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the Project, but the project proponents decline to adopt the mitigation measure or alternative; or
    d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the

environment, but the project proponents decline to adopt the mitigation measure or alternative.

This Addendum concludes that the proposed change to Condition 8.6.3 of the ITP does not trigger any of the CEQA Guidelines Section 15162 conditions described above. This is because the proposed change to the ITP does not require revisions to the conclusions or findings presented in the 2020 FEIR because no new or substantially more intense, severe significant environmental impacts, or potentially significant environmental impacts would occur.

The level of protection for winter-run Chinook Salmon will not change as a result of the requested amendment to Condition 8.6.3. The requested amendment would trigger export restrictions and OMR flow no more negative than -3,500 cfs when genetically identified winter-run Chinook Salmon are salvaged in numbers meeting the daily threshold. No amendment of the daily loss threshold values is required for the amended condition to remain protective of winter-run Chinook Salmon. DWR does not propose changes to any other ITP conditions.



Source: DWR 2020

Figure 1. State Water Project Facilities Located in the Delta

Chapter 2
Environmental Review

2.1 Summary of Previous Environmental Review Process

The effects on the environment of long-term operation of the SWP facilities in the Delta and issuance of an ITP to provide incidental take coverage for four CESA-listed fish species were addressed in the 2020 FEIR. The analyses presented in the FEIR concluded that the Proposed Project and the alternatives considered would have either no impact or a less-than-significant impact on the environment. DWR selected Refined Alternative 2b as the long-term operation of the SWP.

Further, DWR's environmentally preferred alternative, Refined Alternative 2b, proposed mitigation to meet the legal standard under CESA to minimize and fully mitigate the take of listed species consistent with DWR's application for an ITP. Refined Alternative 2b provides additional freshwater flows in the spring and summer, and physical barriers and other deterrents to keep fish away from the SWP pumps. Implementation of this alternative is expected to result in multiple environmental benefits that would contribute to the greater protection of special status aquatic species than historical operations.

Refined Alternative 2b was determined to have less than significant impacts on all environmental resources evaluated and includes mitigation that minimizes and fully mitigates impacts to CESA-listed fish species. Therefore, the long-term operation of the SWP and issuance of the ITP:

1. Will not degrade environmental quality, substantially reduce habitat, cause a wildlife population to drop below self-sustaining levels, reduce the number or restrict the range of special-status species, or eliminate important examples of California history or prehistory.
2. Does not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
3. Will not have impacts that are individually limited but cumulatively considerable.
4. Will not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.

The environmental analyses and findings presented in the FEIR reflect the independent judgment of DWR as the lead agency under CEQA.

2.2 Environmental Analysis

This section of the addendum analyzes the potential effects on the physical environment from implementing the proposed change. This analysis has been prepared to determine whether any of the conditions in Section 15162 or 15163 of the State CEQA Guidelines (as described in Section 1.3) would occur as a result of the proposed minor revisions to the ITP.

2.2.1 Topics Considered in This Addendum

The proposed changes are to modify the modify ITP Condition 8.6.3 to remove the requirement that older juvenile Chinook Salmon juveniles be identified using length-at-date criteria and replace the length-at-date model with real-time rapid genetic testing techniques that are subsequently confirmed using traditional laboratory-based genetic testing techniques.

These proposed changes would not modify the long-term operations or substantively modify the actions evaluated in the FEIR. Therefore, the proposed changes would not result in new significant impacts or a substantial increase in the intensity or severity of environmental effects for any of the following topic areas:

- Agricultural Resources
- Geology, Soils, and Mineral Resources
- Water Quality
- Noise
- Visual Resources
- Utilities and Service Systems
- Hazards and Hazardous Materials
- Environmental Justice
- Biological Resources
- Cultural Resources
- Recreation
- Transportation and Circulation
- Air Quality
- Hydrology and Hydraulics

Additional analysis on biological resources related to the proposed change is provided in analysis below.

2.2.2 Analysis of the Request to Modify Condition 8.6.3

Condition 8.6.3 requires DWR to minimize entrainment, salvage, and take of natural winter-run Chinook Salmon during the peak and end of their migration through the Delta by restricting south Delta exports for five days to achieve a five-day average OMR flows no more negative than -3,500 cfs when daily loss of natural older juveniles identified using the Delta Model length-at-date criteria at the SWP and CVP salvage facilities exceeds specific thresholds identified in the 2020 LTO ITP for the months of January through May.

The condition of approval is based on identifying winter-run Chinook Salmon salvaged at the Skinner Fish Facility using length-at-date criteria. For many years biologists have used the length of a juvenile Chinook Salmon on the date of capture to identify the presumed run of the captured fish. However, CNFH released approximately 680,963 late fall-run Chinook Salmon on December 1, 2022 and approximately 71,057 late fall-run Chinook Salmon on December 5, 2022. These fish were

intended to have their adipose fins removed and CWTs inserted prior to release. Approximately 4.8 percent of the released fish (approximately 36,000 fish) did not have their adipose fin removed, did not have a CWT inserted, or both. Removal of adipose fins and insertion of CWTs allows biologists to easily identify hatchery-origin fish in the field. Therefore, it is not possible for staff at the Skinner Fish Facility to distinguish these unmarked hatchery-origin late fall-run Chinook Salmon from natural-origin winter-run Chinook Salmon because there is overlap between the runs in the length-at-date criteria.

DWR proposes to amend this condition by removing the requirement that older juvenile Chinook Salmon juveniles be identified using the length-at-date criteria. In the place of this requirement, DWR proposes identifying natural winter-run Chinook Salmon using real-time rapid genetic testing techniques that are subsequently confirmed using traditional laboratory-based genetic testing techniques. DWR proposes to amend this condition for January through May 2023.

The rapid genetic testing method proposed for use by DWR to determine whether Chinook Salmon salvaged at the Skinner Fish Facility are winter-run Chinook Salmon is a method for detecting run-specific nucleic acid targets (i.e., a winter-run Chinook Salmon-specific genetic signature). The method, called Specific High Sensitivity Enzymatic Reporter UnLOCKing (SHERLOCK) is a highly sensitive CRISPR-Cas13a genetic detection platform originally developed for point-of-care diagnostics (Gootenberg et al. 2017; Abudayyeh et al. 2017) that has shown promise for genetic taxonomic identification in ecological studies (Baerwald et al. 2020). SHERLOCK works by detecting and amplifying a target genetic sequence (in this case, a winter-run Chinook Salmon-specific sequence). When this target sequence is found, Cas13a activates and cleaves not only the target sequence, but any single-stranded RNA molecules present in the reaction. Quenched reporter RNA molecules included in SHERLOCK reactions produce a fluorescent signal when cleaved by Cas13a, indicating the presence of the target sequence. Baerwald et al. (2020) showed that SHERLOCK rapidly distinguished between three morphologically similar smelt fish species. Accurate identifications were obtained from skin mucus in as little as 25 minutes and could be performed in the field, providing major advantages over more conventional genetic identification approaches. Recently, Baerwald et al. (in review) showed that SHERLOCK can be used to distinguish winter-run Chinook Salmon from other runs and can allow for rapid (less than 1 hour) in-the-field genetic identification of Chinook Salmon run types.

DWR recognizes that using SHERLOCK to identify winter-run Chinook Salmon at the salvage facilities and subsequently making OMR management decisions is a novel approach. Therefore, although SHERLOCK has shown to be over 95 percent accurate in distinguishing winter-run Chinook Salmon from other runs (Baerwald et al. in review), DWR is also proposing to obtain fin samples from salvaged Chinook Salmon and additionally conduct genetic identification with genotyping by thousands sequencing (GT-seq) to confirm the results from the SHERLOCK methodology. Identification with GT-seq methodology typically requires approximately three days to return results, while SHERLOCK methodology will return results within a matter of hours. Typically, there has been a greater than 95% concordance between SHERLOCK and standard laboratory methods (Baerwald pers. com). DWR proposes to implement the OMR management requirement restricting south Delta exports when winter-run Chinook Salmon daily loss thresholds are exceeded based on the SHERLOCK identification of winter-run Chinook Salmon in salvage. If GT-seq methodology identifies salvaged natural juvenile Chinook Salmon as winter-run but SHERLOCK methodology identified the same fish as non-winter-run, OMR management would revert to the required export restrictions as required by the ITP Condition 8.6.3.

DWR proposes to coordinate with CDFW regarding the SHERLOCK and GT-seq DNA sampling protocols and procedures.

The requested amendment would trigger export restrictions and OMR flow no more negative than -3,500 cfs when genetically identified natural winter-run Chinook Salmon are salvaged in numbers meeting the daily threshold. No amendment of the daily loss threshold values is required for the amended condition to remain protective of winter-run Chinook Salmon.

Because the requested amendment would more accurately identify natural-origin winter-run Chinook Salmon than the length-at-date criteria that are currently required, Condition 8.6.3, if amended, would remain as protective of winter-run Chinook Salmon as the current condition. Therefore, impacts associated with this proposed change would be less than significant. Further, the requested amendment does not amend any criteria for other species under the existing state and federal authorizations (i.e., Delta Smelt, spring-run Chinook Salmon, Central Valley steelhead, Green Sturgeon, and Longfin Smelt). Therefore, the requested amendment would have a less than significant impact on these species.

All other provisions of the ITP, including other provisions of Condition 8.6.3, would remain in effect. No changes to SWP facilities or other operations are proposed.

2.2.3 Cumulative Impacts

As described in the 2020 FEIR, the incremental contribution of the Long-Term Operation of the SWP to the cumulative impact on aquatic resources would not be cumulatively considerable because the proposed SWP operations are subject to the same regulatory framework promulgated by the federal and state resource agencies, and include environmental commitments, conservation, or protective measures specifically intended to offset, reduce, or otherwise limit potential impacts on aquatic species. Because modification of ITP Condition 8.6.3 would not result in additional impacts to winter-run Chinook Salmon or other aquatic species, the Long-Term Operation of the SWP would not result in cumulatively considerable impacts.

2.2.3.1 Condition 8.6.3

As described in Section 2.2.2, above, the proposed change to Condition 8.6.3 would allow for real-time rapid genetic testing of salvaged Chinook Salmon to identify natural-origin winter-run Chinook Salmon, which will provide an equivalent level of protection and maintain the level of impacts to those analyzed in the 2020 FEIR. The proposed change to Condition 8.6.3 does not require revisions to the conclusions or findings presented in the 2020 FEIR because no new or substantially more intense or severe significant environmental impacts, or potentially significant environmental impacts would occur.

Because the proposed change to Condition 8.6.3 would remain protective of winter-run Chinook Salmon, and all other requirements and/or conditions of the ITP would remain the same, there would be no considerable change in cumulative impacts as described in the 2020 FEIR.

2.3 Conclusions

As described in this Addendum, the proposed change to Condition 8.6.3 of the ITP does not require revisions to the conclusions or findings presented in the 2020 FEIR because no new or substantially

more intense or severe significant environmental impacts, or potentially significant environmental impacts would occur.

Based on the discussion presented in Section 2.2, Environmental Analysis, the proposed changes to Conditions 8.6.3 of the ITP would not result in any of the conditions described in Sections 15162 and 15163 of the State CEQA Guidelines that call for preparation of a subsequent EIR or supplemental EIR.

In summary, the proposed modification to Condition 8.6.3, *Mid- and Late-season Natural Winter-run Chinook Salmon Daily Loss Threshold*, of the ITP would not result in any of the following:

- new significant or potentially significant environmental effects,
- substantially increase the intensity or severity of previously identified significant effects,
- mitigation measures or alternatives previously found to be infeasible becoming feasible, or
- the availability/implementation of mitigation measures or alternatives that are considerably different from those analyzed in the 2020 FEIR that would substantially reduce one or more significant or potentially significant effects on the physical environment.

These conclusions confirm that a subsequent or supplemental EIR is not warranted, and this Addendum to the 2020 FEIR is the appropriate CEQA document pursuant to State CEQA Guidelines Section 15164 to evaluate and document the changes and additions to the long-term operation of the SWP facilities in the Delta. No changes are needed to the certified 2020 FEIR for the Long-Term Operations of the SWP.

Chapter 3
References

3.1 Printed References

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CDFW. See California Department of Fish and Wildlife. DWR. See California Department of Water Resources.

DWR. See California Department of Water Resources.

Gootenberg J.S. et al. 2017. Nucleic acid detection with CRISPR-Cas13a/C2c2. Science 356:438–442.

3.2 Personal Communications

Baerwald M.R. December 19, 2022. Email to Lenny Grimaldo, Assistant Environmental Director.