



State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
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EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director



May 23, 2018

Joseph Yun
Executive Officer
California Water Commission
P.O. Box 942836
Sacramento, CA 94236-0001

Dear Mr. Yun:

RELATIVE ENVIRONMENTAL VALUE OF WATER STORAGE INVESTMENT PROGRAM PROJECTS AND DEPARTMENT FINDINGS

Thank you for your leadership during this process. As you know, the California Department of Fish and Wildlife (Department) is tasked with the responsibility of making recommendations to the California Water Commission (Commission). I acknowledge the complexity of the process has been challenging for you, Commissioners, the reviewing agencies, and each applicant. No one has tried a competitive approach to water storage on such a scale before. The good news is that the Commission and applicants are as close as ever to adding much needed water storage capacity through a portfolio of different types of projects across a diverse geography.

This competitive approach must adhere to the controlling statute and the implementing regulations. At each step of your process, our Department has always based our recommendations on the plain instructions in the statute and the regulations. All of the current applicants, as members of a broad-based stakeholder advisory group, helped develop these regulations during a two-year dialogue. At the last Commission meeting, the Department's recommendations to the Commission on monetized ecosystem benefits to include in the public benefit ratio calculations were discussed. This package contains our next assignment under the regulations related to our calculation of relative environmental value for the ecosystem improvements of a project and preliminary findings. However, as I describe at the end of this letter, each applicant retains an important obligation to complete due diligence for their projects promptly.

Pursuant to the Water Storage Investment Program (WSIP) regulations, this letter and attachments transmit to California Water Commission (Commission) staff (1) the relative environmental value scores calculated by the California Department of Fish and Wildlife (Department) and (2) the Department's findings on the public benefits claimed by each WSIP project. The WSIP regulations require the Department to calculate a relative environmental value for ecosystem improvements, based on information supplied in each project's application. (Cal. Code Regs. tit. 23, § 6007, subd. (c).) Additionally, if the Department "finds the public benefits as described in a project's application meet all of the requirements of Water Code section 79750 *et seq.* for which the reviewing

agency is responsible, the reviewing agency shall provide to the Commission a written statement confirming the finding.” (Cal. Code Regs., tit. 23, § 6012, subd. (d).) This finding is a “preliminary assessment of public benefits based on information supplied in the application that indicates that a project’s public benefits meet the requirements of Water Code section 79750 *et seq.*” (Cal. Code Regs., tit. 23, § 6012, subd. (a).)

For each ecosystem benefit quantified, project applications were required to identify at least one applicable ecosystem priority listed in section 6007, subdivision (c), of the WSIP regulations. (Cal. Code Regs., tit. 23, § 6003, subd. (a)(1)(Q).) The Department applied the 10 relative environmental value criteria outlined in Table 2 of section 6007, subdivision (c)(1)(A)(1), to score each of the ecosystem priorities identified by the applicant. Based on information supplied in the application, the Department considered information supporting ecosystem benefits including the analytical methods, modeling results, and physical, chemical, or biological information. (Cal. Code Regs., tit. 23, § 6007, subd. (c)(1)(A)(1).) Section 6007, subdivision (c)(1)(A)(2), states the score shall be assigned by evaluating the degree of change between with- and without-project conditions, and the degree to which ecosystem improvements associated with each claimed priority would be provided by a project.

The relative environmental value scores reflect the Department’s critical and thorough evaluations of project applications and include comments to the Commission and its staff that address the many aspects of the projects as proposed. The Department’s analysis contained in this package is consistent with our analysis related to public benefits.

The Department recognizes that the projects in many cases have a long history in water management planning in California, and have additional steps in front of them that will refine the projects, reduce uncertainties, and further inform the Commission’s decisionmaking. The regulations emphasize the preliminary nature of the findings submitted to you today, and the fact that changes may occur after a reviewing agency’s findings. (Cal. Code Regs., tit. 23, § 6012(g).) Moreover, prior to the Commission encumbering funding, each successful applicant must enter into enforceable contracts for public benefits and non-public benefit cost shares, complete feasibility studies and environmental documentation, obtain all required federal, state, and local approvals, and provide extensive additional information to the Commission, as applicable, on items including labor compliance, urban water management plans, agricultural water management plans, and groundwater management plans or GSP(s). (Cal. Code Regs., tit. 23, § 6013(a)(1), (c).)

This letter and attachments represent the completion of the Department’s technical review of WSIP projects for the purpose of contributing toward the maximum conditional eligibility determination of each project that the Commission must make. The Department looks forward to continuing to work with the Commission and project

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applicants in the next phase of the WSIP.

Sincerely,



Charlton H. Bonham
Director

Encl: CDFW Findings on WSIP Public Benefits, Relative Environmental Value
Scores, Technical Review Comments

ec: California Department of Fish and Wildlife

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Willow Springs Water Bank Conjunctive Use Project – Relative Environmental Value Score

Project Overview

The Southern California Water Bank Authority (Applicant) is proposing the Willow Spring Water Bank Conjunctive Use Project (Project), located in the Antelope Valley in north Los Angeles County. The Project would utilize the Applicant’s existing half million acre-feet of groundwater storage facilities to capture and store high flows from the Delta (Department of Water Resources Article 21 water). Funding would be used to construct a regulating reservoir and additional extraction wells, along with new conveyance facilities to move water to and from the California Aqueduct. The Project’s claimed ecosystem benefits would be realized through water transfers with the State Water Project (SWP), whereby a SWP Contractor would use water from the Project in lieu of SWP water. This would allow water stored in Oroville Reservoir to be dedicated to providing instream flow benefits. The Project proposes providing up to 40,000 acre-feet (AF) of water per year to the Feather River in critically dry and dry years via pulse flow releases that would occur in April and May.

Ecosystem Priorities Identified by the Applicant

The Applicant has identified the following ecosystem priorities:

- Priority 2 – Provide flows to improve habitat conditions for in-river rearing and downstream migration of juvenile salmonids.
- Priority 6 – Increase attraction flows during upstream migration to reduce straying of anadromous species into non-natal tributaries.

The California Code of Regulations requires the California Department of Fish and Wildlife (Department) to apply 10 Relative Environmental Value (REV) criteria to score each of the priorities that an applicant claims would be provided by a project. (Cal. Code Regs., tit. 23, § 6007, subd. (c)(1)(A)(1).) Based on the information provided in the application, the Department scored each ecosystem priority listed above to determine the ecosystem REV score shown below. To implement REV Criterion 1, the Department has developed a standard calculation to assign points based on the number of ecosystem priorities a project has claimed. For each priority claimed, the Department added 0.375% to a project’s final ecosystem REV score. REV Criterion 2 through 10 were each scored on a scale of 0 to 6. Detailed scores are provided in Table 1. A summary of comments for each Priority-REV combination is provided in Willow Springs Water Bank Conjunctive Use Project – Technical Review Comments.

REV Score Summary

Total Points Possible	108
Total Points Received	52.7
Additional % for Number of Ecosystem Priorities (REV Criterion 1)	0.8%
Total REV Score	49.6%

Willow Springs Water Bank Conjunctive Use Project – Technical Review Comments

REV Criterion 1 (Number of different ecosystem priorities claimed)

To implement Relative Environmental Value (REV) Criterion 1, the California Department of Fish and Wildlife (Department) has developed a standard calculation to assign points based on the number of ecosystem priorities a project has claimed. For each priority claimed, the Department added 0.375% to the final REV score. The Department has applied the standard calculation to each of the projects.

In its application for funding under the Water Storage Investment Program, the Southern California Water Bank Authority (applicant) identified two ecosystem priorities for the Willow Springs Water Bank Conjunctive Use Project (Project). The calculation described above resulted in an increase of 0.8% for the Project's ecosystem REV score. The Department applied the other nine REV criteria to each priority identified by the applicant. The Department's evaluation of each priority is described below.

Priority 2 – Provide flows to improve habitat conditions for in-river rearing and downstream migration of juvenile salmonids.

Priority 2 – REV Criterion 2 (Magnitude of ecosystem improvements) Score = 3.5

The Project would provide 40,000 acre-feet of water from Oroville Reservoir, to serve as pulse flows, which would be released in April and May into the low flow channel of the Feather River. The pulse flows would be timed in conjunction with the release of approximately 2 million, spring-run Chinook smolts from the Feather River Hatchery. The application cites the Feather River Hatchery Genetic Management Plan, which identifies a production goal of 2 million spring-run Chinook smolts to be released in April and May of every year. This documentation supports the claim that providing pulse flows in dry and critically dry years, when water is normally less likely to be available, would provide a benefit to emigrating hatchery produced spring-run Chinook smolts. However, this timing likely diminishes the magnitude of benefits to naturally produced, emigrating spring-run Chinook fry, as most naturally occurring spring-run Chinook fry on the Feather River begin emigrating between November and January.

Priority 2 – REV Criterion 3 (Spatial and temporal scale of ecosystem improvements) Score = 3.8

The proposed pulse flows would be released from the Feather River low flow channel in April and May, and would be timed in conjunction with the release of approximately 2 million hatchery produced spring-run Chinook smolts. This provides a spatial benefit to emigrating hatchery produced spring-run Chinook smolts, throughout the Feather River. However, the timing of pulse flows to benefit hatchery produced spring-run Chinook smolts is outside the peak emigration period for naturally produced spring-run Chinook fry, as most spring-run Chinook fry on the Feather River begin emigrating between November and January.

Priority 2 – REV Criterion 4 (Inclusion of an adaptive management and monitoring program that includes measureable objectives, performance measures, thresholds, and triggers to achieve the ecosystem benefits) Score = 3.0

The application states that the adaptive management plan would be managed based on the results of historic and ongoing fisheries monitoring, primarily conducted as part of the Oroville Facilities FERC Relicensing and compliance monitoring program. The application states that data collected in these monitoring efforts would provide a baseline for setting performance standards and measuring the success of the proposed pulse flows. The Project would then compare baseline conditions to with-

Project conditions, including parameters such as juvenile survival and outmigration abundances. The application states its commitment to work with agencies and other interested parties to develop a comprehensive hatchery coordinated release strategy and survival/abundance monitoring program. However, the proposed adaptive management plan provides little detail regarding the actual role the applicant is committed to playing in adaptively managing the proposed pulse flows. For example, it is unclear whether the Project would rely solely on existing monitoring to provide data for the adaptive management plan, or whether it would conduct additional monitoring. Additionally, it is unclear whether the applicant would dedicate funds to conduct the proposed analysis.

Priority 2 – REV Criterion 5 (Immediacy of ecosystem improvement actions and realization of benefits) Score = 3.3

The applicant proposes to provide pulse flows in dry and critically dry years. However, water in Oroville Reservoir may not be available for pulse flows in some dry and critically dry years, which would impact both the immediacy and realization of the benefit. Nonetheless, the schedule submitted with the application is reasonable. The application states the Project would be completed by January 1, 2020, and assumes a construction start date of January 1, 2018.

Priority 2 – REV Criterion 6 (Duration of ecosystem improvements) Score = 3.0

The application states that the lifespan of the Project will be 50 years, and that the benefits provided by the proposed pulse flows would be realized annually in dry and critically dry years. Documentation provided with the application shows that pulse flows would be provided in 36.6% of years. Assuming a Project lifespan of 50 years, the Project would likely provide pulse flows in approximately 18 of those 50 years. However, this frequency is based on an analysis of the historical hydrologic record, and the frequency of pulse flows could vary depending on hydrological conditions over the 50-year period. This creates uncertainty regarding the duration of the benefits that the Project would provide.

Priority 2 – REV Criterion 7 (Consistency with species recovery plans and strategies, initiatives, and conservation plans) Score = 2.8

The application states that the Project would be consistent with two primary and two secondary recovery actions for the Feather River, as outlined by the National Marine Fisheries Service (NMFS) 2014 Recovery Plan for Chinook salmon and steelhead. The two primary recovery actions include identifying and implementing actions intended to minimize straying of Feather River Hatchery salmon and steelhead, and managing releases from Oroville Dam with instream flow schedules and criteria to provide suitable water temperatures for all life stages, reduce stranding and isolation, protect incubating eggs from being dewatered, and promote habitat availability. The two secondary recovery actions include negotiating agreements with landowners and Federal and State agencies to provide additional instream flows or purchase water rights in the Feather River, and evaluating pulse flow benefits in the Feather River for adult immigration and juvenile outmigration during peak migration periods for years with low water availability. While the proposed pulse flows would likely contribute to these primary and secondary recovery actions, the application only provided documentation to support the degree of improvement for one of the secondary recovery actions, and did not point to documentation in support of the degree improvement for the remaining primary and secondary recovery actions. Additionally, the application states that the Project would address three of the five listing factors identified by NMFS for the decline in Central Valley spring-run Chinook and steelhead abundance. However, the application does not state which three listing factors the Project would address.

Priority 2 – REV Criterion 8 (Location of ecosystem improvements and connectivity to areas already being protected or managed for conservation values) Score = 3.8

The proposed pulse flows are in a location that is likely to provide a benefit to emigrating hatchery produced spring-run Chinook smolts. Pulse flows provided in the Feather River low flow channel, during dry and critically dry years when water is less likely to be available, would help to increase the number of spring-run Chinook smolts that successfully emigrate from the Feather River Hatchery. The ecosystem benefits would occur below Oroville Reservoir, an area with direct hydrologic connections to areas being protected and managed for conservation values. No significant barriers exist downstream of the pulse flow release point. Thus, flows would be accessible to emigrating spring-run Chinook smolts.

Priority 2 – REV Criterion 9 (Efficient use of water to achieve multiple ecosystem benefits) Score = 3.5

The application identifies multiple ecosystem benefits that would be provided by the proposed pulse flows. According to the application, pulse flows would benefit the emigration of hatchery produced spring-run Chinook smolts, enhance natal stream imprinting of hatchery produced spring-run Chinook smolts, benefit emigration and in-river rearing for naturally produced juvenile spring-run and fall-run Chinook and steelhead, and reduce stray rates by providing attraction flows to migrating spring-run Chinook adults. The application provides documentation to support the assertion that pulse flows made available through water efficiency would provide benefits for spring-run Chinook emigration and enhanced natal stream imprinting. However, while the Project would likely provide some benefit to emigration and in-river rearing for naturally produced fall-run and spring-run Chinook and steelhead and stray rate reduction for spring-run Chinook adults, no documentation was provided to support or further analyze the Project's ability to provide these benefits.

Priority 2 – REV Criterion 10 (Resilience of ecosystem improvements to the effects of changing environmental conditions, including hydrologic variability and climate change) Score = 2.5

The application discusses the resilience of the ecosystem benefit in terms of years in which storage would be less than 750 thousand acre-feet in Oroville Reservoir and the proposed pulse flows would be suspended to avoid exacerbating low Oroville Reservoir storage. The analysis indicates this could occur in four years out of the 82-year hydrologic record when the Project would otherwise provide pulse flows. However, the application did not include a discussion of how the Project would address other uncertainties, such as hydrologic variability and climate change, to ensure resiliency of this ecosystem benefit.

Priority 6 – Increase attraction flows during upstream migration to reduce straying of anadromous species into non-natal tributaries.

Priority 6 – REV Criterion 2 (Magnitude of ecosystem improvements) Score = 2.0

The Project proposes to use pulse flow releases to simultaneously benefit hatchery produced spring-run Chinook smolts, and to serve as attraction flows for returning Spring-run Chinook adults, in order to reduce straying rates. Existing straying rates on the Feather River for spring-run Chinook adults are low (~1%), and therefore any improvements to straying rates created by the pulse flows would likely be minimal. The application assumes, without providing any supporting documentation, that pulse flows will reduce straying rates to 0.5%. It is possible that pulse flows would provide a benefit for spring-run Chinook attraction, potentially resulting in a reduction in straying rates. However, without supporting documentation that demonstrates the projected decrease in straying rates, the Department is unable to verify the magnitude of the benefit.

Priority 6 – REV Criterion 3 (Spatial and temporal scale of ecosystem improvements) Score = 3.3

Pulse flows would be released from the Feather River low flow channel, in April and May, and timed with the release of the approximately 2 million hatchery produced spring-run Chinook smolts. The timing of the pulse flows would coincide with the migration of spring-run Chinook adults. However, it is unclear from the documentation provided, whether the magnitude of the pulse flows released from Oroville Reservoir would be sufficient to serve as attraction flows.

Priority 6 – REV Criterion 4 (Inclusion of an adaptive management and monitoring program that includes measureable objectives, performance measures, thresholds, and triggers to achieve the ecosystem benefits) Score = 2.3

See comments under Priority 2 – REV Criterion 4.

Priority 6 – REV Criterion 5 (Immediacy of ecosystem improvement actions and realization of benefits) Score = 3.3

See comments under Priority 2 – REV Criterion 5.

Priority 6 – REV Criterion 6 (Duration of ecosystem improvements) Score = 2.5

The lifespan of the Project will be 50 years, with the benefits provided by the proposed pulse flows realized annually in dry and critically dry years. Documentation provided with the application shows that pulse flows would be provided in 36.6% of years, which assuming a Project lifespan of 50 years, would equate to approximately 18 years with pulse flows. However, this is based on an analysis of the historical hydrologic record and there is a possibility that pulse flows would be provided in more or fewer years. This creates uncertainty concerning the duration of the actual number of years that an ecosystem benefit would be provided by the Project. Additionally, low confidence in the magnitude of the benefit reduces confidence in the duration of the benefit.

Priority 6 – REV Criterion 7 (Consistency with species recovery plans and strategies, initiatives, and conservation plans) Score = 2.5

See comments under Priority 2 – REV Criterion 7.

Priority 6 – REV Criterion 8 (Location of ecosystem improvements and connectivity to areas already being protected or managed for conservation values) Score = 2.8

The pulse flows would occur in a location that could increase attraction flows during upstream migration of spring-run Chinook and reduce straying into non-natal tributaries. However, there is low confidence in the magnitude of the benefit, which reduces confidence that the benefit would be realized in the identified location of the improvement. The ecosystem benefits would occur below Oroville Reservoir, an area with direct hydrologic connections to areas being protected and managed for conservation values. No significant barriers exist downstream of where pulse flows would be released. Thus, flows would be accessible to migrating spring-run Chinook adults.

Priority 6 – REV Criterion 9 (Efficient use of water to achieve multiple ecosystem benefits) Score = 2.5

See comments under Priority 2 – REV Criterion 9.

Priority 6 – REV Criterion 10 (Resilience of ecosystem improvements to the effects of changing environmental conditions, including hydrologic variability and climate change) Score = 2.3

See comments under Priority 2 – REV Criterion 10.

Table 1. Relative Environmental Value Scores for the Willow Springs Water Bank Conjunctive Use Project												
Priority	REV2	REV3	REV4	REV5	REV6	REV7	REV8	REV9	REV10	REV1	Points Possible	Points Received
P 2	3.5	3.8	3.0	3.3	3.0	2.8	3.8	3.5	2.5	X	54	29.2
P 6	2.0	3.3	2.3	3.3	2.5	2.5	2.8	2.5	2.3	X	54	23.5
TOTAL										REV1 = ¹ 0.8%	108	52.7
											TOTAL REV SCORE²	49.6%

¹Additional 0.375 percent applied to total REV score for each priority claimed

²Total REV Score equals total points received divided by total points possible, plus REV1 percentage addition