

CALIFORNIA WATER COMMISSION

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Armando Quintero
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May 25, 2018

Carol Baker
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Melih Ozbilgin, Senior Water Resources Specialist
Pacheco Reservoir Expansion Project

Andrew Ball
Member

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Joseph Byrne
Member

Dear Mr. Ozbilgin:

Daniel Curtin
Member

Joe Del Bosque
Member

Attached please find the Water Storage Investment Program technical review for the Pacheco Reservoir Expansion Project. The technical review contains the preliminary application scores and related reviewer comment. Additional documents including California Department of Fish and Wildlife and State Water Board Relative Environmental Value reviews and public benefit findings of the Department of Fish and Wildlife, Department of Water Resources, and State Water Resources Control Board, as appropriate, can be found at the following link:

Maria Herrera
Member

<https://cwc.ca.gov/Pages/WSIP/PachecoTech.aspx>

Catherine Keig
Member

Additionally, staff is finalizing summaries of information related to Commission determinations. We will transmit and post this information no later than 5:00 p.m. on June 4.

Staff from the Commission, Department of Fish and Wildlife, Department of Water Resources, and State Water Resources Control Board look forward to engaging with applicants and stakeholders at the scheduled meetings on June 6 and 7. These meetings are intended to focus on the preliminary scores and determination information. Any issues of clarification identified at the June 6 and 7 meetings will be reported by staff to the Commission at the June 27-29 meeting for its consideration in making final application scores and project determinations.

We look forward to your continued engagement in the Water Storage Investment Program.

Sincerely,

A handwritten signature in blue ink, appearing to read "Joe Yun", with a long horizontal flourish extending to the right.

Joe Yun
Executive Officer
California Water Commission

Water Storage Investment Program Technical Review

Pacheco Reservoir Expansion Project

Santa Clara Valley Water District

The applicant, Santa Clara Valley Water District (SCVWD), is proposing a regional surface storage project, the Pacheco Reservoir Expansion (PRE) Project. The PRE Project would enlarge the existing reservoir located in southeast Santa Clara County, from 6 thousand acre-feet (TAF) to 141.6 TAF. The PRE Project would construct new conveyance infrastructure to segments of the Central Valley Project (CVP) San Felipe Division in Merced and Santa Clara counties, and deliver water supply to up to eight south-of-Delta wildlife refuges in Merced County. The primary water sources to fill the expanded reservoir would be natural inflows from the North and East Forks of Pacheco Creek. Supplemental flows to the expanded reservoir would arrive from SCVWD's and the San Benito County Water District's (SBCWD's) share of contracted CVP pumped water from San Luis Reservoir.

Component Scores

The Water Storage Investment Program (WSIP) scoring components were reviewed and scored in accordance with the WSIP regulations section 6007 and 6009¹. The scores are recommendations to the Commission and the Commission will assign final scores at the June meeting.

The raw scores for Public Benefit Ratio (PBR), Relative Environmental Value (REV), and Implementation Risk component scores are in a different number scale than the regulation component score scale. The raw scores are normalized to the regulation scoring scale using the formula contained in section 6009(c)(1) of the regulations. The result is the highest raw score receives the maximum points for the scoring component and all other raw scores are assigned point values relative to where they fall in relation to the highest raw score.

Table 1 contains the staff recommended scores for the various component items and the total score for the project.

Table 1. Preliminary Component Scores		
Component	Max Value	Score
Public Benefit Ratio and Non-Monetized Benefits	33	27
Relative Environmental Value	27	21
Resiliency*	25	23
Implementation Risk	15	11
Preliminary Expected Return for Public Investment Score		82

*Resiliency score is a non-normalized component score.

¹ All references to WSIP regulations refer to California Code of Regulations, title 23, section 6000 et. seq.

Public Benefit Ratio and Non-Monetized Benefit

The Commission determined the monetized value of public benefits at its May 1-3, 2018 meeting. At that meeting, the Commission afforded the applicant an opportunity to modify its funding request prior to final calculation of the PBR. The applicant altered its funding request that was contained in its February 2018 PBR review. The PBR was calculated by dividing the total public benefits provided by the project by the applicant’s funding request and then normalized. The maximum points possible for this category is 33. The monetized public benefits accepted by the Commission for this project are:

- Ecosystem Improvement—Steelhead habitat
- Ecosystem Improvement—Refuge supply
- Emergency Response—Delta failure

Where applicable, Non-Monetized Benefit (NMB) scores were added to the PBR score, if the normalized PBR score was less than 33. NMB scores are solely for recreation, emergency response, or flood control benefits. Ecosystem and water quality benefits that were not monetized were scored in the REV process. The applicant included NMBs in its application.

For Flood Control, the applicant discussed its proposed Flood Control benefit in depth and provided supporting documentation for its claim. Staff concurs with the following items: a) the project provides incidental flood benefits through the utilization of available surcharge reservoir storage when the reservoir is operating at the full operating pool level/elevation; b) the flood benefit is incidental and should not be monetized; and c) additional flood benefits may be achieved when additional reservoir storage is available and a flood event occurs before the reservoir is full.

The Santa Clara Valley Water District could not monetize the flood benefits for Pacheco Dam because there is limited residential development in the downstream area of the dam. The most significant development is located further downstream in the city of Watsonville and the town of Pajaro. The proposed dam on the North Fork Pacheco Creek will control only a small portion of the watershed above the towns of Pajaro and Watsonville; the quantifiable flood benefits would be more localized downstream and near the dam.

Table 2 presents the Public Benefit Ratio and associated normalized score, along with the NMB and the staff recommended scores.

Table 2. Public Benefit Ratio and Non-Monetized Benefits			
Public Benefit Ratio, as determined by Commission	Normalized PBR Score	Non-Monetized Benefit Score	Preliminary Component Score
2.02	23	4	27

Relative Environmental Value

There are two types of REV: ecosystem and water quality provided by the California Department of Fish and Wildlife (CDFW) and the State Water Board (SWB), respectively. Each application indicated the CDFW or SWB priorities the project would address. A score was assigned by the degree to which ecosystem and/or water quality improvements associated with each claimed priority would be provided by a project.

An explanation of the REV percentage and how it was calculated can be found in the CDFW and SWB REV analysis documents located on the Commission website. For applications with both ecosystem and water quality priorities, the score was split 70% ecosystem and 30% water quality. The score was then normalized to a maximum of 27 points. For applications that had only ecosystem priorities, the score is based solely on the ecosystem REV.

Table 3 presents the REV scores, as determined by the CDFW, for ecosystem benefits, and the SWB, for water quality benefits.

Table 3. Relative Environmental Value		
Component	Comment	Score
Ecosystem	<p>The PRE Project proposes to provide perennial stream flows in Pacheco Creek for habitat enhancement and benefits to South-Central California Coast Steelhead. Consistent with the Central Valley Project Improvement Act, the PRE Project also proposes to provide Incremental Level 4 water, in below normal water years, to south-of-Delta wildlife refuges for habitat enhancement.</p> <p>The ecosystem priorities identified by the applicant are:</p> <ul style="list-style-type: none"> • Priority 1 – Provide cold water at times and locations to increase the survival of salmonid eggs and fry. • Priority 2 – Provide flows to improve habitat conditions for in-river rearing and downstream migration of juvenile salmonids. • Priority 3 – Maintain flows and appropriate ramping rates at times and locations that will minimize dewatering of salmonid redds and prevent stranding of juvenile salmonids in side channel habitat. • Priority 4 – Improve ecosystem water quality. • Priority 5 – Provide flows that increase dissolved oxygen and lower water temperatures to support anadromous fish passage. • Priority 8 – Maintain or restore groundwater and surface water interconnection to support instream benefits and groundwater dependent ecosystems. • Priority 9 – Enhance flow regimes or groundwater conditions to improve the quantity and quality of riparian floodplain habitats for aquatic and terrestrial species. • Priority 11 – Enhance the temporal and spatial distribution and diversity of habitats to support all life stages of fish and wildlife species. 	59.50

Table 3. Relative Environmental Value		
Component	Comment	Score
	<ul style="list-style-type: none"> • Priority 12 – Enhance access to fish spawning, rearing, and holding habitat by eliminating barriers to migration. • Priority 14 – Provide water to enhance seasonal wetlands, permanent wetlands, and riparian habitat for aquatic and terrestrial species on State and Federal wildlife refuges and on other public and private lands. • Priority 16 – Enhance habitat for native species that have commercial, recreational, scientific, or educational uses. 	
Water Quality	The applicant did not include water quality benefits that relate to SWB Water Quality priorities in its application. Therefore, a Water Quality REV analysis was not conducted.	NA

Table 4 shows the normalization calculation for the REV component score.

Table 4 - Normalized Relative Environmental Value Calculation			
Total REV Score	Max REV Score	Max Possible Score	Preliminary Component Score
59.50	÷ 77.91	x 27	= 21

Resiliency Score

The resiliency score (total of 25 points) is made up of two pieces: the project’s integration and flexibility (10 points) and its response to an uncertain future (15 points). Applications that demonstrated a high quality of analysis and high level of integration and system flexibility scored higher than those that demonstrated a low quality of analysis or low levels of integration and added system flexibility. Applications with a good quality of analysis, and that demonstrated the project would perform well in future climate conditions including showing water would be available during a drought, scored higher than those that demonstrating a low quality of analysis, public benefits reduced, or low performance during a drought.

Table 5 is the staff recommended score for Resiliency and the evaluation of the two components: a) Integration and Flexibility; and b) Uncertainty.

Table 5. Resiliency		
Component	Comment	Score
Integration and Flexibility	Application described a high level of integration of the proposed PRE Project with the SWP and CVP and SCVWD water system, and regional, and local water agencies’ water systems. The primary water sources to fill the expanded reservoir would be natural inflows from the North and East Forks of	8

Table 5. Resiliency		
Component	Comment	Score
	<p>Pacheco Creek. The proposed project operations would be integrated into the project’s partners’ regional water system operations. The applicant did not describe the inclusion of the project in other integrated planning documents. The proposed project would provide greater operational flexibility for San Luis Reservoir operators and local water systems in Santa Clara County.</p> <p>The proposed project operations would focus on integration with SCVWD’s water system operations to optimize use of all available supplies, including CVP and SWP supplies, other imported supplies, other local surface supplies, and conjunctive use/groundwater recharge. By expanding south-of-Delta storage that is interconnected with both CVP and SWP, the PRE Project would improve the operation of the state water system, including local, regional, state, and federal systems. The proposed project would also integrate into SCVWD’s project partner regional operations. The project would be integrated with existing surface water, groundwater, and future potable reuse supplies. This integration would provide improved system-wide flexibility and reliability, enabling SCVWD to improve management of stormwater supplies for environmental and water supply purposes.</p> <p>The PRE Project would improve overall system reliability and delivery flexibility, particularly related to joint CVP and SWP San Luis Reservoir operations. The project would provide local operational flexibility, contribute to the Sustainable Groundwater Management Act, conjunctive use, system maintenance flexibility, and supply management.</p>	
Uncertainty	<p>The applicant provided quantitative analysis of the two extreme climate scenarios (2070 Wetter/Moderate Warming and 2070 Drier/Extreme-Warming) provided by WSIP. The analysis indicates that the project’s public physical benefits under the extreme climate conditions are equivalent to or higher than those under the 2070 conditions. Ecosystem improvements in Pacheco Creek and emergency water supply increased while refuge water supply for the San Joaquin River watershed is maintained under the two extreme climate conditions.</p> <p>The applicant analyzed the effects on the public benefits under two different potential future water management scenarios— a Moderate Growth Scenario and an Expanded Water Supply Portfolio Scenario. These scenarios represent possible uncertainties in SCVWD’s system assumptions in 2070. The analysis indicates that the public benefits provided by the project are resilient under both the Moderate Growth and Expanded Water Supply Scenarios. Ecosystem improvements in Pacheco Creek and refuge water supply for the San Joaquin River watershed are maintained under the Moderate Growth Scenario and Expanded Water Supply Scenario and emergency water supplies are greater under both water management scenarios.</p> <p>The applicant analyzed other sources of uncertainty qualitatively. Uncertainties discussed include changes to imported water supplies due to</p>	15

Table 5. Resiliency		
Component	Comment	Score
	<p>changes in infrastructure or regulations, how South-Central Coast steelhead will respond to improved flow conditions on Pacheco Creek, and how emergency response operations can be improved. The applicant described potential adaptive management strategies in the Preliminary Operations Plan that may be employed to provide public benefits in consideration of uncertain future conditions.</p> <p>The applicant analyzed and described the performance of the project in providing the public benefits for the 1987-1991 drought period under the 2070 climate conditions. The amount of water stored in the water system due to the project at the beginning and end of the drought is 111,192 acre-feet and 60,876 acre-feet, respectively.</p>	
Preliminary Component Score		23

Implementation Risk

The implementation risk score is the total of the technical, environmental, economic and financial feasibility scores. One to five points, per category, were assigned depending on whether the information provided in the application showed a high or low risk of the project being built or operated in the timeframes provided, as well as whether the information was or was not well supported. The points total, maximum of 20, was then normalized for a maximum of 15 points.

Table 6 is the staff recommended score for Implementation Risk and the evaluation of the four component factors: Technical Feasibility, Financial Feasibility, Economic Feasibility, and Environmental Feasibility.

Table 6. Implementation Risk		
Implementation Risk	Comments	Score
Technical Feasibility	<p>The applicant demonstrated that the project can be constructed with existing technology and available construction materials, work force, and equipment. The applicant also demonstrated that the project is technically feasible consistent with the preliminary operations plan, as discussed below.</p> <p>Feasibility level cost estimates, design drawings, and construction schedule indicated the project can be constructed. The preliminary operations plan contains the four required components and are well supported by the information provided. The risk that the project cannot be operated to provide the substantiated public benefits, as described in the preliminary operations plan, is low.</p> <p>Preliminary operations plan components, as required by the regulations, are listed below:</p>	5

Table 6. Implementation Risk		
Implementation Risk	Comments	Score
	<ul style="list-style-type: none"> • Project operations and public benefits under a range of hydrologic conditions, including wettest and driest years and multiple dry years - Well supported • The actions that will be taken to meet the desired public benefit objectives - Well supported • How operations will be monitored to ensure public benefit outcomes - Well supported • Preliminary adaptive management strategies - Well supported <p>Project operations are well supported by the applicant in the Preliminary Operations Plan Chapter 2, with monthly target flows to Pacheco Creek described in Table 2-1. Pacheco Creek Steelhead Cohort by water year type is shown in Table 2-2 and Table 2-3 for 2030 and 2070 conditions, respectively. Table 2-4 shows water supplies for refuges in below normal years. Table 2-5 shows groundwater and surface water storage for emergency response by water year type.</p> <p>Actions taken to meet the desired public benefits are described in Chapter 3; the applicant provides well supported documentation for permitting, construction, and mitigation; along with agreements with partner agencies.</p> <p>Operation monitoring is described in Chapter 4; well supported information is provided for ecosystem improvements on Pacheco Creek, the San Joaquin River watershed, and emergency supply.</p> <p>Preliminary Adaptive Management Strategies are described in Chapter 5; the applicant states <i>"SCVWD will host a collaborative group (Group) made up of agency scientists, and representatives from non-government organizations, and interested parties."</i> Information is well supported for the Group's adaptive management strategies and performance measures and potential uncertainties.</p>	
Financial Feasibility	<p>The applicant has not fully demonstrated that sufficient funds are likely to be available from public and non-public sources to cover the construction and operation and maintenance of the project over the planning horizon.</p> <p>The financial analysis provided by the applicant indicates a medium risk of being unable to build or operate the project. The monetized non-public benefits are approximately forty percent of the non-public costs. The applicant demonstrates a strong rate base and history of meeting financial obligations. The existing ratepayer base has above-average annual income that could ensure costs are covered, as summarized in the applicant's financial feasibility statement. In addition, the project has other non-monetized public and non-public benefits and costs. Unmonetized benefits include flood benefits and potential non-public future cost savings, which can improve the overall financial feasibility. Additional costs may be</p>	3

Table 6. Implementation Risk		
Implementation Risk	Comments	Score
	required for actions to establish a steelhead trout population in Pacheco Creek.	
Economic Feasibility	<p>Considering all benefits and costs quantified and monetized by the applicant and adjusted by staff, the calculated benefit/cost (B/C) ratio is 1.12. Expected benefits of the project are greater than expected costs. Public benefits include ecosystem, emergency response, and recreation and are about 80% of total benefits. Non-public benefits include water supply and water quality which are about 20% of total benefits. Non-monetized, non-public benefits may include future cost savings for local water districts.</p> <p>The applicant’s analysis of total costs relative to total public and non-public benefits, as adjusted by staff, indicates a high certainty of being able to build or operate the project. The economic feasibility information is generally well supported. After staff adjustments, the analysis is consistent with the methods specified in the regulations and Technical Reference. However, additional costs may be required to attain the steelhead trout escapement expected for the ecosystem investment.</p>	4
Environmental Feasibility	<p>The applicant has prepared an Initial Study and Notice of Preparation but had not begun the preparation of an Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) at the time of application. The schedule indicated that the Draft EIS/EIR will be completed by the end of 2021. This completion date is close to the statutory deadline requirement of January 2022 which indicates a high implementation risk.</p> <p>Potential effects resulting from Project construction and operation correspond to the following resource areas:</p> <ul style="list-style-type: none"> • Aesthetics • Agricultural and forestry resources • Air quality • Biological resources • Cultural resources • Geology and soils • Greenhouse gas emissions • Hazards and hazardous waste • Hydrology • Land-use planning • Noise • Population and housing • Public services • Recreation • Transportation and traffic 	1

Table 6. Implementation Risk		
Implementation Risk	Comments	Score
	<ul style="list-style-type: none"> • Tribal cultural resources • Utilities and service systems <p>Some of the adverse effects anticipated for expanding Pacheco Reservoir would be less-than significant or would be reduced to less-than significant through mitigation. Other adverse effects would be long-term, such as potential impacts on botanical, wildlife and cultural resources within newly inundated areas of Pacheco Reservoir.</p> <p>The application included a comprehensive permit list with some ongoing coordination. Permits are scheduled to be acquired by the end of 2023. The applicant will also need to submit a water right petition for proposed new structures, new water right, and change in use. The application states that it could take up to 4 years to obtain the water right permit and had yet to be submitted. Because the project is in the early stages of environmental document development, there are no comments from agencies that would approve permits, which increases the implementation risk of the proposed project.</p>	
Preliminary Component Score		13

Table 7 shows the normalization calculation for the Implementation Risk score.

Table 7. Normalized Implementation Risk (IR)			
Total IR Score	Maximum IR Score	Maximum Possible Score	Preliminary Component Score
13	÷	17	x
		15	=
			11