

CALIFORNIA WATER COMMISSION

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Armando Quintero
Chair

May 25, 2018

Carol Baker
Vice-Chair

Mario Santoyo, Executive Director
Temperance Flat Reservoir Project

Andrew Ball
Member

msantoyo@sjvwia.org

Joseph Byrne
Member

Dear Mr. Santoyo:

Daniel Curtin
Member

Attached please find the Water Storage Investment Program technical review for the Temperance Flat Reservoir 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:

Joe Del Bosque
Member

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

Maria Herrera
Member

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".

Joe Yun
Executive Officer
California Water Commission

Water Storage Investment Program Technical Review

Temperance Flat Reservoir Project

San Joaquin Valley Water Infrastructure Authority

The San Joaquin Valley Water Infrastructure Authority is proposing the Temperance Flat Reservoir (TFR) project. The TFR project would be a new reservoir, formed by constructing a new dam within the footprint of the existing Millerton Lake on the San Joaquin River, approximately 20 miles northeast of Fresno, California. The TFR would provide an additional 1.26 million acre-feet of water storage capacity on the San Joaquin River that would manage water supplies stored from inflow that exceeds the operational capabilities of Millerton Lake and exchanged water supplies developed through coordinated operations with statewide water systems.

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 normalized 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 | 33 |
| Relative Environmental Value | 27 | 10 |
| Resiliency* | 25 | 19 |
| Implementation Risk | 15 | 9 |
| Preliminary Expected Return for Public Investment Score | | 71 |

*Resiliency score is a non-normalized component score.

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

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

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—Refuge water supply
- Flood Control
- Emergency Response
- Recreation

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 did not include NMBs in its application and the project received the maximum points possible based on the PBR. Therefore, the PBR score was not adjusted.

Table 2 presents the PBR 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 |
| 2.92 | 33 | N/A | 33 |

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 | The TFR project applicant states the Project will provide temperature and flow benefits to spring-run and fall-run Chinook, as well as additional water deliveries to wildlife refuges. The ecosystem priorities identified by the applicant are: | 29.60 |

| Table 3. Relative Environmental Value | | |
|---------------------------------------|---|-------|
| Component | Comment | Score |
| | <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 6 – Increase attraction flows during upstream migration to reduce straying of anadromous species into non-natal tributaries. • Priority 9 – Enhance flow regimes or groundwater conditions to improve the quantity and quality of riparian and floodplain habitats or aquatic and terrestrial species. • Priority 10 – Enhance the frequency, magnitude, and duration of floodplain inundation to enhance primary and secondary productivity and the growth and survival of fish. • Priority 11 – Enhance the temporal and spatial distribution and diversity of habitats to support all life stages of fish and wildlife species. • 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 15 – Develop and implement invasive species management plans utilizing techniques that are supported by best available science to enhance habitat and increase the survival of native species. | |
| 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 | | | |
| 29.60 | ÷ | 77.91 | x | 27 | = | 10 |

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 | <p>The applicant described a high level of integration of the proposed TFR project with the State Water Project (SWP) and the Central Valley Project (CVP) systems as well as regional and local water agencies. The source water for this project is the San Joaquin River. Potential collaboration with statewide, regional, and local planning efforts and future incorporation of the proposed TFR into groundwater sustainable plans is described. The applicant did not describe the inclusion of the project in other integrated planning documents. Due to its integration with the SWP and CVP, the proposed TFR would provide greater flexibility in managing water in the San Joaquin River.</p> <p>The applicant stated that the proposed TFR is being designed to be operated in a coordinated manner with other facilities that comprise the statewide water system and can be integrated with the SWP and CVP projects north and south of Delta and within the Delta. In addition, the applicant stated that the proposed TFR would increase South of Delta (SOD) storage capacity and improve operation of local, regional, and the SWP and CVP facilities to support groundwater sustainability and increase operational flexibility in the CVP Friant Division. Releases from the proposed TFR to the San Joaquin River for downstream delivery during drier conditions would enhance surface water and groundwater interconnection. The applicant stated that its partners and successors will work collaboratively with groundwater sustainability agencies in the priority subbasins to incorporate the proposed TFR into the respective groundwater sustainable plans.</p> | 8 |
| Uncertainty | <p>The applicant provided a quantitative analysis of the two extreme climate scenarios and the effects on each of the public benefits. Several examples of integration with future water management actions/projects and other sources of uncertainty are provided. There is a high level of water stored in the water system at the beginning and end of a 5-year drought.</p> <p>The applicant evaluated the two extreme 2070 climate scenarios (2070 Wetter/Moderate-Warming and Drier/Extreme-Warming) provided by WSIP. The performance of the TFR project for both extreme climate conditions was</p> | 11 |

| Table 5. Resiliency | | |
|------------------------------------|---|--------------|
| Component | Comment | Score |
| | <p>compared to the 2070 conditions performance of the project for each of the physical public benefits. The results of these analyses generally showed that TFR's public physical benefits (refuge Level 4 deliveries and emergency response) are maintained or increased under the extreme climate conditions. The incidental flood control benefits would be reduced due to reductions in incidental flood storage space.</p> <p>The applicant described how the public benefits could potentially be affected by potential future projects and water management actions including changes related to water storage, flood management, ecosystem conditions and management, groundwater and other water management, Delta operations and management, and State Water Quality Control Plan for the San Francisco Bay-Sacramento/San Joaquin Delta Estuary. The applicant stated that the performance of the proposed TFR project to provide the public benefits is not expected to be affected by changes in potential future projects and water management actions because of the project's flexibility, its operations can be adjusted to support the coordinated operations with other future projects and changes to water management actions.</p> <p>The applicant qualitatively describes other potential sources of uncertainty that may affect the proposed TFR operations and performance. If new north of Delta storage was implemented and operated to improve Delta exports, this could increase use of TFR for storage of SOD supplies. Changes in Delta habitat are not expected to have a significant effect on TFR. TFR would provide an additional 1.26 million acre-feet of SOD surface storage and could be operated in coordination with existing SOD storage and conveyance facilities.</p> <p>The applicant analyzed and described the project performance in providing public benefits during a 5-year drought 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 a five-year drought is 418,000 acre-feet and 79,000 acre-feet, respectively.</p> | |
| Preliminary Component Score | | 19 |

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. There is a high certainty that the project can be operated to provide the substantiated public benefits, as described in the preliminary operations plan.</p> <p>Preliminary operations plan components, as required by the regulations, are listed below:</p> <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>The applicant describes the TFR Project Operating Plan and the operating rules that preserve the existing operational requirements and benefits of Friant Dam and Millerton Lake and achieve multiple complementary objectives that provide a wide array of public and non-public benefits. The applicant describes public benefits over a range of hydrologic conditions. The applicant describes actions that will be taken to meet desired public benefit objectives through well supported information in the Preliminary Operations Plan; Section 4.1.4 Enhance Water Temperature and Flow Conditions in the San Joaquin River and in Section 4.1.5 Provide Water Supplies to San Joaquin Valley Wildlife Refuges, with well supported information.</p> <p>The applicant's operations monitoring plan and the adaptive management plan are well supported. The adaptive management plan will coordinate the existing San Joaquin River Restoration Program monitoring program which has a well-established adaptive management and monitoring program developed by the Fisheries Management Work Group, with representatives from the U.S. Fish and Wildlife Service, National Marine</p> | 5 |

| Table 6. Implementation Risk | | |
|-------------------------------------|--|--------------|
| Implementation Risk | Comments | Score |
| | <p>Fisheries Service, California Department of Fish and Wildlife, and Department of Water Resources.</p> <p>Provisions to adjust the timing of deliveries for downstream diversion and refuges on a real-time basis to achieve ecosystem improvements were described by the applicant.</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 (O&M) of the project over the planning horizon. Beneficiaries of non-public benefits have been allocated costs that appear to exceed the estimated ability to pay as analyzed in the draft Feasibility Study. However, a large share of the project capital is not yet funded, a planned federal cost share has not been authorized, funding sources are not substantiated for some future O&M costs, and the applicant does not have an existing rate base that could be used to help cover costs. The applicant reduced its funding request to be equal to the eligible funding amount, and reviewers could not identify another funding source in the application to replace that funding.</p> <p>The financial analysis provided by the applicant indicates a high risk of being unable to build or operate the project. The applicant provides a financial plan; the ability of project beneficiaries to pay financial obligations over the planning horizon is not well-supported. The monetized non-public benefits are approximately seventy-eight percent of the non-public costs. However, the applicant’s draft feasibility study (see Table 6-6, pg. 6-21 of Draft Feasibility Report, Upper San Joaquin River Basin Storage Investigation, January 2014) indicates a non-public ability to pay for water supply that is substantially below the allocated cost for water supply as reported on page 3-12 of the applicant’s file named “SJWVIA_FIR_A1_Feasibility_Assesment.pdf.” It is unclear how the non-public water supply beneficiaries would be able to pay their allocated costs.</p> | 1 |
| 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 0.89. Expected benefits of the project are less than expected costs. Public benefits include emergency response, flood control, and ecosystem and are about 17% of total benefits. Non-public benefits include water supply and hydropower which are about 83% of total benefits.</p> <p>The applicant’s analysis of total costs relative to total public and non-public benefits, as adjusted by staff, indicates a medium risk of being unable to build or operate the project. The B/C ratio is less than 1.0 but not so low to indicate a higher level of risk. The applicant’s economic feasibility analysis generally followed the requirements of the regulation and Technical Reference.</p> | 3 |

| Table 6. Implementation Risk | | |
|-------------------------------------|--|--------------|
| Implementation Risk | Comments | Score |
| Environmental Feasibility | <p>There is a high implementation risk that applicant will not be able to meet the project schedule identified in the application. The length of time it could take to receive a water right permit and revision due to a Fully Appropriated Stream declaration would likely exceed the timeframes indicated in the application and delay the ability of the project to provide public benefits.</p> <p>An environmental impact statement (EIS) prepared in 2014, which satisfied NEPA requirements for the project, was submitted with the project application. The applicant submitted documentation stating that the EIS also satisfies CEQA Guidelines Section 15221 (NEPA Document Ready Before CEQA Document) for WSIP application purposes. The applicant indicated that a Draft EIR will be prepared by the end of 2020 and a Final EIR by the end of 2021 to satisfy the remaining CEQA requirements.</p> <p>The proposed project could cause potentially significant and unavoidable impacts to:</p> <ul style="list-style-type: none"> • Climate change associated with an increase in GHG emissions • Biological resources including, wetlands and waters, rare plants, Botanical and Wetlands, special status raptors, special status passerines or birds protected by the Migratory Bird Treaty Act, and potential conflict with Fresno County and Madera County General Plan Objectives and Guidelines related to biological resources • Cultural resources due to disturbance or destruction of cultural, historic, and tribal cultural resources • Geologic resources related to loss or diminished availability of known mineral or geologic resources, soil erosion or loss of topsoil • Water quality • Land uses related to conversion of farmland and forestland, conflict with adopted plans, and disruption of existing land uses • Noise associated with impacts during construction; • Utilities and service systems related to decreased power generation at Kerckhoff Hydroelectric • Recreation including permanent loss of resources used for recreation and substantial or long-term reduction or elimination of recreational opportunities or experiences, and loss of access to a locally important recreation site or area • Visual resources related to consistency with application plans, obstruction of a scenic view, and generation of daytime glare and night time lighting <p>The applicant indicated that 350 supporting comment letters and 3,000 comments were submitted; but, these were not made available to reviewers. Reviewers were only able to consider significant impacts as they</p> | 1 |

| Table 6. Implementation Risk | | |
|-------------------------------------|---|--------------|
| Implementation Risk | Comments | Score |
| | <p>were described by the applicant. Any other significant impacts or required permits from resource agencies are unknown.</p> <p>The applicant indicates in the EFR_A1_SOWSchedBudget attachment that all permits would be acquired by late 2021. The project will require a new water right appropriation and petition for revision of Fully Appropriated Stream declaration in the list of required permits, and states that it will require 7 years to obtain.</p> | |
| Preliminary Component Score | | 10 |

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 |
| 10 | ÷ | 17 | x |
| | | 15 | = |
| | | | 9 |