

CALIFORNIA WATER COMMISSION

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Armando Quintero
Chair

May 25, 2018

Carol Baker
Vice-Chair

Kellie Welch, Water Resources Manager
Kern Fan Groundwater Storage Project

Andrew Ball
Member

welch@irwd.com

Joseph Byrne
Member

Dear Ms. Welch:

Daniel Curtin
Member

Joe Del Bosque
Member

Attached please find the Water Storage Investment Program technical review for the Kern Fan Groundwater Storage 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/KernTech.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 that reads "Joe Yun".

Joe Yun
Executive Officer
California Water Commission

Water Storage Investment Program Technical Review

Kern Fan Groundwater Storage Project

Irvine Ranch Water District and Rosedale-Rio Bravo Water Storage District

The Kern Fan Groundwater Storage Project (Kern Fan Project) would develop a regional water bank in the Kern Fan area to recharge and store in the Kern County Groundwater Sub-basin of the San Joaquin Valley Groundwater Basin up to 100 thousand acre-feet (TAF) of unallocated Article 21 water available from the State Water Project (SWP) operation. Recovery and use of the stored water would provide public and non-public benefits.

The Kern Fan Project provides groundwater storage and would be operated so that in wet years, the project partners, Irvine Ranch Water District (IRWD) and Rosedale-Rio Bravo Water Storage District (Rosedale), would divert unallocated SWP Article 21 supplies for storage in the Kern Fan Project. IRWD and Rosedale would share first priority rights to 75 percent of the stored water for water supply purposes. The remaining 25 percent of the stored water would be available to support ecosystem benefits. This 25 percent of the water would be used to provide short-term ecosystem pulse flows from Lake Oroville in exchange of the same amount of water extracted from the groundwater storage that would be used as Table A water.

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	
Public Benefit Ratio and Non-Monetized Benefits	33	12
Relative Environmental Value	27	13
Resiliency*	25	12
Implementation Risk	15	11
Preliminary Expected for Public Investment Score		48

* 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 did not alter 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—Spring-run and winter-run Chinook salmon survival
- Ecosystem improvement—Incidental wetland habitat
- Emergency response—Drought water 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 did not include NMBs in its application. Therefore, the normalized 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	
1.05	12	N/A	12

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 Kern Fan project would recharge and store up to 100 TAF of SWP Article 21 water in the Kern County groundwater sub-basin. Approximately 25% of the stored water would be reserved for public benefits that would be made available for ecosystem benefits through one-for-one exchanges, resulting in Table A water held in Oroville Reservoir being reclassified as SWP system water. During dry and critically dry years, the Kern Fan project proposes to provide seven pulse flows over the life of the project from Oroville Reservoir during the month of April to benefit Chinook salmon and green sturgeon. The Kern Fan project also proposes to provide 1,280 acres of temporary shallow open-water habitat for migratory birds during years in which recharge activity occurs. The ecosystem priorities identified by the applicant are:</p> <ul style="list-style-type: none"> • Priority 2 – Provide flows to improve habitat conditions for in-river rearing and downstream migration of juvenile salmonids. • 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. 	37.90
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			
37.90	÷	77.91	x	27	=	13

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 application describes a moderate level of integration of the proposed Kern Fan Project within the applicant agencies' operations. Operation of the project will be coordinated with the SWP through the California Department of Water Resources (DWR) to provide the public benefits. The source water for this project is unallocated Article 21 water available from the SWP operation. The project would be integrated with Rosedale's Conjunctive Use Program. SWP through. The applicant did not describe the inclusion of the proposed project in other integrated planning documents.</p> <p>The proposed project would provide operational flexibility by augmenting water supplies, during periods when other water sources may be limited, with groundwater storage, as well as operational flexibility to Rosedale's existing and future programs. The proposed project would also provide operational flexibility by utilizing contingency groundwater storage to augment supplies during periods when other water sources may be limited or unavailable (emergency response – extended drought). It would be a critical element of the IRWD water supply reliability portfolio that supports groundwater recharge and recovery for regional partnerships involving conjunctive use and groundwater banking.</p>	7
Uncertainty	<p>The applicant did not analyze, as required by section 6004(a)(8)(A) of the regulations, how the expected public physical benefits would change under the two extreme 2070 climate scenarios (2070 Wetter/Moderate-Warming and 2070 Drier/Extreme-Warming) and how the proposed project operations could be adapted to sustain the public benefits. Instead the applicant analyzed the project's performance in providing public benefits based on the 2070 climate conditions. The 2070 climate conditions are required for the quantification of the public benefits, not for uncertainty analysis.</p> <p>The applicant performed sensitivity analysis to evaluate the effects of the California WaterFix proposed action on the proposed project operations. The sensitivity analysis indicated that California WaterFix would increase the ability of the proposed project to recharge water and increase project yields. With California WaterFix, the sensitivity analysis indicated the project's frequency of ecosystem pulse flows increased from four to seven years. The project's frequency of pulse flows under the WSIP 2030 conditions is 7 years.</p> <p>The applicant did not describe, as required by section 6004(a)(8)(C) of the regulations, how the expected public physical benefits would change with other sources of uncertainty identified by the applicant and describe</p>	5

Table 5. Resiliency		
Component	Comment	Score
	<p>alternative operational strategies or adaptations that could be adapted to sustain the public benefits.</p> <p>The applicant quantified the project’s storage during a 5-year drought for 2 drought periods, 1929-1934 and 1987-1992:</p> <ul style="list-style-type: none"> • For the 1929-1934 period, project storage at the beginning and end of this drought period is 0 acre-feet. • For the 1987-1992 period, the amount of water stored in the water system due to the project at the beginning and end of this drought period is 38 TAF and 14 TAF, respectively. The applicant stated that the 14 TAF volume of stored water is not adequate to initiate an ecosystem pulse release from Lake Oroville for fish benefits. 	
Preliminary Component Score		12

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 and construction schedule, and one conceptual design drawing indicated the project can be constructed. The preliminary operations plan contains the four required components and are generally to 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 moderate to low.</p>	4

Table 6. Implementation Risk		
Implementation Risk	Comments	Score
	<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 - Generally supported • Preliminary adaptive management strategies - Generally supported <p>The applicant provides information describing project operations and public benefits for range of hydrologic conditions in the preliminary operations plan. To meet the desired public benefit objectives the applicant describes how incidental wetland habitat, emergency response-extended drought water supplies, and operations for water supply will be provided over the simulated period.</p> <p>The applicant generally describes that public benefits may be achieved through changing timing or magnitude of pulse flows, and flow-survival studies. The adaptive management plan generally described that IRWD and Rosedale would work with CDFW to develop a management and monitoring program. The management and monitoring program is not sufficiently described.</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.</p> <p>The financial analysis provided by the applicant indicates a medium certainty that the applicant can build or operate the project. The monetized non-public benefits are approximately thirty-seven percent of the non-public costs. The applicant has an existing rate base to cover costs, as summarized in the applicant’s financial feasibility statement. The applicant states that IRWD and Rosedale will increase customer rates to cover project costs, but no specific plan or calculation is provided to document the effect on rates. Revenue mechanisms are described in the file “IRWD_Attach 1_Combined Feasibility.pdf”. The applicant states that it has additional benefits that would justify its non-public beneficiaries contributing more toward project costs than indicated by their monetized benefits which reduce possible financial feasibility risks (see the Cost Allocation tab in the file “FINAL Tab 6-A9-A10_IRWD_Benefit-Cost_Analysis_Cost_Allocation.xlsx”).</p>	3

Table 6. Implementation Risk		
Implementation Risk	Comments	Score
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 0.65. The B/C ratio is substantially less than 1.0. Public benefits include ecosystem and emergency response which are about 67% of total benefits. Non-public benefits include water supply and groundwater level improvement and are about 23% of total benefits.</p> <p>The project may provide additional non-public water supply benefits by banking additional water that the applicant may be able to secure in the future. However, the cost of acquiring this water has also not been included.</p> <p>The applicant's analysis of total costs relative to total public and non-public benefits, as adjusted by staff, indicates a medium-high risk of being unable to build or operate the project due to economic feasibility. Also, additional costs associated with arrangements that may be required to exchange stored water for Lake Oroville stored water have not been monetized.</p>	2
Environmental Feasibility	<p>The project appears to have a reasonable schedule, will likely receive permits related to the local project, and appears to be able to mitigate potentially significant impacts associated with the local project. Therefore, this project appears to have a moderately-low implementation risk.</p> <p>A link to the Stockdale Project Final Environmental Impact Report (EIR) (2015), site 3 of which will programmatically cover Phase 1 of this project was provided in the application. By early 2020, a Supplement to the 2015 Stockdale EIR will be prepared to cover Phase 1 and Phase 2 at the Programmatic level. The Supplemental EIR will be completed such that the third site is specifically identified along with appurtenant conveyance facilities to be evaluated at a project-level. The application and Final EIR both describe how potentially significant impacts will be reduced or mitigated. The Final EIR is scheduled to be completed by Fall 2020.</p> <p>Special status species could be affected by construction activities and is of concern to CDFW. The applicant indicates that there are no significant and unavoidable impacts.</p> <p>The application included a comprehensive permit list with permits being acquired by Fall 2020. The application also included comments from permitting agencies which were consulted to understand the permitting needs of the project. The applicant has contacted DWR regarding exchanges that would be required to provide pulse flows on the Feather River. The need for a contract or operating agreement through water contractors or DWR increases implementation risk.</p>	4
Preliminary Component Score		13

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

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