

CALIFORNIA WATER COMMISSION

901 P STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 651-7501



Armando Quintero
Chair

May 25, 2018

Carol Baker
Vice-Chair

Jim Watson, General Manager
Sites Project

Andrew Ball
Member

jwatson@sitesproject.org

Joseph Byrne
Member

Dear Mr. Watson:

Daniel Curtin
Member

Attached please find the Water Storage Investment Program technical review for the Sites 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: <https://cwc.ca.gov/Pages/WSIP/SitesTech.aspx>

Joe Del Bosque
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.

Maria Herrera
Member

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.

Catherine Keig
Member

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

Sites Reservoir Project

Sites Project Authority

The Sites Project Authority is proposing a surface storage project, the Sites Reservoir Project. The Sites Reservoir Project would be a 1.81 million acre-foot offstream surface storage reservoir located in the Sacramento Valley west of the town of Maxwell. The proposed reservoir's conveyance facilities would include the use of existing Tehama Colusa Canal and Glenn-Colusa Irrigation District Canal diversion and conveyance facilities, plus a proposed new diversion and discharge pipeline. Sources of water would be Funks Creek and Stone Coral Creek, which would be impounded by the proposed reservoir and the Sacramento River. Operation of the proposed reservoir would be in cooperation with the operations of existing Central Valley Project (CVP) and State Water Project (SWP) system facilities.

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	13
Relative Environmental Value	27	15
Resiliency*	25	21
Implementation Risk	15	12
Preliminary Expected Return for Public Investment Score		61

*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—Refuge water supply
- Ecosystem Improvement—Yolo Bypass flows
- Recreation
- Flood Control

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 Emergency Response, the applicant’s claim lacked specificity that would enable the Department of Water Resources (DWR) to evaluate if there is an emergency response benefit. The applicant provided no justification on why this benefit could not be monetized and no qualitative description of the importance of the benefit. The applicant has claimed operational flexibility, but did not specifically describe how the operational flexibility would benefit one of the NMB categories.

For Recreation, the applicant’s operations modeling indicated that with Sites reservoir storage at Lake Oroville, Shasta Lake and Folsom Lake improved during dry and critical years. The applicant did not provide sufficient information on how the increased storage in these lakes ties into increased recreation visitation.

Regarding the benefits to fishing, the applicant’s operations modeling indicated there could be additional cold water and augmented flows for game fish. However, the applicant provided insufficient information on how the cold water and augmented flows would substantiate the recreational fishery; there was insufficient justification regarding why these benefits could not be monetized; and no qualitative description of the importance of the benefit was included. The applicant has claimed operational flexibility, but did not specifically describe how the operational flexibility would benefit one of the NMB categories.

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
1.10	12	1	13

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 that 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 that 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 primary ecosystem benefits of the proposed Sites Reservoir Project derive from coordinated operations of Sites Reservoir, Shasta Lake, Lake Oroville, and Folsom Lake. Through the use of water stored in Sites Reservoir in substitution for releases from these other reservoirs, storage could be conserved in Shasta Lake, Lake Oroville, and Folsom Lake to increase operational flexibility and to improve river water temperatures for anadromous fish survival. Utilizing this operational design, the applicant claims temperature improvements to the upper Sacramento River that would result in higher rates of salmon survival. Similarly, the applicant states there would be temperature improvements derived from added water stored in Oroville. The applicant is also proposing to deliver water to the Yolo Bypass, in order to propagate nutrient rich water lower in the bypass system that would later be flushed to the Delta where smelt could benefit from increased food productivity. Lastly, the applicant is proposing deliveries of Incremental Level 4 refuge water to National Wildlife Refuges, State Wildlife Areas, and privately managed wetlands in order to improve wetland habitat and provide benefits to species utilizing these habitats. 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. 	40.50

Table 3. Relative Environmental Value		
Component	Comment	Score
	<ul style="list-style-type: none"> • Priority 5 – Provide flows that increase dissolved oxygen and lower water temperatures to support anadromous fish passage. • 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 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. • Priority 16 – Enhance habitat for native species that have commercial, recreational, scientific, or educational uses. 	
Water Quality	<p>The Sites Reservoir Project will be an off-stream reservoir independently owned, constructed, governed, and operated by the Sites Project Authority under its own water rights and other regulatory requirements, but in coordination with the U.S. Bureau of Reclamation and DWR. The stated objective for the Sites Reservoir Project is to make California’s water system more efficient, flexible, and reliable. The reservoir would provide additional water storage that could be used to provide public benefits. The public benefits for the Sites Reservoir Project are to improve the survival of anadromous fish and other aquatic species, provide additional water to support wetland habitat development, provide opportunities for recreation, and reduce flood damage.</p> <p>Sites Project Authority claimed the project would address four of the SWB water quality priorities:</p> <ul style="list-style-type: none"> • Priority 1: Improve water temperature conditions in surface water bodies that are not meeting water quality standards for temperature; • Priority 6: Protect, clean up, or restore groundwater resources in high- and medium-priority basins designated by DWR; • Priority 7: Achieve Delta tributary stream flows that resemble natural hydrograph patterns or other flow regimes that have been demonstrated to improve conditions for aquatic life; and • Priority 9: Provide water for basic human needs, such as drinking, cooking, and bathing, in disadvantaged communities, where those needs are not being met. 	52.50

Table 4 shows the calculation combining the Ecosystem score and the Water Quality score to determine the total REV score.

Table 4. Combined Relative Environmental Value Calculation						
Ecosystem Score Calculation			Water Quality Score Calculation			
Eco Score	Eco Portion Score		WQ Score	WQ Portion Score	Eco Score	WQ Score
40.50	x 0.7	= 28.35	52.50	x 0.3 = 15.75	28.35	+ 15.75 = 44.10

Table 5 shows the normalization calculation for the REV component Score.

Table 5. Normalized Relative Environmental Value Calculation			
Total REV Score	Max REV Score	Max Possible Score	Preliminary Component Score
44.10	÷ 77.91	x 27	= 15

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

Table 6. Resiliency		
Component	Comment	Score
Integration and Flexibility	The application described a high level of integration of the proposed Sites Reservoir Project with the SWP and CVP systems as well as regional and local water agencies. The primary source of water for this project would be the Sacramento River. Potential collaboration with statewide, regional, and local planning efforts is also described. The proposed project would provide additional storage and system flexibility to the CVP and SWP system. The Sites Project Authority is working with the U.S. Bureau of Reclamation and DWR to develop cooperative operations between the proposed Sites Reservoir and the SWP and CVP to improve water supply reliability throughout the State’s integrated water system. The proposed project would provide the following benefits:	10

Table 6. Resiliency		
	<ul style="list-style-type: none"> • Long-term additional storage in SWP and CVP reservoirs • Provide water to Yolo Bypass for ecosystem restoration • Facilitate habitat enhancement actions • Provide water for agricultural and municipal and industrial purposes and State and federal wildlife refuges • Provide opportunities for in lieu surface water benefiting groundwater levels • Be consistent with Agricultural and Urban Water Management Plans submitted by participating suppliers. <p>The applicant described the proposed project as an important regional initiative and was identified as a long-term regional priority in the Sacramento Valley Integrated Water Management Plan due to its water supply reliability and flood protection benefits. Project participants include agencies in the Sacramento Valley, Bay Area, San Joaquin Valley, Southern Desert, and South Coast regions.</p> <p>The proposed project would increase the current storage capacity in the largest reservoirs in the Sacramento Valley by 15%. The applicant stated that the additional storage in the SWP and CVP reservoirs resulting from the proposed project would provide the state water system greater flexibility in operating the overall water system without negative impacts to water supplies and would provide State resource agencies with a water supply dedicated to the environment. In addition, the applicant stated that the proposed project would improve the ability of state water managers to adaptively manage reservoir releases to achieve different benefits associated with the increase in systemwide storage capacity and changes in future hydrologic and/or environmental conditions.</p>	
Uncertainty	<p>The applicant performed sensitivity analyses to evaluate the effects of the two extreme 2070 climate scenarios (2070 Wetter/Moderate-Warming and Drier/Extreme-Warming) provided by WSIP on the public physical benefits. The applicant stated <i>“The public benefits provided by Sites Reservoir are largely dependent on the capability to divert Sacramento River water into the reservoir when all other regulatory and water right requirements are met. In both the WMW and DEW climate scenarios, the average annual diversion to Sites Reservoir illustrates the resiliency of the project, as diversions are only reduced by six percent and three percent, respectively, when compared to the base WSIP 2070 model results.”</i> The results of the sensitivity analyses indicated that the proposed project can be adapted to future conditions and provide sustained public benefits.</p> <p>The applicant stated that the proposed project has the operational flexibility to deliver water to provide public benefits where and when it is needed most, based on changing conditions and ecosystem priorities. In the 2070 WMW scenario, the sensitivity analysis indicated that water deliveries to the Yolo</p>	11

Table 6. Resiliency		
Component	Comment	Score
	<p>Bypass occur in over 90 percent of the years, as compared to 70 percent in the 2070 climate conditions and Level 4 refuge deliveries are increased due to more available water in storage. In the 2070 Drier/Extreme-Warming climate scenario, the sensitivity analysis indicated that water is delivered to the Yolo Bypass in over 50 percent of the years as compared to 70 percent in the 2070 climate conditions and Level 4 refuge deliveries may decrease. The applicant did not describe how the recreation and flood control benefits would be affected by the extreme climate scenarios.</p> <p>The applicant provided qualitative discussions of the potential effects of these future potential projects and water management actions on the proposed project performance and public benefits: Multi-regional water resource projects and actions; water supply projects; ecosystem improvement projects and actions. Based on the sensitivity analyses or post-processing of the 2070 climate conditions modeling results, the applicant concluded that the proposed project has the operational flexibility to shift the timing of diversions, reservoir storage, and release operations to maintain and potentially enhance public physical benefits such as refuge deliveries and Yolo Bypass flow enhancement with these potential future projects and water management actions.</p> <p>The applicant stated that the potential future projects and water management actions described in the “Future projects and water management actions” section adequately cover the range of potential uncertain future conditions that may affect the public physical benefits. The applicant stated that the proposed Sites Reservoir would allow for the development of an EESA that could be managed by the State to provide water for ecosystem and water quality purposes. The EESA would provide the operational flexibility for the state to manage water stored in Sites Reservoir to sustain public benefits to meet future needs on an adaptive management basis. The applicant provided examples of adaption measures include shifting the timing of primary diversion periods, shifting facility operations and maintenance periods, and shifting diversions among three intake locations and concluded that the project has the operational flexibility to provide public benefits over a range of potential uncertain future conditions.</p> <p>The applicant analyzed and described the project performance in providing public benefits during a 5-year drought for the 1930-1934 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 900,000 acre-feet and 300,000 acre-feet, respectively.</p>	
Preliminary Component Score		21

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 7 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 7. Implementation Risk		
Implementation	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 provides well supported information in the preliminary operations plan describing the public benefits associated with Yolo Bypass and Delta outflow, and water supply for wildlife refuges over a range of hydrologic conditions.</p> <p>The operations actions describe an example of how the EESA could be used to meet public benefit objectives over a range of hydrologic conditions. Operations in any given year will be a function of the current year hydrology, as well as a function of the system conditions resulting from the previous year's hydrology and operations.</p>	5

Table 7. Implementation Risk		
Implementation	Comments	Score
	<p>The applicant describes objective-based monitoring strategies in Table ADF-1 in the preliminary operations plan. The applicant provides well-supported description of an objective-based monitoring framework with objectives and ecosystem priorities, measurable objectives, and performance measures and monitoring.</p> <p>Applicant provides well-supported information in the adaptive management framework section of the Operations Plan including a detailed description of environmental conditions of primary concern and states "<i>The adaptive management program will be developed in close coordination with the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFW). Specific adaptive management investigations will be developed to build on the best available science on the range of issues listed above.</i>"</p>	
Financial Feasibility	<p>The applicant has claimed 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. However, no explicit funding source has been identified for some of the capital and O&M costs required to operate the project, including O&M costs associated with public benefits. The financial feasibility information (in applicant's file "Sites_A1 Feasibility.doc", pages 6 to 14) is generally well-supported.</p> <p>The financial analysis provided by the applicant indicates a medium risk of being unable to build or operate the project. The project has a favorable benefit/cost (B/C) ratio, but there are overall questions related to project funding. The monetized non-public benefits for the applicant are 88% of the non-public costs. 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 unit values used for agricultural water supply are substantially more than some agricultural users currently pay; this could cause some non-public beneficiaries to decline participation.</p>	3
Economic Feasibility	<p>Considering all benefits and costs quantified and monetized by the applicant and adjusted by staff, the calculated B/C ratio is 1.05. Expected monetized benefits of the project are more than expected costs. Public benefits include ecosystem, recreation, and flood control, which are about 15% of total benefits. Non-public benefits include water supply and hydropower and are about 85% 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 low risk of being unable to build or operate the project. The economic feasibility information is generally</p>	4

Table 7. Implementation Risk		
Implementation	Comments	Score
	well supported, and after staff adjustments, is consistent with the methods specified in the regulations and Technical Reference. However, the project benefits and costs do not include potential impacts to anadromous fish identified by staff in the public benefits ratio review.	
Environmental Feasibility	<p>There is a high implementation risk due to the length of time it could take to receive a water right permit and Federal Energy Regulatory Commission (FERC) Hydropower License. It is not likely that a water right permit or FERC hydropower license will be obtained by the end of 2021.</p> <p>The application permit document (Sites_A2 Permits) states that several permits and authorizations would be required for the project; and, that most permits will be acquired by the end of 2021. However, no formal permitting or approval processes had been initiated at the time of application. The application schedule (Sites_A3 Schedule) shows Water Rights Permit Application development in Summer 2018 and completion by the end of 2021. The application mentions that a FERC hydropower license would take between 5-10 years to receive, which would be much later than 2021. Additional permits that the proposed project may require include but are not limited to a Biological Opinion and/or Incidental Take Permit and a Streambed Alteration Agreement. Depending upon the timing of CEQA document processing, the permitting could be delayed.</p> <p>The applicant provided a link to the Sites Reservoir Project Draft EIR/EIS which was prepared in August 2017. The Final EIS/EIR is scheduled to be prepared in mid-2019. CDFW's PBR review and analysis shows that there are impacts that may not be addressed in the Draft EIR.</p> <p>The proposed project could have potentially significant and unavoidable impacts to:</p> <ul style="list-style-type: none"> • Air quality (PM10, ROG, NOx) associated with operations and maintenance • Climate change associated with an increase in GHG emissions above County thresholds • Terrestrial biological resources including a permanent loss of nesting and foraging habitat for golden eagle • Existing and designated land uses and zoning including a physical division of the community of Sites, conflicts or incompatibilities with agricultural zoned lands, and conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-ag uses • Cultural resources including built historical resources, tribal resources, and human remains associated with a designated cemetery 	2

Table 7. Implementation Risk		
Implementation	Comments	Score
	<ul style="list-style-type: none"> Visual resources associated with Terminal Regulating Reservoir and associated facilities, which would be visually dominant and in high contrast to surrounding landscape 	
Preliminary Component Score		14

Table 8 shows the normalization calculation for the Implementation Risk Score.

Table 8. Normalized Implementation Risk (IR)						
Total IR Score	Maximum IR Score	Maximum Possible Score	Preliminary Component Score			
14	÷	17	x	15	=	12