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April 20, 2018

Terrie Mitchell, Manager, Legislative and Regulatory Affairs
South Sacramento County Agriculture and Habitat Lands Recycled Water, Groundwater Storage, and Conjunctive Use Program
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Subject: Public Benefit Ratio Appeal Response

Dear Ms. Mitchell,

As you know, the Water Storage Investment Program (WSIP) provided an appeal process allowing applicants to respond to staff adjustments made in our February initial Public Benefit Ratio (PBR) review. Many applicants used the opportunity to submit information that helped substantiate their project's anticipated physical benefits and their monetary value to help the Commission make an informed determination of each project's PBR at the upcoming May 1-3 meeting.

Thank you for your engagement, and the work your team put into the appeal process. The enclosed packet includes the WSIP technical review team's response to your appeal regarding the PBR for the South Sacramento County Agriculture and Habitat Lands Recycled Water, Groundwater Storage, and Conjunctive Use Program.

The response includes the recommendations of the Department of Water Resources, Department of Fish and Wildlife, and State Water Resources Control Board, as appropriate, as well as the Commission staff's updated recommendation for the project's PBR.

The staff recommendations will be presented to the Commission at the May 1-3 meeting. Please note, we are reserving May 4 as a hold-over day in the event extra discussion time is necessary. At the Commission meeting, applicants will have the opportunity to publicly address the Commission and answer questions about their projects. Public comment also will be heard.

Staff from the Commission, the Department of Water Resources, the Department of Fish and Wildlife, and the State Water Resources Control Board look forward to engaging with applicants at the scheduled meetings on April 24 and 25. These public meetings are designed to walk through the staff-response and help identify any remaining issues that may need clarification when the Commission meets in May. The meetings also will help applicants and the public prepare for the May 1-3 meeting.

The California Water Action Plan recognizes the importance of investing in both above- and below-ground storage. The Commission's May 1-3 meeting will mark another key step toward making key investments in new water storage. The

Commission remains on track to make early funding and conditional funding awards in July.

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

Sincerely,

Joe Yun
Executive Officer, California Water Commission

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Public Benefit Ratio Appeal Response: South Sacramento County Agriculture and Habitat Land Recycled Water, Groundwater Storage, and Conjunctive Use Program

Applicant: Sacramento Regional County Sanitation District

Introduction

On February 2, 2018, the California Water Commission (Commission) released staff-adjusted Public Benefit Ratios (PBRs) for Water Storage Investment Program (WSIP) applications received in August 2017. WSIP regulations section 6008 describes the appeal process for staff adjustments to a PBR. Applicants had three weeks to submit an appeal of the staff's adjustments to their PBRs. On February 23, 2018, the Commission received appeals from 10 applicants.

This PBR appeal response describes the following:

- Applicant's original PBR as submitted
- Staff adjustments to the PBR review
- Applicant's appeal
- Staff PBR recommendations

The Commission will decide final PBRs at its May 1-3, 2018 meeting.

This PBR response incorporates review of the applicant's appeal, which was conducted by the Commission's economics reviewers and water operations reviewers, the California Department of Fish and Wildlife (CDFW), and the California Department of Water Resources (DWR). The following reviews are attached to this PBR response:

- California Water Commission, Economics Review Appeal (Economics Response)
- California Water Commission, Water Operations Review Response to Applicant's Appeal of Public Benefits Ratio (Water Operations Response)
- California Department of Water Resources, Water Storage Investment Program – Public Benefits Ratio Recommendations – Response to Applicant's Appeal (DWR Response)

Project Overview

The Sacramento Regional County Sanitation District (Regional San) is proposing a conjunctive use project, the South Sacramento County Agriculture and Habitat Lands Recycled Water, Groundwater Storage, and Conjunctive Use Program (South County Ag Program) to store and manage groundwater while improving stream flow, enhancing groundwater-dependent riparian habitats, sustaining prime agricultural lands, and improving regional water supply reliability. Sources of water would be up to 50 thousand acre-feet (TAF) per year of Title 22 tertiary-treated recycled water produced by Regional San. Water produced from the South County Ag Program would be used to irrigate up to 16,000 acres of agriculture and habitat lands in Sacramento County near the lower Cosumnes River and Stone Lakes National Wildlife Refuge.

The applicant describes South County Ag Program's public benefits as follows:

- Ecosystem Improvement—Increased flows for fall-run Chinook salmon passage in the lower Cosumnes River
- Ecosystem Improvement—Riparian and wetland habitat enhancements
- Ecosystem Improvement—Increase additional habitat to support sandhill cranes
- Ecosystem Improvement—Restore vernal pool habitats
- Water Quality Improvement—Reduce mass loading of salts to the lower Sacramento River and Delta
- Recreation—Increase the number of visitors to the Cosumnes River Preserve and Stone Lakes National Wildlife Refuge

Summary

Staff reviewed the information submitted in the appeal, considered the reasonableness of the documentation provided, and made recommendations (Table 1) for adjustment to the applicant's quantified public benefits, funding request or eligible amount, and PBR. Table 1 summarizes how these values changed during the PBR review process.

Through the PBR appeal process, applicants could rebut staff's adjustments to their public benefits, and provide an alternate PBR. If, during the appeal, and in response to a staff adjustment, the applicant chose to change their funding request from the amount in the original August 2017 application, it is also shown in Table 1.

Table 1. Summary of Adjustments to Public Benefit Ratio

Item	Original Application, August 2017	Staff PBR Review, February 2, 2018	Applicant Appeal, February 23, 2018	Staff Recommendation, April 20, 2018
Value of Public Benefits ($ millions)	$896.7	$229.6	$280.6	$244.3
Applicant Funding Request ($ millions)	$304.0	--	$280.5	--
Public Benefit Ratio	2.95	0.75	1.00	0.87

Notes:
All values are in 2015 dollars.
PBR value is based on the applicant's funding request.
Values are rounded to the nearest tenth of a million dollars for display purposes.
Underlying calculations reflect the precision provided by the applicant.

Table 2 summarizes the changes made during the PBR review process to the public physical benefits claimed in the application, and the monetary value of those benefits. The last column shows the staff recommendation for each claimed physical benefit.

Table 2. Summary of Physical Benefits and Economic Issues

Benefits	Physical/ Monetary	Staff PBR Review, February 2, 2018	Applicant Appeal, February 23, 2018	Staff Recommendation, April 20, 2018
Ecosystem— Increased Flows for Fall-run Chinook	Physical benefit	No adjustments	N/A	Physical benefit accepted
	Monetary value	Value adjusted	N/A	Monetary value adjusted. See Economics Response Page 2.
Ecosystem— Wetland Habitat Enhancement	Physical benefit	No adjustments	N/A	Physical benefit accepted
	Monetary value	Value reduced	Appealed	Monetary value adjusted. See Economics Response Page 5.
Ecosystem— Riparian Habitat Enhancement	Physical benefit	No adjustments	N/A	Physical benefit accepted
	Monetary value	Value reduced	Appealed	Monetary value adjusted. See Economics Response Page 3.

Table 2. Summary of Physical Benefits and Economic Issues

Benefits	Physical/ Monetary	Staff PBR Review, February 2, 2018	Applicant Appeal, February 23, 2018	Staff Recommendation, April 20, 2018
Ecosystem— Greater Sandhill Crane Habitat Improvements	Physical benefit	No adjustments	N/A	Physical benefit accepted
	Monetary value	Value reduced	Accepted	Monetary value accepted
Ecosystem— Vernal Pool Habitat Improvements	Physical benefit	No adjustments	N/A	Physical benefit accepted
	Monetary value	Value accepted	N/A	Monetary value accepted
Water Quality— Reduced Salinity Load to Surface Water	Physical benefit	No adjustments	N/A	Physical benefit accepted
	Monetary value	Value reduced	Accepted	Monetary value accepted
Recreation	Physical benefit	DWR recommended removal	Accepted	Physical benefit removed. See DWR Response Page 2.
	Monetary value	Value removed	Accepted	Monetary value removed

Note: N/A indicates item is not applicable

Table 3 summarizes the monetary value of the public benefits claimed by the applicants, as adjusted through the PBR review. It shows the staff recommendation, and how the total value of the claimed benefits changed through the PBR review. If a benefit was removed, the staff recommended monetary value is zero.

Table 3. Monetization of Public Benefits ($ millions)

Benefits	Original Application, August 2017	Staff PBR Review, February 2, 2018	Applicant Appeal, February 23, 2018	Staff Recommendation, April 20, 2018
Ecosystem— Increased Flows for Fall-Run Chinook	$48.9	$63.9	$63.9	$42.2
Ecosystem— Wetland Habitat Enhancement	$91.6	$49.0	$78.4	$65.3
Ecosystem— Riparian Habitat Enhancement	$25.3	$1.7	$23.3	$21.7
Ecosystem— Greater Sandhill Crane Habitat Improvements	$146.1	$57.0	$57.0	$57.0
Ecosystem— Vernal Pool Habitat Improvements	$8.5	$10.5	$10.5	$10.5
Water Quality— Reduced Salinity Load to Surface Water	$569.5	$47.7	$47.7	$47.7
Recreation	$6.7	$0.0	$0.0	$0.0
Total Value of Public Benefits	$896.7	$229.6	$280.6	$244.3

Notes:
All values are in 2015 dollars.
Values are rounded to the nearest tenth of a million dollars for display purposes.
Numbers may not add up totals shown due to independent rounding and precision provided by applicant.
Underlying calculations reflect the precision provided by the applicant.

Table 4 shows staff recommendations for the total value of public benefits, ecosystem benefits, and the eligible amount. It also shows the proposed project's capital costs, and the funding request by the applicant, as provided in the appeal. Adjustments to the value of public benefits may have resulted in changes to the eligible amount, because Water Code section 79752 specifies that projects must have a measurable benefit to the Delta ecosystem or tributaries to the Delta. Water Code section 79756 also specifies that the WSIP can fund no more than one-half of total project costs, and that ecosystem benefits must be at least 50 percent of the eligible amount.

Table 4. Staff Recommendations for Value of Total Public and Ecosystem Benefits and Eligible Amount ($ millions)

Benefit/Cost	Amount
Total Public Benefits	$244.3
Ecosystem Benefits	$196.6
Total Capital Costs	$280.5
Total Funding Request as provided in appeal	$280.5
Maximum Eligible Amount	$244.3

Notes:
All values are in 2015 dollars.
Values are rounded to the nearest tenth of a million dollars for display purposes.
Underlying calculations reflect the precision provided by the applicant.

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Economics Review Appeal Response: South Sacramento County Agriculture and Habitat Lands Recycled Water, Groundwater Storage, and Conjunctive Use Program

Applicant: Sacramento Regional County Sanitation District

This appeal response provides the Economic reviewers' (reviewers) recommendation for economics related public benefit ratio (PBR) review comments that were appealed by the applicant. The applicant appeal is summarized in this document and the reviewer responses are presented. Related comments are grouped by topic, in the order presented in the initial PBR review. For each PBR comment, a summary of the PBR comment is presented, followed by a synopsis of applicant's appeal, concluding with the reviewer response. Reviewers analyzed and considered the information contained in the appeal.

Summary of Economics Appeal Response

The applicant appeals the following benefit and cost adjustments made in the Economics Review for PBR:

- The applicant accepted the adjustments for fall-run Chinook salmon. However, this adjustment was explicitly conditional. The PBR review stated, "applicant *must* follow Technical Reference (TR) guidance regarding methods for displaying and calculating fall-run Chinook annual benefits over a planning horizon." (Emphasis added.) Therefore, reviewers adjusted the benefit based on information provided by the applicant. The applicant's appeal claimed a present value (PV) of $63.9 million. The reviewer-adjusted PV of the fall-run Chinook salmon benefit is $42.2 million.
- The applicant appealed reviewers' adjustments for riparian habitat. Reviewers agreed with applicant's appeal regarding the characterization of the initial PBR review of riparian habitat and have adjusted the applicant's monetization of the 500 acres of riparian habitat to account for 2 years of hydrologic and biological delays in achieving physical benefits. The applicant's appeal claimed a PV of $23.3 million. The reviewer-adjusted PV of the riparian habitat benefit is $21.7 million.
- The applicant appealed the adjusted monetization for improved wetlands habitat and requested that the adjustment be increased from 50 percent to 80 percent of their original request. For the improved wetlands physical benefits, reviewers increased the per acre benefit from 50 percent to 70 percent. However, information provided in the appeal letter suggests that the 500 acres of riparian habitat are also counted as wetland acres. Therefore, reviewers have removed the monetization of 500 acres of wetland to avoid double-counting. The applicant's appeal claimed a PV of $78.4 million. The reviewer-adjusted PV of the improved wetlands habitat benefit is $65.3 million.

- The applicant accepted the adjusted monetization of the greater sandhill crane habitat improvements. The PV of sandhill crane habitat benefit is $57.0 million as adjusted in the PBR review.
- The applicant accepted the adjusted monetization of the vernal pool habitat benefit. The PV of the vernal pool benefit is $10.5 million as adjusted in the PBR review.
- The applicant accepted the adjusted monetization of the reduced salinity load to surface water. The PV of reduced salinity load benefit is $47.7 million as adjusted in the PBR review.
- The applicant accepted the adjusted monetization of recreation benefits to $0. The PV of recreation benefits is $0 as adjusted in the PBR review.
- The applicant appealed counting of water supply impact cost for their project. Reviewers found that water supply impact costs must be counted in benefit-cost and cost-effectiveness analysis from the State of California perspective, but since the applicant has a water right for their wastewater, there will be no associated cost to the applicant for financial feasibility considerations.
- The applicant suggested that its agricultural water supply benefit would be higher if it used Water Storage Investment Program (WSIP) Technical Reference (TR) unit values. Reviewers agree that the TR unit values are not representative of the applicant's agricultural water supply situation.

The applicant claimed a total of $280.7 million in public benefits and requests $280.5 million in funding in its appeal. After reviewer adjustments in response, total public benefits are $244.3 million, and the recommended eligible amount is $244.3 million.

1. Ecosystem Monetization—Increased Flows for Fall-Run Chinook

The applicant's appeal claimed a PV of the fall-run Chinook salmon benefit of $63.9 million. The reviewer-adjusted PV is $42.2 million.

1.1. Comment—Follow TR Guidance for Fall-Run Chinook Delayed Benefits

The PBR review stated that the applicant "must follow TR guidance regarding methods for displaying and calculating fall-run Chinook annual benefits over a planning horizon in accordance with regulation section 6004(a)(4)(J) and TR Section 5.2.8." Regulation 6004(a)(6)(A)(1) requires "the present value of the expected value of economic net public benefits over the planning horizon discounted to the first year of project operations." The PBR review stated that "the corrected valuation should include hydrologic and biological delays in achieving physical benefits."

1.1.1 Applicant Appeal

This issue has not been addressed by applicant. The applicant accepted reviewers' estimate of $63.9 million, which would only be valid if full benefits were achieved the first year of project operations. The applicant provided benefits for the 2030 and 2070 conditions but did not show

how hydrologic and biological delays would increase benefits from the start of operations over the planning horizon.

1.1.1 Economics Review Response

The applicant accepted the adjustments for fall-run Chinook salmon in the PBR review. However, those adjustments were conditioned on the applicant applying the following: "The applicant must follow TR guidance regarding methods for displaying and calculating fall-run Chinook annual benefits over a planning horizon… The corrected valuation should include hydrologic and biological delays in achieving physical benefits." Since the applicant did not address this comment, reviewers adjusted the benefit based on information provided by the applicant.

Reviewers applied the 2030 and 2070 annual benefits with qualitative information provided by applicant about phasing of physical benefits to re-estimate benefits over the planning horizon. From the application file named "Regional San_CALSIM_HEC5Q_ModelingTM_ A.1ProjectConditions_SecBCMR.pdf," in Table 1 on page 6, the increase in Cosumnes and Sacramento river streamflows is 17,870 acre-feet per year (AFY) after 10 years and 34,880 AFY after 20 years. The alternative-cost-of-water benefit is assumed to increase linearly from start of project operations for 20 years to the maximum. Using this approach, the PV of benefits is $42.2 million.

2. Ecosystem Monetization—Riparian Habitat Enhancement

The applicant's appeal claimed a PV of $23.3 million. The adjusted PV of the riparian habitat benefit is $21.7 million.

2.1. Comment—Adjustment for 95 Percent Functionality

Reviewers adjusted the monetization of the additional 500 acres of riparian habitat pursuant to regulations section 6004(a)(4)(J) because Table 7 on page 21 in the file named "Regional San_Monetized Public Benefits_A 3 Monetization Meth.pdf" shows that the targeted 500 acres currently have 95 percent functionality.

2.1.1 Applicant Appeal

Regional San believes the reviewer misunderstood Regional San as claiming that Program area riparian forests are currently at a level of 95% ecological function and would only be improved 5% by restoration and active management to achieve 100% functionality. Regional San was instead claiming that 95% ecological functionality would be achieved, and therefore, the monetized value was multiplied by 0.95 to calculate the public benefit (per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," on page 11).

2.1.1 Economics Review Response

Reviewers agree with this characterization of the PBR review. However, the monetization of riparian lands and economics review presumed that the riparian lands that benefit would be different lands than those benefitting from wetland restoration. Reviewers have reconsidered this assumption based on information provided in the appeal letter. This has resulted in a reduction of 500 monetized wetland acres.

2.1.2 Applicant Appeal

Applicant monetizes the 500 riparian acres using applicant-recommended value per acre to obtain $23.3 million, which considers a median functional increase of these habitats due to restoration and management of 70 percent (per the file named "South County Ag WSIP Appeal Doc_ Final.pdf,' on page 4).

2.1.2 Economics Review Response

Reviewers adjusted the monetization of this benefit to account for the time taken for riparian lands to attain conditions comparable to the mitigation land acquired in the alternative cost condition. The applicant's monetization presumes that the 13-year purchase for the alternative cost would begin the same year as the beginning of project operations. It seems unlikely that much project riparian benefit would be achieved within 2 years, and full benefits would not be achieved within 13 years. The benefitted acres depend on response to higher groundwater levels and plant response which will take more than 13 years to achieve. Therefore, the entire alternative cost program was delayed by 2 years to obtain a PV of $21.7 million as compared to $23.3 million as estimated by applicant.

3. Ecosystem Monetization—Greater Sandhill Crane Habitat Improvements

The PV of sandhill crane habitat benefit is $57.0 million as adjusted in the PBR review.

3.1. Comment—Monetization of Increased Habitat

Reviewers adjusted the monetization of increased habitat for greater sandhill cranes.

3.1.1 Applicant Appeal

Reviewers' adjustment is accepted (per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," on page 6)

3.1.1 Economics Review Response

Reviewers acknowledge applicant's acceptance of the increased habitat for greater sandhill cranes benefit.

4. Ecosystem Monetization—Wetland Habitat Enhancement

The applicant's appeal claimed a PV of $78.4 million. The adjusted PV of the improved wetlands habitat benefit is $65.3 million.

4.1. Comment—Mitigation Bank Alternative Cost Measure

Reviewers adjusted the monetization of the improved wetlands habitat. The applicant applied a mitigation bank alternative cost measure of more than $150,000 per acre. The reviewers concluded that the best way to reflect these issues was to reduce the reviewer adjustment of the applicant's PV of wetland benefit of $98.1 million[1] (which is unadjusted for the "Project Operation Start Date Delay Cost Adjustment Ratio") by 50 percent. The resulting PV of benefits without the "Project Operation Start Date Delay Cost Adjustment Ratio" is $49.0 million.

4.1.1 Applicant Appeal

*The applicant requests that the adjustment should be increased from 50 to 80 percent. Regional San believes these wetlands have exceptional value, as described below, and alternatively suggest that the monetized benefits should only be discounted by a maximum of 20 percent, instead of 50 percent" (*per the file named "*South County Ag WSIP Appeal Doc_ Final.pdf," on page 7)*.

4.1.1 Economics Review Response

Reviewers partially accepted the appeal and applied 70 percent of the original applicant's benefit per acre. After adjusting for acreage double-counted with riparian, reviewers estimated the total PV of wetland acres to be $65.3 million.

4.1.2 Applicant Appeal

Per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," at the top of page 10:

As discussed above, Ecological Plan Section 2.1 described the habitat improvements to existing wetlands, including riparian forests*, that will result from the improved groundwater conditions with the Program in place. Increased ecological function of wetlands are anticipated across 3,133 acres in 2030 and 2,505 acres in 2070 with the Program in place (Table 5).*

On page 12 of the file named "South County Ag WSIP Appeal Doc_ Final.pdf," within the section titled "Revision of physical benefits quantification for active improvements to riparian forests," the applicant states:

[1] Reviewers calculated the present value of wetland benefits from Page 2 in the file named "Regional San_Monetized Public Benefits_A 3 Monetization Meth.pdf" for 2030 and 2070, expressed as annual benefits by determining the equivalent annual payment for 84 years at 3.5 percent interest, and filling in years of the planning horizon by interpolation and extrapolation.

"of the thousands of existing wetland acres within the Program area (Table 5), Regional San has conservatively targeted 500 acres to implement active restoration and management strategies."

Per the file named "From South County Ag WSIP Appeal Doc_ Final.pdf." on page 10, the applicant states:

"Section 2.3 of the Ecological Plan (Regional San_Conceptual Ecological Plan_A.2 Ecosystem Benefits_SecPPB.pdf), in contrast, describes the physical benefits that result from restoration and management activities that will be included in the Program to improve the quality of riparian forest habitats."

In the Ecological plan, in Section 2.3, titled Groundwater-supported Wetland & Riparian Forest Restoration page 32, the applicant states:

"The shallow groundwater benefits described in Section 2.1 highlight the broad-scale ecosystem improvements associated with the program. While the increase in shallow groundwater levels alone will help to support riparian and wetland habitats, some of the unmanaged areas are severely degraded."

In the same document on page 34, the applicant states:

"As part of the South County Ag Program, 500 acres of riparian and wetlands habitat will be targeted for restoration to improve canopy conditions."

Table 4 of the Ecological Plan Section 2.1 can also be used to confirm the 3,133 and 2,505 total acres with improved functionality due to groundwater improvements in the 2030 and 2070 conditions, respectively.

Table 2-8 of the preliminary operations plan in the file named "Regional San_Preliminary Operations Plan_A.2 Prelim Ops Plan_SecBCMR.pdf," whose data are reproduced in Table 5 of the applicant's appeal letter named "South County Ag WSIP Appeal Doc_ Final.pdf," on page 10 also shows 3,133 total acres of managed and unmanaged wetland acreage (benefitted acres) in the 2030 conditions that include 607 acres of "forested/shrub" acreage.

The wetlands monetized benefits (per Table 5 in the file named "Regional San_Monetized Public Benefits_A 3 Monetization Meth.pdf") shows that wetland benefits were monetized for 3,187 (i.e., 865+361+1291+670) acres with improved functionality due to groundwater improvements under 2030 conditions, more than the 3,133 acres shown in other places. Therefore, the benefits of riparian lands must have been monetized as part of the 3,187 wetland acres in the original application.

4.1.2 Economics Review Response

Reviewers conclude from the appeal information, and substantiated by the original application, that the 500 riparian acres are part of 3,133 total acres that were also valued as wetlands.

Reviewers could find no information regarding how much of the four wetland classes with improved functionality due to groundwater improvements will be targeted as the 500 riparian acres. Therefore, each class of wetland acres improved due to groundwater management is reduced pro-rata according to their share of total improved acres.

Benefits are adjusted to reflect wetland/riparian acreage improved due to groundwater management of 3,133 rather than 3,187. Table 5 in the file named "Regional San_Monetized Public Benefits_A 3 Monetization Meth.pdf" is consistent with the 3,133 acres, except that the 3,187 acres includes 865 acres with 10 percent improvement are monetized rather than the correct 811 acres (per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," in Table 5).

To consider the acreage double-counted with riparian, each class of wetland acres improved due to groundwater management is reduced pro-rata according to its share of total improved acres.

Reviewers monetized the 2,633 and 2,005 acres of wetlands for the 2030 and 2070 conditions, respectively, with improved functionality due to groundwater improvements, plus 1,300 acres of wetlands with improved functionality due to water application and management. With these corrections and allowing the applicant's proposed phasing of alternative cost land purchase over the planning horizon as per Table 5 in the file named "Regional San_Monetized Public Benefits_A 3 Monetization Meth.pdf," with interpolation of benefits between 2030 and 2070 as per TR, and a benefit of $106,665 per acre, the total PV of wetland acres is $65.3 million.

5. Ecosystem Monetization—Vernal Pool Habitat Improvements

The PV of the vernal pool benefit is $10.5 million as adjusted in the PBR review.

5.1. Comment—Monetization Method

Reviewers accepted the monetization method for the additional vernal pool habitat physical benefits. Reviewers estimated the PV of the vernal pool benefit to be $10.5 million.

5.1.1 Applicant Appeal

Reviewers' adjustment is accepted (per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," on page 6).

5.1.1 Economics Review Response

Reviewers acknowledge applicant's acceptance of the vernal pool habitat physical benefits.

6. Water Quality Monetization—Reduced Salinity Load to Surface Water

The PV of reduced salinity load benefit is $47.7 million as adjusted in the PBR review.

6.1. Comment—Monetization of Reduced Salinity Load

Reviewers adjusted the monetization of the reduced salinity load to surface water physical benefit for a PV of benefits of $47.7 million.

6.1.1 Applicant Appeal

Although Regional San maintains that its estimated cost of reverse osmosis treatment represents the real cost of removing an equivalent salt load to the lower Sacramento River and Delta as will be afforded by the South County Ag Program, it will not contest the Commission's adjusted present value economic benefit of $47.7 million. This water quality benefit is still linked to the salinity benefits provided to urban and agricultural water users and public trust resources with implementation of the South County Ag Program (per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," on page 6).

6.1.1 Economics Review Response

Reviewers acknowledge applicant's acceptance of the adjustment to the reduced salinity load benefit.

7. Recreation Monetization

The PV of recreation benefits is $0 as adjusted in the PBR review.

7.1. Comment—Monetization of Recreation Physical Benefit

Reviewers removed the monetization of the recreation physical benefit. The PV of recreation benefit is $0.

7.1.1 Applicant Appeal

Reviewers' adjustment is accepted per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," on page 3.

7.1.1 Economics Review Response

Reviewers acknowledge the applicant's acceptance of the removal of recreation benefit monetization.

8. Non-Public Benefits Monetization

8.1. Comment—Water Supply Impact

The TR requires a California, not just a local, accounting perspective (per TR Section 5.2.2 on page 5-4). Furthermore, regulations section 6004(a)(3) requires that "The determination of potential public and non-public physical benefits (i.e., positive or beneficial physical changes) shall account for any negative

physical changes or impacts that are not fully mitigated" and 6004(a)(4)(K) requires that "For each benefit category, the applicant shall display the net benefit (monetized benefit minus monetized unmitigated impact).

The applicant provides physical water supply impacts, including change in Delta exports and north-of-Delta deliveries, but does not monetize this physical water supply impact at the state level. Therefore, reviewers monetized the water supply impacts using TR values and estimated the PV of water supply impact to be a cost of $112.4 million. The remaining non-public benefits were $15 million.

8.1.1 Applicant Appeal

"Regional San does not take issue with the methodology used by CWC reviewers herein, but does not share the perspective that the downstream effects of the change in operations by Regional San (with project vs. without project) should be counted against Regional San in its overall Benefit:Cost ratio or in its project cost effectiveness analysis. Regional San owns the water it discharges and is finalizing its Petition for Change to document that ownership, consistent with the analysis done for this application" (per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," on page 5).

8.1.1 Economics Review Response

The fact that the applicant may have a water right for the wastewater does not negate the water impact cost from the State perspective. In many instances, water users have rights to divert and consume more water without compensation paid to downstream water users. The downstream users who lose water supply must be counted within the State perspective. Therefore, the water impact cost must be counted in the benefit cost ratio and cost-effectiveness considerations. This cost is considered equally for all WSIP applications to the extent possible. However, since the applicant may have a water right for the wastewater, the water impact cost is not counted as a cost in financial feasibility analysis.

8.2. Comment—Agricultural Water Supply Valuation

Reviewers accepted the monetization method for the local water supply physical benefit.

8.2.1 Applicant Appeal

The applicant states "Reviewers did not contest benefits submitted by Regional San (which were based on a constant local water supply value in 2015$ at $370/AF), but offset the benefits with water supply impacts on Delta Exporter… If Regional San were to have used the same methodology… the present value of its water supply benefit would have been" different. (per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," on page 13).

8.2.1 Economics Review Response

Reviewers agreed. However, most of the project water supply will be provided for agricultural use in an in-lieu exchange for groundwater pumping. In this situation, most of the water supply

benefit of surface water is cost savings from pumping less groundwater. That is, the TR unit values would be inappropriate for valuing the wastewater for irrigation supply since the project would be substituting surface for groundwater. Therefore, there is no effect on quantified benefits.

Reviewers noted that the analysis monetizes 32,500 AF of water for irrigation in 19 out of 20 years and 32,500 AF of municipal water in 3 out of 10 years for an annual average of 40,625 AF of agricultural and municipal water delivery.

9. Project Costs

9.1. Comment—Proposed Capital Cost

Reviewers adjusted the applicant's proposed capital cost to $280.5 million. Of the $38.9 million proposed cost for the ecological monitoring program, $31.7 million is future operations and maintenance, which is not an eligible capital cost. In addition, about $2.0 million requested for the groundwater monitoring program and $0.21 million requested for public outreach and education are not eligible capital costs.

9.1.1 Applicant Appeal

Regional San made a correction to the reviewers' revised costs for the Pump Station Replacement Fund to reflect the duration that the fund is in place per the file named "South County Ag WSIP Appeal Doc_ Final.pdf," on page 5.

9.1.1 Economics Review Response

According to information provided by applicant, this change has no effect on the project's capital costs.

10. Other Monetization Assumptions

10.1. Comment—Accounting and Discounting of Costs

The applicant provides accounting and discounting of costs and benefits in a spreadsheet named "Regional San CB and Allocation_Public Non-Public A.10_SecBCMR.xls." The applicant did not follow TR guidance regarding methods for calculating annual benefits over a planning horizon in accordance with regulation section 6004(a)(4)(J) and TR Section 5.2.8. However, the PV of benefits is provided for 2030 and 2070 conditions. These estimates allow for the applicant's annual benefits to be calculated for 2030 and 2070 conditions, and remaining years of the planning horizon can be estimated by extrapolation and interpolation as described in the TR.

Cost and benefit data are provided in the spreadsheets named "Regional San CB and Allocation_Public Non-Public A.10_SecBCMR.xls" and "Regional San_Eco Program Costs Summary_A.10 SecBCRM.xls."

Reviewers could not confirm that all operations costs detailed in the file named “Regional San_Eco Program Costs Summary_A.10 SecBCRM.xls" are included in South County Ag Program’s total costs.

10.1.1 Applicant Appeal

The applicant did not address this comment.

10.1.1 Economics Review Response

This issue has not been addressed by applicant. Reviewers have discounted and adjusted project benefits as per the TR. Reviewers have not confirmed that all operations costs are included in total costs.

California WATER COMMISSION

Water Operations Review Response to Applicant's Appeal on Public Benefits Ratio: South Sacramento County Agriculture and Habitat Land Recycled Water, Groundwater Storage, and Conjunctive Use Program

Applicant: Sacramento Regional County Sanitation District

This response to appeal contains the Water Operations related Public Benefit Ratio review comments (released February 2, 2018), applicant appeal (received February 23) summarization, and Water Operations reviewer responses. The information is arranged as a comment group containing a specific reviewer comment, associated applicant appeal, and reviewer response. The comment groups are arranged by comment order as established in the February Public Benefit Ratio review. Through the information supplied with the appeal, the applicant has addressed the Water Operations reviewer comments made in the Public Benefit Ratio review, as detailed below. This Water Operations response to Sacramento Regional County Sanitation District's appeal is supplied to other review teams for their use in responding to applicant appeal items related to physical public benefits and economics.

Comment 1: Review of Water Operations Analysis Methodology

Comment 1.1

Reviewers are unable to determine how the applicant compiled the SacIWRM model. A hydrogeologic conceptual model was not provided. It is not clear how the model boundary conditions were established, and the extent of the model area is unclear; it appears that the model extends beyond the proposed Program area. Also, calibration of the model cannot be verified.

Applicant Appeal:

The applicant referred reviewers to the Sacramento Area Integrated Water Resources Model (SacIWRM) Model Development and Baseline Scenarios document (RMC / WRIME 2011) for information on boundary conditions, calibration, and features of the SacIWRM and provided a web link to the document.

Water Operations Review Response:

Reviewers examined the referenced document and confirmed that SacIWRM model covers an area of 1,412 square miles, which underlies the North American, South American, and Cosumnes groundwater sub-basins. Because the boundary conditions and features of the SacIWRM model were developed on a regional scale for a larger area that encompasses the proposed Program, reviewers concur that the modeling analysis of the groundwater storage and streamflows is reasonable.

Comment 1.2

Streamflow gains are overstated by 3,840 acre-feet per year, or 21 percent under the 2030 conditions after 10 years of proposed Program operations in the CalSim II model. By overestimating streamflow gains, the combined effect on Delta exports and outflow is underestimated by 4 TAF per year, on average, under 2030 conditions after 10 years of proposed Program operations.

Applicant Appeal:

The applicant explained that the streamflow gains are based on a detailed analysis of water budgets within the SacIWRM integrated hydrologic model:

"Streamflow gains are based on a detailed analysis of water budgets within the SacIWRM integrated hydrologic model… Benefits to streamflow are available through SacIWRM results, however, the use of CalSim II was necessary to tie the streamflow benefits and the results of reduced wastewater discharge to statewide reservoir operations. As SacIWRM and CalSim II operate under different hydrology (1970-2011 repeated twice for SacIWRM and 1922-2003 for CalSim II) it was not possible to directly input SacIWRM values into CalSim II. Instead, a two-part linear regression analysis was performed for each water-year type to allow for the estimation of streamflow benefits at any point in time since Project inception and at any water-year type. SRCSD_Streamflows.Table is a CalSim II input file based on the analysis performed under SacIWRM." (South County Ag WSIP Appeal Doc_ Final, p. 14 and 15)

Water Operations Review Response:

The additional information provided by the applicant in the appeal does not adequately address the comment. There appears to be a mismatch in the streamflow gains between the SacIWRM analysis and data transferred to the CalSim II model even after accounting for differences in hydrologic sequence and modeling approaches. The applicant stated in its application and in the appeal documentation that through extensive data analysis based on SacIWRM results, "near-equilibrium" conditions are attained after 25 years of project operations and streamflow-groundwater interaction stabilizes, groundwater levels are no longer rapidly rising, and majority of the streamflow benefits are accrued. Therefore, it can be assumed that the second half of SacIWRM simulation, the last 42 of the 84 years of project operations, is operating under "near-equilibrium" conditions over a range of hydrologic conditions. Using SacIWRM, the average annual streamflow

gains under "near-equilbrium" conditions is 22,800 acre-feet and 18,700 acre-feet under 2030 and 2070 conditions, respectively (per the file named "South County Ag WSIP Appeal Doc_ Final, Table 7," on page 15). From the CalSim II model results, the average annual streamflow gains under "near-equilibrium" conditions are 34,880 acre-feet and 32,390 acre-feet under 2030 and 2070 conditions, respectively, which is 12,080 acre-feet (52 percent) higher compared to the SacIWRM under 2030 conditions, and 13,690 acre-feet (73 percent) higher under 2070 conditions (Surface water operations TM by CH2M, Table 1). This difference cannot be justified by modeling and hydrology differences alone. After reviewing the information in the appeal, reviewers still believe that the stream gains resulting from the proposed project as modeled in the CalSim II model are overestimated and consequently, the combined effect of the project on Delta outflow and Delta exports is underestimated. However, in the worst case, the impact on Delta outflow and exports is not expected to be significant (less than 1 percent).

Comment 1.3

The applicant proposes water banking operations where up to 30 percent of the total accumulated in-lieu recharged water, up to 50 TAF per year, is available for extraction during the driest three years out of a 10-year period. Water budget analysis by reviewers shows that, under 2070 conditions over the 82-year simulation period, 739 TAF are available for extraction (i.e., 30 percent of the in-lieu recharge), and 814 TAF is extracted. CalSim II results reported by the applicant overestimate the amount of water left instream, and underestimate the combined effect on Delta exports and outflow by 0.9 TAF per year, on average, under 2070 conditions.

Applicant Appeal

The applicant explained that the results of banking operations vary due to the differences in analysis approaches between SacIWRM and CalSim II:

"SacIWRM is a transient analysis of groundwater conditions from start of operations… CalSim II is used for period analysis of specific points in time during the life of the Project: at start of operations (year 0), year 10, year 20, and at near-equilibrium… For each point in time, assumptions of recharge, streamflows, and banking operations are varied only by climate and hydrologic conditions, whereas the point-in-time of the Project operations remains fixed… The results of banking operations, as well as other operations (such as recharge and streamflow changes) vary due to the difference in analysis approaches between SacIWRM and CalSim II." (South County Ag WSIP Appeal Doc_ Final, p. 16)

Water Operations Review Response:

The additional information provided by the applicant in the appeal adequately addresses the comment. The CalSim II model is used to conduct a point-in-time analysis. Review of the CalSim II model setup under 2070 conditions confirms that the groundwater extractions are limited to the "driest" years as defined by the applicant

and occur in the amount of 32,570 acre-feet per year of extraction as claimed by the application.

Comment 2: Water Operations Review Conclusions Related to Benefits

Comment 2.1: Increased Flows for Fall-Run Chinook

A review of the SacIWRM model results confirm an increase in groundwater storage by 245 TAF within 10 years of proposed Program operations, and groundwater levels increase by 20 to 30 feet over the entire proposed Program area, with a maximum groundwater level increase of 35 feet in the center of the proposed Program area within 15 years of proposed Program operations. An increase in groundwater levels will result in the river losing less water to the groundwater table as compared to the without-project conditions, consequently increasing flow in the Cosumnes River. Cosumnes River flows increase during the first 15 to 20 years of proposed Program operation and reach near-equilibrium thereafter.

Applicant Appeal:

The applicant explained that the interaction of groundwater and surface water is complex and depending on the location of recharge activities, the time it takes benefits in streams to accrue varies: "This complex relationship necessitated the use of the SacIWRM integrated hydrologic model, with its ability to simultaneously simulate groundwater and surface water processes. The benefits to streamflow cannot be assumed to be the same as the change in groundwater use within the same month. Regional San's extensive work effort to establish groundwater and surface water benefits resulting from the South County Ag Program are detailed in the Modeling Technical Memorandum, with additional work performed with CalSim II to establish benefits in consideration of statewide reservoir and water delivery systems. As a result, we encourage the CWC staff to use the simulated streamflows vs. their calculated values in assessing Project benefits and effects." (South County Ag WSIP Appeal Doc_ Final, p. 17)

Water Operations Review Response:

Reviewers agreed. Reviewers performed simple calculations using the input and output data presented in the groundwater modeling technical memorandum to estimate monthly flows in the Cosumnes River.

Comment 2.2: Reduced Salinity Load to Surface Water

The applicant did not use the DSM2 models for the 2030 and 2070 conditions as provided by the Water Storage Investment Program (WSIP). The applicant provides DSM2 modeled volumetric fingerprinting data used for the proposed Program's environmental impact report (EIR). Review of the DSM2 model results from the EIR and the calculation of future water quality data show a

slight improvement in water quality downstream of the discharge location in Sacramento River and in South Delta locations with the proposed Program. The median electrical conductivity (EC) in the Delta at Emmaton changes from 389 to 387 micromhos per centimeter (µmhos/cm), a -0.5 percent change under 2030 conditions, and from 389 to 388 µmhos/cm, a -0.3 percent change under 2070 conditions with the proposed Program.

Applicant Appeal:

Applicant did not appeal this comment.

Comment 2.3: Water Supply Reliability to Agricultural and Municipal and Industrial Users

Review of the SacIWRM model confirms the long-term average recycled water deliveries of 32,500 acre-feet per year for irrigation and 17,000 acre-feet per for wintertime recharge.

Applicant Appeal:

Applicant did not appeal this comment.

Comment 2.4: Wetland Habitat Enhancement

Review of the SacIWRM model confirms the long-term average recycled water deliveries of 500 acre-feet per year to Stone Lakes National Wildlife Refuge.

Applicant Appeal:

Applicant did not appeal this comment.

Comment 3: Water Operations Review Conclusions Related to Benefits

Comment 3.1: Increased Emigration of Juvenile Chinook and Stray Rate Reduction

Applicant Appeal:

Applicant did not appeal this comment.

Comment 3.2: Water Supply

Applicant Appeal:

Applicant did not appeal this comment.

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

April 12, 2018

Joseph Yun
Executive Officer
California Water Commission
P.O. Box 942836
Sacramento, CA 95814-0001

RE: Proposition 1 Water Storage Investment Program

Dear Mr. Yun:

This is an exciting stage in the implementation of the Proposition 1 Water Storage Investment Program (WSIP) as the California Water Commission (Commission) is on the brink of investing $2.7 billion toward new water storage projects. The Department of Water Resources (DWR) is committed to its ongoing role of providing the Commission expert technical review and support.

DWR is pleased that the additional conversations with applicants have resulted in an improved understanding of these projects. We look forward to the next phase when the Commission will make its determination and begin awarding funding. Investments in storage are critically needed across the state to ensure flood control protection, improve ecosystems and water quality, and to improve the resiliency of our water infrastructure and supplies.

We commend the Commission on its continued commitment to working with applicants and stakeholders in a transparent manner as it navigates the complexities of implementing this one-of-a-kind public investment program. The task before the Commission is not easy.

DWR looks forward to our continued partnership and appreciates the important work that will take place in the coming weeks before preliminary decisions are made in July.

Sincerely,

Karla A. Nemeth
Director

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001

April 12, 2018

Mr. Joseph Yun
Executive Officer
California Water Commission
Post Office Box 942836
Sacramento, California 94236-0001

Project: South Sacramento County Agriculture & Habitat Lands Recycled Water, Groundwater Storage, and Conjunctive Use Program (South County Ag Program)
Applicant: Sacramento Regional County Sanitation District (Regional San)

RE: Water Storage Investment Program —Public Benefits Ratio Recommendations – Response to Applicant's Appeal

Dear Mr. Yun:

With this letter, the Department of Water Resources (DWR) provides the California Water Commission the public benefits recommendation for acceptance, adjustment, or removal of the applicant's appealed physical benefits from the public benefits ratio (PBR) for the Water Storage Investment Program (WSIP) Proposition 1 application.

DWR maintains the original recommendation for the removal of the recreation physical benefit from the PBR calculation.

DWR staff evaluated each benefit addressed in the applicant's appeal. The information provided by the applicant in support of each claimed monetized benefit was reviewed in a consistent manner across all applications for the summary of recommendations listed below. DWR did not attempt to replicate or modify models and did not evaluate the project's claimed monetized benefits outside of the information provided in the application and appeal.

During the appeal reviews, DWR staff had the option to recommend adjustment of the physical benefit if the PBR physical benefit was not supported by the additional information provided in the applicant's appeal. If the methods used or values supplied in the appeal were not supported, and staff could not adjust the PBR, the monetized public benefit value was recommended for removal from the total PBR calculation.

Summary of Recommendations:

Recreation:
DWR's original PBR recommendation:

> *DWR recommends the removal of this physical benefit from the PBR calculation. The South County Ag Program recreation physical benefit cannot be verified with the information provided by the applicant for the reasons listed below:*
>
> *• The proposed project has no recreation benefit other than the provision of water to the service area stated.*
>
> *• No information was provided on the plans or agreements with the Cosumnes Preserve or the Stone Lakes National Wildlife Refuge on how they will deal with the proposed increased visitation numbers, how the increase would affect their operations and facilities, and how South County Ag Program proposes to help them with these issues for staff to evaluate if the proposed project would negatively affect existing recreation activities at either facility.*
>
> *• The model used to calculate visitation is a 25-year-old Loomis and Creel study from 1992. The estimates from this study may have increased or decreased a significant amount. This could potentially lead to significantly higher or lower numbers than estimated and cause either over use or the realization of benefit to never be reached. Visitation estimates cannot be verified using the provided study.*

As stated in their appeal, the applicant is "*removing the recreation benefits (and associated valuations) from their analysis based on the reviewers' conclusions that the benefits attributable to recreation originate from ecosystem improvements that are already quantified as ecosystem benefits, such as improved flows in the Cosumnes River"* as stated during their appeal.

DWR maintains the original recommendation for the removal of the recreation physical benefit from the PBR calculation.

Sincerely,

Karla A. Nemeth
Director