



SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

380 E. Vanderbilt Way, San Bernardino, CA 92408

REGULAR MEETING OF THE BOARD OF DIRECTORS

2:00 PM Tuesday, July 21, 2026

ZOOM INFORMATION

Online: <https://sbvmwd.zoom.us/j/83910934313>

Telephone: (877) 853-5247 US Toll-free

Meeting ID: 839 1093 4313

PASSCODE: 3802026

If you are unable to participate online or by telephone, you may submit your comments and questions in writing for Board consideration by emailing comments@sbvmwd.com with the subject line Public Comment Item # (insert the agenda item number relevant to your comment) or Public Comment Non-Agenda Item. Submit your written comments no later than 6 p.m. the day prior to the meeting. All public comments will be provided to the Board President and may be read into the record or compiled as part of the record.

IMPORTANT PRIVACY NOTE: Online participants MUST log in with a Zoom account. The Zoom app is a free download. Please keep in mind: (1) This is a public meeting; as such, the virtual meeting information is published on the World Wide Web and available to everyone. (2) Should you participate remotely via telephone, your telephone number will be your identifier during the meeting and available to all meeting participants; there is no way to protect your privacy if you elect to call in to the meeting.

CALL TO ORDER/PLEDGE OF ALLEGIANCE/ROLL CALL

1) PUBLIC COMMENT

Members of the public may address the Board regarding any item within the subject matter jurisdiction of the Board; however, no action may be taken on off-agenda items except as authorized by law. Each speaker is limited to a maximum of three (3) minutes.

2) CONSENT CALENDAR

- 2.1 Approve Minutes of the Board of Directors Special Meeting - General Fund Budget Workshop - June 25, 2026 (2 min) - Pg 4
[Approve Minutes of the Board of Directors Special Meeting - General Fund Budget Workshop - June 25, 2026](#)

- 2.2 Approve Minutes of the Board of Directors Special Meeting - Policy/Administration Workshop - July 2, 2026 (2 min) - Pg 10
[Approve Minutes of the Board of Directors Special Meeting - Policy/Administration Workshop - July 2, 2026](#)
- 2.3 Approve Minutes of the Regular Board of Directors' Meeting - July 7, 2026 (2 min) - Pg 14
[Approve Minutes of the Regular Board of Directors' Meeting - July 7, 2026](#)

3) DISCUSSION AND POSSIBLE ACTION ITEMS

- 3.1 Consider Adopting the Proposed Fiscal Year 2026-2027 State Water Contract Fund Budget and Setting the Ad Valorem Property Tax Rate for Fiscal Year 2026-2027 (60 min) - Pg 21
[Staff Memo - Consider Adopting the Fiscal Year 2026-2027 State Water Contract Fund Budget and Setting the Ad Valorem Property Tax Rate for Fiscal Year 2026-2027](#)
[Attachment 1. Proposed Fiscal Year 2026-2027 State Water Contract Budget Estimates](#)
[Attachment 2. Draft Proposed Resolution Establishing the FY 2026-2027 State Water Contract Ad Valorem Tax Rate](#)
[Attachment 3. ERA Economic Considerations for San Bernardino Valley MWD Tax Rate Setting - Fiscal Year 2027](#)

4) REPORTS (Discussion and Possible Action)

- 4.1 Directors' Report of Activities and Travel Requests in accordance with Resolution 1100 (10 min) - Pg 56
[SBVMWD Director Fees and Expenses paid in June 2026](#)
[Director Botello Activity Report - June](#)
[Director Harrison Activity Report - June](#)
[Director Kielhold Activity Report - June](#)
[Director Longville Activity Report - June](#)
[Director Velasquez Activity Report - June](#)
- 4.2 General Counsel Report
- 4.3 SAWPA Meeting Report
- 4.4 Water Delivery Report (10 min) - Pg 62
[June 2026 - Water Delivery Report](#)
[June 2026 - Water Delivery Report Summary](#)
- 4.5 CEO/General Manager's Report (15 min) - Pg 66
[Staff Memo - July General Manager's Report](#)
[Freshwater health in a highly urbanized semi-arid watershed: Assessing ecosystem vitality and ecosystem service in the Santa Ana River Watershed](#)
[July 3-Month Look Ahead](#)
[July Project Status Update](#)

5) FUTURE BUSINESS

6) ANNOUNCEMENTS

- 6.1 List of Announcements (2 min) - Pg 97

List of Announcements

7) **CLOSED SESSION**

- 7.1 Conference with the legal counsel-anticipated litigation Significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of Government Code Section 54956.9: One potential case

8) **ADJOURNMENT**

**MINUTES
OF
THE
BOARD OF DIRECTORS SPECIAL MEETING
GENERAL FUND BUDGET WORKSHOP
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT**

June 25, 2026

Directors Present: Gil J. Botello, Paul R. Kielhold, Susan Longville, T. Milford Harrison, and Jose Velasquez

Directors Absent: None

Staff Present:

Heather Dyer, MS, MBA – Chief Executive Officer/General Manager
Joanna Gibson, MS – Executive Director Upper SAR Habitat Conservation Program
Wen Huang, PE, MS – Assistant General Manager/Chief Operating Officer
Jose Macedo, ML, CPT-P (USA Retired) – Chief of Staff/Clerk of the Board
Cindy Saks, CPA – Chief Financial Officer/Deputy General Manager
Greg Woodside, PG, C.Hg. – Chief of Planning and Watershed Resilience

Owen Cross, BS – Environmental Compliance Analyst I
Leo Ferrando, PE – Assistant Chief Engineer
Anthony Flordelis – Business Systems Analyst
Kelly Malloy, MPA – Strategic Communications Manager
Adekunle Ojo, MPA – Manager of Integrative Planning
Sayer Pinto, MBA – Principal Water Resources Analyst
Alliah Smith – Senior Administrative Assistant
Andreea Tanase, MPA – Administrative Analyst I

Members of the Public in Attendance: None

The regular meeting of the Board of Directors was called to order by President Harrison at 10:00 a.m. A quorum was noted present by roll call.

Agenda Item 1. Introductions. None.

Agenda Item 2. Public Comment. None.

Agenda Item 3. Discussion and Possible Action Items.

3.1) Review Proposed General Fund Budget for Fiscal Year 2026-2027. CEO / General Manager Heather Dyer introduced the Fiscal Year 2026–27 General Fund

Budget. She reported proposed General Fund revenues of \$53,891,100 and expenditures of \$51,115,800, noting both figures were based on assumptions, including projected water sales, assessed property values, investment earnings, and successor agency pass-through payments. Ms. Dyer also reviewed the required \$2.89 million contribution to the WIFIA Rate Stabilization Fund, explaining the reserve is a loan requirement. After accounting for the reserve contribution, the proposed budget reflected a net operating loss of approximately \$114,700, which would be funded from the New Infrastructure reserve. President Harrison inquired whether similar reserve requirements applied to other WIFIA borrowers, and Ms. Dyer explained while other agencies may maintain comparable reserves, San Bernardino Valley's variable water sales revenue requires a different financial approach.

Ms. Dyer reviewed historical budget trends, explaining year-over-year fluctuations in revenues, expenditures, and cash reserves, including the effects of water sales, grant funding, major capital construction, and the Agency's long-standing practice of cash financing infrastructure projects to minimize borrowing costs. She explained the projected \$124 million in cash reserves was largely committed to customer deposits, WIFIA rate stabilization, Basin Management Fund reserves, emergency infrastructure repairs, operating reserves, and future capital projects such as Devil Basins. Director Velasquez sought clarification regarding historical expenditures and reserve levels. Ms. Dyer explained that prior Boards had intentionally accumulated reserves to finance major infrastructure projects. In response to Director Botello, Chief Financial Officer / Deputy General Manager Cindy Saks explained staff were developing revisions to the Agency's reserve policy for future Board consideration. Ms. Dyer reviewed the principal General Fund revenue assumptions, including projected property tax growth, investment income, successor agency pass-through payments, and estimated water sales.

Budget items discussed:

Pipeline Control System: \$520,000

Ms. Dyer proposed a multi-year modernization of the Agency's Supervisory Control and Data Acquisition (SCADA) system, which has not undergone a significant hardware or software upgrade since the 1990s. She explained that the proposed funding would support communications infrastructure, system design, hardware, and software improvements, with implementation led by Assistant General Manager / Chief Operating Officer Wen Huang.

Vehicle Replacement: \$590,000

Ms. Dyer outlined proposed vehicle and equipment purchases, including five new fleet vehicles to support hydroelectric and water operations and an excavator for maintenance of hydro diversion facilities, water infrastructure, and land management activities. She described a new fleet acquisition process involving an interdepartmental team to evaluate costs and opportunities to procure vehicles. Director Botello emphasized the importance of purchasing vehicles from dealerships within the Agency's service area whenever reasonable, and Ms. Dyer confirmed staff would pursue local fleet purchasing opportunities while balancing cost considerations.

Field Improvement: \$1,085,000

Ms. Dyer also highlighted field improvement projects, including completion of mitigation work associated with the Enhanced Recharge Phase 1B Project and rehabilitation of the San Bernardino Avenue Well in partnership with the City of Redlands. Mr. Huang noted the well, originally constructed several decades ago, was acquired by San Bernardino Valley through the 1996 Big Bear settlement agreement and will support the Agency's long-term conjunctive use strategy.

Consultants: \$3,688,500

Ms. Dyer explained the budget reflected anticipated work to advance San Bernardino Valley's highest priority initiatives. She pointed out that actual expenditures historically fall below budgeted amounts. She highlighted ongoing work related to the Basin Optimization Framework, Cactus Basins planning and engineering, engineering and environmental on-call services, groundwater modeling supporting water rights and recharge projects, grant writing and administration, the Seven Oaks Dam Forecast-Informed Reservoir Operations (FIRO) program, Yucaipa Basin groundwater modeling and Sustainable Groundwater Management Agency (SGMA) support, Sunrise Ranch planning, and Devil Basins expansion. In response to Director Longville, Ms. Dyer explained that the "new conservation scenarios" modeling is required to quantify recharge attributable to new infrastructure for permanent water rights purposes. President Harrison asked about grant consulting services, and Ms. Dyer described the continued use of Kennedy Jenks for grant development and reporting. Director Botello encouraged staff to coordinate with the Santa Ana Watershed Project Authority (SAWPA) regarding grant consulting resources and emphasized pursuing available Proposition 4 funding. Ms. Dyer stated staff would share those opportunities with the grant consultant.

Dues and Subscriptions: \$950,000 (as revised by board during the workshop)

This section includes memberships in professional organizations, technical partnerships, software subscriptions, cybersecurity services, and steps toward San Bernardino Valley's planned transition toward cloud-based data storage to improve system security, resiliency, and disaster recovery. President Harrison suggested adding memberships in several local chambers of commerce to strengthen relationships with the business community, and Board members discussed expanding chamber membership throughout the Agency's service area. Directors Kielhold, Velasquez, and Longville each recommended including chambers within their respective areas, while Director Botello cautioned against creating an expectation of automatic participation for every chamber and suggested requests be evaluated thoughtfully. The Board directed staff to include funding sufficient to accommodate participation in local chambers of commerce throughout the service area, and to consult individual directors when requests are received.

Water Conservation and Education: \$5,335,000

The Demand Management Program was mildly restructured at the request of retail agency conservation coordinators. Funding previously allocated to regional education and outreach was consolidated into the demand management line item to provide local agencies greater flexibility in designing programs that best meet their individual

conservation objectives. Ms. Dyer noted that the \$4.7 million Direct Installation Program will be fully reimbursed through a Department of Water Resources grant, and that the budget continues to support water conservation sponsorships, including participation in community Earth Day events throughout the Agency's service area.

External Affairs and Strategic Communications: \$608,000

The proposed budget continues funding for two annual State Water Project (SWP) tours, local facilities tours, Trails Day, the Santa Ana River Science Symposium, and a dedication event recognizing the transfer of the hydropower facilities. It also includes funding to improve website ADA accessibility and create an educational video highlighting the historical significance of the hydropower facilities and their relationship to the Agency's water supply system. President Harrison expressed support for the educational SWP tours as one of San Bernardino Valley's most effective outreach efforts, noting participants consistently share their positive experiences throughout the community. Director Botello echoed those comments and acknowledged staff for successfully coordinating the complex logistics required to conduct the tours.

Environmental / Permit Compliance / Habitat Conservation Plan Implementation:
\$2,480,000

Ms. Dyer described planned biological surveys, mitigation activities, Sterling Natural Resource Center permit compliance, habitat management, Riverside County Ranger Services, and development of the Agency's mitigation credit program. She explained that the biological work will support future projects, including Sunrise Ranch, and facilitate creation of a statewide-first mitigation credit program capable of generating credits for future Agency projects or sale to outside entities. President Harrison praised the effectiveness of the Ranger Program in protecting restored habitat and discouraging unauthorized activities along the Santa Ana River. In response to Director Kielhold, Ms. Dyer explained that the mitigation credit account functions as the framework for the Agency's mitigation banking program and indicated staff would provide a more detailed presentation on the program's progress at a future Board meeting.

Headwaters Resilience Partnership: \$307,000

Ms. Dyer reviewed the proposed Headwaters Resilience Partnership budget and reported that the partnership has secured more than \$30 million in grant funding for fuels reduction and restoration projects. She described San Bernardino Valley's continued participation through water quality monitoring with California State University, San Bernardino, consultant support for program coordination, and development of fuels management projects around hydropower facilities and Agency-owned properties. Ms. Dyer explained that the proposed \$200,000 allocation to post-fire restoration would position the Agency to leverage future Proposition 4 wildfire resilience grants by providing matching funds for eligible projects. In response to Director Longville, Ms. Dyer stated that future opportunities, including a potential investment with Blue Forest Conservation, could be incorporated through a budget amendment should a specific project mature during the fiscal year.

WIFIA Loan Interest Prepayment: \$2,000,000

Ms. Dyer proposed a \$2 million prepayment toward capitalized interest on the Agency's \$46.9 million WIFIA loan, explaining that the financing allows interest to be prepaid without penalty and that each \$1 million prepaid would reduce future gross savings on WIFIA payments by approximately \$2.1 million. She stated that the proposed prepayment of \$2 million would generate an estimated \$4.2 million in lifetime savings while reducing future financing costs for local infrastructure projects. Chief Financial Officer Cindy Saks concurred, noting that total interest over the life of the loan is projected at approximately \$58 million and describing the proposed prepayment as a prudent use of reserve funds when available. Director Longville expressed support for the recommendation.

Director Communications (Covered under Utilities: \$1,485,000)

Director Botello suggested providing Board members with the option of offering Agency-issued cellular telephones, citing increasing Board responsibilities and concerns regarding public records. President Harrison expressed concern about the discoverability of personal cellular telephone records, while Director Velasquez supported offering Board members the option of participating without requiring all directors to do so. Ms. Saks outlined the administrative considerations associated with both Agency-issued phones and taxable reimbursement allowances, advising that either option the Board decides could be accommodated within the existing utilities budget. The Board supported the opportunity for each director to select the option best suited to their needs.

Sponsorships: \$213,500 (as revised by board during the workshop)

Ms. Dyer presented the proposed sponsorship budget, noting that staff intentionally maintains existing sponsorship categories each year to allow the Board to determine funding priorities. She recommended adding support for the Southern California Water Coalition luncheon, and continued support for the Institute for Watershed Resiliency Fellowship Program at California State University, San Bernardino. President Harrison and Director Botello praised the Fellowship Program as one of the Agency's most successful initiatives, and Director Botello proposed expanding the program by two additional fellows (approximately \$40,000). The Board also discussed increasing the miscellaneous water-related sponsorship allocation to provide greater flexibility for future opportunities, including sponsorship of community and professional events.

Following discussion, the Board reached consensus to reduce the SoCal STEAM sponsorship from \$15,000 to \$10,000, increase the miscellaneous water-related sponsorship allocation by \$5,000, and direct staff to incorporate funding sufficient to expand the Fellowship Program by two additional students. Directors also expressed support for sponsorship of the Southern California Water Coalition event.

Conclusion

Ms. Dyer concluded the budget presentation:

Estimated total general fund revenue	\$53,891,100
Estimated total general fund expenditures (as revised by the Board during the workshop)	\$51,161,750
Allocation to WIFIA rate stabilization reserve	\$2,890,000
Net loss FY 2026-2027 covered from cash reserves	(\$160,650)

The Board of Directors approved the General Fund Budget, including the modifications and adjustments made by the Board for the Fiscal Year Ending June 30, 2027 which includes total revenue in the amount of \$53,891,100, total expenditures as revised by the board during the workshop in the amount of \$51,161,750, and approved the Agency Salary Schedule and Job Position Salary Range Schedule effective July 4, 2026 for Fiscal Year 2026-2027 by the following roll-call vote:

MOVED: Velasquez	SECONDED: Botello	APPROVED: 5-0
AYES:	Botello, Harrison, Kielhold, Longville, Velasquez	
NOES:	None	
ABSTAIN:	None	
ABSENT:	None	

President Harrison acknowledged the quality work of staff. Ms. Saks emphasized the team effort on the budget.

Agenda Item 4. Future Business. None added.

Agenda Item 5. Adjournment. President Harrison adjourned the meeting at 11:43 a.m.

APPROVAL CERTIFICATION

I hereby certify to approval of the foregoing minutes of the
San Bernardino Valley Municipal Water District

Secretary

Date _____

Respectfully submitted,

Lynda J. Kerney
Contract Assistant

**MINUTES
OF
THE
BOARD OF DIRECTORS SPECIAL MEETING
POLICY / ADMINISTRATION WORKSHOP
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT**

July 2, 2026

Directors Present: Gil J. Botello, T. Milford Harrison, Paul R. Kielhold, Susan Longville, and Jose Velasquez

Directors Absent: None

Staff Present:

Heather Dyer, MS, MBA – Chief Executive Officer/General Manager
Wen Huang, PE, MS – Chief Operating Officer/Assistant General Manager
Jose Macedo, ML, CPT-P (USA Retired) – Chief of Staff/Clerk of the Board
Michael Plinski, PE – Chief of Water Resources
Cindy Saks, CPA – Chief Financial Officer/Deputy General Manager
Greg Woodside, PG, C.Hg. – Chief of Planning and Watershed Resilience

Owen Cross, BS – Environmental Compliance Analyst I
Leo Ferrando, PE, MS – Assistant Chief Engineer
Anthony Flordelis – Business Systems Analyst
Kelly Malloy, MPA – Strategic Communications Manager
Matthew Olivo – Senior Accountant
Sayer Pinto, MBA – Principal Water Resources Analyst
Karen Resendez, MAOL – Human Resources & Risk Manager
Alliah Smith – Senior Administrative Assistant
Andreea Tanase, MPA – Administrative Analyst I
Francisco Wences – Assistant Engineer

Meredith Nikkel, Downey Brand
Sam Bivins, Downey Brand
Brad Neufeld, Varner & Brandt

Members of the Public in Attendance:

Jackson Gualco, The Gualco Group, Inc.
Kendra Daijogo, The Gualco Group, Inc.
Mark Falcone, San Bernardino Valley Water Conservation District
Robert Stewart, San Bernardino Valley Water Conservation District

The Policy/Administration Workshop of the Board of Directors was called to order by Chairperson Botello at 2:04 p.m. A quorum was noted present.

Agenda Item 1. Introductions. CEO/General Manager Heather Dyer introduced two new employees:

- Marco Tule, Hydropower Operations Supervisor
- Samuel Tuckett, Engineering Intern

Agenda Item 2. Public Comment. None.

Agenda Item 3. Discussion and Possible Action Items.

3.1) State Legislative Update. Jackson Gualco and Kendra Daijogo of The Gualco Group provided an update on current State legislative and budget matters, including:

- AB 35 received unanimous concurrence in the Assembly and was sent to the Governor. The legislation removes Administrative Procedure Act requirements to expedite distribution of Proposition 4 funding.
- AB 2215, which would have extended State Water Project water rights through 2046, was withdrawn from Senate consideration after encountering significant opposition in the Senate Natural Resources and Water Committee. Mr. Gualco indicated that State Water Contractors will continue discussions regarding future legislative options in 2027.
- AB 2568, relating to an increased number of meetings allowable for water district director compensation, continues to advance through the legislative process and is awaiting Senate action.
- SB 872, addressing Delta levee and subsidence repairs, continues to advance through the Legislature; however, funding has not yet been identified and will be considered through future budget discussions.
- Fiscal Year 2026-27 State budget update: discussions over Proposition 4 funding allocations and Greenhouse Gas Reduction Fund expenditures will continue following the legislative summer recess. Potential reductions in greenhouse gas revenues could significantly affect programs such as the Safe and Affordable Drinking Water Program.
- The Legislative Analyst's Office projects continuing State budget challenges over the next several budget cycles and cautioned that a significant decline in capital gains tax revenues could substantially worsen future budget shortfalls.
- Recent gubernatorial appointments include Tom Gibson as Director of the Department of Water Resources, Jared Blumenfeld to the State Water Resources Control Board, and the reappointment of Dee Dee D'Adamo to the Board.

Strategic Communications Manager Kelly Malloy noted the Legislature has recessed for the summer and advised that staff will continue to monitor developments and provide updates as bills advance toward final gubernatorial action.

Chair Botello inquired about the future of AB 2215 and related water rights issues affecting both the State Water Project and the Sites Reservoir. Mr. Gualco attributed the bill's withdrawal to opposition from Delta interests, tribal stakeholders, and Senate leadership, noting that the Senate's perspective on Delta water issues differed significantly from that of the Assembly. Ms. Dyer expressed confidence that State Water Contractors would continue pursuing solutions on water rights issues through ongoing advocacy efforts.

3.2) Consider the Second Amendment to the Asset Purchase Agreement with Southern California Edison for the Hydroelectric Facilities, Including the Generator Interconnection and Distribution Service Agreements. Assistant Chief Engineer Leo Ferrando presented the proposed Amendment to the Asset Purchase Agreement (APA) with Southern California Edison (SCE), providing a brief overview of the acquisition process and recent milestones, including prior Board approval of the First Amendment to the APA, California Public Utilities Commission approval, and Federal Energy Regulatory Commission (FERC) approval of the license transfer.

Mr. Ferrando explained the Second Amendment replaces the previous variable interconnection cost structure with a flat fixed monthly fee per facility for a 20-year term (\$1.7 million total), resulting in significant cost savings while eliminating future cost uncertainty. The amendment replaces the original generator interconnection agreements with agreements that will allow the Joint Powers Authority to sell generated electricity to third parties through the wholesale electricity market. In conjunction with that change, new Distribution Service Agreements will authorize SCE to transmit the generated power through its distribution system for delivery into the wholesale market.

Ms. Dyer explained the revised agreements reflect a strategic decision to simplify future power sales by selling electricity directly through a third-party power purchase agreement rather than attempting to distribute tariff benefits among the Joint Powers Authority partners. She noted that this approach provides a more straightforward structure for managing operational revenues and expenses.

Responding to Chair Botello, staff explained that while the fixed monthly payment applies for 20 years, the interconnection work is expected to be completed well before that time and the agreement does not currently address terms beyond the initial 20-year period.

Director Velasquez inquired about the technical expertise supporting the negotiations. Ms. Dyer explained that District staff is being assisted by outside consultants and specialized legal counsel, including experts in power purchase agreements, FERC matters, and water law. Director Longville commented that receiving presentation materials in advance of the meeting greatly improved her understanding of the item.

President Harrison and Chair Botello acknowledged the work of staff and the District's consultants in advancing the acquisition, expressing confidence that the agreements protect the District's interests.

The Board of Directors approved the Second Amendment to the Asset Purchase Agreement with Southern California Edison for the acquisition of the hydroelectric facilities, together with the associated Generator Interconnection Agreements and Distribution Service Agreements, and authorized the CEO/General Manager to execute the Agreements, subject to any minor, technical, or non-substantive revisions deemed necessary and approved by House Counsel by the following roll-call vote:

MOVED: Harrison	SECONDED: Velasquez	APPROVED 5-0
AYES:	Botello, Harrison, Kielhold, Longville, Velasquez	
NOES:	None	
ABSTAIN:	None	
ABSENT:	None	

Agenda Item 4. Future Business. None added.

Agenda Item 5. Closed Session. District Counsel Brad Neufeld announced the Closed Session. Chair Botello opened the Closed Session at 2:34 p.m.

- 5.1 CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION
 Significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of Government Code section 54956.9
 One potential case

Chair Botello returned the meeting to Open Session at 2:36 p.m. and advised that President Harrison had left the meeting early. Counsel Neufeld announced that no reportable action was taken.

Agenda Item 6. Adjournment: Chair Botello adjourned the meeting at 2:36 p.m. in memory of San Bernardino Mayor Judith Valles.

APPROVAL CERTIFICATION

I hereby certify to approval of the foregoing minutes of the
 San Bernardino Valley Municipal Water District

 Secretary

Date _____

Respectfully submitted,

Lynda J. Kerney
 Contract Assistant

**MINUTES
OF
THE
REGULAR BOARD MEETING
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT**

July 7, 2026

Directors Present: Gil J. Botello, T. Milford Harrison, Paul R. Kielhold, and Susan Longville

Directors Absent: Jose Velasquez

Staff Present:

Heather Dyer, MS, MBA – Chief Executive Officer/General Manager
Wen Huang, PE, MS – Chief Operating Officer/Assistant General Manager
Jose Macedo, ML, CPT-P (USA Retired) – Chief Administrative Officer/Deputy General Manager
Cindy Saks, CPA – Chief Financial Officer/Deputy General Manager
Greg Woodside, PG, C.Hg. – Chief of Planning and Watershed Resilience

Owen Cross, BS – Environmental Compliance Analyst I
Leo Ferrando, PE, MS – Assistant Chief Engineer
Anthony Flordelis – Senior Business Systems Analyst
Aaron Jones, EIT, MEng – Senior Engineer
Matthew Olivo – Senior Accountant
Sayer Pinto, MBA – Principal Water Resources Analyst
Karen Resendez, MAOL – Human Resources & Risk Manager
Alliah Smith – Senior Administrative Assistant
Andreea Tanase, MPA – Administrative Analyst I
Francisco Wences – Assistant Engineer

Brad Neufeld, Varner & Brandt
Meredith Nikkel, Downey Brand

Members of the Public in Attendance:

Ben Kelly, Western Heights Mutual Water Company
Mark Falcone, San Bernardino Valley Water Conservation District
John Longville, San Bernardino Valley Water Conservation District
Melody McDonald, San Bernardino Valley Water Conservation District
Sarah Wargo, San Gorgonio Pass Water Agency
James Morales, East Valley Water District
Nyles O’Harra, Yucaipa Valley Water District
Joyce McIntire, Yucaipa Valley Water District

Joseph Zoba, Yucaipa Valley Water District
 Matt Porras, Yucaipa Valley Water District
 Michah Knox, Yucaipa Valley Water District
 Michael Moore, East Valley Water District
 Michael Miller
 Larry Smith, San Geronio Pass Water Agency
 Nate Scheevel, Scheevel Engineering

The regular meeting of the Board of Directors was called to order by President Harrison at 2:00 p.m. A quorum was noted present by roll call.

Agenda Item 1. Public Comment. None.

Agenda Item 2. Consent Calendar.

- 2.1) Approve Minutes of the Regular Board of Directors Meeting – June 6, 2026**
- 2.2) Approve Minutes of the Board of Directors Special Meeting – Resources / Engineering Workshop – June 9, 2026**
- 2.3) Approve Minutes of the Regular Board of Directors' Meeting - June 16, 2026**
- 2.4) Approve Resolution No. 1204 to Repeal Resolutions No. 285 and 398**

The Board of Directors approved the items on the Consent Calendar by the following roll-call vote:

MOVED: Botello	SECONDED: Longville	APPROVED 4-0
AYES:	Botello, Harrison, Kielhold, Longville,	
NOES:	None	
ABSTAIN:	None	
ABSENT:	Velasquez	

RESOLUTION NO. 1204

RESOLUTION OF THE BOARD OF DIRECTORS OF THE SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT REPEALING RESOLUTION NO. 285 AND 398.

(See Resolution Book)

Agenda Item 3. Discussion and Possible Action Items.

3.1) Consider Professional Services Agreement with Scheevel Engineering for Engineering Consulting Services for Fiscal Year 2026-27. Assistant Chief Engineer Leo Ferrando explained that the proposed on-call professional services agreement supplements San Bernardino Valley engineering staff in managing the current workload of capital improvement projects. He stated that Nate Scheevel has become a trusted extension of Agency staff, is familiar with Agency projects and standards, and recently established an office in San Bernardino to improve collaboration with Agency staff.

Senior Engineer Aaron Jones highlighted several projects on which Scheevel Engineering has provided engineering support, including the County Line Turnout Project, Central Feeder EBX Intertie, Sweetwater Basins, Cactus Basins Connector, Greenspot Pipeline at Tate Pump Station, and the Santa Ana River Tributaries Restoration Project. He also noted that Mr. Scheevel provides hydraulic modeling, project management, construction support, and technical assistance with engineering studies.

Director Longville commended Mr. Scheevel's consistent problem-solving abilities and innovative approach. Director Botello confirmed that the proposed contract amount remains consistent with prior years and asked about Mr. Scheevel's role in supporting grant applications. Mr. Jones confirmed that Scheevel Engineering assists with technical analyses, feasibility studies, and other engineering components needed for grant funding applications, including support for the Devil Canyon recharge basin project.

The Board of authorized the CEO/General Manager to execute a professional services agreement with Scheevel Engineering for on-call engineering consulting services for fiscal year 2026-27 in an amount not to exceed \$300,000 by the following roll-call vote:

MOVED: Kielhold	SECONDED: Botello	APPROVED 4-0
AYES:	Botello, Harrison, Kielhold, Longville	
NOES:	None	
ABSTAIN:	None	
ABSENT:	Velasquez	

3.2) Consider Adoption of Updated Reserve Policy. Chief of Planning and Watershed Resilience Greg Woodside presented a comprehensive update to the Agency's Reserve Policy, noting that the existing policy had not been revised since 2012. He explained that the updated policy establishes how reserve funds are created, maintained, used to support the Agency's mission, and serve public purposes, while incorporating current industry best practices and providing a durable framework for future Boards. Staff anticipates returning annually to review the policy and how it is implemented.

Mr. Woodside explained that the policy is intended to ensure sufficient financial resources to meet variable operating cash flow needs, support development of reliable and diverse water supplies, cash-finance infrastructure where practical, ensure sufficient funds are available to manage emergencies affecting imported or local water supplies, maintain strong credit ratings, reduce borrowing costs, and satisfy legal and contractual obligations. He reviewed the Agency's two primary funding categories: the restricted State Water Contract Fund and the General Fund, and explained that the proposed policy establishes separate reserve categories within each fund, each with defined minimum and target reserve levels.

Mr. Woodside detailed the reserve structure, including operating, catastrophic risk and emergency, capital project, debt service, and contract reserves. He explained that operating reserves provide financial stability during revenue and expenditure fluctuations; catastrophic reserves would allow the Agency to respond immediately to major disruptions affecting water supplies; capital project reserves support cash financing of infrastructure; debt service reserves satisfy financing requirements; and contract reserves segregate monies committed to specific legal settlements, customer deposits, or other contractual obligations. He emphasized that restricted and unrestricted reserves remain segregated, consistent with State Auditor recommendations and industry best practices.

Ms. Dyer emphasized the updated policy is intended to provide a long-term framework that will guide future Boards while preserving flexibility to respond to changing conditions. Noting that a significant portion of revenue is gained from assessed property values, she explained that strong reserves enable the Agency to continue investing in regional water reliability during economic downturns. She reminded that property tax revenues required several years to recover following the 2008 recession, illustrating the importance of maintaining financial resilience through economic cycles.

Ms. Dyer cited several examples of how prudent reserve management has benefited the Agency, including cash financing of the Regional Recycled Water Project supporting the Sterling Natural Resources Center, acquisition of conservation easements to advance PERC projects, and preservation of the Agency's AAA credit rating. She noted maintaining robust reserves also positions the Agency to cash-finance future infrastructure where appropriate, as directed by the Board, reducing long-term financing costs. Additionally, sufficient resources provide immediate availability to purchase replacement water and respond to catastrophic disruptions affecting the State Water Project or other critical water supply infrastructure. She emphasized that the strategy provides flexibility in options available to the Board to achieve important water supply projects. The policy complies with current standards, is reflective of statements made by the Board, and provides a foundation for staff.

In response to Director Kielhold, Mr. Woodside indicated that an example of payments to set aside would be the WIFIA loan. Director Longville noted the importance of the Board having regular reports and control, especially in relation to varying target levels and project timelines. She acknowledged the accomplishment and the work of staff and committees.

Director Botello pointed out the policy is a living document to review every year, and it is at the discretion of the Board to use the reserves for the Agency's needs. He acknowledged the importance of reserves to address catastrophic circumstances such as earthquakes or failures in the Delta that interrupt the State Water Project, and to maintain financial stability during economic downturns. Director Botello requested a pamphlet be produced to explain how the Agency manages its reserve funds.

Director Kielhold observed that many major State Water Project infrastructure needs, including Delta levee improvements, Central Valley subsidence mitigation, and Delta Conveyance, extend well beyond the Department of Water Resources' current five-year capital program. He emphasized the importance of considering these long-term financial obligations when establishing and maintaining the Agency's reserves.

President Harrison emphasized that the Agency's responsibility extends beyond day-to-day operations to ensuring a reliable supplemental water supply for approximately 700,000 residents throughout the service area. He cited risks to the State Water Project and stated that maintaining adequate reserves is essential to protecting existing assets while funding future infrastructure improvements. He further observed that large regional projects should be financed over multiple generations, with reserves providing the flexibility to initiate projects while balancing costs between current and future ratepayers.

Ms. Dyer clarified the Department of Water Resources' current five-year capital program addresses ongoing maintenance needs and does not include major long-term investments such as Delta Conveyance. She explained that the proposed capital project reserve is intended to prepare for those future obligations, while the catastrophic risk and emergency reserve would allow the Agency to quickly purchase replacement water following a major interruption to the State Water Project. She noted that retailers with treatment plants depend upon San Bernardino Valley's ability to secure supplemental supplies during emergencies and stated that maintaining immediately available reserves would provide the flexibility to respond rapidly to protect regional water reliability.

President Harrison reiterated that retailers depend upon San Bernardino Valley to maintain a dependable wholesale water supply and emphasized that the responsibility for regional water reliability rests with the Agency. He stated that reserve decisions should continue to balance prudent financial stewardship, including the setting of tax rates, with the need to prepare for low-probability but high-consequence events affecting imported water supplies. Ms. Dyer concluded by recognizing staff's ongoing efforts to strengthen the State Water Project and local groundwater recharge system, noting that the proposed Reserve Policy provides additional financial tools to help the Agency remain a dependable supplemental water supplier during future emergencies.

Yucaipa Valley Water District General Manager Joseph Zoba expressed appreciation for the Board's discussion of the proposed Reserve Policy, particularly the emphasis on maintaining reserves to purchase replacement water during interruptions of the State Water Project. Mr. Zoba observed that San Bernardino Valley's reserve strategy could influence how retailers plan for their own emergency reserves and cautioned against

unnecessary duplication of reserve funding at retail levels. Mr. Zoba suggested establishing an advisory committee composed of agencies operating treatment plants.

The Board of Directors rescinded the 2012 Reserve Policy and adopted the Reserve policy as updated July 2026, subject to review and approval to form by Legal Counsel by the following roll-call vote:

MOVED: Longville	SECONDED: Longville	APPROVED 4-0
AYES:	Botello, Harrison, Kielhold, Longville	
NOES:	None	
ABSTAIN:	None	
ABSENT:	Velasquez	

Agenda Item 4. Reports. (Discussion and Possible Action)

4.1) Directors' Report of Activities and Travel Requests in accordance with Resolution 1100.

President Harrison reported that he attended:

- June 22-23 – California HCP Coalition Conference
- June 30 – Conference with Chairman of East Valley Water District
- July 1 – Loma Linda Chamber of Commerce

Director Longville reported that she attended:

- June 17 and 25 – PERC Policy Committee meetings
- June 22 – Climate Center Board meeting
- June 23 – League of California Voters Water Committee meeting

Director Botello reported that he attended:

- June 20 – San Bernardino City Council Ward 3 meeting
- July 1 – Stormwater Capture Pollution Prevention webinar

4.2) General Counsel Report. No report.

4.3) Ad-Hoc and Standing Committee Reports. None.

4.4) SAWPA Meeting Report. Director Botello presented the report on the July 7, 2026, SAWPA meeting, and President Harrison provided the PA 24 Committee report.

SAWPA Commission

- The Commission approved a 30-day delay in the adoption of the FY 2027 Salary Schedule.

- The Commission approved to reject all proposals received for the SAWPA Building Perimeter Security Fence project and directed the General Manager to reissue a Request for Proposals.
- The Commission received and filed the following Informational Report:
 - Proposition 4 Upcoming Funding Opportunities

PA 24 Committee

- The Committee received and filed the following Informational Reports:
 - Inland Empire Brine Line Pretreatment Program – Valley Brine Line Pretreatment Program Services
 - CARB Advanced Clean Fleet Regulatory Compliance Update

Agenda Item 5. Future Business. Director Kielhold requested to add meetings of the Yucaipa Sustainable Groundwater Management Agency to the List of Announcements.

Agenda Item 6. Announcements.

6.1) List of Announcements. Chief Administrative Officer / Deputy General Manager Jose Macedo reviewed the List of Announcements.

Agenda Item 7. Closed Session. District Counsel Brad Neufeld announced the Closed Session. President Harrison opened the Closed Session at 2:58 p.m.

- 7.1) CONFERENCE WITH LEGAL COUNSEL - ANTICIPATED LITIGATION
 Significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of Government Code section 54956.9
 (one potential case)

President Harrison returned the meeting to Open Session at 4:10 p.m. District Counsel Brad Neufeld stated that no reportable action was taken.

Agenda Item 8. Adjournment. President Harrison adjourned the meeting at 4:11 p.m.

APPROVAL CERTIFICATION

I hereby certify to approval of the foregoing minutes of the
 San Bernardino Valley Municipal Water District

 Secretary

Date _____

Respectfully submitted,

Lynda J. Kerney
 Contract Assistant

DATE: July 21, 2026

TO: Board of Directors

FROM: Heather Dyer, Chief Executive Officer/General Manager
Cindy Saks, Chief Financial Officer/Deputy General Manager
Greg Woodside, Chief of Planning and Watershed Resilience

SUBJECT: Consider Adopting the Fiscal Year 2026-2027 State Water Contract Fund Budget and Setting the Ad Valorem Property Tax Rate for Fiscal Year 2026-2027

Staff Recommendation

That the Board of Directors consider adopting the Fiscal Year 2026-2027 State Water Contract Fund Budget in the amount not-to-exceed \$100,335,217 in expenditures; determine an ad valorem property tax rate for Fiscal Year (“FY”) 2026-2027; and adopt a resolution establishing the selected rate.

Summary

San Bernardino Valley Municipal Water District (“San Bernardino Valley” or “Agency”) annually sets an ad valorem property tax rate to fund obligations under its State Water Contract (“SWC”) with the California Department of Water Resources (“DWR”). For FY 2026-2027, staff estimate \$100.3 million in expenditures necessary to meet obligations (i.e., receive, treat, manage and deliver imported water) under its SWC. For FY 2027-2028, staff estimate that approximately \$140.7 million will be due. San Bernardino Valley began FY 2026-2027 with approximately \$723.9 million in the SWC Fund. In adopting a tax rate for FY 2026-2027, the Board must ensure that the revenue collected from the ad valorem property tax, in combination with potential use of funds in the SWC Reserve Fund, are sufficient to pay obligations under the District’s SWC, and the objectives of the recently adopted reserve policy are met while also avoiding abrupt tax or water-rate increases as major project costs become due. A tax rate of between \$0.04 and \$0.06 per \$100 of assessed value can accomplish the stated objectives.

Background

San Bernardino Valley is a wholesale water agency that provides supplemental water supplies to retail agencies throughout its service area through direct delivery and groundwater recharge, and its activities are critical for regional groundwater management in the San Bernardino Basin Area and other groundwater basins in the Agency's service area. San Bernardino Valley's primary source of supplemental water is the State Water Project ("SWP"). San Bernardino Valley has ongoing financial obligations associated with its annual supply of SWP water, as well as capital obligations associated with the Delta Conveyance Project, Sites Reservoir, and other State Water Project improvements that are necessary to effectively manage and deliver water to customers, as it is contractually obligated to do as a State Water Contractor. San Bernardino Valley is obligated to make monthly payments to DWR to cover anticipated costs pursuant to its SWC. DWR invoices San Bernardino Valley for SWC costs by way of a "Statement of Charges" ("SOC").

To pay these costs, San Bernardino Valley annually levies ad valorem property taxes that were authorized and deemed to have been approved by the voters when they adopted the California Water Resources Development Bond Act (known as the Burns Porter Act). San Bernardino Valley's ad valorem tax rate in the fiscal year ending June 30, 2026, was \$0.11 per \$100 of assessed property valuation. Since FY 2016-2017, San Bernardino Valley has steadily decreased the ad valorem tax rate from \$0.1625 to \$0.11 per \$100 of assessed property valuation, a 32 percent reduction in the tax rate.

To support the FY 2026-2027 rate-setting process, the Agency retained ERA Economics LLC (ERA) to review the SWC Fund budget and reserves, estimate upcoming annual and capital obligations, and evaluate the effect of alternative ad valorem tax rates. ERA's analysis is provided as Attachment 3.

Estimated SWC Costs

Estimating future SWC costs requires assumptions about both annual State Water Project operations and the timing of major capital projects. Approximately 85 percent of San Bernardino Valley's historical SWC costs billed under the SOC have been fixed charges that must be paid regardless of how much water is delivered. The variable portion depends on hydrology, annual State Water Project allocations, deliveries, and power costs. Other costs depend on project schedules, financing plans, construction costs, and capital work that is not within the Agency's control.

Estimated costs can shift between fiscal years when permitting, design, financing, or construction schedules change. This is particularly important for Sites Reservoir, the Delta Conveyance Project, California Aqueduct subsidence repairs, and other State Water Project system improvements. The FY 2026-2027 and FY 2027-2028 estimated costs are therefore planning estimates based on the best information currently available. Actual charges may be higher or lower and may be billed earlier or later than estimated.

Development of the SWC Cost Estimates

The FY 2026-2027 estimate begins with the Agency's current SOC and SWC Fund budget. Fixed charges include the minimum components of the Transportation Charge and Delta Water Charge, State Water Project debt-related charges, and East Branch facilities. Variable charges were estimated using historical delivery patterns and expected power and operating costs. For FY 2027-2028 and later years, the Agency's projections were compared with DWR Bulletin 132 estimates, DWR capital project costs and timelines, and adjusted to reflect San Bernardino Valley's delivery history.

In addition, DWR's February 2026 State Water Project Budget Report identifies planned improvements to existing State Water Project facilities, including California Aqueduct subsidence work and other system repairs. San Bernardino Valley's proportional share of these costs was estimated based on the project costs, timeline, and San Bernardino Valley's proportional share obligation for each project. These costs do not appear on the current SOC but are SWP costs that are expected to be recovered through future SOC.

San Bernardino Valley is also investing in two major capital infrastructure projects designed to increase deliveries of imported water to the Agency: the Delta Conveyance Project ("DCP") and the Sites Reservoir Project ("Sites"). The FY 2027-2028 estimate of SWC costs includes an additional \$4.2 million in DCP costs expected to be billed through the SOC. This estimate is based on the Delta Conveyance Design and Construction Authority's current spending plan.

The estimate of Sites Reservoir costs derives from the January 2026 Sites Project Authority construction cash-flow schedule and San Bernardino Valley's approximately 9.5 percent project share. By statute, DWR has the authority to acquire water supplies for San Bernardino Valley as a State Water Contractor. Like other State Water Contractor participants in the Sites Reservoir Project, San Bernardino Valley intends for DWR to acquire an interest in Sites Reservoir Project water on its behalf. Accordingly, DWR has been identified as an acquirer in the Benefits & Obligations Contract for the Sites Reservoir Project. Under this arrangement,

DWR would acquire an interest in the Sites Reservoir Project on San Bernardino Valley's behalf and recover those acquisition costs through the SOC under an amendment to San Bernardino Valley's SWC. Consistent with this arrangement, the current estimate includes \$14.2 million in FY 2026-2027 and \$52.1 million in FY 2027-2028.

Taken together, these estimates reflect the Agency's anticipated fixed and variable State Water Project charges, including all debt service, planned system improvements, and near-term costs for the Delta Conveyance and Sites Reservoir projects. Based on the best information currently available, San Bernardino Valley expects approximately \$85.9 million in costs to be billed through the SOC in FY 2026-2027 and approximately \$140.7 million in FY 2027-2028. The table below summarizes the components of those estimates.

Table 1. Estimated SWC Costs Billed Through SOC for FY 2026-2027 and FY 2027-2028

Cost Category	FY 2026-2027 (millions)	FY 2027-2028 (millions)
SWP Variable Charge	\$11.8	\$15.9
SWP Fixed Charge	\$44.3	\$35.6
East Branch Extension Debt	\$15.6	\$18.8
SWP Facility Costs	\$0.0	\$14.1
Sites Reservoir	\$14.2	\$52.1
Delta Conveyance Project	\$0.0	\$4.2
Total SWC Cost Estimate	\$85.9	\$140.7

It Is Not Feasible to Cover All SWC Costs Using Revenue Sources Other Than Ad Valorem Taxes

ERA evaluated whether the Agency could rely more heavily on water sale revenues to pay SWC costs based on a variety of considerations. Although each of these considerations weighs against replacing the ad valorem tax with water rates, the most immediate concerns are the magnitude of the rate increase that would be required and the resulting incentive for retail agencies to substitute extracted groundwater for imported water.

San Bernardino Valley currently charges approximately \$118 to \$125 per acre-foot for most wholesale water deliveries. Water sale revenues are allocated to the General Fund and are necessary to support the Agency's general operations, programs, and obligations essential to fulfill its contractual obligations, including staff costs associated with SWC administration and operations. The FY 2026-2027 General Fund budget includes approximately \$11.6 million in water sale revenue against \$51.1 million in General Fund expenses. Redirecting that revenue

to the SWC Fund would create a General Fund shortfall that may be difficult, if not impossible, to cover through the limited other potential sources of revenue such as the water rate.

Staff are in the process of conducting a comprehensive water-rate study. That study is not complete, and it would not be feasible to develop, evaluate, and implement the wholesale rate increase that would be required during the current tax-setting cycle. It is clear, however, that the increase in water rates required to fully cover SWC costs would be substantial. Using the 68,430-acre-foot annual delivery assumption reflected in DWR's current forecast¹, recovering the anticipated FY 2026-2027 SWC costs of \$85.9 million entirely through water sales would require a wholesale rate of approximately \$1,255 per acre-foot. A water rate designed to recover those costs would be far above the Agency's current wholesale rate and above ERA's estimated \$200 to \$400 per acre-foot cost of groundwater production for retail agencies, before Agency delivery and overhead costs.

Groundwater is the principal substitute supply for SWP water for San Bernardino Valley's retail agencies. A wholesale imported water rate that exceeds groundwater pumping costs would incentivize retail agencies to reduce, or even stop, purchasing imported water and instead increase or shift entirely to the much less expensive alternative, groundwater extraction. That response would reduce water sale revenue while leaving the Agency's fixed SWC obligations unchanged. Significantly, it would work against San Bernardino Valley's regional groundwater-management responsibilities and increase stress on a groundwater basin that is already at near-historic low levels. Water-rate revenue also varies with annual allocations and deliveries, while most SWC costs do not. Relying primarily on water sales would therefore make the Agency's revenue less stable and could require repeated rate adjustments in low delivery years. Accordingly, water sale revenues cannot feasibly replace the ad valorem tax as the principal source of revenue for costs billed under the SWC.

San Bernardino Valley staff and legal counsel have also evaluated whether other potential financing and revenue authorities could provide a practical substitute for the ad valorem tax. The alternatives reviewed included groundwater replenishment assessments, revenue bonds, improvement districts and benefit assessments, voter-approved taxes, expanded water sales or groundwater storage arrangements, and fees for sewage, waste, or stormwater services. Each option is subject to significant statutory, constitutional, financial, or operational limitations. Several would require new legislation or voter approval, while others may be used only for

¹ The analysis assumes DWR's projected allocation. However, the most recent 10-year average SWP allocation is 45% (approximately 46,170 acre-feet), which would result in a proportionally higher unit cost for imported water.

defined facilities, services, or special benefits and therefore could not be applied broadly to the Agency's ongoing SWC obligations.

Some of these authorities may warrant further evaluation for limited purposes. For example, improvement districts or benefit assessments could potentially help finance specific pipelines or recharge facilities, and water sales or storage arrangements may produce revenue when supplies and market conditions permit. They would not, however, provide a feasible revenue stream to fund SWC costs. Staff therefore do not consider these alternative revenue sources to be feasible substitutes to ad valorem taxes for covering SWC costs in FY 2026-2027.

Reserve Policy and Tax-Rate Objectives

In selecting an ad valorem tax rate for FY 2026-2027, the Board must ensure that the Agency will have sufficient funds to pay amounts due under the Agency's SWC. To do so, the Board should consider estimated ad valorem tax revenue, together with existing reserves, to meet known and reasonably anticipated SWC costs and maintain adequate liquidity for monthly SOC payments.

The Board should also consider how the selected rate will affect the Agency's reserves. On July 7, 2026, the Board adopted an updated reserve policy establishing reserve components, minimum levels, and target levels. The policy is intended to preserve adequate liquidity for monthly SOC payments, capital projects, and low-probability but catastrophic high-impact events, while avoiding unnecessary accumulation of reserves above the adopted targets.

The Agency's approximately \$723.9 million starting SWC Fund reserve balance is currently above the updated target levels. Staff therefore recommend that the Board consider two primary reserve objectives in selecting the FY 2026-2027 rate. First, the selected rate should not increase the reserve balance. Second, reserves should be drawn down gradually enough to avoid creating a likely need for substantial tax or water-rate increases in the near term.

Potential Tax Rates

ERA evaluated near-term rates from \$0.04 through the current \$0.11 rate per \$100 in assessed value. The FY 2026-2027 estimates begin with a \$723.9 million reserve balance and approximately \$33.3 million in investment and other revenue. The ad valorem revenue estimates include property-tax revenue paid directly to San Bernardino Valley by the tax collection authorities and the portion from redevelopment agency ("RDA") successor pass-

through revenue ("RDA pass-through"). The table below shows the estimated revenue generated and end-of-year (EOY) reserve balance associated with tax rates between \$0.04 and \$0.08 per \$100 of assessed values.

Table 2. FY 2026-2027 Revenue and Estimated Reserve Effects of Alternative Tax Rates

Tax Rate	Estimated Property Tax Revenue (millions)	Estimated FY 2027 EOY Reserve (millions)	Estimated Reserve Change (millions)
\$0.04	\$43.5	\$700.3	(\$23.6)
\$0.05	\$54.4	\$711.2	(\$12.7)
\$0.06	\$65.3	\$722.1	(\$1.8)
\$0.07	\$76.1	\$733.0	\$9.1
\$0.08	\$87.0	\$743.8	\$19.9

Actual costs, revenues, and end-of-year reserve balances will depend on project timing, financing, hydrology, assessed values, investment returns, and DWR billing. ERA worked with staff to apply the most current information available from DWR, the Agency, project authorities, and other public sources. Future year reserve targets and costs account for general cost inflation. The data and assumptions are documented in Attachments 1 and 3 with supporting reference material included in Attachment 4.

Rates of \$0.07 and Above

At \$0.08 per \$100 of assessed value, ad valorem property tax revenue is estimated at \$87.0 million for FY 2026-2027. That amount exceeds the \$85.9 million currently expected to be billed through FY 2026-2027 SOC and therefore likely increase reserves.

A \$0.07 rate would generate approximately \$76.1 million in ad valorem tax —revenues- slightly less than anticipated SOC expenses for FY 2026-2027. However, because existing reserves are expected to generate investment income, a \$0.07 rate would likely result in a modest increase in estimated reserve funds in FY 2026-2027. Accordingly, the selection of a rate of \$0.07 per \$100 of assessed value or higher would not achieve the objective of avoiding an increase in reserve funds.

Rates of \$0.05 to \$0.06

A \$0.06 rate would generate approximately \$65.3 million in FY 2026-2027 tax revenue and, when combined with anticipated investment income on existing reserves, leave the year-end reserve balance slightly lower at approximately \$722.1 million. If the same rate were maintained

in FY 2027-2028, ERA estimates a year-end reserve balance of approximately \$671.5 million after expected costs that year. Under the Agency's anticipated SOC costs and assumptions applied to estimate future budgets, reserves would fall to minimum target levels in approximately 2033.

A \$0.05 rate would generate approximately \$54.4 million in FY 2026-2027 tax revenue and, when combined with anticipated investment income on existing reserves, reduce the year-end reserve balance to approximately \$711.2 million. If maintained in FY 2027-2028, ERA estimates a year-end reserve balance of approximately \$649.0 million. Under the Agency's anticipated SOC costs and assumptions applied to estimate future budgets, reserves would fall to minimum target levels in approximately 2032.

Rate of \$0.04

A \$0.04 rate would reduce estimated FY 2026-2027 reserves to approximately \$700 million and would produce a substantially faster drawdown over time. Under the Agency's anticipated SOC costs and assumptions applied to estimate future budgets, selecting an ad valorem tax rate of \$0.04 would create a greater likelihood that the Board would need to increase the tax or water rates in approximately 4 years.

Figures 1 and 2 below show how tax rates between \$0.04 and \$0.07 per \$100 of assessed value are estimated to affect Agency reserves over a ten-year planning horizon. It is important to note that the Agency's reserve policy requires the Board to review the status of the Board's reserves every year, and that the Board retains discretion to adjust tax rates and reserve targets.

Figure 1. Projected SWC Fund Reserves at \$0.07 and \$0.06 per \$100 of Assessed Value

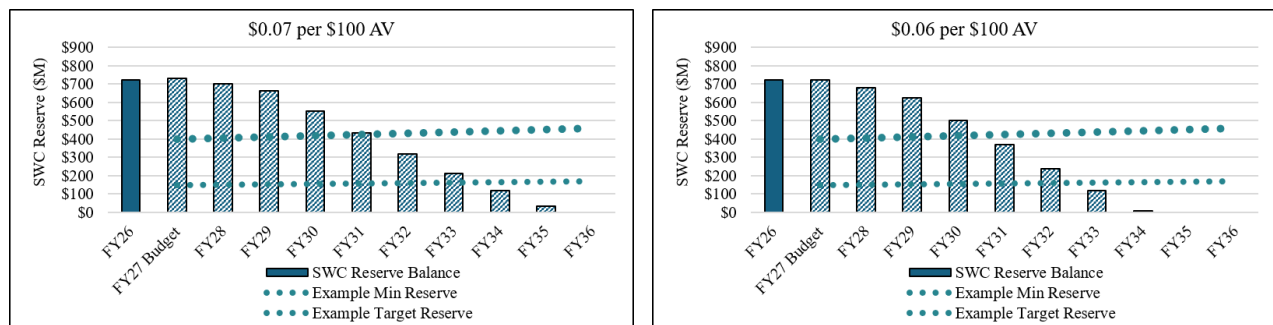
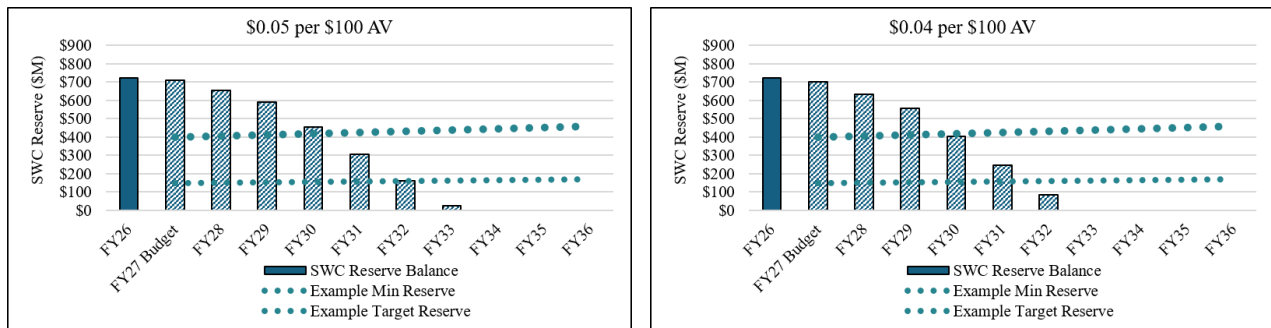


Figure 2. Projected SWC Fund Reserves at \$0.05 and \$0.04 per \$100 of Assessed Value



Estimating future SWC costs and revenues is uncertain because actual assessed values, hydrology, DWR charges, project schedules, financing, and capital costs will vary over time. The uncertainty increases over a longer planning horizon. Staff will continue to evaluate costs and revenues as new information is available, and this information will be reflected in future SWC costs and budgets. Future ad valorem tax rates can be adjusted, up or down, to reflect the most current data supporting cost and revenue estimates.

Proposed Fiscal Year 2026-2027 State Water Contract Fund Budget

The estimated SWC Fund Budget is attached to this report as Attachment 1. The budget estimates include a total of \$100.3 million in SWP-related expenditures, of which approximately \$85.9 million are expected to be billed by DWR through the SOC. In addition to amounts expected to be billed through the SOC, total SWC Fund costs include other costs that are necessary to meet obligations under the SWC and deliver SWP water in San Bernardino Valley's service area; such costs may be covered by Reserves, investment income, or sources of revenue other than ad valorem taxes levied for FY 2026-2027. Amounts expected to be billed through the SOC will be paid using SWC Fund reserves and ad valorem taxes levied in FY 2026-2027; the use of Reserves depends on the rate set by the Board and the actual revenue generated based on assessed value.

Property Tax Rate Setting Next Steps

The Board should select the FY 2026-2027 ad valorem tax rate and adopt the attached resolution establishing that rate. Following adoption, staff will provide the approved rate and required documentation to the both San Bernardino and Riverside Counties for inclusion in the FY 2026-2027 property-tax levy. Staff will continue to update the SWC Fund cash-flow forecast as DWR billing, capital-project schedules, assessed values, and financing plans are refined, and will bring updated information to the Board no later than the next annual rate-setting cycle.

Agency Strategic Plan Application

This item supports the Agency's commitment to proactively manage a diverse and adaptable water supply portfolio and to maximize the value of the region's water assets. It also supports prudent financial planning for the State Water Project and the Agency's regional groundwater management responsibilities.

Fiscal Impact

The selected rate will determine the amount of ad valorem property tax revenue deposited into the SWC Fund and the amount of above-target reserves used during FY 2026-2027.

Attachments

1. Fiscal Year 2026-2027 State Water Contract Budget Estimates
2. Draft Proposed Resolution Establishing the FY 2026-2027 State Water Contract Ad Valorem Tax Rate.
3. ERA Economics, Economic Considerations for San Bernardino Valley MWD Tax Rate Setting – Fiscal Year 2027.
4. [ERA Economics Report Reference Materials](#)

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT
STATE WATER CONTRACT FUND
PROPOSED FISCAL YEAR 2026-2027 BUDGET ESTIMATES

	<u>2026-2027 Estimate</u>
<u>ESTIMATED EXPENDITURES</u>	
Capital Cost Component - Delta Water Charge	\$ 4,440,198.00
Capital Cost Component - Transportation Charge	\$ 3,551,627.00
Capital Cost Component - Power Debt Service	\$ 861,482.00
Minimum OMP& R Component - Delta Water Charge	\$ 5,592,514.00
Minimum OMP& R Component - Transportation Charge	\$ 26,535,100.00
Variable Charge for Energy	\$ 11,832,000.00
Water System Revenue Bond	\$ 2,534,870.00
Off Aqueduct Power Facilities Variable Cost	\$ 43,542.00
East Branch Enlargement - Minimum OMP&R	\$ 383,128.00
East Branch Extension	\$ 15,642,661.00
Tehachapi 2nd Afterbay	\$ 393,095.00
Sites Reservoir Project	\$ 14,180,000.00
SWP Delivery Turnouts and Water Treatment	\$ 13,800,000.00
Legal/Financial Advisory Fee	\$ 150,000.00
Audit Fees	\$ 45,000.00
State Water Contractor Fees	\$ 350,000.00
TOTAL SWC EXPENDITURES	\$ 100,335,217.00
<u>ESTIMATED REVENUE</u>	
Investment Income/Interest Earnings	\$ 25,000,000.00
Return of DWR Debt Service Reserves/Bond Cover	\$ 8,300,000.00
TOTAL NON-TAX REVENUE	\$ 33,300,000.00
Property Taxes	TBD (based on tax rate)
TOTAL PROPERTY TAX REVENUE	TBD (based on tax rate)
TOTAL SWC REVENUE	TBD (based on tax rate)
NET REVENUE OVER EXPENDITURES	TBD (based on tax rate)

RESOLUTION NO. 1205

RESOLUTION OF THE BOARD OF DIRECTORS OF THE SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT DETERMINING THE AMOUNT OF MONEY NEEDED TO MAKE ANNUAL PAYMENTS FOR INDEBTEDNESS APPROVED BY THE VOTERS PRIOR TO JULY 1, 1978, AND/OR FOR WHICH A TAX LEVY IS REQUIRED UNDER ARTICLE I, SECTION 10 OF THE UNITED STATES CONSTITUTION AND MAKING A TAX LEVY THEREFOR

WHEREAS, Section 72093 of the Water Code requires the Board of Directors of the San Bernardino Valley Municipal Water District to determine the amounts necessary to be raised by taxation during the fiscal year and to fix the rate or rates of tax to be levied therefore; and

WHEREAS, Section 11652 of the Water Code requires the Board, whenever necessary, to levy a tax sufficient to assure payment of sums due under the Contract Between the State of California Department of Water Resources and the San Bernardino Valley Municipal Water District for a Water Supply dated December 30, 1960; and

WHEREAS, Section I(b) of Article XIII A of the California Constitution and Section 93 of the Revenue and Taxation Code exempt ad valorem property tax levies to make payments upon indebtedness approved by the voters prior to July 1, 1978, from the limitations set forth in Section 1(a) of Article XIII A and said Section 93, the District's Water Supply Contract, having been approved by vote of the people on November 8, 1960, and March 9, 1971, fall within such exemption; and

WHEREAS, the District's aforementioned contract and the provisions of Section 11652 of the Water Code with respect thereto are protected against impairment under the provisions of Article I, Section 10 of the Constitution of the United States and Article I, Section 9 of the California Constitution prohibiting the impairment of the obligation of contracts; and

WHEREAS, the Board, after reviewing and considering all the facts, information and reports provided by District staff, and information communicated to the Board during public meetings in which the District's Fiscal Year 2026-27 State Water Contract Fund budget and General Fund budget and proposed rates and charges were considered, has determined that it is necessary to raise the amounts hereinafter specified as an ad valorem real property tax, and that it is not practicable and feasible to raise said sums from water rates or other sources; and

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the San Bernardino Valley Municipal Water District as follows:

1. That said Board of Directors has determined that the amounts necessary to be raised by taxation during the fiscal year beginning July 1, 2026, and ending June 30, 2027, to pay indebtedness approved by the voters prior to July 1, 1978, and/or for which a tax levy is required under Article I, Section 10 of the United States Constitution and Article I, Section 9 of the California Constitution is \$XXXXXX for payments on the Contract Between the State of California Department of Water Resources and San Bernardino Valley Municipal Water District for a Water Supply dated December 30, 1960 and hereby fixes the rates of tax for such purposes as follows:

State Water Contract Tax Rate \$ 0.XX per \$100 of assessed value

2. That the Board of Directors does hereby certify the rate so fixed, and as hereinbefore set forth, to the Boards of Supervisors of the Counties of San Bernardino and Riverside, State of California, and to the County Auditor Controller of said Counties, and does further certify that all legal requirements for the establishment of the said tax rates have been met and that the imposition of such levies complies with the provisions of Article XIII A, Section I(b) of the California Constitution and/or the requirements of Article I, Section 10 of the Constitution of the United States and Article I, Section 9 of the California constitution.

3. That pursuant to California Water Code Section 72093, the determination of the amounts necessary to be raised by taxation for such purposes during the fiscal year and the order fixing the rate of tax made herein shall constitute a valid assessment of the property within the District and a valid levy of the taxes so fixed.

4. That certified copies of this Resolution be transmitted to the County Auditor Controller Offices of the Counties of San Bernardino and Riverside, and that when so transmitted, said certified copies shall constitute the certification required in section 72094 of the California Water Code.

5. That funds received by the San Bernardino Valley Municipal Water District pursuant to the aforesaid tax levy shall be placed in separate funds identified for the indebtednesses set forth above.

ADOPTED this 21st day of July 2026.

San Bernardino Valley Municipal Water District

By: _____
T. Milford Harrison
President

ATTEST:

Heather Dyer
Secretary

Technical Memorandum

Subject: Economic Considerations for San Bernardino Valley MWD Tax Rate Setting – Fiscal Year 2027

From: Duncan MacEwan, Kevin Kasberg, Richard Howitt, ERA Economics

To: San Bernardino Valley Municipal Water District

Date: July 10, 2026

Background

San Bernardino Valley Municipal Water District (San Bernardino Valley or Agency) is one of 29 SWP contractors. The Agency holds the fifth-largest SWP Table A maximum annual entitlement of 102,600 acre-feet (AF) per year, making it a significant participant in the State Water Project (SWP) system. As a wholesale agency, the Agency imports and delivers SWP water to retail water agencies serving communities throughout the San Bernardino Valley. Retail agencies in turn deliver water to residential, commercial, industrial, and agricultural end users that support regional economic activity. SWP water that is purchased by retail agencies also replenishes local groundwater basins including the Rialto-Colton Basin, San Bernardino Basin, and the Yucaipa Subbasin that are subject to management under prior judgements and the Sustainable Groundwater Management Act (SGMA).

San Bernardino Valley funds its anticipated SWP obligations to DWR through an ad valorem tax (AV tax) authorized under Water Code section 11652 and other revenue source. The Agency also maintains reserves to ensure that it can meet contractual obligations, manage annual cost variability, respond to unexpected conditions, and continue providing imported water supplies for its customers.

San Bernardino Valley has ongoing SWP costs and upcoming capital obligations. These include SWP-related capital projects such as the Delta Conveyance Project (DCP) and Sites Reservoir Project (Sites) as well as Agency capital improvements needed to deliver SWP water to customers and replenish local groundwater basins. Under Resolution 1060 San Bernardino Valley established a policy to cash finance (or “pay-go”) DCP costs. On September 14, 2017, the SBVMWD Advisory Commission on Water Policy unanimously voted to support this Resolution. The Agency has continued to apply this pay-go approach to other capital projects in order to limit debt obligations and reduce financing/borrowing costs for its customers. Unanticipated delays in DCP, Sites, and other Agency capital project timelines have resulted in an accumulation of Agency reserves.

San Bernardino Valley engaged ERA Economics to review and summarize its current budget and reserves, review upcoming capital and other annual expenditure obligations, and provide economic considerations under different scenarios defined by the Agency for setting the AV tax for the upcoming Fiscal Year (FY). ERA Economics' analysis relies on data provided by the Agency and other cost information cited throughout this technical memorandum (TM). The analysis does not address legal issues or other Agency policy considerations related to budgeting, reserve use, or expenses that can be recovered through the AV tax. This TM provides an initial review of San Bernardino Valley revenues, costs, reserves, and related economic considerations to inform the Agency's broader AV tax rate setting process.

San Bernardino Valley Budget Overview

San Bernardino Valley imports and delivers SWP water under a contract with the California Department of Water Resources (DWR) with a Table A entitlement of 102,600 AF per year to retail water agencies serving communities throughout the San Bernardino Valley. It also delivers imported supplies purchased by retail agencies to replenish local groundwater subbasins including Rialto-Colton, San Bernardino, and the Yucaipa Subbasins that are subject to management under prior court orders (Western Judgement and Orange County Judgement) and SGMA. Retail agencies then deliver water to residential, commercial, industrial, and agricultural end users that support regional economic activity, and groundwater replenishment that benefits all groundwater users.

San Bernardino Valley is responsible for groundwater replenishment in the San Bernardino Basin Area and Riverside Basin when certain conditions are triggered under the 1969 Western Judgment. The Judgment recognized that no agreement had been reached concerning the method by which the cost of San Bernardino Valley providing replenishment will be financed (such as levying an assessment on extractions). San Bernardino Valley effectively has an unfunded requirement for groundwater replenishment under certain conditions. The Agency lacks an adequate funding mechanism for groundwater replenishment obligations, if any are triggered in the future, and for effective basin management to avoid triggering such obligations.

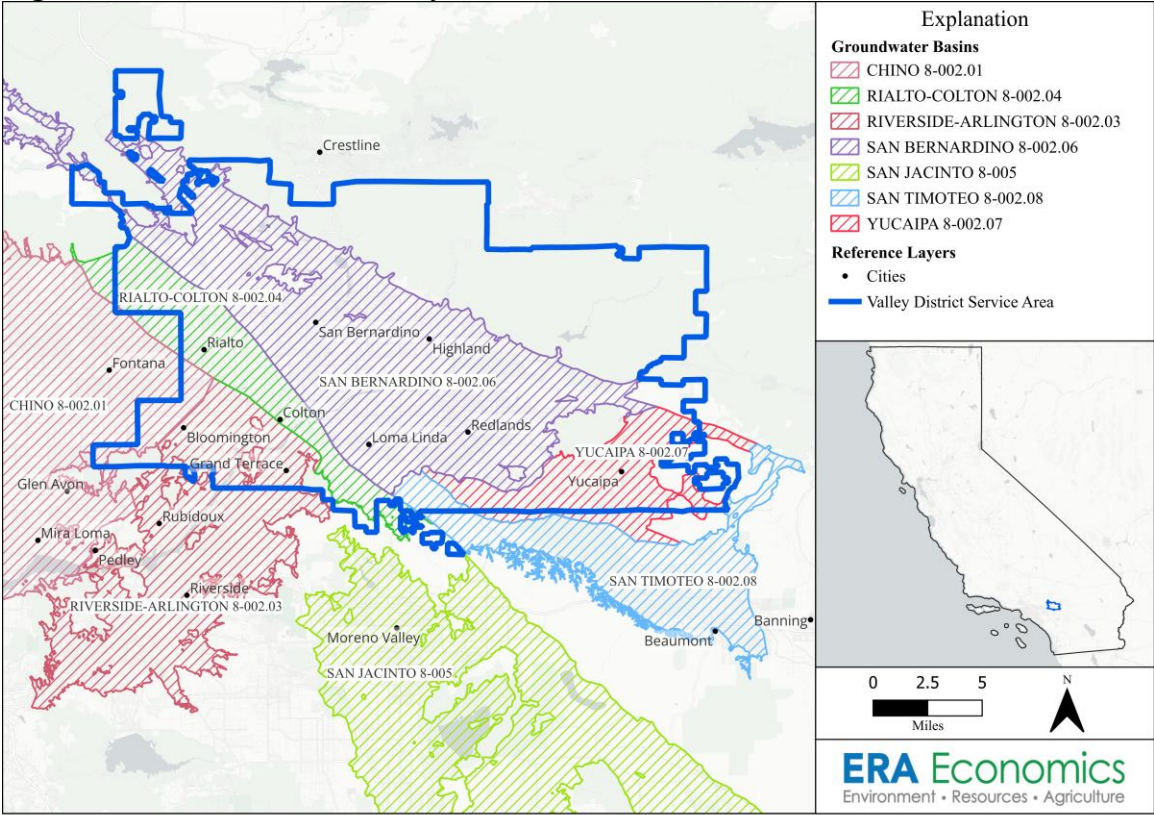
Figure 1 illustrates the San Bernardino Valley service area, retailer agencies, groundwater basins, and major cities. The Agency service area covers a population of about 700,000, supporting industries in logistics, transportation, and manufacturing along the I-10 and I-210 freeway corridors. The service area includes a mix of communities. Approximately 13 percent of residents have average annual income¹ below the state poverty line, and some communities have greater than 20 percent of residents below the state poverty line. Water affordability is an important concern in California and the San Bernardino Valley service area.

The San Bernardino Basin Area is a primary water supply for retail water agencies within the Agency's boundary. Certain retail water agencies in Riverside County also have rights to pump groundwater from

¹ U.S. Census. 5-year American Community Service (ACS) Survey, 2020-2024.

the San Bernardino Basin Area. Approximately one million people rely on the San Bernardino Basin Area as their primary water supply.

Figure 1. San Bernardino Valley Service Area



San Bernardino Valley’s budget includes its General Fund and State Water Contract (SWC) fund. The FY 2027 General Fund budget² includes total revenue of \$53.9 million and expenses of \$51.1 million in FY 2027, with the difference (\$2.9 million) allocated to the General Fund reserves. The SWC budget³ includes total expenditures of \$100.3 million in FY 2027. SWC Fund revenues include interest income and AV tax and other property taxes that depend on the FY 2027 AV tax rate. The General Fund unrestricted reserve is \$100 million, the General Fund restricted reserve is \$24.8 million, and the SWC restricted reserve is \$723.9 as of end of FY 2026. Table 1 summarizes the General Fund and SWC Fund budgets.

² SBVMWD Draft Revised General Fund FY 2026-2027
³ Proposed Fiscal Year 2026-2027 SWC Budget Estimates.

Table 1. San Bernardino Valley FY 2027 Budget Summary

	General Fund (\$M)	SWC Fund (\$M)
Revenue (FY 2027 Budget)		
Water Sales	\$11.6	\$0.0
Property Taxes	\$16.5	TBD
Investment / Interest	\$4.3	\$33.3
RDA Pass Thru / Other	\$21.5	TBD
Total Revenue	\$53.9	TBD
Expenditures (FY 2027 Budget)		
DWR SWP SOC	\$0.0	\$71.8
Other SWP Capital	\$0.0	\$13.8
Other SWP	\$42.7	\$0.5
Other Capital	\$8.4	\$14.2
Total Expenditures	\$51.1	\$100.3
Reserves (Start of FY 2027)		
Unrestricted	\$100.0	\$0.0
Restricted	\$24.8	\$723.9
Total Reserves	\$124.8	\$723.9

The Agency sets its AV tax and water rates to generate revenues sufficient to cover costs including capital projects and prudent reserves. San Bernardino Valley maintains reserves to limit debt obligations for its customers and to cash finance (pay-go) some of its project capital costs. Agency policy is to limit debt financing for its capital projects to reduce borrowing costs for its customers. Board Resolution 1060⁴ established Agency policy to cash-finance the DCP capital project. The Agency has continued to apply a cash financing policy, when feasible, as reflected in the board materials and staff recommendations^{5,6} for upcoming SWP capital projects. For example, San Bernardino Valley has paid for DCP and Sites planning costs without issuing new debt and it paid its debt obligations early for the East Branch Enlargement, and the Greenspot Pumping Plant for the East Branch Extension, which improved water reliability for its retail customers.

Delays in the timing of capital projects such as Sites and DCP have resulted in an accumulation of SWC Fund reserves. San Bernardino Valley updated its reserve policy at its July 7, 2026 board meeting. The updated reserve policy clarifies reserve components and target levels for the reserves, recognizing that the Agency has a particular responsibility to offset risk⁷ and maintain reliability for customers. This includes maintaining sufficient reserves to manage for cash flow and capital projects as well as low probability, but high-impact incidents that are public liabilities and therefore of agency concern.

⁴ Resolution 1060 of the Board of Directors of SBVMWD Supporting the California Water Fix.

⁵ Staff Report. July 17, 2025. Debt Service Fund Budget Workshop. Review State Water Contract Debt Service Fund Budget and Approve the Tax.

⁶ Rate Resolution 1195 of the Board of Directors of SBVMWD for Fiscal Year 2025-2026

⁷ State Water Resources Control Board. Methodology for Risk Assessment for Public Water System. June 2025.

Current San Bernardino Valley SWC reserves are above the target levels. The Agency has indicated that reserves will be gradually adjusted to avoid abrupt and potentially disruptive changes in the AV tax or wholesale water rates, and to ensure that the Agency maintains sufficient reserves to meet its future cost obligations.

State Water Contract Fund SWP Costs

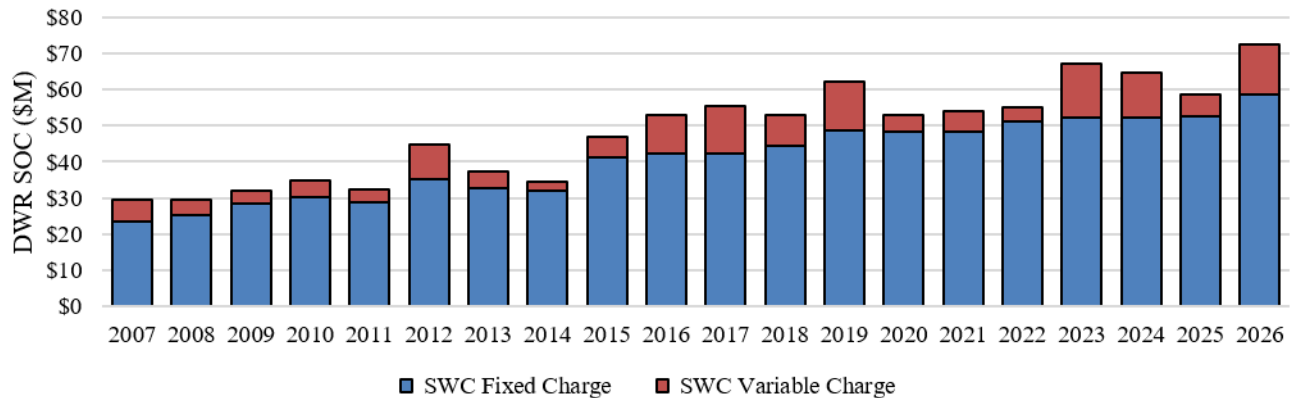
San Bernardino Valley SWP obligations include monthly payments to DWR under its SWP contract (the Statement of Charges, or SOC) as well as costs to deliver SWP water to its customers and for groundwater replenishment.

DWR State Water Project Statement of Charges

The DWR SWP SOC is split into fixed and variable components. The variable operations, maintenance, power, and replacement (OMP&R) charge is a component of the SWP transportation charge and is billed in proportion to the amount of water the Agency takes delivery of each year. Fixed charges are billed regardless of actual water delivered each year and are made up of multiple components such as minimum OMP&R of the Transportation Charge, the Delta Water Charge, and for San Bernardino Valley, East Branch Enlargement, East Branch Extension and Tehachapi Second Afterbay payments.

Figure 2 illustrates San Bernardino Valley’s historical SOC⁸ over the past 20 years, separated into fixed and variable charge components. Fixed charges include debt service for San Bernardino Valley’s share of the East Branch Extension Phase I, Phase I Improvements and Phase II improvements. The combined annual debt service amount for these facilities increased from approximately \$4.5 million in 2007 to \$18.6 million in 2026, and is scheduled to increase to approximately \$23 million in 2035, when the East Branch Extension obligation is expected to be fully repaid⁹. Approximately 85 percent of San Bernardino Valley’s SWP SOC costs are fixed charges that the Agency is obligated to pay regardless of how much SWP water is delivered.

Figure 2. San Bernardino Valley Historical SWP SOC, 2007 – 2026



⁸ Department of Water Resources (DWR) Bulletin 132-25, Appendix B. Note that DWR Bulletin 132 reports calendar year costs and deliveries, which differs from the San Bernardino Valley FY (7/1 – 6/30).
⁹ SBVMWD East Branch Extension Debt Service Schedule.

Future SWP SOC will include fixed and variable components. Fixed charges depend on SWP capital projects and delivery costs. Variable charges depend on uncertain future hydrologic conditions that determine the amount of SWP water delivered to San Bernardino Valley.

DWR estimates¹⁰ future SWP SOC fixed and variable charges. The total charge depends on San Bernardino Valley SWP allocation/deliveries. The minimum annual deliveries the Agency received between 2007 and 2025 was about 10,000 AF. The Agency's full Table A entitlement is 102,600 AF. Table 2 summarizes San Bernardino Valley's projected SWP SOC costs. DWR includes East Branch Extension debt service in its fixed charges in Bulletin 132-25 Appendix B.

Table 2. San Bernardino Valley Projected SOC from DWR Bulletin 132-25 (\$ in Millions)

Calendar Year	Variable Charge (B-18)	Fixed Charge (B-23 – B-18)	Total Charge (B-23)
2027	\$14.6	\$62.1	\$76.6
2028	\$14.5	\$63.0	\$77.5
2029	\$14.6	\$63.7	\$78.3
2030	\$14.8	\$66.3	\$81.1
2031	\$14.9	\$66.8	\$81.7
2032	\$15.1	\$67.5	\$82.6
2033	\$15.2	\$68.2	\$83.4
2034	\$15.4	\$69.1	\$84.5
2035	\$15.5	\$69.6	\$85.1

Note: The estimated variable charge is based on a 68,430 AF delivery to SBV per Bulletin 132-25 Appendix B.

Table 3 summarizes San Bernardino Valley's estimated¹¹ future SWP SOC costs. Calendar year 2027 costs are from San Bernardino Valley's SWC budget for FY 2027¹². Variable costs are based on historical SWP deliveries, which are less than the DWR estimated deliveries in Bulletin 132-25 Appendix B. Fixed costs are split into SWP fixed charges (minimum charge, non-water supply and power, and WSRB) and East Branch Extension (EBX) debt service. The total SOC is \$71.8 million in 2027 and \$70.3 million in 2028, which is slightly less than the costs shown in DWR Bulletin 132-25 Appendix B.

¹⁰ DWR Bulletin 132-25 Appendix B.

¹¹ SBVMWD SWP Historical and Estimated Costs 2016-2034.

¹² Proposed Fiscal Year 2026-2027 SWC Budget Estimates.

Table 3. San Bernardino Valley Projected SOC (\$ in Millions)

Calendar Year	Fixed Costs	EBX Debt Service	Variable Cost	Total SOC
2027	\$44.3	\$15.6	\$11.8	\$71.8
2028	\$35.6	\$18.8	\$15.9	\$70.3
2029	\$37.4	\$18.7	\$16.7	\$72.8
2030	\$39.3	\$21.8	\$17.5	\$78.6
2031	\$41.2	\$21.8	\$18.4	\$81.4
2032	\$43.3	\$21.9	\$19.3	\$84.5
2033	\$45.4	\$22.0	\$20.3	\$87.7
2034	\$47.7	\$23.0	\$21.3	\$92.1
2035	\$50.1	\$23.0	\$22.4	\$95.5

Other SWP Related Costs

Other SWP related costs include the following components:

- **SWP Facility Costs.** SWP facility costs include capital costs for improvements and upgrades to the SWP system that are implemented by DWR. For example, this includes repairs to the California Aqueduct to manage subsidence. These SWP costs will ultimately be on the SWP SOC, but are not included in DWR or San Bernardino Valley's SWP SOC projections.
- **Field Improvement Costs.** Field improvements are projects that are included in San Bernardino Valley's 10-year Capital Improvement Plan (CIP) budget¹³. The CIP includes a mix of projects to improve, expand, and refurbish the Agency's system to deliver water to its customers and to local recharge basins.
- **Other SWP Costs.** Other administrative costs include audits, State Water Contractors Association fees, and other legal and financial advisory fees.

DWR estimates¹⁴ that SWP capital projects for existing SWP facilities will continue to increase with planned projects and operational improvements. The top 10 capital projects total over \$800 million with \$1.93 billion in total capital projects planned by 2030. Major projects include subsidence correction on the San Luis Canal and the California Aqueduct. DWR estimates that the present value of SWP capital improvements is around \$5.7 billion. San Bernardino Valley will be responsible for its proportional share of SWP facility capital improvement costs.

Table 4 summarizes San Bernardino Valley's estimated share of SWP facilities, field improvements, and other SWP costs. FY 2027 estimates are from the SWC Fund budget¹⁵. Field improvement costs from the FY 2027 budget (\$13.8 million) are applied in future years. SWP facility costs are from the DWR

¹³ SBVMWD SWP Fund - Projected 10-Year CIP Budget.

¹⁴ Department of Water Resources. State Water Project Budget Report. February 2026.

¹⁵ Proposed Fiscal Year 2026-2027 SWC Budget Estimates.

SWP Budget Report¹⁶ that are then scheduled out in San Bernardino Valley’s SWP budget¹⁷. Other SWP costs include audit, association fees, and legal/financial cost line items from the FY 2027 SWC budget¹⁸.

Table 4. San Bernardino Valley Other SWP-Related Costs

Fiscal Year	SWP Facility Costs	Field Improvements	Other SWP	Total
FY27	\$0.0	\$13.8	\$0.5	\$14.3
FY28	\$14.1	\$13.8	\$0.5	\$28.5
FY29	\$12.3	\$13.8	\$0.5	\$26.6
FY30	\$17.6	\$13.8	\$0.5	\$32.0
FY31	\$15.1	\$13.8	\$0.5	\$29.5
FY32	\$16.4	\$13.8	\$0.5	\$30.7
FY33	\$19.1	\$13.8	\$0.5	\$33.5
FY34	\$18.4	\$13.8	\$0.5	\$32.7
FY35	\$19.8	\$13.8	\$0.5	\$34.1

Delta Conveyance Project

The DCP is a project to modernize SWP conveyance through the Sacramento-San Joaquin Delta by adding a new north-of-Delta intake and tunnel facilities to improve SWP system reliability and flexibility. This would increase SWP deliveries to contractors including San Bernardino Valley. San Bernardino Valley is responsible for its proportional share of DCP costs and has committed to cash financing its obligations to the extent feasible under San Bernardino Valley’s Resolution 1060.

The Delta Conveyance Design & Construction Authority (DCA) is the entity responsible for engineering, design, and construction of the DCP on behalf of DWR. The DCP project cost estimates were updated in May 2024¹⁹. The May 2024 DCA cost estimate is \$20.12 billion (in 2023 dollars). DCA identified a set of design and construction innovations that could reduce total project cost by \$1.23 billion (6%), to approximately \$18.89 billion, without changing the approved project description.

Figure 3 reproduces the annual spend plan for DCP showing both the \$20.12 billion and \$18.89 billion project costs²⁰. State-led financing for DCP remains uncertain. DWR included a revenue bond financing structure with repayment expected to come from SWP contractors. However, this was challenged and ultimately rejected²¹ by the courts because the approach was not sufficiently defined or clearly authorized under DWR existing authority. Governor Newsom has proposed legislative changes that would have addressed the financing issue by expressly incorporating DCP into the SWP and allowing DWR to finance it through revenue bonds repaid by participating contractors, but that proposal did not

¹⁶ Department of Water Resources. State Water Project Budget Report. February 2026. Page 27.

¹⁷ SBVWMD SWP Historical and Estimated Costs 2016-2034.

¹⁸ Proposed Fiscal Year 2026-2027 SWC Budget Estimates.

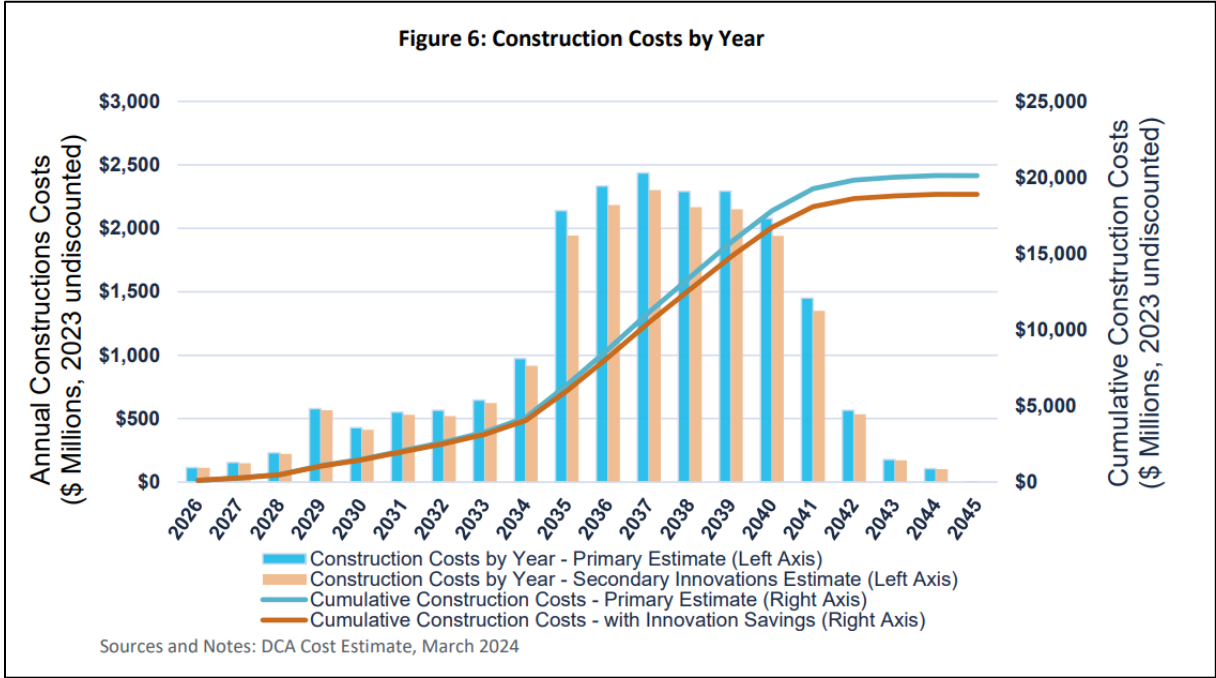
¹⁹ Delta Conveyance Authority. Total Project Cost Summary Memorandum. May 2024.

²⁰ Sunding, David, Oliver Browne. Benefit-Cost Analysis of the Delta Conveyance Project. May 16, 2024. Fig. 6, p. 45.

²¹ Department of Water Resources v. Metropolitan Water District of So. Calif., et al. (2025) 117 Cal.App.5th 751 (Opinion).

advance. This increases financing uncertainty for the DCP. If state financing is limited or unavailable, contractor-level funding would be needed through pay-go, debt financing, or a blended approach, which San Bernardino Valley has established under Resolution 1060.

Figure 3. Delta Conveyance Project Construction Costs by Year



Source: Sunding, David L. and Oliver Browne. Benefit-Cost Analysis of the Delta Conveyance Project. May 16, 2024. Figure 6, p. 45.

Under the existing DCP timeline San Bernardino Valley will have additional DCP planning payments that will be included on its 2027 and 2028 SWP SOC. The 2027 SOC includes \$4.2 million for DCP. This anticipates an additional \$4.2 million charge in FY 2028²² that would be included in the SWP SOC. If DCP costs are financed through the DCA or other state-led financing the San Bernardino Valley annual debt-service obligation would be around \$30 million starting in 2034. Table 5 summarizes San Bernardino Valley share of estimated DCP costs based on the existing project timeline.

Table 5. DCP Estimated Construction Cost	
Calendar Year	San Bernardino Valley Cost Share (\$M)
2027	\$4.2*
2028	\$4.2
2029	\$6.9
2030	\$17.1
2031	\$37.9
2032	\$46.8
2033	\$44.2
2034 - 2049	\$30.2

*2027 DCP charges are included in the SOC and are already included the 2027 SOC cost shown in Table 3

²² SBVMWD SWP Historical and Estimated Costs 2016-2034.

DCP costs are uncertain, including the timing and mechanism for recovery through future DWR SOC. San Bernardino Valley DCP-related payments include \$4.2 million in 2027 and \$4.2 million in 2028. The 2027 charge is already included in the SOC. The 2028 charge will be included in the SOC. Future costs are based on the DCA spend plan for DCP.

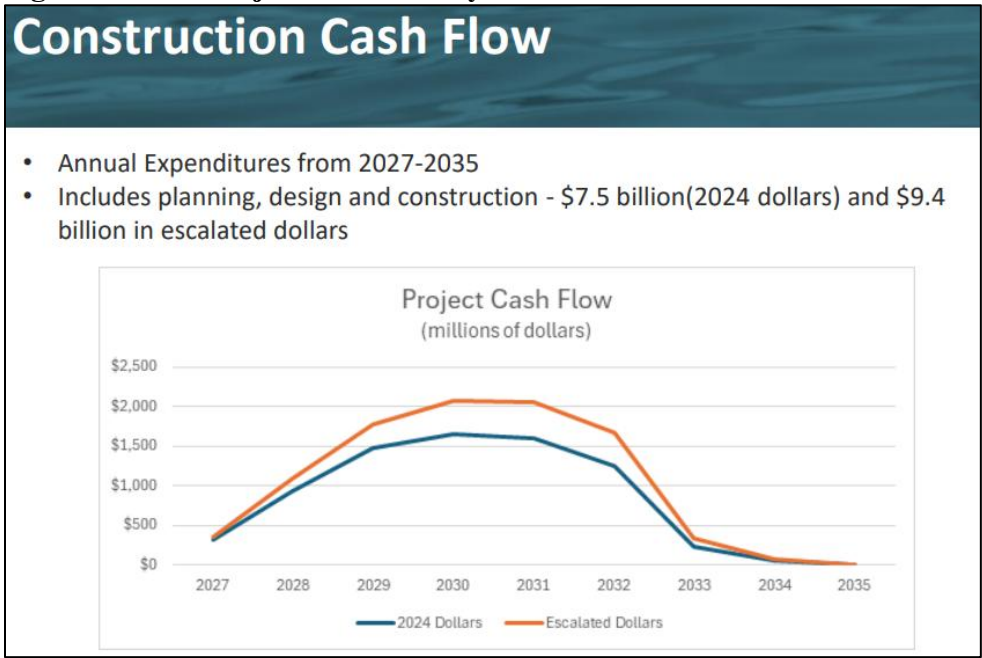
Sites Reservoir

The Sites Reservoir Project (Sites) is an off-stream storage project for 1.5 million AF in the Sacramento Valley. Sites would store excess water diverted during wetter periods for use in dry years. For San Bernardino Valley, participation in Sites would provide an additional source of long-term water supply and reliability for SWP deliveries and groundwater recharge, particularly in dry years. San Bernardino Valley would be responsible for its proportional share of costs (about 9.5 percent).

In January 2026, the Sites Project Authority presented an updated Plan of Finance²³. The update provided project cost estimates, escalation assumptions, construction schedule, and financing structure reflecting current market conditions. The Sites project cost has increased since the original 2021 feasibility-level estimate of approximately \$3.9 billion to the current level of \$7.54 billion (2024 dollars).

The Sites Project Authority January 2026 update shows total escalated project costs of approximately \$9.4 billion by substantial completion in 2033 (with start-up and punch-list costs continuing through 2035), in 2035 dollars. Figure 4 reproduces the Sites cash flow needs from 2027-2035, shown in 2024 dollars and future (2035, escalated) dollars.

Figure 4. Sites Project Cash Outlays



Source: Sites Project Authority. January 2026 Cash Flow Forecast and Plan of Finance Update. January 2026. Figure 1, page 4.

²³ Sites Project Authority. January 2026 Cash Flow Forecast and Plan of Finance Update. January 2026.

San Bernardino Valley developed²⁴ its Sites cost estimate by applying the construction cash flow, or spend plan, published in the January 2026 Sites Project Authority materials to the Agency's 9.5 percent capital cost share.²⁵ 2024 Sites costs were indexed to current 2026 dollars using a 9 percent escalation factor, consistent with recent construction cost inflation assumptions. Table 6 summarizes the resulting Sites spend plan for San Bernardino Valley. The Agency anticipates more than \$800 million in Sites-related capital costs through the start of project operations. Consistent with current Agency policy, San Bernardino Valley would seek to limit debt and cash-finance, or pay-go, Sites capital costs to the extent feasible.

Table 6. San Bernardino Valley Sites Capital Costs (in 2026 dollars using an estimated 9% escalation factor)

Calendar Year	San Bernardino Valley Cost Share (\$M)
2027	\$14.2
2028	\$52.1
2029	\$78.3
2030	\$195.4
2031	\$195.4
2032	\$156.4
2033	\$78.3
2034	\$23.6
2035	\$0.2
Total	\$793.9

San Bernardino Valley SWC Fund Cost Summary

The preceding sections summarize the major cost components included in San Bernardino Valley's SWC Fund, including DWR SOC, other SWP-related costs, and planned capital obligations for DCP, Sites, and related SWP facilities. This section summarizes the total SWC Fund expenses the Agency expects to incur in FY 2027, 2028, and future years.

Figure 5 illustrates expected SWC Fund expenditures for the cost categories described in the preceding sections and summarized again below:

- DWR SWP SOC. Costs that are expected to be included on the SOC in 2027 and 2028.
- Other SWP related costs, which include:
 - SWP facility costs. SWP capital projects that are not included in estimated SOC costs, but would be included on the SOC. These include but are not limited to subsidence planning and repairs and various SWP system improvements that are included in DWR's State Water Project Budget Report.

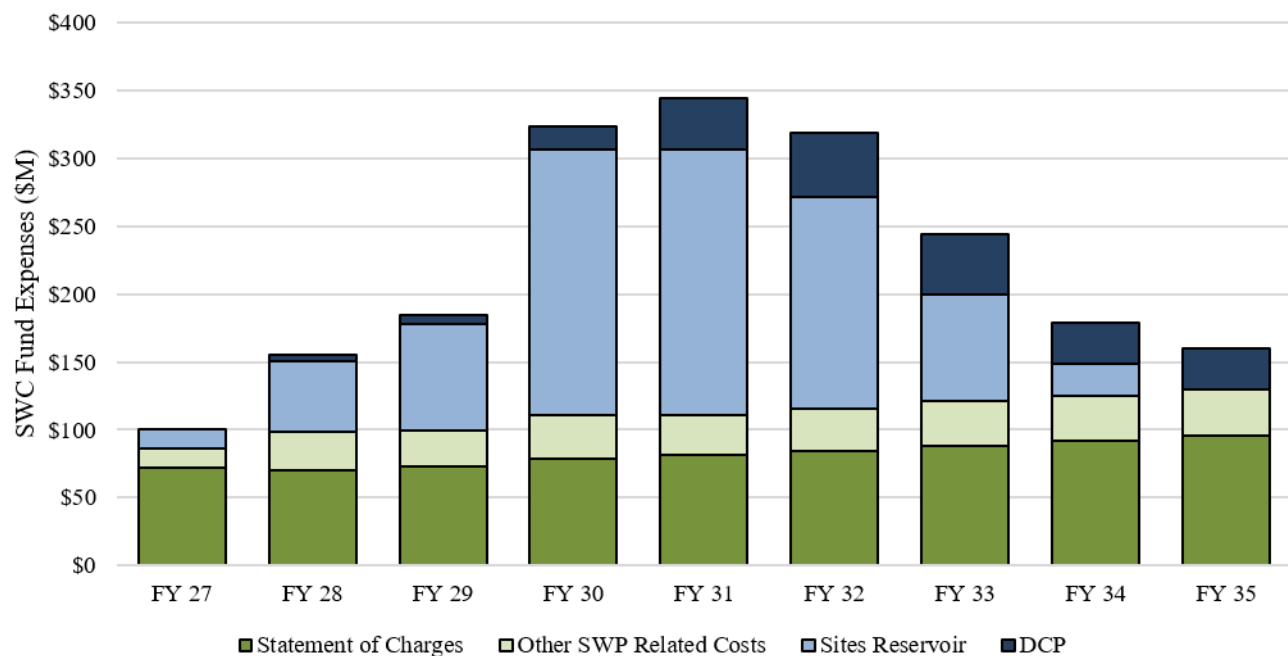
²⁴ SBVMWD SWP Historical and Estimated Costs 2016-2034.

²⁵ At its June 17, 2026 meeting, the California Water Commission approved a \$269 million increase to Sites' conditional state funding amount, including funding for a new emergency drought response public benefit. This amount may increase the State's share of construction cost and slightly reduce the cost share of other beneficiaries, including San Bernardino Valley. This change has not been included in the calculations here.

- Field improvements. Capital projects that are part of the Agency’s 10-year CIP that are developed to facilitate the delivery of SWP water to Agency customers and recharge, and are therefore SWP expenses, but the costs will not appear on the SOC.
- Other SWP costs. SWP costs include audit fees, State Water Contractor Association fees, and legal/financial cost line items.
- Other SWP capital project costs, which include:
 - DCP. Planning and initial construction costs with debt service starting in 2032. The FY 2027 and 2028 SWC Fund budgets include DCP planning costs.
 - Sites. Planning and construction costs through 2035 for San Bernardino Valley’s 9.5 percent share of Sites Reservoir costs, based on current data available from the Sites Project Authority.

Figure 5 illustrates anticipated SWC Fund expenditures for FY 2027 and 2028 through 2035.

Figure 5. San Bernardino Valley Estimated Future SWC Fund Expenditures



The timing and amount of planned capital expenses can be difficult to predict, particularly for large multi-agency projects that are outside the Agency’s direct control. For example, San Bernardino Valley authorized cash financing for DCP in 2017, but project changes, regulatory review, and financing uncertainty have shifted the timeline and expected costs over time. DCP costs in FY 2028 and later are expected to appear on future DWR SOC, but the timing and amount of those costs remain uncertain.

Table 7 summarizes SWC Fund expenses for FY 2027 and 2028. Costs that are expected to appear on the DWR SOC include DWR SOC charges, SWP facility costs (e.g., subsidence planning and repairs),

and DCP. DWR intends to acquire Sites water as a charge to San Bernardino Valley under the contract²⁶. SWP field improvements are SWP-related expenses that do not appear on the SOC.

Table 7. SWC Fund Expenses FY 27 and FY 28

Item	FY 27 (\$M)	FY 28 (\$M)
SWP SOC		
Variable Charge	\$11.8	\$15.9
Fixed Charge (Minimum Charge)	\$44.3	\$35.6
East Branch Extension Debt	\$15.6	\$18.8
Other SOC Expenses		
SWP Facility Costs	\$0.0	\$14.1
Sites	\$14.2	\$52.1
DCP	\$0.0	\$4.2
Total SOC	\$85.9	\$140.7
Other SWC Expenses		
SWP Field Improvements	\$13.8	\$13.8
Other SWP	\$0.5	\$0.5
Total Other SWP Expenses	\$14.3	\$14.3
Total SWC Fund Expenses	\$100.3	\$155.1

In summary, San Bernardino Valley anticipates approximately \$100.3 million in SWC Fund costs in FY 2027 and \$155.1 million in FY 2028. The Agency anticipates that approximately \$85.9 million and \$140.7 million would be on the DWR SOC in FY27 and FY28. These estimates are based on the best information available at the time of budgeting, but future SWP-related costs remain uncertain because they depend on hydrology, timing of billing, project schedules, financing decisions, and the timing of large capital projects that are not fully within the Agency's control.

This uncertainty is particularly important for major capital obligations such as DCP, Sites, and other SWP system improvements, where costs may shift across fiscal years as planning, permitting, financing, and construction schedules change. For this reason, the Agency maintains reserves to ensure that sufficient funds are available to meet contractual obligations, absorb cost timing changes, and avoid abrupt changes in the AV tax or wholesale water rates. Future costs may be higher or occur sooner than assumed in the current budget and should be periodically updated as new cost information becomes available.

Agency Revenues

San Bernardino Valley pays for its SWP obligations and other Agency costs through an ad valorem property tax (AV tax) authorized under California Water Code section 11652, water rates, and other revenue sources. A combination of taxes and water rates are economically reasonable to manage fixed

²⁶ Sites Authority. Issue Paper #3 – Additional Terms for Acquirer and SWP Participants. May 2026.

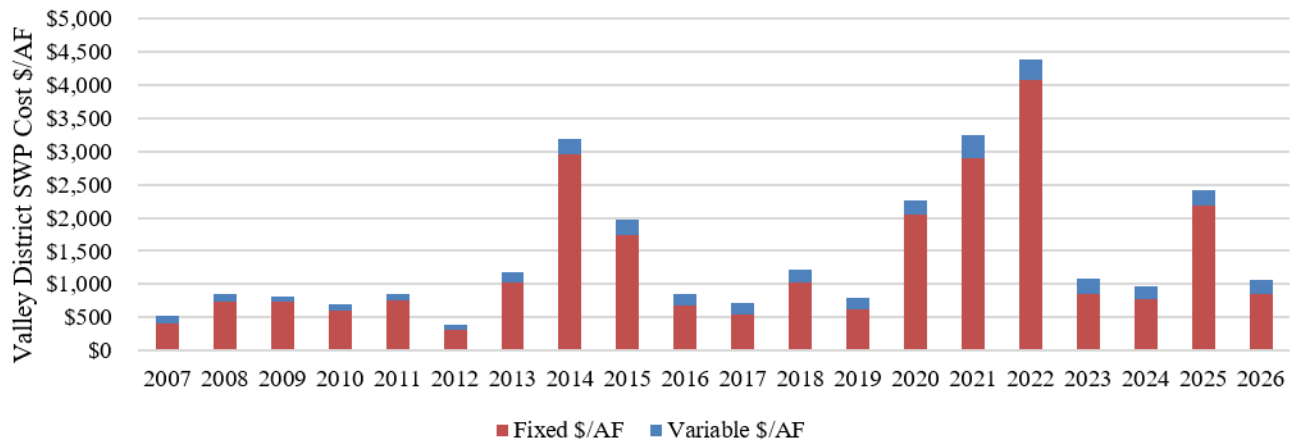
and variable SWP charges. The following sections summarize water rates, other Agency revenues, and the AV tax.

Water Rates

San Bernardino Valley charges between \$118 and \$145 per AF for wholesale water.

The Agency uses a combination of water rates, taxes, and other revenues to manage its revenue obligations. Water rate revenue varies according to the amount of water sold, whereas many costs, including fixed SWP costs, do not vary by amount delivered and sold. For example, figure 6 illustrates the fixed and variable charges for SWP water delivered to San Bernardino Valley from 2007-2026²⁷, for costs appearing on the DWR SOC, only. A substantial share of SWP SOC costs are fixed and paid whether the Agency receives SWP deliveries. In years of low State Water Project allocation, such as in 2014 and 2022, the fixed portion of the SOC is spread over substantially less water, so the effective rate per AF is much higher. Around 85 percent of the San Bernardino Valley SWP costs are fixed.

Figure 6. Fixed and Variable Components, San Bernardino Valley SWP costs, 2007 - 2026



San Bernardino Valley’s retail customers rely on imported SWP supplies for delivery to water treatment plants to meet customer demand and for groundwater replenishment. Some retail agencies have also invested in developing alternative water supplies as part of a diversified portfolio. The marginal (incremental) cost of these alternative supplies can affect economic incentives for wholesale imported SWP purchases. If San Bernardino Valley’s wholesale SWP water rates exceed the cost of substitute sources, retail customers may reduce SWP purchases and shift toward these alternatives.

Alternatives to imported SWP water include groundwater, recycled water, aquifer storage and recovery (ASR), demand management, and other purchases/transfers. Groundwater extractions are affected by impacts to the basins, legal judgements, and SGMA. Retailers are investing in recycled water opportunities which range from expanding existing systems to developing new systems with non-potable

²⁷ Table B-5b. Annual Water Quantities Delivered to Each Contractor. DWR, *Bulletin 132-25, Appendix B* (2025). Values show total charges developed in Bulletin 132-25 Appendix B and will differ from San Bernardino Valley’s actual costs because DWR reports on a calendar year basis and the Agency reports on a fiscal year basis. Total water delivered will differ for the same reason.

supplies. ASR includes various stormwater capture or use of other water supplies for storage and later extraction. Demand management programs include short-run responses to drought conditions to get customers to reduce water use as well as longer-term adjustment consistent with the “Making Conservation a California Way of Life” State Board regulatory program. Other sources include potential transfers from other wholesalers such as San Geronimo Pass Agency and Inland Empire Utilities Agency. San Bernardino Valley SWP water must be used within its service area, so other sources are not a direct substitute.

The marginal supply source for most retail customers is groundwater. The unit cost of groundwater includes the amortized capital costs plus energy costs to produce the groundwater, and any operating, maintenance, and replacement costs. Applying the East Valley Water District Well No. 129 project²⁸ capital costs and standard pumping energy costs the cost per AF of groundwater is between \$200 and \$400, excluding Agency delivery and other overhead costs. The Western Judgement, Orange County Judgement, and SGMA currently impose conditions on groundwater, but do not currently place a strict limit on annual pumping by individual users or in aggregate. For example, the Orange County Judgement does not directly limit groundwater pumping but has a minimum flow requirement for the Santa Ana River that San Bernardino Valley is responsible for. Subject to legal judgements and SGMA, groundwater pumping is the primary alternative supply source for San Bernardino Valley’s retail customers.

If San Bernardino Valley’s SWP wholesale water rates approach the cost of alternative supplies, an economically rational response by retail agencies with operational flexibility would be to substitute away from SWP supplies. Higher SWP rates may reduce SWP purchases and increase reliance on local groundwater. This affects the feasibility of increasing SWP rates.

Groundwater is the marginal supply source. Increased pumping over time would have negative effects on the local aquifers. The Yucaipa Subbasin GSP notes the importance of imported SWP water for groundwater management,²⁹ where SWP supplies have increased groundwater levels and reduced pumping. Part of the Agency’s mission is to support sustainable groundwater management and avoid negative effects on groundwater basins by importing supplemental supplies.

Other economic considerations for water rates include:

- Access to clean, safe, and affordable drinking water has been a focus for the United Nations and a key issue in California, as addressed under Assembly Bill 685 of 2012 and furthered under Senate Bill 200 of 2019. Some retail agencies serve predominantly low-income communities and already face challenges in maintaining affordable water rates. Increased retail water prices have larger economic costs for water-intensive industries such as nurseries, golf courses and some manufacturing and food processing industries. Higher water prices can cause water-intensive businesses to consider relocating to areas with lower cost water supplies

²⁸ East Valley Water District. Well 129 Project. Well Design and Construction.

²⁹ Yucaipa Subbasin Groundwater Sustainability Plan. Section ES-3, and ES-4-4.

- Ad valorem property taxes are assessed in proportion to property value. Higher-valued properties, which are typically owned by higher-income households, contribute more in ad valorem taxes than lower-valued properties. Water rates remove this proportional relationship, causing low-income households to bear a larger share of costs relative to their income, which can be a regressive revenue approach.
- The effective cost of SWP water in years with low SWP allocation can exceed \$3,000 per AF. Water rate revenue varies with SWP allocation set each year by DWR, and relying entirely on water rates would require a substantial increase in the San Bernardino Valley's wholesale water rate. This may exceed the cost of alternative supplies to retailers. If customers shift away from SWP water, San Bernardino Valley's water rate revenue decreases while its fixed SWP obligations remain unchanged. This revenue shortfall would need to be covered by additional rate increases or tax increases, or reserves.
- Imported SWP water provides benefits in addition to direct consumption of water by individual users. Imported SWP water supports groundwater recharge programs that maintain the health of the regional aquifer system, broadly benefiting property owners and water users in the basin. The value of reliable water supply is capitalized into the value of the land and therefore these are broader/public benefits that are appropriately funded through broad-based taxes rather than user charges.
- The AV tax is currently paid by all non-exempt property owners within San Bernardino Valley's service area, including owners of undeveloped land. The value of undeveloped land reflects, in part, the availability of water supplies that would be needed for future development. Property owners benefit from imported SWP water and water supply reliability even if they are not currently consuming water, because these attributes are capitalized into property values.

San Bernardino Valley water rate revenue is currently allocated to its General Fund budget to offset direct costs associated with the State Water Project Fund.

Other Revenues

Other Agency revenues include investment income, return of bond cover or reserve amounts, contract revenues, grants, reimbursements, and other miscellaneous receipts. These revenues help offset the amount that must be collected through the AV tax or water rates, but they vary in reliability and are not fully within the Agency's control. Investment income depends on reserve balances and market interest rates, and returns of bond cover, reserves, credits, grants, or reimbursements may be one-time or project specific.

AV Tax

San Bernardino Valley's AV tax rate for FY 2025-26 was \$0.11 per \$100 dollar of assessed valuation, generating \$112.5 million in AV tax revenue. This includes \$68.6 million in direct annual AV tax revenue and approximately \$43.9 million from Redevelopment Agency (RDA) Successor Agency pass-throughs.

Current year AV taxes can be estimated based on the assessed value of properties that is typically available in July. Forecasting future AV tax revenues requires estimating future assessed values, which are uncertain. Assessed value growth depends on economic conditions, property sales and turnover, new development, reassessments, and other changes in local real estate market conditions. Proposition 13 limits annual assessed value increases for properties that do not change ownership, actual AV tax revenue can vary as properties are sold, improved, newly developed, or otherwise reassessed. As a result, AV tax revenue projections should be treated as planning estimates.

Pathways for the AV Tax Rate

As described earlier, accurately forecasting SWC Fund costs is challenging because the Agency's obligations depend on hydrology, the timing of DWR billing, project schedules, financing decisions, and capital projects that are not fully within the Agency's control. This is particularly difficult for long-term planning, but near-term costs can also shift across fiscal years when major projects such as DCP, Sites, or other SWP system improvements experience permitting, design, financing, or construction delays. In evaluating an appropriate AV tax rate the Agency should consider balancing the need to fund known and reasonably anticipated obligations with the need to avoid unnecessary reserve accumulation, abrupt tax or rate changes, or underfunding projects.

The SWC Fund data summarized earlier in this TM is used below to evaluate economic considerations for alternative pathways for setting the AV tax rate. These pathways should be considered with other legal, policy, and Agency considerations. Economic considerations for evaluating alternative AV tax pathways include but are not limited to:

- SWC reserves currently exceed Agency target levels due to unanticipated delays in SWC projects. As such, reserves should be gradually reduced over time.
- Align AV tax revenue with expected SWC Fund costs based on current information available to the Agency.
- Maintain sufficient reserves consistent with Agency reserve policy.
- Recognize and plan for uncertainty in the timing and amount of major capital costs, particularly DCP, Sites, and other SWP system improvements.
- Recognize and plan for uncertainty in forecasting assessed values and therefore AV tax revenues.
- Consider the economic feasibility of alternative revenue sources, including the limits of shifting costs to wholesale water rates given affordability, revenue stability, and groundwater substitution concerns.
- Coordinate AV tax setting with the Agency's reserve policy, water rates, capital financing approach, and long-term SWC Fund cash-flow planning.

FY 2027 and FY 2028 AV Tax Examples

Five scenarios were developed with the FY 27 AV tax rate ranging from \$0.05 to \$0.09 per \$100 in assessed value. Table 8 summarizes the estimated SWC Fund revenue, other revenue, total revenue, and the estimated end of year (EOY) SWC Fund reserve balance. The reserve balance as of the start of FY 2027 is approximately \$723.9 million. Based on the assumptions and data applied to the analysis, an AV tax rate of approximately \$0.06 to \$0.07 per \$100 in assessed value maintains or modestly reduces the reserve balance. Rates below \$0.06 would reduce the SWC Fund reserve balance. These are planning estimates based on the revenues and costs available from the Agency. As described in this TM, revenues and expenses are uncertain and the actual reserve balance will differ from the estimates.

Table 8. Estimates for AV Tax Rates for FY 2027

SWC Fund Revenue / AV Tax Rate	\$0.04	\$0.05	\$0.06	\$0.07	\$0.08	\$0.09
AV tax + RDA (\$M)	\$43.5	\$54.4	\$65.3	\$76.1	\$87.0	\$97.9
Other revenue (\$M)	\$33.3	\$33.3	\$33.3	\$33.3	\$33.3	\$33.3
Total Revenue (\$M)	\$76.8	\$87.7	\$98.6	\$109.4	\$120.3	\$131.2
Reserve Balance 2027 EOY (\$M)	\$700.3	\$711.2	\$722.1	\$733.0	\$743.8	\$754.7

Table 9 summarizes the estimated SWC Fund revenue, other revenue, total revenue, and the estimated 2028 end of year (EOY) SWC Fund reserve balance if the AV tax is held at the same rate for FY 2027 and FY 2028. The reserve balance as of the start of FY 2027 is approximately \$723.9 million. These are planning estimates based on the revenues and costs available from the Agency. As described in this TM, revenues and expenses are uncertain and the actual reserve balance will differ from the estimates.

Table 9. Estimates for AV Tax Rates for FY 2028

SWC Fund Revenue / AV Tax Rate	\$0.04	\$0.05	\$0.06	\$0.07	\$0.08	\$0.09
AV tax + RDA (\$M)	\$44.8	\$56.0	\$67.2	\$78.4	\$89.6	\$100.8
Other revenue (\$M)	\$36.3	\$36.7	\$37.2	\$37.6	\$38.1	\$38.5
Total Revenue (\$M)	\$81.1	\$92.8	\$104.4	\$116.0	\$127.7	\$139.3
Reserve Balance 2028 EOY (\$M)	\$626.4	\$649.0	\$671.5	\$694.0	\$716.5	\$739.0

FY 2027 – FY 2035 AV Tax Examples

Several scenarios were developed to estimate the SWC Fund budget beyond the 2-year (FY 2027 and 2028) planning horizon. It is noted that forecasting future costs and revenues is highly uncertain. The analysis is based on the data summarized in this TM and assumptions stated below. Actual future year budgets will vary from these estimates.

Several assumptions were applied to evaluate future scenarios. Key assumptions include:

- An approximate reserve minimum and target for FY 2027 was calculated and applied to future years. The reserve minimum and target escalate at 1.5 percent per year.
- Charges that appear on the SOC escalate at 3 percent per year.

- Assessed values increase by 3 percent per year. The base assessed value is adjusted to account for mid-year adjustments (e.g., from property sales and supplemental taxes).
- Future SWC Fund costs are applied as summarized in prior sections of this TM.

The timing and cost of capital projects such as DCP, California Aqueduct subsidence repairs, Sites, and other SWP system improvements are uncertain and may change as planning, permitting, design, and construction proceed. Capital projects are typically funded through a combination of cash, grants, or debt. Cash financing can reduce borrowing costs and limit future debt obligations, but it requires the Agency to accumulate funds before or during construction and it can be difficult to manage cash flow. Debt financing can spread costs over time, but interest costs are paid.

The scenarios illustrate future SWC Fund balances under varying AV tax rates assuming that half of Sites costs are debt financed through a WIFIA loan, or other low interest loan, and DCP construction commences in 2030.

Figure 7 illustrates the current (\$0.11) AV tax and \$0.10 per \$100 in assessed value through FY 2035. SWC Fund reserves are estimated to continue to increase before modestly decreasing in 2030 as Sites and DCP payments increase. The reserve would likely remain above the policy target.

Figure 7. \$0.11 and \$0.10 per \$100 Assessed Value SWC Reserve Fund Examples

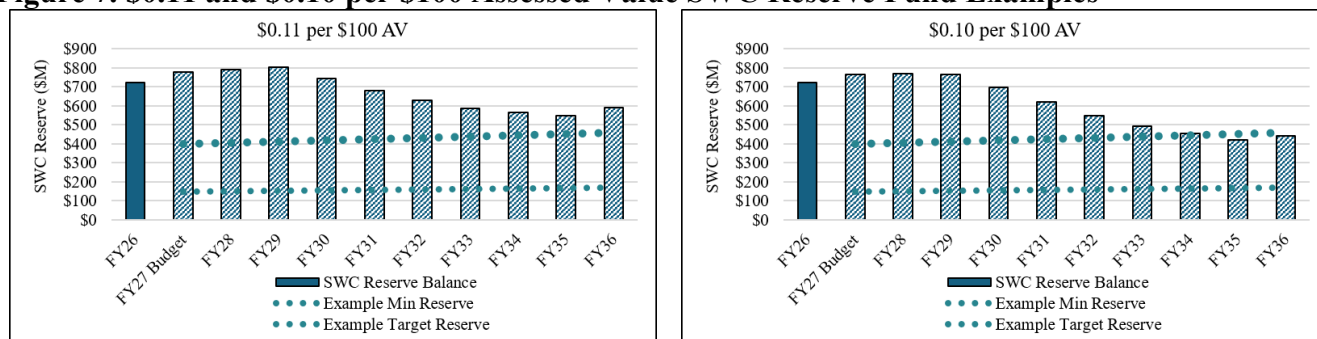


Figure 8 illustrates \$0.09 and \$0.08 per \$100 in assessed value through FY 2035. SWC Fund reserves would decrease as Sites and DCP payments increase. The lower AV tax rate would decrease SWC Fund reserves more rapidly.

Figure 8. \$0.09 and \$0.08 per \$100 Assessed Value SWC Reserve Fund Examples

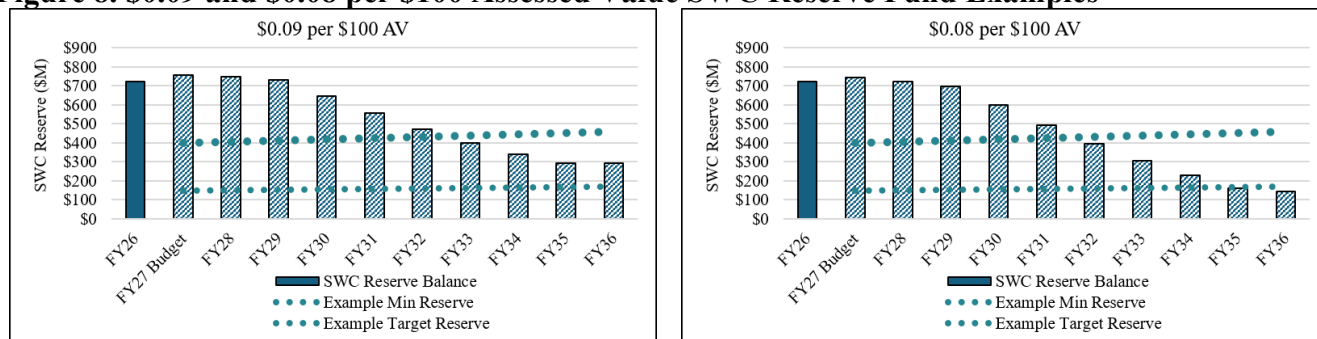
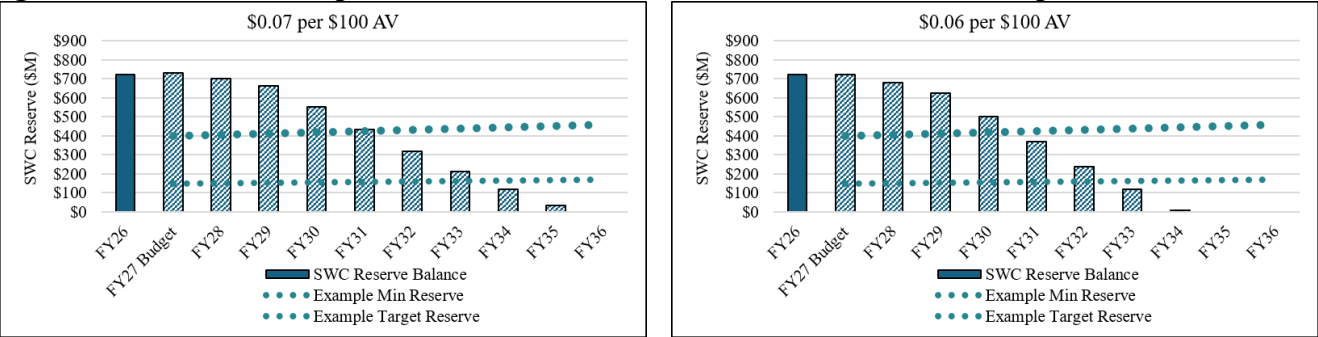


Figure 9 illustrates the \$0.07 and \$0.06 per \$100 in assessed value through FY 2035. SWC Fund reserves would decrease as Sites and DCP payments increase.

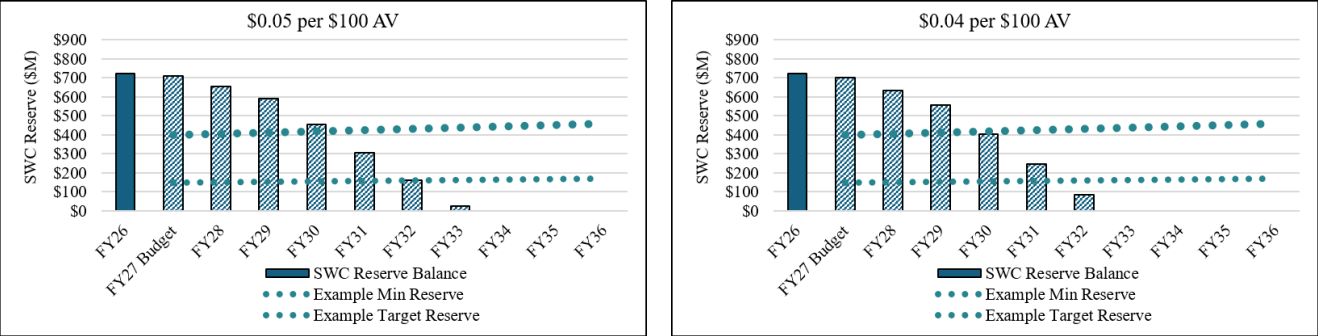
Figure 8. \$0.07 and \$0.06 per \$100 Assessed Value SWC Reserve Fund Examples



The scenarios are based on the assumptions and data described above. Future costs, revenues, and the reserve fund balance will differ from these planning-level estimates.

Figure 10 illustrates the \$0.05 and \$0.04 per \$100 in assessed value through FY 2035. SWC Fund reserves would decrease as Sites and DCP payments increase.

Figure 10. \$0.05 and \$0.04 per \$100 Assessed Value SWC Reserve Fund Examples



The scenarios are based on the assumptions and data described above. Future costs, revenues, and the reserve fund balance will differ from these planning-level estimates.

Summary

San Bernardino Valley’s SWP obligations include DWR SOC, other SWP-related costs, field improvements, and planned capital obligations for Sites, DCP, and other SWP system improvements. Based on current project and Agency information, SWC Fund expenses are estimated at approximately \$100.3 million in FY 2027 and \$155.1 million in FY 2028. Of that amount, \$85.9 and \$140.7 would be charges appearing on the SOC. These estimates rely on the best information available at the time of budgeting, but future costs remain uncertain because they depend on hydrology, project schedules, financing decisions, and the timing of large capital projects.

San Bernardino Valley’s current SWC Fund reserves are above the updated reserve policy target levels, largely due to delays in major capital projects such as DCP and Sites. The example AV tax scenarios

show that lower AV tax rates would begin drawing down reserves immediately, while higher rates would maintain or increase reserve balances in the near term before eventually drawing down reserves below target levels over time. Based on the planning assumptions applied in this analysis, an AV tax rate in the range of approximately \$0.05 to \$0.07 per \$100 in assessed value would maintain or modestly reduce the SWC reserve balance over the near term.

From an economic perspective, the Agency could consider reducing the AV tax rate in the near term to better align revenues with expected SWC Fund costs and gradually adjust reserves toward target levels. Over the next rate-setting cycle, the Agency could continue refining its CIP, SWP costs, reserve targets, and financing. The reserve fund balance is sensitive to the timing of Sites, DCP, and other SWP capital expenditures, as well as financing costs.

The analysis is based on data and information provided by the Agency, and supporting public data, which represents the best information available at the time of preparation. Future costs, revenues, and reserve balances will vary from these estimates as assessed values, hydrology, project schedules, financing decisions, DWR charges, and other factors change over time. Short-term estimates, including FY 2027 and FY 2028, are generally more reliable than longer-term projections, but actual costs and revenues will differ from the estimates shown. Other legal, technical, policy, and district information should be applied to evaluate alternative AV tax rate pathways.

List of References

1. U.S. Census. 5-year American Community Service (ACS) Survey, 2020-2024.
2. SBVMWD Draft Revised General Fund for FY 2026-2027.
3. Proposed Fiscal Year 2026-2027 SWC Budget Estimates.
4. Resolution 1060 of the Board of Directors of SBVMWD Supporting the California Water Fix.
5. Staff Report. July 17, 2025. Debt Service Fund Budget Workshop. Review State Water Contract Debt Service Fund Budget and Approve the Tax.
6. Rate Resolution 1195 of the Board of Directors of SBVMWD for Fiscal Year 2025-2026.
7. State Water Resources Control Board. Methodology for Risk Assessment for Public Water System. June 2025.
8. Department of Water Resources (DWR) Bulletin 132-25, Appendix B.
9. SBVMWD East Branch Extension Debt Service Schedule.
10. DWR Bulletin 132-25, Appendix B.
11. SBVMWD SWP Historical and Estimated Costs 2016-2034.
12. Proposed Fiscal Year 2026-2027 SWC Budget Estimates.
13. SBVMWD SWP Fund - Projected 10-Year CIP Budget.
14. Department of Water Resources. State Water Project Budget Report. February 2026.
15. Proposed Fiscal Year 2026-2027 SWC Budget Estimates.
16. Department of Water Resources. State Water Project Budget Report. February 2026. Page 27.
17. SBVMWD SWP Historical and Estimated Costs 2016-2034.
18. Proposed Fiscal Year 2026-2027 SWC Budget Estimates.
19. Delta Conveyance Authority. Total Project Cost Summary Memorandum. May 2024.
20. Sunding, David, Oliver Browne. Benefit-Cost Analysis of the Delta Conveyance Project. May 16, 2024. Fig. 6, p. 45.
21. Department of Water Resources v. Metropolitan Water District of So. Calif., et al. (2025) 117 Cal.App.5th 751 (Opinion).
22. SBVMWD SWP Historical and Estimated Costs 2016-2034.
23. Sites Project Authority. January 2026 Cash Flow Forecast and Plan of Finance Update. January 2026.
24. SBVMWD SWP Historical and Estimated Costs 2016-2034.
25. Footnote.
26. Sites Authority. Issue Paper #3 – Additional Terms for Acquirer and SWP Participants. May 2026.
27. DWR Bulletin 132-25, Appendix B.
28. East Valley Water District. Well 129 Project. Well Design and Construction.
29. Yucaipa Subbasin GSP. Section ES-3, and ES-4-4.

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT						
RECAP OF DIRECTORS FEES AND EXPENSE REIMBURSEMENT						
PAID IN THE MONTH OF JUNE 2026						
	GIL BOTELLO	MILFORD HARRISON	PAUL KIELHOLD	SUSAN LONGVILLE	JOSE VELASQUEZ	
DIRECTOR COMPENSATION - MAY MEETINGS	2,990.00	2,990.00	2,392.00	2,691.00	2,392.00	
EXPENDITURES / REIMBURSEMENTS						
EDUCATION						
CA HABITAT CONSERVATION PLANNING COALITION ANNUAL MEETING		100.00				
THREE VALLEYS LEADERSHIP BREAKFAST					44.52	
TRAVEL						
MILEAGE REIMBURSEMENT - MEETINGS OUTSIDE DISTRICT SERVICE AREA						
MILEAGE REIMBURSEMENT - MEETINGS WITHIN DISTRICT SERVICE AREA						
STATE WATER PROJECT TOUR - SACRAMENTO			54.00			
MEALS						
LODGING						
ACWA SPRING 2026 CONFERENCE - SACRAMENTO		1,189.01				
MISCELLANEOUS						
THIS REPORT IS PROVIDED IN ACCORDANCE TO RESOLUTION 1100						
EACH BOARD MEMBER SHALL BE PROVIDED WITH A MONTHLY REPORT SHOWING THE AMOUNT OF COMPENSATION OR REIMBURSEMENT REQUESTED BY EACH BOARD MEMBER.						



Director's Activity Report

Director's Name Gil J. Botello

Month Reporting Activity June 2026

	Date	Meeting/Activity Description	Provide description of the meeting or activity and brief explanation on the benefits to the District and work of the Board by your attendance. (Not required for Valley District meetings)	Explanation	Max 10/month	Travel Cost Estimate (Staff)
1	06/01/2026	Other	BTAC		\$299	
2	06/02/2026	SB Valley Board Mtg 1	Valley District		\$299	
3	06/03/2026	Other	Webinar:Flows, Fish & FIRO		\$299	
4	06/04/2026	Workshop - Policy/Admin	Valley District		\$299	
5	06/09/2026	Workshop - Resources/Eng	Valley District		\$299	
6	06/10/2026	Other	Public Event w/ Supv Baca Jr: "Flip the Switch"		\$299	
7	06/15/2026	Water Forum	MWDOC Water Policy Forum		\$299	
8	06/16/2026	SB Valley Board Mtg 2	Valley District		\$299	
9	06/20/2026	Other	SB Council Ward 3 Community Meeting		\$299	
10	06/25/2026	Workshop - Budget	Valley District		\$299	
11		Select from List			Per diem?	
12		Select from List			Per diem?	
13		Select from List			Per diem?	
14		Select from List			Per diem?	
15		Select from List			Per diem?	
				Total Requested Compensation	\$ 2,990.00	

The undersigned certifies that the claims hereby stated are for authorized activities as described in the District's approved Resolution establishing rules and procedures for compensation of Directors.

Digitally signed by Gil Botello
Date: 2026.06.29 14:23:03 -07'00'

Date: 06/29/2026

Signed: Gil Botello



Director Request for Compensation & Public Disclosure Form

Director's Name T. Milford Harrison

Month Reporting Activity JUNE 2026

	Date	Meeting/Activity Description	Explanation Provide description of the meeting or activity and brief explanation on the benefits to the District and work of the Board by your attendance. (Not required for Valley District meetings)	Max 10/month	Travel Cost Estimate (Staff)
1	06/01/2026	Assigned Committee Mtg	BASIN TECH. ADVISORY COMMITTEE-POSTED AGENDA	\$299	
2	06/02/2026	Valley District Board Mtg 1	POSTED AGENDA	\$299	
3	06/03/2026	Chamber of Commerce Mtg	LOMA LINDA CHAMBER OF COMMERCE	\$299	
4	06/04/2026	Workshop - Policy	POSTED AGENDA	\$299	
5	06/05/2026	Assigned Committee Mtg	HCP GOVT. RELATIONS	\$299	
6	06/08/2026	CSDA Mtg	ASBCSD BOSRD MEETING	\$299	
7	06/09/2026	Workshop - Engineering	POSTED AGENDA	\$299	
8	06/10/2026	Chamber of Commerce Mtg	GRANS TERRACE CHAMBER OF COMMERCE	\$299	
9	06/15/2026	CSDA Mtg	ASBCSD MONTHLY DINNER MEETING	\$299	
10	06/16/2026	Valley District Board Mtg 2	POSTED AGENDA	\$299	
11	06/22/2026	Assigned Committee Mtg	CALIF. HCP COALITION ANNUAL CONFERENCE	Per diem?	
12	06/23/2026	Assigned Committee Mtg	CALIF. HCP COALITION ANNUAL CONFERENCE	Per diem?	
13	06/24/2026	Workshop - Policy	BUDGET -- POSTED AGENDA	Per diem?	
14	06/30/2026	Other	MEETING WITH EAST VALLEY BOARD CHAIRMAN	Per diem?	
15		Select from List		Per diem?	
			Total Requested Compensation	\$ 2,990.00	\$ 0.00

The undersigned certifies that the claims hereby stated are for authorized activities as described in the District's approved Resolution establishing rules and procedures for compensation of Directors.

Signed: _____

Date: 07/05/2026



Director's Activity Report

Director's Name Paul Kielhold

Month Reporting Activity June 2026

	Date	Meeting/Activity Description	Provide description of the meeting or activity and brief explanation on the benefits to the District and work of the Board by your attendance. (Not required for Valley District meetings)	Explanation	Max 10/month	Travel Cost Estimate (Staff)
1	6/1/26	Other	BTAC		\$299	
2	6/2/26	Valley District Board Mtg 1			\$299	
3	6/2/26	Retail Agency Board Meeting	YVWD		\$0	
4	6/3/26	SBV Water Conservation District Mtg	Operations Committee		\$299	
5	6/4/26	Workshop - Policy			\$299	
6	6/9/26	Workshop - Engineering			\$299	
7	6/10/26	SBV Water Conservation District Mtg			\$299	
8	6/10/26	Retail Agency Board Meeting	EVWD		\$0	
9	6/16/26	Valley District Board Mtg 2			\$299	
10	6/24/26	Retail Agency Board Meeting	EVWD		\$299	
11	6/25/26	Other	SBVMWD General Fund Budget FY26-27		\$299	
12					\$0	
13					\$0	
14					\$0	
15					\$0	
			Total Requested Compensation		\$2,691.00	\$ 0.00

The undersigned certifies that the claims hereby stated are for authorized activities as described in the District's approved Resolution establishing rules and procedures for compensation of Directors.

Signed: Paul Kielhold

Date: June 25, 2026



Director's Activity Report

Director's Name **Susan Longville** Month Reporting Activity **06/30/2026**

	Date	Meeting/Activity Description	Provide description of the meeting or activity and brief explanation on the benefits to the District and work of the Board by your attendance. <i>(Not required for Valley District meetings)</i>	Explanation	Max 10/month	Travel Cost Estimate <i>(Staff)</i>
1	06/01/2026	Other	BTAC Meeting by Zoom		\$299	
2	06/02/2026	Assigned Committee Mtg	PA23 Meeting at SAWPA		\$0	
3	06/02/2026	SB Valley Board Mtg 1			\$299	
4	06/04/2026	Workshop - Policy/Admin			\$299	
5	06/06/2026	Other	League of Women Voters of San Bernardino Annual Meeting at San Bernardino County Museum		\$299	
6	06/09/2026	Workshop - Resources/Eng			\$299	
7	06/16/2026	SB Valley Board Mtg 2			\$299	
8	06/17/2026	Assigned Committee Mtg	PERC Meeting at San Bernardino Water Conservation District		\$299	
9	06/22/2026	Assigned Committee Mtg	THE CLIMATE CENTER BOARD MEETING by Zoom		\$299	
10	06/25/2026	Workshop - Budget	General Fund Budget Workshop		\$299	
11	06/26/2026	Assigned Committee Mtg	PERC Meeting at San Bernardino Valley Water Conservation District		\$299	
12		Select from List			Per diem?	
13		Select from List			Per diem?	
14		Select from List			Per diem?	
15		Select from List			Per diem?	
			Total Requested Compensation		\$ 2,990.00	

The undersigned certifies that the claims hereby stated are for authorized activities as described in the District's approved Resolution establishing rules and procedures for compensation of Directors.

Signed: Susan Longville Date: _____



Director's Activity Report

Director's Name Jose Velasquez

Month Reporting Activity June 2026

	Date	Meeting/Activity Description	Explanation Provide description of the meeting or activity and brief explanation on the benefits to the District and work of the Board by your attendance. (Not required for Valley District meetings)	Max 10/month	Travel Cost Estimate (Staff)
1	06/01/2026	Other	SBVMWD Basin Technical Advisory Committee (BTAC)	\$299	
2	06/02/2026	SB Valley Board Mtg 1	SBVMWD Regular Board Meeting	\$299	
3	06/04/2026	Workshop - Policy/Admin	SBV Workshop Meeting Policy/Admin	\$299	
4	06/09/2026	Workshop - Resources/Eng	SBV Workshop Meeting Engineering/ Resources	\$299	
5	06/15/2026	Other	MWDOC Water Policy Forum & Dinner	\$299	
6	06/16/2026	SB Valley Board Mtg 2	SBVMWD Regular Board Meeting	\$299	
7	06/26/2026	Workshop - Budget	SBVMWD General Fund Budget Board Meeting	\$299	
8	06/10/2026	Other	County Supervisor Baca's office Flip the Switch event at Rosena Ranch Check Presentation	\$299	
9		Select from List		Per diem?	
10		Select from List		Per diem?	
11		Select from List		Per diem?	
12		Select from List		Per diem?	
13		Select from List		Per diem?	
14		Select from List		Per diem?	
15		Select from List		Per diem?	
			Total Requested Compensation	\$ 2,392.00	

The undersigned certifies that the claims hereby stated are for authorized activities as described in the District's approved Resolution establishing rules and procedures for compensation of Directors.

Digitally signed by Jose Velasquez
Date: 2026.07.09 08:59:16 -07'00'

Date: 07/09/2026

Signed: Jose Velasquez

DATE: July 21, 2026
TO: Board of Directors
FROM: Sayer Pinto, Principal Water Resources Analyst
SUBJECT: Water Delivery Report

The following amounts of water were delivered by San Bernardino Valley Municipal Water District:
(in acre-ft)

	JUN	Year to Date
State Water Project	3,308	10,953
Groundwater		
Baseline Feeder Wells	636	2,332
San Bernardino Avenue Well	0	0
Santa Ana River Diversions	1,361	7,878

San Bernardino Valley Municipal Water District

Delivery of Water For Calendar Year 2026 - Acre Feet

Measurement / Delivery Point	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
IMPORTED WATER SUPPLIES													
<u>STATE WATER PROJECT DELIVERY CATEGORIES</u>													
Yuba Accord Water (14-819)													
Article-21													
MWDSC Transfer													
CLAWA exchange water SWPAO #25-033													
Kern Delta Water Bank (11-015)													
Carryover	955	408											1,363
Table A		1,438	1,775	2,224	2,165								7,602
* SWP into SBV Service Area (DWR Meters)	955	1,846	1,775	2,224	2,165								8,965
<u>RECHARGE DELIVERIES</u>													
Sweetwater													
Sweetwater - Valley District													
Sweetwater - City of San Bernardino													
Sweetwater - SNRC Settlement Agreement		101											101
Sweetwater - BLF Obligation to SBB													
Waterman													
Waterman - Valley District													
Waterman - BLF Obligation to SBB													
Waterman - SBB Non-GC Contribution (SBVWCD)													
Waterman - SNRC Settlement Agreement		572	16	15	15	1,429							2,046
Waterman - City of San Bernardino													
City Creek													
City Creek - SBB GC													
Santa Ana Low													
Santa Ana Low - BVMWC (purchase)													
Santa Ana Low - Redlands (purchase)													
Santa Ana Low - Valley District													
Santa Ana Low - SBB Non-GC Contribution (SBVWCD)													
Plunge Creek Spreading													
Plunge Creek - Northfork Delivery													
Mill Creek Spreading													
Mill Creek Spreading - Redlands													
Mill Creek Spreading - Valley District													
S.A.R.C.													
S.A.R.C. to Redlands Aqueduct - Recharge (purchased by Redlands)													
S.A.R.C. to Conservation District													
S.A.R.C. to Redlands													
Zanja East Weir to WCD - Valley District (USE WITH GREENSPOT OR TATE ONLY)													
Zanja East Weir to WCD - Valley District													
Wilson Basins													
Wilson Basins - YVWD													
Wilson Basins - Valley District													
Oak Glen Basins - Valley District													
Oak Glen Basins - YVWD													
Sub-total Recharge		673	16	15	15	1,429							2,147

Delivery of Water For Calendar Year 2026 - Acre Feet

Measurement / Delivery Point	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
DIRECT DELIVERIES													
Lytle Creek													
West Valley Water District	219	252	467	461	526	305							2,230
Fontana													
Marygold Mutual				41	45	46							132
RHWC													
SB County - Glen Helen													
WMWD/MWDSC (MWDSC SWP Water)													
Lytle Creek - Fontana Water Company WTP	17												17
Lytle Creek - Fontana Water Company - CEMEX													
SALES/RETURNS/BANKING													
CLAWA Exchange (08-063)													
CLAWA Exchange (09-079)													
CLAWA Exchange (22-021)					12	26							38
EVWD Plant 134													
EVWD Plant 134 - BB Agreement (In-Lieu)													
EVWD Plant 134 - BVMWC purchase (for EVWD)													
EVWD Plant 134 - EVWD (purchase)			85	187	245	427							944
Northfork													
Northfork - EVWD (purchase)	355	324	231										910
Northfork - EVWD - BB Agreement													
Northfork - BVMWC purchase (for EVWD)													
Edwards Canal Pump - BVMWC In-Lieu													
Edwards Canal Pump - EVWD purchase for Farmer													
S.A.R.C.													
S.A.R.C. - Valley District													
S.A.R.C. to Redlands Aqueduct - Sandbox (purchased by Redlands)													
S.A.R.C. to Redlands Aqueduct - BB Agreement													
S.A.R.C. to Redlands Aqueduct - BVMWC purchase (for Redlands)													
S.A.R.C. to Redlands - Greenspot Forebay Replacement													
Arrowhead Springs													
Arrowhead Springs Turnout (Yuhaaviatam)													
Bear Valley Highline Connector [Out of Service - Under Repair]													
Newport Ave.													
Newport Ave. - Greenspot Mutual													
Newport Ave. - BVMWC													
Newport Ave. - BVMWC (Greenspot Forebay Replacement)	1	2	6	6	7	7							28
Tres Lagos													
Tres Lagos - Greenspot Mutual													
Tres Lagos - BVMWC													
Tres Lagos - BVMWC (Greenspot Forebay Replacement)			5	21	22	21							69
Unger Lane to Zanja													
Unger Lane to Zanja - Crafton - BVMWC In-Lieu													
Unger Lane to Zanja - Crafton - BVMWC													
Boullioun Box													
Boullioun Box to Zanja													
Boullioun Box to Highline In-Lieu													
Boullioun Box to Highline - BVMWC													
Boullioun Box to Highline - BVMWC (Greenspot Forebay Replacement)	127	171	332	268	268	328							1,494
City of Redlands													
City of Redlands - Tate Treatment In-Lieu													
City of Redlands - Tate Treatment													
Yucaipa													
Yucaipa Regional Park		18	18	1	85	18							140
Yucaipa Valley Water District Treatment Plant	2	118	560	703	724	701							2,807
Western Heights													
Sub-total Direct Deliveries within SBV Service Area	720	884	1,703	1,688	1,933	1,879							8,806
<i>SGPWA Service Area</i>	<i>1,327</i>	<i>1,881</i>	<i>2,155</i>	<i>1,143</i>	<i>1,625</i>	<i>2,424</i>							<i>10,555</i>
Sub-total Direct Deliveries (SBV + SGPWA)	2,047	2,765	3,858	2,831	3,558	4,303							19,361

Delivery of Water For Calendar Year 2026 - Acre Feet

Measurement / Delivery Point	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
SUMMARY													
Recharge in SBV Service Area		673	16	15	15	1,429							2,147
Direct Deliveries in SBV Service Area	720	884	1,703	1,688	1,933	1,879							8,806
* Deliveries to SGPWA Service Area	1,327	1,881	2,155	1,143	1,625	2,424							10,555
* Total Deliveries	2,047	3,438	3,874	2,846	3,572	5,732							21,508
Total Deliveries within SBV Service Area	720	1,557	1,719	1,703	1,947	3,308							10,953
SAN BERNARDINO BASIN PUMPING													
Baseline Feeder													
Ninth Street North Replacement Well				235	282	192							710
Ninth Street South Replacement Well	223	197	263	226	270	444							1,622
Sub-total Baseline Feeder	223	197	263	462	552	636							2,332
San Bernardino Avenue Well No. 1 - Redlands													
San Bernardino Avenue Well No. 1 - Redlands - In Lieu													
San Bernardino Avenue Well No. 1 - Water Quality Testing		0.3			0.4								0.7
Redlands Pump Station													
De-watering Well # 1													
De-watering Well # 2													
Total San Bernardino Basin Pumping	223	197	263	462	552	636							2,333

* Pending final verification by San Bernardino Valley and Department of Water Resources staff.



DATE: July 21, 2026

TO: Board of Directors

FROM: Heather Dyer, Chief Executive Officer/General Manager

SUBJECT: CEO/General Manager's Report

In this report:

- 1. Anza Creek Larval Survey Update**
- 2. Journal Publication Regarding Santa Ana River Health**
- 3. Proposed Establishment of U.S. Army Corps of Engineering Office of Water Supply, Water Conservation, and Drought Resiliency Update**
- 4. Engagement Activities**
 - **Upcoming CEO/General Manager and Staff Speaking Engagements**
- 5. Project Status Updates**

The following is an update from the Chief Executive Officer/General Manager on the status of several items at the Agency.

I. Anza Creek Larval Survey Update

As part of the Upper SAR Habitat Conservation Plan (HCP), the Anza Creek Tributary Stream restoration project is integral to the overall conservation strategy. During field observations, staff and volunteers observed reproducing Santa Ana sucker and Arroyo chub. By observing these sensitive species successfully occupying, reproducing, and growing juvenile fish, the Agency has effectively met the most important success criteria to permit and grant compliance

requirements at Anza Creek shortly after completion of the project and connection of the newly enhanced creek to the Santa Ana River. The Agency is facilitating three more tributary restoration projects with additional opportunities for positive results.

The Anza Creek Tributary Stream Restoration Project is part of the Upper SAR HCP's regional effort to make critical water projects permittable and funded partially by the Prop 84 SARCCUP grant, administered by SAWPA. This project specifically has been identified to meet mitigation obligations of the Sterling Natural Resource Center, Waterman Basins maintenance activities, and Lower Cactus Basins, along with additional future water projects.

II. Journal Publication Regarding Santa Ana River Health

In partnership with local universities and scientific researchers, San Bernardino Valley continues to collect and analyze data that advances scientific understanding of the Santa Ana River ecosystem and supports science-based resource management. These collaborative efforts contribute to the growing body of scientific knowledge regarding native species and freshwater ecosystem health throughout the watershed.

Recently, San Bernardino Valley staff member Kai Palenscar co-authored a peer-reviewed article published in the scientific journal *Ecological Indicators* titled "*Freshwater Health in a Highly Urbanized Semi-Arid Watershed: Assessing Ecosystem Vitality and Ecosystem Service Delivery in the Santa Ana River Watershed*." The lead author, Gary Qin, a doctoral student at the University of California, Riverside, has collaborated extensively with San Bernardino Valley staff and has presented his research at multiple Santa Ana River Science Symposiums.

The study demonstrates how freshwater health assessments can be applied in highly urbanized watersheds facing complex environmental and water management challenges. The publication further highlights San Bernardino Valley's leadership in advancing applied scientific research and developing data-driven approaches to watershed management. A copy of the article is attached for the Board's reference.

III. Proposed Establishment of U.S. Army Corps of Engineering Office of Water Supply, Water Conservation, and Drought Resiliency Update

The ongoing FIRO effort includes extensive cooperation, coordination, and input from the U.S. Army Corps of Engineering (Corps of Engineering). With Water Supply/Water Conservation identified in the 2024 Water Resources Development Act (WRDA), the next step is for Congress to allocate resources to support that specialized focus.

Through a coalition with the National Water Supply Alliance (NWSA), agencies from across the country have been working with their federal delegation to encourage the establishment of an Office of Water Supply, Water Conservation, and Drought Resiliency at the Corps of Engineers Headquarters. Greg Woodside, Chief of Planning and Watershed Resilience, represents the Agency's interests on the NWSA and moving this effort forward.

Most recently, the House of Representatives committee released its draft WRDA 2026 legislation, which includes the requested language. This language will be reviewed and marked up at a future date. Additionally, the corresponding Senate Committee is considering incorporation of similar language. This effort is an important step in reinforcing that Water Supply/Water Conservation is a primary mission of the Corps of Engineers and critical to reliable future water supplies throughout the country.

IV. Engagement Activities

The Board of Directors, CEO/General Manager, and staff have participated in multiple community and industry events in recent weeks to highlight the ongoing priorities of the Strategic Plan. Activities included:

- June 30 - Water Solutions Summit Workshop- The CEO/ General Manager participated in the Water Solutions Summit Workshop in Sacramento with water leaders from across the state in support of the SB 72 "CA Water for All" implementation effort.
- July 15 - San Bernardino Municipal Water Department History Video Interviews - Director Longville and CEO/General Manager participated in video interviews to support the Water Department's effort to create a regional water history video.
- July 16 - West Valley Water District Demand Management - Vice Chair Botello, Director Velasquez, and CEO/General Manager presented a ceremonial check for their FY25/26 Demand Management project.
- July 17 - ACWA Region 9 Event - The CEO/General Manager participated in a panel discussion regarding leadership and the need for bold investments supporting water supply reliability and long-term resilience for the state.

- **Upcoming CEO/General Manager and Staff Speaking Engagements**

- Yucaipa Valley Water District Demand Management check presentation (7/21)
- San Bernardino Municipal Water Department Demand Management check presentation (7/28)
- City of Rialto Demand Management check presentation (7/28)
- Loma Linda Demand Management check presentation (8/11)
- BIA Southern California Water Conference (8/14)
- Colton Demand Management check presentation (8/18)

V. Project Status Updates

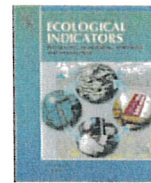
See attached.

Staff Recommendation

Receive and file.

Attachments

1. "Freshwater health in a highly urbanized semi-arid watershed: Assessing ecosystem vitality and ecosystem service in the Santa Ana River Watershed." *Ecological Indicators*
2. July Project Status Update
3. July 3-Month Look Ahead



Freshwater health in a highly urbanized semi-arid watershed: Assessing ecosystem vitality and ecosystem service delivery in the Santa Ana River watershed

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ARTICLE INFO

Keywords:

Freshwater
Watershed
Mediterranean climate
Semi-arid
Assessment
Ecosystem health
Ecosystem service

ABSTRACT

Freshwater systems are biodiversity hotspots that provide ecosystem services vital to the well-being and livelihoods of billions of people. However, the multiple stressors they face from human activity threaten their ecological integrity. This study used the Santa Ana River Watershed (SARW) in Southern California as a case study of the challenges faced by freshwater systems in semi-arid, Mediterranean-climate regions. A baseline assessment of quantitative indicators spanning ecosystem vitality (EV) and ecosystem service (ES) delivery was conducted using the Freshwater Health Index to evaluate patterns between ecosystem condition and ecosystem service delivery. Composite scores were calculated from 16 sub-indicators across EV and ES, revealing an imbalance: EV scored 40/100, while ES scored 74/100. The low EV score reflected an extensively altered flow regime, impaired water quality for native freshwater species, disrupted connectivity, and threatened freshwater biodiversity. In contrast, the high ES score reflected a robust and diversified water portfolio that meets human needs and protects cultural and recreational sites, supported in part by engineered infrastructure and imported water supplies. These results indicate an imbalance between ecosystem condition and ecosystem service delivery, consistent with patterns observed in highly managed freshwater systems. As the first basin-wide application of the FHI in a highly urbanized semi-arid Mediterranean watershed, this study can inform follow-up within-basin assessments that incorporate climate change and management scenarios to support water management actions that promote freshwater health. More broadly, this study demonstrates how freshwater health assessments can be applied in highly urbanized, semi-arid Mediterranean watersheds facing environmental and water management challenges.

1. Introduction

Despite comprising only a small portion of the Earth's water, freshwater systems support disproportionately high levels of global biodiversity and provide essential ecosystem functions and services that contribute to the well-being and livelihoods of billions of people (Dudgeon et al., 2006; Vörösmarty et al., 2015). At the same time, freshwater systems face several major stressors, including pollution from organic waste and industrial byproducts; channel modifications from dredging, impoundments, and levees; biological invasions; and disruptions to hydrological processes due to climate change (Dudgeon et al., 2006; Reid et al., 2019; Allan et al., 2021). The importance of freshwater systems to humans and the myriad threats they face underscore the

challenges of balancing ecosystem functioning with ecosystem service delivery. For example, deforestation is a provisioning ecosystem service that has detrimental effects on biodiversity, ecosystem functioning, and downstream water delivery (Hermoso et al., 2018). Such trade-offs, when not carefully managed, may create uncertainties and risks to a freshwater system's ability to *sustainably* provide ecosystem services and benefits, i.e., freshwater health (Grey and Sadoff, 2007; Vollmer et al., 2018).

Trade-offs in freshwater systems are often discussed as arising from the competing demands placed on limited water resources by humans and the intrinsic ecological requirements of freshwater ecosystems (Cavender-Bares et al., 2015). For instance, altering flow regimes to meet agricultural or municipal water needs often reduces the frequency

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<https://doi.org/10.1016/j.ecolind.2026.114835>

Received 5 November 2025; Received in revised form 10 March 2026; Accepted 31 March 2026

Available online 7 April 2026

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and duration of natural flooding events that sustain floodplain wetlands and maintain sediment and nutrient transport (Poff et al., 1997). Likewise, intensification of land-use change in watersheds through deforestation, urbanization, and agriculture can increase sediment and pollutant loads in freshwater bodies, thereby compromising water quality and habitat suitability for native freshwater species (Allan, 2004; Foley et al., 2005). Water delivery infrastructure often prioritizes human benefits while fragmenting river networks, disrupting the life cycles of migratory aquatic species, and facilitating the invasion and establishment of exotic and invasive species (Bunn and Arthington, 2002; Nilsson et al., 2005; Liermann et al., 2012). These trade-offs can be amplified by governance structures that manage water resources across various sectors (e.g., agriculture, energy, urban planning, and environmental protection) if they fail to account for the cumulative and cross-sectoral impacts on freshwater systems (Falkenmark and Rockström, 2006). As a result, water policies and investments can undermine the broader ecological processes that support long-term water security and ecosystem resilience (Pahl-Wostl, 2009). Understanding and assessing how trade-offs arise and can be managed is crucial for balancing multiple, often conflicting objectives while preserving the long-term resilience and benefits that freshwater systems provide.

The Santa Ana River Watershed (SARW) is a notable example of the challenges of managing freshwater systems in highly urbanized semi-arid regions, where tensions between ecosystem service delivery and ecosystem function present challenges for freshwater sustainability. The SARW is located in Southern California and is one of the most urbanized and densely populated watersheds in the western United States (Fig. 1; Santa Ana Watershed Project Authority, 2019). In addition, the SARW overlaps one of 36 global biodiversity hotspots—the California Floristic Province, through which the Santa Ana River flows to the Pacific Ocean. This region harbors thousands of endemic plant species and has lost over

70% of its primary native vegetation (Harrison et al., 2024). The watershed supports its residents and ecosystems through a combination of an artificially recharged groundwater basin network, stormwater capture, and treated wastewater, with a heavy reliance on imported water from the State Water Project and the Colorado River Aqueduct (Santa Ana Watershed Project Authority, 2019). Highly variable seasonal precipitation and frequent floods are typical of its semi-arid Mediterranean climate, making water delivery and flood control priority management targets (Simes, 2013; California Department of Water Resources, 2018). These management targets are complicated by climate change, as many projections indicate that the region will experience greater precipitation variability and highly uncertain overall trends (Simes, 2013). Compounding this uncertainty, the SARW is experiencing ecosystem degradation and destruction due to its extensive urbanization and altered water flow. These characteristics make the SARW a representative case study of semi-arid Mediterranean water basins that rely on engineered water systems to sustain large human populations at the expense of ecosystem degradation.

To manage trade-offs, water infrastructure and ecosystem management are coordinated through regional and local collaboration, most notably through the Santa Ana Watershed Project Authority (SAWPA) and its One Water One Watershed (OWOW) program, which supports watershed-wide collaborative planning and project implementation to achieve watershed sustainability. In the OWOW program's most recent update, SAWPA's goals focus on achieving resilient water resources that provide high-quality water for people and the environment, while preserving and enhancing recreational areas, open spaces, habitats, and natural hydrological functions (Santa Ana Watershed Project Authority, 2019). Meeting these goals requires an integrated evaluation of ecological integrity and human well-being in the context of urbanization, climate variability, and competing regional water demands. Water

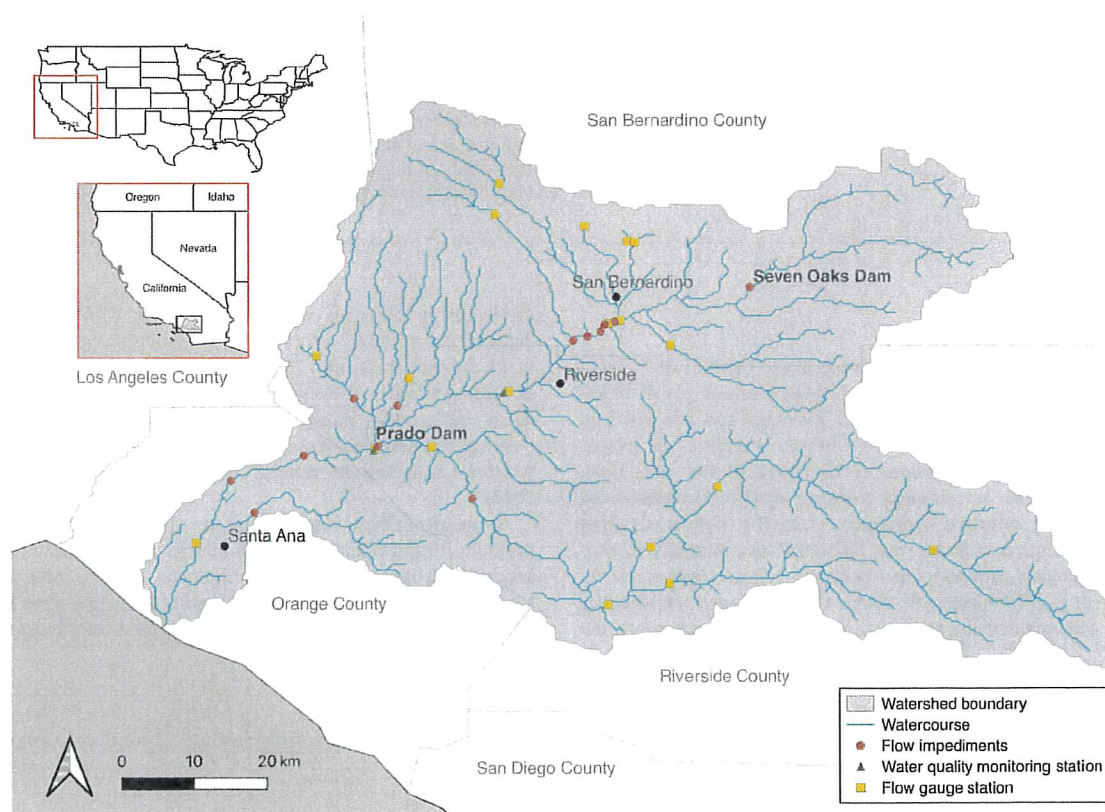


Fig. 1. Santa Ana River Watershed in southern California, USA (highlighted in blue). Major cities are indicated with black dots. Dams are highlighted in bold text. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

management practices in the region have often prioritized water supply reliability and flood control over ecosystem functions, habitat connectivity, and water quality for ecosystems (Santa Ana Watershed Project Authority, 2019). However, maintaining the health of freshwater ecosystems is crucial for biodiversity conservation and the sustainable provision of ecosystem services, including groundwater recharge, recreational opportunities, and cultural value. Various methods and indicators have been employed to characterize these multifaceted issues in other water basins, however, they either focus on a particular component of freshwater systems or do not adequately account for the interactions among the biological, physical, and social facets of freshwater health (Vollmer et al., 2016). To begin examining trade-offs, a framework is needed that recognizes the dual importance of ensuring sufficient water quantity and quality for human well-being, while also preserving freshwater ecosystems to sustain biodiversity and ecological functions.

This paper applies the Freshwater Health Index (FHI) to the SARW in California, USA, representing the first basin-wide application of the FHI in a highly urbanized semi-arid Mediterranean water basin. The FHI is a score-based nested indicator system that assesses freshwater health across three main components: Ecosystem Vitality (EV, the health of freshwater ecosystems); Ecosystem Services (ES, water-related provisioning, regulating, and cultural services); and Governance and Stakeholders (GS, the people who have an interest in, or influence over, freshwater systems and the decision-making and power-sharing structures and processes surrounding water resources management; Vollmer et al., 2018). The FHI has been applied to ten water basins across Africa, Asia, and Latin America, primarily tropical and temperate regions, to address local and regional water management priorities, including the implementation of integrated water resources management (Bezerra et al., 2022); hydropower development scenario analysis (Souter et al., 2020); and understanding water governance (Vollmer et al., 2021). In Mediterranean-climate regions, such as the SARW, there is a high degree of interannual and within-year precipitation variability, often accompanied by prolonged dry seasons, resulting in dependence on engineered water storage and import systems. These solutions are designed to attenuate the naturally variable flow regime, thereby creating a reliable and predictable water supply (Grantham et al., 2018; Poff, 2018). Given the interaction between water infrastructure and ecosystem function, this paper focuses on the first two main components of the FHI—EV and ES—to evaluate whether the competing demands of maintaining ecosystem health (EV) and water-related ecosystem service provisioning (ES) are adequately met. A sustainable water basin that adequately protects freshwater ecosystem functioning while delivering vital ecosystem services is expected to achieve high scores for both EV and ES. Past applications of the FHI suggest that there are often trade-offs between maintaining ecosystem health and meeting demand for certain services, such as water provisioning and flood regulation, particularly in water basins with large human populations. The goals of this study are to:

1. establish a baseline assessment of freshwater ecosystem health (EV) and ecosystem service delivery (ES) in the SARW, and
2. identify imbalances between EV and ES and highlight areas for more effective management.

Identifying imbalances between EV and ES can reveal aspects of freshwater health that require more effective management, while illustrating how the FHI framework can be adapted and operationalized in highly urbanized semi-arid Mediterranean watersheds.

2. Methods

2.1. Physical context

The Santa Ana River Watershed (SARW) is located in Southern

California, encompassing 7355 km² (2840 mi²) and spanning portions of Orange, Riverside, San Bernardino, and Los Angeles Counties (Fig. 1; Santa Ana Watershed Project Authority, 2019). The Santa Ana River mainstem originates in the San Bernardino Mountains and flows for over 160 km (100 miles), draining into the Pacific Ocean at the city of Huntington Beach. The watershed has two major dams: Prado Dam, constructed in 1941 near the city of Corona, which separates the upper and lower watersheds, and Seven Oaks Dam, completed in 1999 and upstream of Prado Dam near the City of Highland. More than six million people reside in the SARW, including large urban centers such as San Bernardino, Riverside, and Santa Ana (Santa Ana Watershed Project Authority, 2019). The watershed includes populations represented by more than a dozen municipalities served by the five municipal water districts that comprise SAWPA (Santa Ana Watershed Project Authority, 2019). Irrigated agricultural land currently accounts for only about 3% of land use in the region, with a shift towards residential, commercial, and industrial development over the past century (San Bernardino Valley Municipal Water District, 2021). Although largely urban, the SARW encompasses numerous natural areas, including the San Bernardino, Cleveland, and the eastern portion of the Angeles National Forests, and features diverse ecosystems, such as riparian corridors, chaparral, and coastal wetlands. The SARW has high levels of plant and animal endemism and is home to hundreds of wildlife species, including at least 200 bird species, 50 mammals, 13 reptiles, 7 amphibians, and 15 fish (Mitchell, 2006). Of these species, eight are classified as state-endangered species, 13 as federally-endangered or threatened species, and over 53 as species of special concern (Santa Ana Watershed Project Authority, 2019). Notable species include the Santa Ana sucker (*Catostomus santaanae*) and the Santa Ana River Woolly-star (*Eriastrum densifolium* ssp. *sanctorum*), which are endangered due to altered hydrological regimes resulting from urban and agricultural development that degrade their habitat (U.S. Fish and Wildlife Service, 2010, 2011; Huntsman et al., 2023).

2.2. Governance and institutional context

The SARW is governed by complex federal, state, regional, and local governance structures. At the federal level, the U.S. Army Corps of Engineers operates flood control infrastructure, including Prado Dam and Seven Oaks Dam, the U.S. Forest Service manages much of the headwaters in the San Bernardino Mountain Range, like the San Bernardino National Forest, while the U.S. Fish and Wildlife Service is responsible for endangered species protection. These agencies enforce protections under the Endangered Species Act and the National Environmental Policy Act. At the state level, the California State Water Resources Control Board and the Santa Ana Regional Water Quality Control Board regulate water quality under the state Porter-Cologne Water Quality Control Act and the federal Clean Water Act. These boards enforce water quality standards, stormwater permits, and wastewater discharge requirements. At the local level, governance is carried out by dozens of water providers, flood control districts, and wastewater agencies. For instance, in the lower watershed in Orange County, the Orange County Water District manages and supplies water to residents through the Orange County Groundwater Basin and the Groundwater Replenishment System. In the upper watershed, the San Bernardino Valley Municipal Water District oversees the delivery of imported water and regional groundwater replenishment, while the Inland Empire Utility Agency and Western Municipal Water District coordinate wastewater treatment and stormwater capture. In addition, county-level flood control districts manage stormwater conveyance and flood risk reduction projects.

Due to highly fragmented local governance, the SARW has developed regional collaborative structures, most notably SAWPA. SAWPA is a multi-agency joint powers authority composed of the five local urban water suppliers in the region: Eastern Municipal Water District, Inland Empire Utilities Agency, Orange County Water District, San Bernardino Valley Municipal Water District, and Western Municipal Water District.

These member agencies promote watershed-level planning through their Integrated Regional Water Management Plan, known as the OWOW Plan, which undertakes and implements projects related to flood control, groundwater recharge, water quality control, and habitat management.

2.3. Freshwater health index

The FHI, developed by Conservation International, is a quantitative socioecological framework and management tool for assessing multiple ecological, hydrological, and social indicators of freshwater health at the watershed scale (Vollmer et al., 2018). The framework is designed to be applied collaboratively with water managers and stakeholders to support integrated water resource planning and policy development (Bezerra et al., 2022). A single FHI assessment provides a snapshot of current conditions and trends, and repeated assessments can evaluate scenarios for land-use change, infrastructure development, and climate change (Mohammed et al., 2022). The index can serve as a decision-support tool for water managers by providing a framework for examining trade-offs within a water basin, the potential effects of management actions, and opportunities for improvement.

The FHI characterizes freshwater systems as dynamic social-ecological systems, centered on the main components of governance and stakeholders (GS), ecosystem services (ES), and ecosystem vitality (EV). Each component is comprised of several major indicators, which are further divided into sub-indicators. Sub-indicator values are normalized to a scale ranging from 0 to 100, where lower values indicate impacted freshwater systems and higher numbers indicate unimpacted freshwater systems. This hierarchical indicator structure captures multiple dimensions of freshwater health while maintaining transparency in how individual indicators contribute to overall scores.

Following the standard aggregation procedure of the FHI framework, normalized sub-indicator values were aggregated via an unweighted geometric mean to produce their respective major indicator values, and major indicators within each component were aggregated using the same procedure to produce EV and ES scores. Equal weights were applied to all sub-indicators and major indicators to avoid introducing subjective weighting preferences and to maintain comparability across indicators. The geometric mean reduces the influence of high values, allowing the major indicator and component scores to reflect imbalances between ecosystem condition and service delivery.

In this application of the FHI, all seven major indicators under the EV and ES components were evaluated, with 16 sub-indicators across them (Table 1). The Supplementary Material provides a detailed explanation

of the specific methods used to calculate each sub-indicator, which were adapted from established calculation methods outlined in the FHI User Manual (Freshwater Health Index, 2021) and operationalized in established toolboxes (<https://www.freshwaterhealthindex.org/traininghub/ecosystemtools>). Several indicators were modified to reflect data availability and biophysical and management contexts typical of semi-arid Mediterranean watersheds, including *Groundwater Storage Depletion*, *Bank Modification*, *Land Cover Naturalness*, *Species of Concern*, *Water Supply Reliability Relative to Demand*, and *Conservation & Cultural Heritage Sites*, and novel indices were developed for *Recreation* and *Local Water Availability* (Supplementary Material).

2.4. Datasets and models

Calculations for the sub-indicator scores are based on spatially distributed, monitored, and modeled data across the SARW. All spatial analyses were conducted using the SARW boundary as the unified spatial analysis unit. Where spatially disaggregated results were calculated, sub-watersheds were defined using U.S. Geological Survey 10-Digit Hydrologic Unit Codes (HUC10s). Indicators were derived from multiple spatial data types, including raster land-use data, polyline river networks data, and point monitoring stations, using the most recent available datasets for each indicator to approximate current watershed conditions. The spatial resolution of the datasets varied by indicator, ranging from raster land-cover grid cells and individual river network segments to point-based locations. The Supplementary Material and Table 2 provide information on the datasets, models, and spatial data types for each indicator. Whenever possible, data were selected that reflect conditions for the entire watershed, except for the number of species of concern and the number of invasive and nuisance species, which were limited to species in the upper watershed upstream of the Prado Dam, given a greater focus on monitoring and conservation management in this area compared to the lower watershed.

3. Results

The Ecosystem Vitality component scored 40, while the Ecosystem Services component scored 74 (Fig. 2). Where data for an indicator could be parsed geographically, separate scores for the lower, middle, and upper sub-watersheds were calculated (Table 3). The results of the major and sub-indicator calculations are provided in the following sections, with further details explaining each indicator reported in the Supplementary Material.

3.1. Ecosystem vitality

The *Deviation from Natural Flow* measures the extent to which current flow deviates from natural flow conditions. The entire watershed scored a 24 while the upper, middle, and lower sub-watersheds scored 43, 36, and 7, respectively (Table 3; Supplementary Fig. 1).

Groundwater Storage Depletion measures trends in the availability of water stored in underground aquifers, the watershed scored 76. Trends from 1998 to 2018 were assessed for 50 groundwater monitoring wells: 12 showed decreasing trends, 4 showed increasing trends, and 34 remained constant (Supplementary Fig. 2).

The *Water Quality* major indicator scored 44. This indicator compares observed surface water quality parameters with established thresholds, which are environmental baselines derived from historic natural conditions or the physiological tolerances of native aquatic species of concern (Freshwater Health Index, 2021). These water quality parameters were assessed at two monitoring stations from 2006 to 2022 (Fig. 1). Three out of the four sub-indicators: *Dissolved Oxygen*, *Total Nitrogen*, and *Total Suspended Solids* [measured as turbidity], failed to meet their threshold values for at least one year (Supplementary Table 1). The other sub-indicator, *Total Dissolved Solids*, consistently remained under the threshold. Notably, *Total Suspended Solids* exceeded

Table 1
Ecosystem Vitality and Ecosystem Services indicators assessed.

Component	Major indicators	Sub-indicators
Ecosystem Vitality	Water quantity	Deviation from natural flow regime Groundwater storage depletion Dissolved oxygen in surface water Total dissolved solids in surface water
	Water quality	Total nitrogen in surface water Turbidity of surface water
	Drainage-basin condition	Flow connectivity Bank modification Land cover naturalness
	Biodiversity	Species of concern Invasive species
	Provisioning	Water supply reliability relative to demand Local water supply availability
Ecosystem Services	Regulation and support	Water quality regulation
	Cultural/aesthetic	Conservation & cultural heritage sites Recreation

Table 2

Indicator scores for Deviation from Natural Flow Regime, Bank Modification, Land Cover Naturalness, Conservation & Cultural Heritage Sites, and Recreation separated by upper, middle, and lower sub-watersheds of the Santa Ana River Watershed.

Sub-Indicator(s)	Data Source	Spatial Extent	Spatial Data Type
Deviation from natural flow regime (EV)	California Environmental Flows Working Group, 2021; Zimmerman et al., 2023	Entire watershed	Point vector (stream gauge locations with time-series data)
Groundwater storage depletion (EV)	California Department of Water Resources, 2020	Entire watershed	Point vector (groundwater wells with trends)
Dissolved oxygen in surface water (EV); Total dissolved solids in surface water (EV); Total nitrogen in surface water (EV); Turbidity of surface water (EV); Water quality regulation (ES)	U.S. Geological Survey, 2025	Entire watershed	Point vector (water quality monitoring stations with time-series data)
Flow connectivity (EV)	Lehner et al., 2008; expert opinion	Entire watershed	Polyline vector (river network); point vector (migration barriers)
Bank modification (EV)	Santa Ana Watershed Project Authority	Entire watershed	Polyline vector (river network segments with substrate attributes)
Land cover naturalness (EV)	Southern California Association of Governments, 2023a; 2023b; 2023c; International Union for Conservation of Nature, 2024; California	Entire watershed	Raster dataset (land-use classification)
Species of concern (EV)	Department of Fish and Wildlife, 2025; San Bernardino Valley Water Conservation District, 2024; expert opinion	Upper watershed	Polygon vector (species habitat ranges)
Invasive species (EV)	Wulff et al., 2023; California Department of Fish and Wildlife, 2024; The Calflora Database, 2024; expert opinion	Upper watershed	Point and polygon vector (species occurrence records)
Water supply reliability relative to demand (ES); Local water supply availability (ES)	Municipal Water District of Orange County, 2021; Inland Empire Utilities Agency, 2021; San Bernardino Valley Municipal Water District, 2021; Western Municipal Water District, 2021; Eastern Municipal Water District, 2021	Entire watershed	Tabular dataset (regional water management planning data)
Conservation & cultural heritage sites (ES)	Lehner et al., 2008; GreenInfo Network, 2024	Entire watershed	Polyline vector (river network); polygon vector (protected areas)
Recreation (ES)	Trust for Public Land, 2025	Entire watershed	Polygon vector (municipal)

Table 2 (continued)

Sub-Indicator(s)	Data Source	Spatial Extent	Spatial Data Type
			boundaries with park accessibility metrics)

The scores for the entire watershed are presented for comparison and include spatial data and indicators not used in calculating scores for the upper, middle, and lower sub-watersheds.

the established threshold every year, contributing disproportionately to a lower major indicator score than the other parameters.

Flow Connectivity measures the longitudinal connectivity of stream networks for migrating fish species using the Dendritic Connectivity Index (DCI; Cote et al., 2009). The indicator scored 29, assuming that barriers and flow impediments ($n = 13$; Fig. 1) were not passable upstream but were partially passable downstream for migrating fish. This determination was based on expert opinion and attributed to the absence of fish ladders and bypass channels that permit upstream migration. While fish pass downstream incidentally with water releases, such passage carries a high risk of mortality and stress (U.S. Fish and Wildlife Service, 2011).

Bank Modification measures the lateral connectivity between the river and its floodplain or riparian zone. The percentage of river channels with concrete bottoms relative to those with natural soft-bottoms was used as a proxy, the indicator scored 89. Excluding river channels with unidentified substrates, the total length of the river network was 1594 km, of which 171 km were concrete/urban channels, compared to 1423 km of riparian/soft-bottom natural channels (Supplementary Fig. 3; Supplementary Table 2). The upper, middle, and lower sub-watersheds scored 95, 70, and 90, respectively (Table 3).

Land Cover Naturalness scored 83. Pervious percentages, how pervious different land surfaces are to water, served as a proxy for the degree of 'naturalness' (Supplementary Table 3). Of the six land-use categories considered, the two most pervious land surfaces, 'Open Space/Dry Agriculture/Water' and 'Agriculture/Golf Course/Parks', covered the most area, followed by 'Commercial/Industrial/Public Facility', 'Residential Medium Density', 'Residential High Density', and 'Residential Low Density' (Fig. 3; Table 4). When considered individually, the upper, middle, and lower sub-watersheds scored 75, 66, and 63, respectively (Table 3).

Species of Concern measures the proportion of threatened and endangered freshwater species relative to the total number of freshwater species present in the watershed. There were four Endangered and five Vulnerable freshwater species classified under the IUCN Red List of Endangered Species and eight locally endangered and 34 locally threatened freshwater species classified under the California Endangered Species Act, which included species designated as 'Species of Concern' by the California Department of Fish and Wildlife (Supplementary Table 4). In total, 51 endangered and threatened freshwater species were identified, compared to 242 freshwater species not included in IUCN, federal, or State threat listings. After accounting for the relative weights of each threat classification, as detailed in the Supplementary Material, the indicator scored 54.

Invasive Species measures the number (i.e., richness) of invasive and nuisance species found in the watershed. In this study, invasive species are nonindigenous or alien species that threaten native biodiversity, ecological stability, and water-dependent commercial, agricultural, or recreational activities. A total of 126 invasive and nuisance species were identified, with a majority ($n = 112$) being plants, followed by fish ($n = 8$), invertebrates ($n = 3$), and one each of amphibian, bird, and reptile species (Supplementary Table 5). The indicator scored a 10.

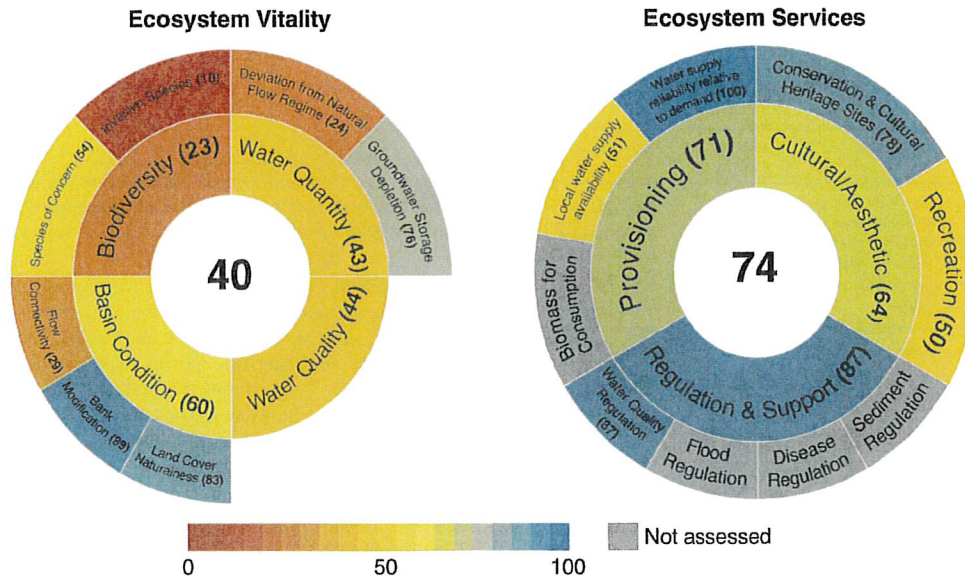


Fig. 2. Summary results for the Santa Ana River Watershed. Component scores are shown in the center of the doughnut charts, and the major indicators are shown in the inner portion, while their sub-indicators are shown in the outer portion. Scores are highlighted in bold text next to the major and sub-indicators. In addition, the color gradient depicts scores for each major and sub-indicator.

Table 3

Datasets, spatial extent, and spatial data types used for Ecosystem Vitality and Ecosystem Service indicators.

Subwatershed	Ecosystem Vitality				Ecosystem Services		
	Deviation from Natural Flow	Bank Modification	Land Cover Naturalness	Component Score	Conservation & Cultural Heritage Sites	Recreation	Component Score
Upper	43	95	75	71	57	44	50
Middle	37	70	66	58	55	47	51
Lower	7	90	63	53	89	60	74
Entire Watershed	24	89	83	40	78	50	75

EV stands for Ecosystem Vitality, and ES stands for Ecosystem Services.

3.2. Ecosystem services

Water Supply Reliability Relative to Demand is measured by the watershed's ability to meet net water demand. Projected regional water supply (surface water, stormwater capture, groundwater, recycled water, and imported water) is expected to meet regional water demand until at least 2045, as reported by the five urban water suppliers in the SARW (Supplementary Table 6). Therefore, the indicator scored 100.

Local Water Supply Availability compares the proportion of the total local water supply (surface water, stormwater capture, groundwater, and recycled water) to the total water supply. Between 2025 and 2045, on average, 49% of the SARW's total regional water supply will be imported through the Metropolitan Water District of Southern California, a public agency that provides supplemental imported water from the California State Water Project and the Colorado River Aqueduct (Supplementary Table 7). Therefore, the indicator scored 51, reflecting 51% of the total regional water supply as local rather than imported.

Water Quality Regulation scored 87. *Water Quality Regulation* differs from the *Water Quality* major indicator under the EV component in that the former examines a broader range of parameters relevant to human health, whereas the latter examines a narrower set of ecologically relevant water quality parameters. Of the 24 surface water quality parameters assessed, 18 did not deviate from their respective thresholds at any site for which data were available (Fig. 1). Three parameters (Ammonia-Nitrogen, Dissolved Oxygen, and Turbidity) exceeded their respective thresholds at all sites in at least one year, while three other

parameters (Chloride, Sodium, and Total Nitrogen) exceeded their respective thresholds in at least one site in at least one year (Table 5; Supplementary Table 8).

Conservation & Cultural Heritage Sites measured the extent to which wetland and waterways are protected. The total length of all rivers and streams in the SARW was 1578.33 km, of which 266.67 km formed protected area boundaries and 581.17 km were within protected areas, meaning the percentage of river length in protected areas was 45% (Supplementary Fig. 4; Supplementary Table 9). California has set a Statewide goal to conserve 30% of its land and coastal waters by 2030, known as 30 × 30 (California Natural Resources Agency, 2025). This was used to scale the percentage of river length in protected areas, yielding a final sub-indicator score of 78. When considering the individual protection of the upper, middle, and lower sub-watersheds, the scores were 57, 55, and 89, respectively (Table 3).

In the context of this study, *Recreation* measures the accessibility of public parks, calculated as the percentage of the population living within 0.8 km (0.5 miles) of a public park. A total of 47 incorporated cities that overlap the SARW boundary were identified (Supplementary Fig. 5), and their percentages were obtained from the ParkServe database (Trust for Public Land, 2025). These percentages were aggregated into the final indicator score of 50 (Supplementary Table 10). In other words, on average, only 50% of SARW residents are within close walking distance to a public park. When considering the accessibility of public parks for residents of the upper, middle, and lower sub-watersheds, the scores were 44, 47, and 60, respectively (Table 3).

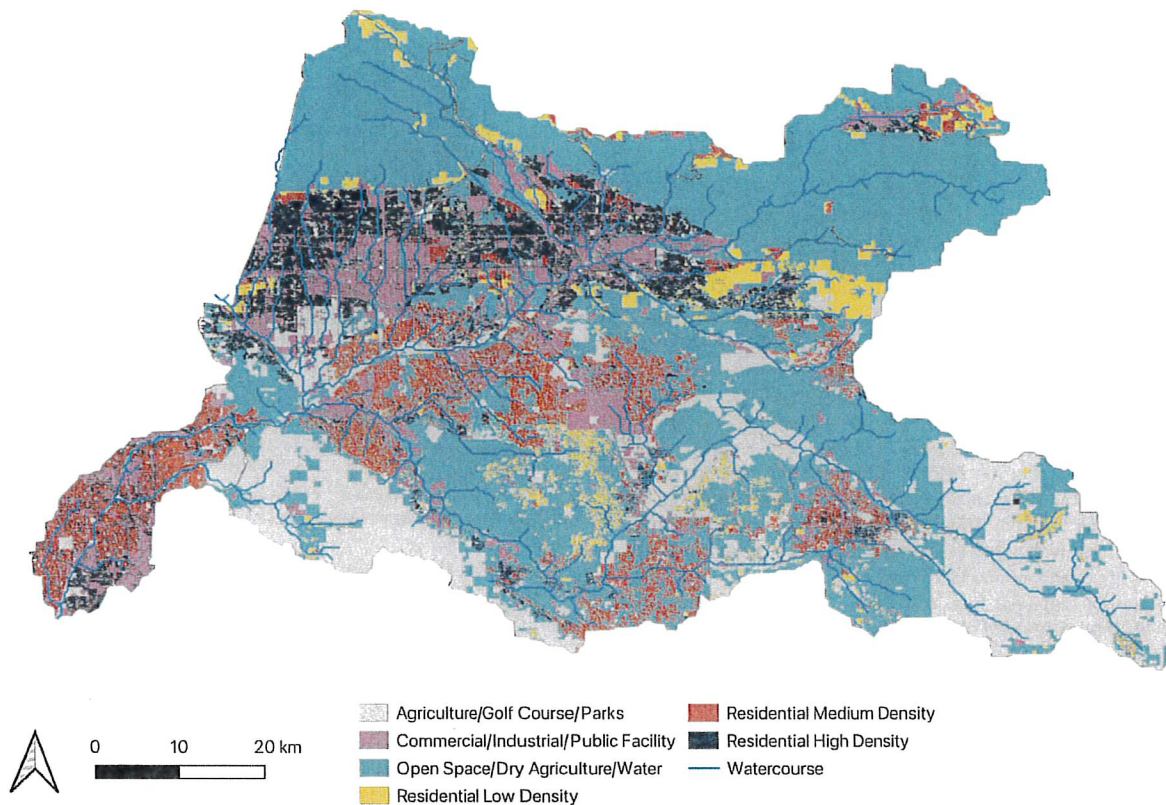


Fig. 3. Land use information in the Santa Ana River Watershed in southern California, USA.

Table 4

Land use categories for the Santa Ana River Watershed in southern California, USA.

Land Use	Area (km ²)
Agriculture/Golf Course/Parks	1307
Commercial/Industrial/Public Facility	676
Open Space/Dry Agriculture/Water	2643
Residential Low Density	252
Residential Medium Density	471
Residential High Density	363
Total	5712

4. Discussion

4.1. Evaluation of ecosystem vitality and ecosystem services

The difference between the EV score of 40 and the ES score of 74 suggests an imbalance between ecosystem condition and ecosystem service delivery in the SARW. In highly engineered freshwater systems, water infrastructure and institutional management can maintain reliable service delivery while simultaneously altering ecological processes that support long-term ecosystem integrity (Poff et al., 1997; Bunn and Arthington, 2002; Falkenmark and Rockström, 2006). In this study, the contrast between EV and ES should be interpreted as a diagnostic pattern consistent with trade-offs commonly observed in managed freshwater systems, rather than proof of causality.

The EV component of the FHI provides a snapshot of ecological integrity in response to human disturbance and modification. Ecosystem vitality is fundamentally dependent on the natural flow regime, which is compromised in the SARW. A natural flow regime supports sediment transport, groundwater recharge, and habitat diversity (Poff et al.,

Table 5

Water Quality Regulation (WQR) scores for surface water quality parameters from the period from 2006 to 2022.

Water Quality Parameter (in mg/L unless indicated)	F ₁ (Scope)	F ₂ (Amplitude)	WQR Score
Ammonia-Nitrogen	100.00	10.38	67.78
Bicarbonate	0.00	0.00	100.00
Boron	0.00	0.00	100.00
Calcium	0.00	0.00	100.00
Carbonate	0.00	0.00	100.00
Chloride	50.00	0.05	98.44
Dissolved Oxygen	100.00	1.79	86.60
Electrical Conductivity (μmhos/cm)	0.00	0.00	100.00
Fluoride	0.00	0.00	100.00
Magnesium	0.00	0.00	100.00
Nitrate-Nitrogen	0.00	0.00	100.00
Nitrite-Nitrogen	0.00	0.00	100.00
Organic Nitrogen	0.00	0.00	100.00
pH	0.00	0.00	100.00
Potassium	0.00	0.00	100.00
Sodium	50.00	0.47	95.18
Sulfate	0.00	0.00	100.00
Total Alkalinity	0.00	0.00	100.00
Total Dissolved Solids	0.00	0.00	100.00
Total Hardness	0.00	0.00	100.00
Total Inorganic Nitrogen	0.00	0.00	100.00
Total Nitrogen	50.00	0.34	95.89
Total Organic Carbon	0.00	0.00	100.00
Turbidity (NTU)	100.00	86.20	7.16

F₁ (scope) is the extent of threshold non-compliance, and F₂ (amplitude) is the amount by which failed parameters deviate from their thresholds. A higher WQR score indicates how well a parameter is meeting water quality standards.

1997). In the SARW, however, flows have been heavily modified by the Prado and Seven Oaks Dams and by widespread channelization and

flood control infrastructure. Spatial patterns are evident: the upper reaches are moderately altered, while the lower reaches are extensively modified. Tributaries in the upper watershed near the San Bernardino Mountains still exhibit some natural flow variability, thereby maintaining native fish habitat for species such as the federally threatened Santa Ana sucker (*Catostomus santaanae*; [Huntsman et al., 2023](#)). In the upper watershed near Prado Dam, the flow regime is more heavily modified, in part due to treated wastewater discharges that create perennial baseflows where the river would otherwise be intermittent ([Huntsman et al., 2023](#)). In contrast to the upper reaches, natural flow variability is largely eliminated in the lower watershed, as rivers and streams are almost entirely channelized into concrete and soft-bottom channels and are dominated by treated wastewater and imported water discharges ([Santa Ana Watershed Project Authority, 2019](#)). *Flow Connectivity* also scored low, which is consistent with a highly fragmented and regulated river network. Although this indicator does not directly measure pollutant filtration or baseflow maintenance, low connectivity can alter hydrological processes and reduce ecological functioning ([Nilsson et al., 2005](#)), which is consistent with the poor performance of the *Water Quality* major indicator, particularly the *Total Suspended Solids* sub-indicator. The data used to calculate the *Water Quality* indicator were obtained from water quality monitoring stations located in areas surrounded by commercial, industrial, residential, and agricultural development ([Fig. 1](#); [Fig. 3](#)). Therefore, the poor performance of *Total Suspended Solids* was likely driven by urbanization, wastewater discharges, and agricultural activities ([Beechie et al., 2010](#); [Santa Ana Watershed Project Authority, 2019](#)). Low scores for *Species of Concern* and *Invasive Species* were also consistent with ecological impairment indicated by the other EV indicators. Freshwater species are often sensitive to altered flows, while invasive species can thrive under such conditions ([Kingsford, 2011](#); [Comte et al., 2021](#)). As major contributors to the low overall EV score, addressing deficiencies in freshwater biodiversity may require management actions that benefit native freshwater species and suppress the proliferation of invasive species. There are ongoing efforts to remove prominent invasive species, such as giant reed (*Arundo donax*), from the upper watershed, as giant reed establishes in riparian corridors and is dispersed downstream ([Table 6](#)). Improving habitat quality through invasive species removal may help restore ecological conditions that enhance groundwater recharge, water supply reliability, and overall watershed resilience.

Many of the high-scoring EV indicators reflect outcomes consistent with ongoing water management and land-use practices while retaining some natural ecological functions. *Groundwater Storage Depletion* scored relatively high, reflecting successful management efforts to facilitate groundwater recharge, which is especially critical in the SARW, as groundwater supplies the majority of potable water ([Municipal Water District of Orange County, 2021](#)). Approximately 91% of the watershed's groundwater recharge originates from local sources, including base flows, storm flows, recycled water, and natural recharge ([Langridge et al., 2016](#)). One factor supporting groundwater recharge is the large amount of pervious land surfaces, reflected in the high *Land Cover Naturalness* score. *Land Cover Naturalness* measured the extent of pervious land surfaces, which allow water infiltration. The SARW encompasses large swathes of commercial, industrial, and residential areas, where the land surface is relatively impervious to water, but the watershed also maintains ample open space, including agricultural areas, golf courses, and parks, which play a crucial role in promoting groundwater recharge. *Bank Modification* scored highly despite the channelization of many rivers and streams, particularly in the lower watershed, for flood control. This high score reflects the significant proportion of rivers and streams in the watershed that retain natural, soft-bottom substrates, which support elements of the natural flow regime and ecological function. Unlike concrete-lined channels, soft-bottom channels are permeable, facilitating hydrologic connectivity between surface water and aquifers, thereby sustaining groundwater recharge and supporting habitat heterogeneity for some species

Table 6

Select management actions in the Santa Ana River Watershed, their spatial extent, and the indicators under Ecosystem Vitality (EV) and Ecosystem Services (ES) that are likely to be impacted.

Management Action	Spatial Extent	Impacted Indicators
Prado Constructed Wetlands (Horne et al., 2024)	Lower Watershed	Water Quality (EV); Groundwater Storage Depletion (EV); Land Cover Naturalness (EV); Species of Concern (EV)
Invasive species removal of giant reed (<i>Arundo donax</i>) and salt cedar (<i>Tamarix</i> spp.) (Bell, 1997 ; Santa Ana Watershed Project Authority, 2019)	Upper Watershed	Water Quality (EV); Flow Connectivity (EV); Species of Concern (EV); Invasive Species (EV); Water Supply Reliability Relative to Demand (ES); Local Water Supply Availability (ES)
Western Riverside County Multiple Species Conservation Plan, habitat preserve system and associated land management (Western Riverside County Regional Conservation Authority, 2003)	Upper Watershed	Water Quality (EV); Land Cover Naturalness (EV); Species of Concern (EV); Invasive Species (EV); Water Supply Reliability Relative to Demand (ES); Local Water Supply Availability (ES); Conservation & Cultural Heritage Sites (ES)
Upper Santa Ana River Wash Habitat Conservation Plan and Preserve System, and associated land management (San Bernardino Valley Water Conservation District, 2024)	Upper Watershed	Water Quality (EV); Land Cover Naturalness (EV); Species of Concern (EV); Invasive Species (EV); Water Supply Reliability Relative to Demand (ES); Local Water Supply Availability (ES); Conservation & Cultural Heritage Sites (ES)
*Upper Santa Ana River Habitat Conservation Plan and Preserve System (Upper Santa Ana River Sustainable Resource Alliance, 2021)	Upper Watershed	Water Quality (EV); Land Cover Naturalness (EV); Species of Concern (EV); Invasive Species (EV); Water Supply Reliability Relative to Demand (ES); Local Water Supply Availability (ES); Conservation & Cultural Heritage Sites (ES)
Santa Ana River Conservancy (California Legislature, 2014)	Entire Watershed	Flow Connectivity (EV); Species of Concern (EV); Invasive Species (EV); Conservation & Cultural Heritage Sites (ES)
Headwaters Resiliency Partnership and associated land management (San Bernardino Valley Municipal Water District, 2021b)	Upper Watershed	Water Quality (EV); Flow Connectivity (EV); Water Supply Reliability Relative to Demand (ES); Local Water Supply Availability (ES)

Asterisks indicate proposed management actions.

([Stanford and Ward, 1993](#)). Soft-bottom channels provide important habitats for riparian vegetation, aquatic invertebrates, and native fish that are sensitive to flow changes ([Opperman et al., 2010](#)). Preserving these segments enables the watershed to meet flood control requirements while maintaining a modicum of ecological function.

Many streams and rivers that support groundwater recharge are also reasonably well protected. Protected areas in California are defined by the California Protected Areas Database, which is utilized by agencies across the State of California to designate, track, and share information in support of the State's goal to conserve 30% of land and coastal waters by 2030, known as 30 × 30 ([California Natural Resources Agency, 2025](#)). Protected areas in the database include national, state, and regional parks, forests, reserves, wildlife areas, urban open-space parks, land-trust preserves, and special-district open-space areas (e.g., for recreational purposes). When comparing the watershed's river network to protected areas data, 45% of the watershed is protected, exceeding California's 30% goal. A potential caveat of the California Protected Areas Database is that it classifies urban open-space parks and special-district open-space as protected. While these areas provide recreational and cultural benefits, they may not offer the same level of ecological protection as, for example, a national, state, or regional park, nor may they be protected in the long term. As a result, this study may

overestimate the extent of protected areas in the watershed.

The watershed offers diverse recreation opportunities, from fishing, swimming, and kayaking in the upper watershed to hiking and mountain biking in the San Bernardino and Santa Ana Mountains, as well as picnicking and multi-use trails in urban open spaces (Mitchell, 2006). This abundance of recreational opportunities can only contribute to residents' well-being if accessible. The *Recreation* sub-indicator suggests that, on average, 50% of SARW residents live within a close walking distance of a public park. While the SARW contains large areas of contiguous open space alongside public parks scattered across urban areas (Fig. 3), access to many of these areas requires driving. Driving can impose time, cost, and logistical burdens that discourage regular use. For residents without reliable access to transportation, including youth, older adults, and lower-income households, recreational opportunities that require driving are effectively inaccessible. Additional data from ParkServe suggest that limited park access is associated with higher rates of physical inactivity, defined as the percentage of adults who do not regularly participate in physical activity and exercise (Trust for Public Land, 2025). Areas with limited park access and higher rates of physical inactivity often overlap with high percentages of low-income households, for example, in the cities of Rialto, Wildomar, and Jurupa Valley. However, areas with higher park access also coincided with high rates of physical inactivity in some relatively affluent cities, such as Irvine and Tustin, highlighting the complexity and limitations of "recreation" as a measure of ecosystem service provisioning. Accessibility is a necessary condition for the delivery of recreational ecosystem services, but it is affected by socioeconomic factors in complex ways.

In contrast to the lower scores for several EV indicators, the watershed demonstrates a strong capacity to deliver a reliable water supply to people. *Water Supply Reliability Relative to Demand* was the only indicator that scored perfectly, largely due to the contribution of imported water. Imported water accounts for nearly half of the watershed's water supply (Supplementary Table 7), showing both the success of management and the challenges that lie ahead. Imported water ensures short-term reliability despite semi-arid conditions and variable local water availability. However, reliance on imported water exposes the watershed to risks such as drought, climate change, infrastructure disruptions, and governance challenges across jurisdictions (Barnett and Pierce, 2009; Lyle et al., 2023). To mitigate these risks, investments have been made in the local water supply, resulting in a diversified water portfolio that includes surface water, stormwater, groundwater, and recycled water. This diversified portfolio reflects best practices for semi-arid urbanized water basins, but is only part of the solution (Blanco et al., 2012). Improving ecosystem health and functioning to achieve a sustainable freshwater system is important for long-term freshwater sustainability in the watershed.

4.2. Management actions in the Santa Ana River watershed

Local agencies are undertaking several ongoing and proposed management actions that rely on coordination across a highly fragmented governance structure (Table 6). Water management in the SARW is distributed across federal, state, regional, and local levels, each with distinct mandates for flood control, water supply, water quality, land management, and species conservation. Consequently, effective implementation of management actions depends on sustained collaborations across agencies with overlapping jurisdictions and objectives. Regional entities, particularly SAWPA, play a pivotal role in aligning these efforts through watershed-level planning frameworks, such as the OWOW Integrated Regional Water Management Plan.

Within this context, SAWPA, in partnership with the Orange County Water District, has engaged in the Prado Constructed Wetlands project, a nature-based solution that creates wetlands to provide habitat for the federally and State-listed endangered least Bell's vireo (*Vireo bellii pusillus*), restoring spawning grounds for the Santa Ana sucker (*Catostomus santaanae*; Santa Ana Watershed Project Authority, 2019), and

reducing nitrate and phosphate concentrations (Horne et al., 2024). Additionally, SAWPA is leading an ongoing large-scale removal of water-intensive and fire-prone giant reed and salt cedar (*Tamarix* spp.) along the Santa Ana River and its tributaries, thereby reducing fire risk, restoring habitat connectivity, and increasing available water supply (Santa Ana Watershed Project Authority, 2019).

There are also multiple ongoing and proposed habitat conservation plans (HCPs) in the SARW, such as the Western Riverside County Multiple Species Conservation Plan, the Upper Santa Ana River Wash HCP, and the proposed Upper Santa Ana River HCP. These HCPs provide frameworks for protecting and restoring habitat for target endangered freshwater species, like the California gnatcatcher (*Poliopitila californica californica*) and the San Bernardino kangaroo rat (*Dipodomys merriami parvus*). These plans also streamline permitting for various water conservation, mining, recreational, and infrastructure development while committing participating agencies to long-term management objectives across jurisdictional boundaries. (Western Riverside County Regional Conservation Authority, 2003; Upper Santa Ana River Sustainable Resource Alliance, 2021; San Bernardino Valley Water Conservation District, 2024).

Furthermore, several collaborations focus on supporting ecological functions and human benefits within the SARW. The Santa Ana River Conservancy Program, a State-mandated initiative created in 2014, provides planning and policy guidance for recreational and open-space development along the Santa Ana River (California Legislature, 2014). For example, the program is taking an active role in completing the Santa Ana River Trail and Parkway, a planned recreational trail that will also protect and restore riparian habitat along the river corridor by replanting native riparian vegetation and removing invasive vegetation (Santa Ana Watershed Project Authority, 2019). The Headwaters Resiliency Partnership, established by the San Bernardino Valley Municipal Water District, aims to identify solutions to challenges in water supply and natural resources in the SARW's forest headwaters by funding proactive investments to address climate change, extreme storm events, drought, and wildfire risk.

Collectively, these management actions reflect an integrated yet institutionally complex approach to water management, in which improvements to water reliability, ecosystem functions, and biodiversity conservation involve multiple agencies and stakeholders across the SARW. While the existing collaborative structure enables large-scale action in the highly urbanized watershed, the structure also poses coordination challenges and extended implementation timelines. As a result, there may be a significant time lag before measurable improvements are observed in EV and ES indicators. These governance dynamics underscore the importance of follow-up basin-wide assessments to evaluate whether existing governance structures are sufficient to ensure that infrastructure-dependent ecosystem service delivery can be sustained, while working towards long-term freshwater sustainability.

4.3. Study limitations

This study aimed to assess freshwater health in terms of ecosystem health and ecosystem service delivery for the entire SARW, with some limitations. Regarding spatial coverage, indicators such as *Species of Concern* and *Invasive Species* were assessed only in the upper watershed, as biodiversity monitoring and conservation have historically focused there, where there are fewer human stressors and more critical habitat designations (Huntsman et al., 2023). As a result, these indicators may overestimate the status of biodiversity when interpreted at the watershed scale. Expanded biodiversity monitoring in other parts of the watershed would improve the spatial representativeness of future FHI assessments in the SARW. Furthermore, *Water Quality* and *Water Quality Regulation* were assessed using surface water data from two monitoring stations in the upper watershed, as these were the only stations with sufficient data for all parameters. Because this study is a single-basin baseline assessment, it does not evaluate temporal covariation or

statistical correlations; such analyses would require repeated assessments through time or comparative analysis across multiple basins. In addition, although not explored, alternative weighting or aggregation schemes could influence results and warrant future methodological investigation.

As a snapshot assessment, all data should cover the same period, however, this was not possible, so the most recent data were used, which may introduce temporal uncertainty in interpreting patterns between indicators. Some of the most recent data used were more than five years old: *Water Supply Reliability Relative to Demand and Local Water Supply Availability* relied on urban water management plan data from 2020 (see Supplementary Material for data sources). *Groundwater Storage Depletion* used 2020 groundwater well data from the California Department of Water Resources' Groundwater Update 2020 (California Department of Water Resources, 2020); and *Land Cover Naturalness* used 2016 land-use data from the Southern California Association of Governments Regional Data Platform. These 2016 land-use data are used in Connect SoCal 2020, a long-term plan that outlines more than \$638 billion in transportation system investment through 2045 (Southern California Association of Governments, 2023). The inclusion of the 2016 data in this plan indicates that the 2016 data remain the basis for regional planning and land-use forecasting, therefore, a calculation of *Land Cover Naturalness* using more recent land-use data is unlikely to deviate substantially from the calculation presented in this study. Lastly, the watershed river network, which served as the basis for many of the indicators calculated in this study, was obtained from the HydroSHEDS database, a global dataset designed for large-scale applications and therefore may introduce uncertainties when used for smaller catchments at the local level (Lehner et al., 2008). Additionally, the HydroSHEDS database is a composite of observations and may not capture recent changes to the river network.

Lastly, quantifying recreation in this study was difficult due to the enormity of what constitutes recreation in southern California watersheds and limited availability and data standardization relative to provisioning and regulating services (Vári et al., 2022; Sousa et al., 2025). Using proximity to public parks as a proxy captures only one dimension of recreational benefits. While accessibility is a worthwhile consideration, measuring accessibility alone does not reflect the variety, quality, and intensity of recreational activities available in the watershed. The SARW supports diverse recreational uses, including trail- and water-based activities, as well as mixed-use in large open spaces and protected areas, many of which are not adequately represented by public park access alone. In addition, this study did not account for park size, monetary investment, or available amenities, all of which influence whether parks are used and whether they provide sufficient benefits to residents. Despite these limitations, park accessibility is a useful and transparent indicator of recreation that should be interpreted as a partial measure rather than a comprehensive assessment of the diverse and economically valuable cultural ecosystem services that the SARW provides to residents.

5. Conclusion

This study evaluated EV and ES delivery in the SARW to demonstrate how freshwater health can be assessed in highly urbanized semi-arid Mediterranean watersheds. The results indicate an imbalance between ecosystem service delivery and ecosystem condition: the watershed currently provides human benefits, as evidenced by high ES scores for water supply, water quality regulation, and recreational benefits, while several indicators of ecological integrity scored substantially lower. Water-based ecosystem services in the SARW appear to be maintained largely through engineered infrastructure and imported water rather than strong ecological conditions. As the first such assessment in the SARW, this study provides an initial reference point for understanding current freshwater health conditions in the watershed. Future within-basin assessments employing the methodology presented in this study

can monitor changes in ecosystem health and service delivery over time. These follow-up studies should ideally be conducted every five years, aligned with the update cycles of many agency-based data sources. These studies can also improve on this study by assessing indicators not included here due to limited data availability, such as sediment regulation, and by incorporating an evaluation of the GS component, which can provide insights into perceptions of institutional capacity, policy effectiveness, and stakeholder engagement. Using modeled and interpolated data, this study can also serve as a foundation for scenario analyses exploring how climate change and management actions may affect indicators. More broadly, this study presents a case study of the challenges of freshwater management in other large, urbanized watersheds in semi-arid regions. Semi-arid regions are projected to expand by up to 23% by the end of the century due to increased evapotranspiration driven by climate change (Huang, 2016). Future studies can employ the replicable, tailored methodology presented in this study or adapt indicator calculation to the data context in other semi-arid regions to understand the relationships between ecosystem condition and ecosystem service delivery and identify long-term solutions that deliver water-related benefits to people while protecting the ecosystems in which they reside.

CRediT authorship contribution statement

Gary Qin: Writing – review & editing, Writing – original draft, Visualization, Validation, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation. **Kurt E. Anderson:** Writing – review & editing, Writing – original draft, Validation, Resources, Investigation, Conceptualization. **Kai Palenscar:** Writing – review & editing, Writing – original draft, Validation, Resources, Investigation, Conceptualization. **Helen M. Regan:** Writing – review & editing, Writing – original draft, Validation, Resources, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization.

Funding sources

KEA was supported by National Science Foundation Award BoCP-2225098 and a US Fish and Wildlife Service Grant F23AC03112. HMR was supported by the National Institute for Food and Agriculture awards CA-R-EEOB-5204-H and the Collaborative of Native Nations for Climate Transformation & Stewardship (CNNCTS) (The California Climate Action Seed and Matching Grants) UCOP grant number R02CM708.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Kurt E. Anderson reports financial support was provided by National Science Foundation. Kurt E. Anderson reports financial support was provided by US Fish and Wildlife Service. Helen M. Regan reports financial support was provided by National Institute of Food and Agriculture. Helen M. Regan reports financial support was provided by Collaborative of Native Nations for Climate Transformation and Stewardship. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

This study would not have been possible without the support and assistance of our collaborators at San Bernardino Valley Municipal Water District. In particular, we want to thank Heather Dyer, Joanna Gibson, and Gil Botello for providing contextual information and data. Additionally, we would like to thank Chris Jones, Adekunle Ojo, Wen Huang, David Barnes from Geoscience Support Services, Aaron Echols

from Inland Empire Resource Conservation District, and Ian Achimore from the Santa Ana Watershed Project Authority for helping us procure data essential to completing this study. We want to thank our colleagues at the University of California, Riverside — Andrew Gray, Kurt Schwabe, and Darrel Jenerette — for their feedback throughout the data acquisition, analysis, and writing process. The University of California, Riverside, occupies the ancestral lands of the Cahuilla, Tongva, Luiseño, and Serrano peoples, and we are grateful for the opportunity to conduct this research on their homelands.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ecolind.2026.114835>.

Data availability

The data supporting this study are described in the Supplementary Material. Additional information is available from the corresponding author upon reasonable request.

References

- Allan, J.D., 2004. Landscapes and riverscapes: the influence of land use on stream ecosystems. *Annu. Rev. Ecol. Syst.* 35 (1), 257–284. Available at: <https://doi.org/10.1146/annurev.ecolsys.35.120202.110122>.
- Allan, J.D., Castillo, M.M., Capps, K.A., 2021. Stream ecology: structure and function of running waters. Springer International Publishing. <https://doi.org/10.1007/978-3-030-61286-3>. Available at.
- Barnett, T.P., Pierce, D.W., 2009. Sustainable water deliveries from the Colorado river in a changing climate. *Proc. Natl. Acad. Sci.* 106 (18), 7334–7338. Available at: <https://doi.org/10.1073/pnas.0812762106>.
- Beechie, T.J., et al., 2010. Process-based principles for restoring river ecosystems. *BioScience* 60 (3), 209–222. Available at: <https://doi.org/10.1525/bio.2010.60.3.7>.
- Bezerra, M.O., et al., 2022. Operationalizing integrated water resource management in latin america: insights from application of the freshwater health index. *Environ. Manag.* 69 (4), 815–834. Available at: <https://doi.org/10.1007/s00267-021-01446-1>.
- Blanco, H., et al., 2012. Water Supply Scarcity in Southern California: Assessing Water District Level Strategies. University of Southern California, pp. 1–80. Available at <https://deepblue.lib.umich.edu/handle/2027.42/192047>.
- Bunn, S.E., Arthington, A.H., 2002. Basic principles and ecological consequences of altered flow regimes for aquatic biodiversity. *Environ. Manag.* 30 (4), 492–507. Available at: <https://doi.org/10.1007/s00267-002-2737-0>.
- California Department of Fish and Wildlife (2024) *California Department of Fish and Wildlife Invasive Species Program*. Available at: <https://wildlife.ca.gov/Conservation/Invasives> (Accessed: March 20, 2024).
- California Department of Fish and Wildlife (2025) *California Natural Diversity Database*. Available at: <https://wildlife.ca.gov/Data/CNDDDB> (Accessed: February 13, 2025).
- California Department of Water Resources, 2018. California Water Plan Update 2018, pp. 1–100. Available at <http://www.water.ca.gov/waterplan/cwpu2013/final/index.cfm>.
- California Department of Water Resources, 2020. California's Groundwater (Bulletin 118) Update 2020. Sacramento, California, pp. 1–485. Available at: <https://water.ca.gov/programs/groundwater-management/bulletin-118>.
- California Environmental Flows Working Group (2021) "California Natural Flows Database: Functional flow metrics v1.2.1." Available at: <https://rivers.codefornature.org/> (Accessed: February 6, 2025).
- California Legislature, 2014. Senate Bill No. 1390: Santa Ana River Conservancy Program Act. Available at https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB1390.
- California Natural Resources Agency, 2025. California Annual Progress Report: Pathways to 30x30. Sacramento, California, pp. 1–41. Available at: <https://resources.ca.gov/-/media/CNRA-Website/Files/2025-30x30-Pathways-Progress-Report.pdf>.
- Cavender-Bares, J., et al., 2015. A sustainability framework for assessing trade-offs in ecosystem services. *Ecol. Soc.* 20 (1), 1–19. Available at <https://doi.org/10.5751/ES-06917-200117>.
- Comte, L., Grantham, T., Ruhi, A., 2021. Human stabilization of river flows is linked with fish invasions across the USA. *Glob. Ecol. Biogeogr.* 30 (3), 725–737. Available at: <https://doi.org/10.1111/geb.13258>.
- Cote, D., et al., 2009. A new measure of longitudinal connectivity for stream networks. *Landsc. Ecol.* 24, 101–113. Available at: <https://doi.org/10.1007/s10980-008-9283-y>.
- Dudgeon, D., et al., 2006. Freshwater biodiversity: importance, threats, status and conservation challenges. *Biol. Rev. Camb. Philos. Soc.* 81 (2), 163–182. Available at: <https://doi.org/10.1017/S1464793105006950>.
- Eastern Municipal Water District (2021) *Urban Water Management Plan*, pp. 1–120. Available at: https://content.emwd.org/sites/default/files/2024-07/urbanwatermanagementplan_0.pdf.
- Falkenmark, M., Rockström, J., 2006. The new blue and green water paradigm: breaking new ground for water resources planning and management. *J. Water Resour. Plann. Manage.* 132 (3), 129–132. [https://doi.org/10.1061/\(ASCE\)0733-9496\(2006\)132:3\(129\)](https://doi.org/10.1061/(ASCE)0733-9496(2006)132:3(129)).
- Foley, J.A., et al., 2005. Global consequences of land use. *Science* 309 (5734), 570–574. Available at: <https://doi.org/10.1126/science.1111772>.
- Freshwater Health Index, 2021. FHI User Manual Version 1.2.1. Available at <https://manual.freshwaterhealthindex.org/index.html>.
- Grantham, T.E.W., et al., 2018. Sensitivity of streamflow to climate change in California. *Clm. Change* 149, 427–441. Available at: <https://doi.org/10.1007/s10584-018-2244-9>.
- GreenInfo Network (2024) *California Protected Areas Database*. Available at: <https://calands.org/> (Accessed: April 29, 2024).
- Grey, D., Sadoff, C.W., 2007. Sink or swim? Water security for growth and development. *Water Policy* 9, 545–571. Available at: <https://doi.org/10.2166/wp.2007.021>.
- Harrison, S., et al., 2024. Climate change and California's terrestrial biodiversity. *Proc. Natl. Acad. Sci. U. S. A.* 121 (32), 1–10. Available at <https://doi.org/10.1073/pnas.2310074121>.
- Hermoso, V., et al., 2018. Catchment zoning to enhance co-benefits and minimize trade-offs between ecosystem services and freshwater biodiversity conservation. *Aquat. Conserv. Mar. Freshwat. Ecosyst.* 28 (4), 1004–1014. Available at: <https://doi.org/10.1002/aqc.2891>.
- Home, A., Beutel, M., Woodside, G., 2024. The Prado wetlands: 24 years of river diversion treatment wetlands reducing nitrate and phosphate while increasing an endangered bird. *Ecol. Eng.* 200, 107174. Available at: <https://doi.org/10.1016/j.ecoleng.2023.107174>.
- Huang, J., et al., 2016. Accelerated dryland expansion under climate change. *Nat. Clim. Chang.* 6 (2), 166–171. Available at <https://doi.org/10.1038/nclimate2837>.
- Huntsman, B.M., et al., 2023. Microhabitat use of native Santa Ana sucker and arroyo chub in an effluent-dominated southern California stream. *Southwest. Nat.* 67 (3), 192–204. Available at <https://doi.org/10.1894/0038-4909-67.3.192>.
- Inland Empire Utilities Agency (2021) *2020 Urban Water Management Plan*, pp. 1–729. Available at: <https://www.ieua.org/wp-content/uploads/2021/05/Final-IEUA-2020-UWMP.pdf>.
- International Union for Conservation of Nature, 2024. The IUCN Red List of Threatened Species. Version 2025–1. Available at <https://www.iucnredlist.org>. (Accessed 13 February 2025).
- Kingsford, R.T., 2011. Conservation management of rivers and wetlands under climate change – a synthesis. *Mar. Freshw. Res.* 62 (3), 217–222. Available at: <https://doi.org/10.1071/MF11029>.
- Langridge, R., Sepaniak, S., Conrad, E., 2016. An Evaluation of California's Special Act Groundwater Districts. University of California, Santa Cruz, pp. 1–193. Available at: <https://escholarship.org/uc/item/3cr8k66v>.
- Lehner, B., Verdin, K., Jarvis, A., 2008. New global hydrography derived from spaceborne elevation data. *Eos* 89 (10), 93–94. Available at: <https://doi.org/10.1029/2008EO100001>.
- Liermann, C.R., et al., 2012. Implications of dam obstruction for global freshwater fish diversity. *BioScience* 62 (6), 539–548. Available at: <https://doi.org/10.1525/bio.2012.62.6.5>.
- Lyle, Z.J., VanBriesen, J.M., Samaras, C., 2023. Drinking water utility-level understanding of climate change effects to system reliability. *ACS EST Water* 3, 2395–2406. Available at: <https://doi.org/10.1021/acsestwater.3c00091>.
- Mitchell, P., 2006. *Santa Ana River Guide: From Crest to Coast - 110 Miles along Southern California's Largest River System*, 1st edition. Wilderness Press, Birmingham, Alabama.
- Mohammed, I.N., et al., 2022. Diagnosing challenges and setting priorities for sustainable water resource management under climate change. *Sci. Rep.* 12 (796), 1–15. Available at <https://doi.org/10.1038/s41598-022-04766-2>.
- Municipal Water District of Orange County, 2021. 2020 Urban Water Management Plan, pp. 1–165. Available at <https://www.mwdoc.com/wp-content/uploads/2021/04/2020-UWMP.pdf>.
- Nilsson, C., et al., 2005. Fragmentation and flow regulation of the worlds large river systems. *Science* 308 (5720), 405–408. Available at: <https://doi.org/10.1126/science.1107887>.
- Opperman, J.J., et al., 2010. Ecologically functional floodplains: connectivity, flow regime, and scale. *J. Am. Water Resour. Assoc.* 46 (2), 211–226. Available at: <https://doi.org/10.1111/j.1752-1688.2010.00426.x>.
- Pahl-Wostl, C., 2009. A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Glob. Environ. Chang.* 19 (3), 354–365. Available at: <https://doi.org/10.1016/j.gloenvcha.2009.06.001>.
- Poff, N.L., 2018. Beyond the natural flow regime? Broadening the hydro-ecological foundation to meet environmental flows challenges in a non-stationary world. *Freshw. Biol.* 63 (8), 1011–1021. Available at: <https://doi.org/10.1111/fwb.13038>.
- Poff, N.L., et al., 1997. The natural flow regime. *BioScience* 47 (11), 769–784. Available at: <https://doi.org/10.2307/1313099>.
- Reid, A.J., et al., 2019. Emerging threats and persistent conservation challenges for freshwater biodiversity. *Biol. Rev.* 94, 849–873. Available at: <https://doi.org/10.1111/brev.12480>.
- San Bernardino Valley Municipal Water District, 2021. Integrated Regional Urban Water Management Plan, pp. 1–240. Available at <https://www.sbvmd.com/reports>.
- San Bernardino Valley Water Conservation District, 2024. Upper Santa Ana River Wash Habitat Conservation Plan Annual Report 2024. Redlands, California, pp. 1–93. Available at: https://www.sbvwd.org/wp-content/uploads/2024/11/2024_Wash_Habitat_Annual_Report_11.01.2024.pdf.

- Santa Ana Watershed Project Authority, 2019. One Water One Watershed Plan Update 2018, pp. 1–419. Available at: <https://www.sawpa.gov/wp-content/uploads/2019/02/OWOW-Plan-Update-2018-1.pdf>.
- Simes, J., 2013. Santa Ana Watershed Basin Study Summary Report. Bureau of Reclamation, Temecula, California, pp. 1–72. Available at: <https://www.usbr.gov/watersmart/bsp/docs/finalreport/SantaAnaWatershed/SantaAnaBasinStudySummaryReport.pdf>.
- Sousa, M.C., et al., 2025. Ecosystem services of urban rivers: a systematic review. *Aquat. Sci.* 87, 1–10. Available at: <https://doi.org/10.1007/s00027-024-01138-y>.
- Souter, N.J., et al., 2020. Using the freshwater health index to assess hydropower development scenarios in the sesan, sreok and Sekong river basin. *Water* 12 (3), 1–32. Available at: <https://doi.org/10.3390/w12030788>.
- Southern California Association of Governments, 2023. 2016 Land Use Information for Riverside County. Available at: https://hub.scag.ca.gov/datasets/9eabed1dab064ee9a1fd579463731d3_0. (Accessed 7 February 2025).
- Southern California Association of Governments, 2023a. 2016 Land Use Information for Orange County. Available at: https://hub.scag.ca.gov/datasets/2db3558d212d42e5b64cd136ffe0467f_0 (Accessed: February 7, 2025).
- Southern California Association of Governments, 2023b. 2016 Land Use Information for Riverside County. Available at: https://hub.scag.ca.gov/datasets/9eabed1dab064ee9a1fd579463731d3_0 (Accessed: February 7, 2025).
- Southern California Association of Governments, 2023c. 2016 Land Use Information for San Bernardino County. Available at: https://hub.scag.ca.gov/datasets/b9b46349554945b29f7e6860d8a4304c_0 (Accessed: February 7, 2025).
- Stanford, J.A., Ward, J.V., 1993. An ecosystem perspective of alluvial rivers: connectivity and the hyporheic corridor. *J. N. Am. Benthol. Soc.* 12 (1), 48–60. Available at: <https://doi.org/10.2307/1467685>.
- The Calflora Database (2024) *Calflora: Information on California plants for education, research and conservation*. Available at: <https://www.calflora.org/> (Accessed: March 16, 2024).
- Trust for Public Land (2025) “ParkServe.” Available at: tpl.org/parkserve (Accessed: December 9, 2025).
- U.S. Fish and Wildlife Service, 2010. *Eriastrum densifolium subsp. sanctorum* (Santa Ana River woolly-star) 5-Year Review: Summary and Evaluation. Carlsbad, California, pp. 1–30. Available at <https://ecos.fws.gov/ecp/species/6575>. (Accessed 20 August 2025).
- U.S. Fish and Wildlife Service, 2011. *Catostomus santaanae* (Santa Ana Sucker): 5-Year Review: Summary and Evaluation. Carlsbad, California, pp. 1–74. Available at: <https://ecos.fws.gov/ecp/species/3785>. (Accessed 20 August 2025).
- U.S. Geological Survey (2025) “National Water Information System data available on the World Wide Web (USGS Water Data for the Nation).” Available at: <https://waterdata.usgs.gov/nwis/> (Accessed: January 2, 2025).
- Upper Santa Ana River Sustainable Resource Alliance, 2021. Upper Santa Ana River Habitat Conservation Plan. Available at: <https://www.sbvmd.com/home/showpublisheddocument/8830/637394728499030000>.
- Vári, Á., et al., 2022. Freshwater systems and ecosystem services: challenges and chances for cross-fertilization of disciplines. *Ambio* 51, 135–151. Available at: <https://doi.org/10.1007/s13280-021-01556-4>.
- Vollmer, D., Regan, H.M., Andelman, S.J., 2016. Assessing the sustainability of freshwater systems: a critical review of composite indicators. *Ambio* 45 (7), 765–780. Available at: <https://doi.org/10.1007/s13280-016-0792-7>.
- Vollmer, D., et al., 2018. Integrating the social, hydrological and ecological dimensions of freshwater health: the freshwater health index. *Sci. Total Environ.* 627, 304–313. Available at: <https://doi.org/10.1016/j.scitotenv.2018.01.040>.
- Vollmer, D., et al., 2021. Can we take the pulse of environmental governance the way we take the pulse of nature? Applying the freshwater health index in latin america. *Ambio* 50 (4), 870–883. Available at: <https://doi.org/10.1007/s13280-020-01407-8>.
- Vörösmarty, C.J., et al., 2015. Fresh water goes global. *Science* 349 (6247), 478–479. Available at: <https://doi.org/10.1126/science.aac6009>.
- Western Riverside County Regional Conservation Authority, 2003. Western Riverside County Multiple Species Habitat Conservation Plan. Riverside, California, pp. 1–1312. Available at: <https://www.wrc-rca.org/habitat-conservation/>.
- Western Municipal Water District (2021) *2020 Urban Water Management Plan*, pp. 1–888. Available at: <https://westernwaterca.gov/DocumentCenter/View/5739/Western-2020-UWMP-with-Appendices-Revised-20220330?bidId=>.
- Wulff, M. et al. (2023) “Santa Ana River Native Fish Population and Habitat Data, Santa Ana River, California.” Available at: <https://doi.org/10.5066/P9XY7FJC>.
- Zimmerman, J. et al. (2023) “California Unimpaired Flows Database v2.1.2.” Available at: <https://rivers.codeformature.org/> (Accessed: February 3, 2025).

Agendas: 3 Month Look Ahead

Item	August	September	October	Pending/In Progress
AI, Data Centers, and Water & Energy Resilience (Board Request)	X			
City Creek Crossing Update (Board Request)				X
Contract Procurement Review (Board Request)				X
East Branch Extension Intertie Update	X			
Federal Legislative Update	X		X	
FIRO Update	X			
Headwater Resiliency Partnership (Board Request)				X
Quarterly Investment Portfolio Update from PFM Asset Management	X			
Reimbursement Policy for Board of Directors Travel / Agency Compensation (Board Request)				X
Reserve Policy Review (Board Request)				X
State Legislative Update		X		
State Water Project Connection for Arrowhead Springs Hotel Area Update	X			
Strategies and Outcomes for the Cost of Service Study (Board Request)				X
Summary Review of District's Existing Agreements (Board Request)				X
Summary Review of District's Existing Policies (Board Request)	X			

USGS Contract Renewal	X			
Watershed Fellow Introductions		X		
Willow Springs Water Bank Project	X			
Wilson Basin Cleanup and Partnership with San Bernardino County Flood Control Update	X			

Project Status Updates

Item	Status	Estimated Next Board Update or Action
Basin Optimization Plan	In progress. The Basin Optimization Plan Phase 1 concluded in early 2024. San Bernardino Valley and Western Water are working on the scope of work for Phase 2, including a historical State of the Basin document.	Update as needed
Bay-Delta Water Quality Control Plan Update/ Healthy Rivers & Landscapes Alternative	In progress. State Water Resources Control Board conducted hearings on the Healthy Rivers & Landscapes alternative April 2024. This alternative would result in adaptive management of the Bay Delta and provide more regulatory certainty for our State Water Project (SWP) supplies.	Update as needed
Bunker Hill Conjunctive Use Project	In progress. Staff is continuing coordination with local partners to develop alternatives and identify how best to move forward.	Update as needed
Cactus Basins Recharge	In progress. San Bernardino County and San Bernardino Valley have revised the contract with the Facilitator authorizing continued efforts. The Facilitator gathered preliminary input and hosted four Technical Advisory Group (TAG) meetings. Serving as technical representatives, staff reviewed the groundwater model results that will	Update as needed

Item	Status	Estimated Next Board Update or Action
	be used to develop the Adaptive Management Plan (AMP) and have begun developing the monitoring program for the AMP.	
Climate Adaptation and Resilience Plan (CARP)	In progress. Staff are working on implementation of the CARP that was approved by the Board in October 2024.	Update as needed
Cost of Service and Rate Design Study	In progress. Work on the study is underway.	Update as needed
County Line Road Basin Recharge Project	In progress. Staff are working with San Geronio Pass Water Agency (SGPWA) on this project. The Board of Directors awarded the SWP turnout construction contract at the April 21 meeting. Construction is anticipated to be completed by December 2026.	Update as needed
CSUSB Regional Water Fellowship	In progress. The Institute for Watershed Resiliency will have seven 2026-27 Fellows sponsored by San Bernardino Valley. Interview will be conducted in July with the on-boarding process scheduled to take place in August.	Update as needed
Cybersecurity Improvements	In progress. Staff continues to identify and implement policies, procedures, and systems to enhance the Agency's digital security. This has included recent	Update as needed

Item	Status	Estimated Next Board Update or Action
	enhancements to the password policy, multi-factor authentication, and network monitoring.	
Delta Conveyance Project	In progress. The Water Rights Hearing is continuing through 2027, including an extensive public input process.	Update as needed
Delta Conveyance Proposed Amendment to SWP Contract	In progress. Staff reviewed and provided comments on the 2024 draft agreement. Once a consensus on language is reached a final agreement will be brought to the Board for consideration.	2027
Demand Management Program	In progress. FY 2025/26 program has pivoted to be more grant style rather than automatic incentives, making the program more available to local water retailers. The Agency is continuing to make ceremonial presentations of the awards to water retailers.	2026
Devil Basin Preliminary Design	In progress. Devil Basin Preliminary Design involves improving the existing Sweetwater SWP turnout and basins, constructing a new SWP turnout in Devil Canyon, and improving the basins for enhanced recharge capabilities. The Agency is reviewing design proposals to advance the project for Board consideration. Simultaneously staff is working with SBCoFCD and City of San Bernardino on recharge agreements.	Late 2026

Item	Status	Estimated Next Board Update or Action
	The Agency has initiated cultural and biological surveys.	
East Branch Extension and Central Feeder Intertie Project	In progress. Staff has finalized the design and coordination with DWR staff. The construction contract for this project was approved by the Board in December. Construction will be underway by September once long lead-time materials arrive. This project will be completed in December 2026.	Update as needed
Emergency Response Program	In progress. Staff continue to identify and implement measures that enhance the Agency's operational resiliency during emergencies, including enhancing the communications system which allows for additional security cameras, more reliable internet, and increased SCADA data security. The Agency has begun the process of updating the Emergency Response Plan.	Update as needed
Engagement Activities	In progress. The Board of Directors, Heather Dyer, and staff have participated in multiple community and industry events in recent months to highlight the ongoing priorities of the Strategic Plan. Communications resources supporting projects and programs include informative social media posts, project materials, industry	Update as needed

Item	Status	Estimated Next Board Update or Action
	conference and community presentations.	
Foothill Pipeline Crossing (City Creek Crossing) Project	In progress. The Feasibility Study was completed in 2023, and design phase is 95% complete. Staff is currently working with the SBCoFCD and Metropolitan Water District of Southern California (Metropolitan) to discuss alternative solutions for this project.	Update as needed
Foothill Pump Station and Inland Feeder Intertie Project	In progress. San Bernardino Valley has authorized the joint operational agreement with Metropolitan, with implementation pending their Board approval. Staff have been assisting on permit preparations and a mitigation strategy for potential impacts to SBKR. Construction is anticipated to begin in late 2026, pending contract award by Metropolitan.	Update as needed
Forecast-Informed Reservoir Operations (FIRO) at Seven Oaks Dam Preliminary Viability Assessment, UC San Diego & USACOE	In progress. Work on the Preliminary Viability Assessment (PVA) is underway, with anticipated completion in August 2026. Meetings of the FIRO Steering Committee are progressing, and staff are participating in multiple Work Teams.	Update as needed
FY 2026/27 Budget	In progress. The Board has adopted the General Fund Budget. Consideration of the Restricted Fund budget will take place in July 2026.	July 2026

Item	Status	Estimated Next Board Update or Action
Golden Mussel	In progress. Staff is actively monitoring SWP pipelines for presence of golden mussel. The Agency is coordinating with DWR, and San Gabriel Municipal Water District regarding the recent pilot study for the installation of a treatment location along the Azusa Pipeline at the Devil Basin Afterbay. We continue to dose the East Branch with EarthTec. As of July, no mussels have been detected within the service area.	Update as needed
Grant Management	In progress. Along with our Grant consultant (Kennedy Jenks), staff are managing 10 active grants: US Bureau of Reclamation (5 grants); Wildlife Conservation Board (1 grant); SARCCUP/SAWPA/ Department of Water Resources (1 grant); US Fish and Wildlife Service/California Department of Fish and Wildlife (2 grants); and Department of Water Resources (1 grant).	Update as needed
Headwaters Resiliency Partnership (HRP)	In progress. Staff continue to coordinate with partners on program development, monitoring plans, and implementation of joint projects. The team continues to work with our facilitator to develop a charter for the partnership and develop a steering committee. Staff are working with CSUSB professors to develop a comprehensive monitoring program, referred to as the Mountain Labs,	Update as needed

Item	Status	Estimated Next Board Update or Action
	intended to support the HCP, FIRO, HRP and other projects.	
Legislative Activities	In progress. The Agency continues to monitor State and Federal legislative activities including budget discussions, leadership appointments, and grant funding opportunities.	Monthly updates
Louis Rubidoux Parkland & Pecan Grove (LRPPG) Master Plan Development	In progress. Work is ongoing on the development of a master plan. Planning and coordination are also underway to identify sustainable water sources to support irrigation and habitat restoration.	Update as needed
Mitigation Credit Agreement Application	In progress. Following Board direction, staff are working with the California Department of Fish and Wildlife to prepare the Mitigation Credit Agreement application.	Update as needed
Native Fish Habitat Enhancement Structures in the Santa Ana River	In progress. The project was initiated in 2022 and successfully achieved performance criteria for 2023 - 2025. The effort exceeded the initial 2-acre goal. 2026 field work will continue to take place weekly May through September. It is important to note that this is an effective, yet labor intensive process.	Update as needed

Item	Status	Estimated Next Board Update or Action
Per- and Polyfluoroalkyl Substances (PFAS)	Staff are participating in SAWPA's watershed-wide PFAS study and engaging in other regional PFAS related activities.	Update as needed
Rialto Basin Perchlorate Task Force	In progress. The Task Force meets quarterly. Discussions within the group have been very collaborative.	Update as needed
Rialto Decree	Completed. Retail agencies collected the 3-month water level data to measure spring high-water levels March through May. Staff then completed the analysis and calculated the 44% pumping restriction based on the judgment requirements. This information was provided to interested parties in the annual notification letter.	2027
Riverside Habitat, Parks, and Water Project	In progress. Staff are working with Riverside Public Utilities on design and CEQA. Work to revise the Draft Environmental Impact Report (DEIR) and associated technical assessments is ongoing. Staff is concurrently working with RPU to develop their 1211 Wastewater Change Petition to submit to the State Water Resources Control Board.	Update as needed
Salt and Nutrient Management Plan for the Upper Santa Ana River Watershed Groundwater Basins	In progress. The Salt and Nutrient Management Plan workgroup met to discuss an update on the Regional Salt Mitigation Feasibility Study. Staff are coordinating with Regional Board staff	Update as needed

Item	Status	Estimated Next Board Update or Action
	to address comments on the assumptions that will be used for groundwater modeling. Staff continue to facilitate coordination based on the recent cost share and scope of services approved by the Board.	
Santa Ana River Enhanced Recharge Phase 1-B	Ongoing. The project construction is complete, with the Operations and Maintenance Plan in development. Staff are coordinating with SBCoFCD for delivery of excess sediment caused by the Line Fire from local stormwater channels that can be used for habitat restoration groundcover. Habitat restoration is underway.	Update as needed
Sites Reservoir Project	In progress. The Water Rights hearing began in 2024 and may be completed in late 2026. This complex process has included multiple extensions for public comment, prior to consideration for a proposed order to the full State Water Board.	Update as needed
Sites Reservoir Project Governance Approach and Accompanying Agreements	In progress. The suggested approach was presented at a 2023 Workshop. Work to develop and reach a consensus on the following agreements continues: Benefits & Obligations Contract, Updated Joint Powers Agreement, Updated Bylaws, Agreement with DWR (statement of charges). The Benefits & Obligations Contract has been updated to strengthen the governance of the	2026

Item	Status	Estimated Next Board Update or Action
	project in parallel with a legislative solution sponsored by Metropolitan. The Agency may hold a joint workshop with SGPWA to present final draft of agreements.	
Southern California Edison East End Hydroelectric Facilities	In progress. The Agency entered into an Asset Purchase Agreement with SCE to acquire 7 hydroelectric plants. The transfer has been approved by the CPUC and FERC. All parties have executed the JPA agreement. The first board meeting of the Santa Ana Watershed Hydro Authority is scheduled for August 2026. Recruitment for initial staffing is underway. Staff are preparing draft permit applications and engineering design for critical repair projects for next steps after FERC approval.	Update as needed
State Water Project Tour	The Agency is preparing for the Fall 2026 tour of State Water Project facilities in the Delta.	Update as needed
Sterling Natural Resource Center (SNRC) Mitigation Measures Assistance	In progress. Staff are managing implementation and reporting on behalf of East Valley Water District (EVWD) for all their mitigation obligations for the SNRC Project. Staff are beginning preparations for the 2026 Reimbursement Agreement between San Bernardino Valley and EVWD. As part of this partnership, San Bernardino Valley incurs over \$50,000 in staffing	Update as needed

Item	Status	Estimated Next Board Update or Action
	expenses that are being provided in kind, as well as coordinating over 1,000 volunteer hours annually for these mitigation measures.	
Sunrise Ranch Property Master Plan	In progress. The project team is working on Phase 1 as approved by the Board of Directors in the 2026 Sunrise Ranch Master Plan. Biologic, cultural, and technical site surveys needed for preliminary analysis relating to the potential reservoir and mitigation credit acreage are underway. The Agency is also researching the creation of a non-profit organization. An Ad Hoc Committee Meeting has been scheduled for August 2026.	Update as needed
Tributary Restoration Projects	In progress. Staff are managing habitat restoration efforts at four locations (Hidden Valley Creek, Lower Hole Creek, Anza Creek, and Old Ranch Creek). The Agency has now transitioned from construction to on-going managing and monitoring of the habitat.	Update as needed
Upper Santa Ana River Habitat Conservation Plan	In progress. The entire document has been provided to USFWS for review by the Solicitor. Work on the NEPA will be underway following review by the USFWS. Additionally, all analysis and mitigation strategies prepared for the USFWS will also be used for review and	2026, pending USFWS

Item	Status	Estimated Next Board Update or Action
	consideration by state regulatory agencies.	
Waterman Basins Mitigation	In progress. As part of the Waterman Basins mitigation, staff are managing habitat restoration at two locations, totaling 60 acres, at Hidden Valley Wildlife Area. Agency Operations staff are conducting this work with heavy equipment as training for future projects that require coordination with biological and cultural monitors.	Update as needed
Weaver Basins Mitigation	In progress. Staff are managing San Bernardino kangaroo rat habitat restoration for construction of Weaver Basins. Approximately 22 acres are under active habitat management which includes habitat restoration with Agency Operations staff and heavy equipment. The Agency is working with the San Diego Zoo on species monitoring on site.	Update as needed
West Valley Water District:(WVWD) Lower Cactus Basin #2 Mitigation Assistance	In progress. Staff are managing WVWD's mitigation obligation for their Lower Cactus Basin #2 Long-term Maintenance Agreement with CDFW. 12 acres of habitat are under active management at Hidden Valley Wildlife Area over the next four years. Staff are preparing the 2026 Reimbursement Agreement for consideration.	Update as needed

Item	Status	Estimated Next Board Update or Action
Western-San Bernardino Watermaster (1969 Judgement)	In progress. Data collection is underway for analysis and document development. Efforts will result in the report for submittal to the courts prior to the August 1 deadline.	Update as needed
Yucaipa Sustainable Groundwater Management Agency	In progress. Staff continue to participate in quarterly Groundwater Sustainability Agency meetings and engage with both water retailers and private well owners.	Update as needed

DATE: July 21, 2026

TO: Board of Directors

SUBJECT: List of Announcements

- A. July 22, 10:30 a.m. – Yucaipa Groundwater Sustainability Agency Board Meeting -
Community Meeting Room at Yucaipa City Hall, 34272 Yucaipa Boulevard,
Yucaipa
- B. July 22, 3:00 p.m. – SAWPA Strategic Plan Community Meeting – San Bernardino
Valley Municipal Water District Boardroom, 380 E. Vanderbilt Way, San Bernardino
- C. July 23, 8:30 a.m. – Upper SAR WIFA Technical Advisory Committee In-Person
(Cancelled)
- D. July 23, 09:00 a.m. – Yucaipa Groundwater Sustainability Agency - Policy
Workshop - Yucaipa Valley Regional Water Filtration Facility, 35477 Oak Glen
Road, Yucaipa
- E. August 4, 08:30 a.m. – SAWPA PA 23 Committee Meeting by Teleconference or
In-Person
- F. August 4, 09:30 a.m. – SAWPA Commission Meeting by Teleconference or In-
Person
- G. August 4, 10:00 a.m. – SAWPA PA 24 Committee Meeting by Teleconference or
In-Person
- H. August 4, 2 p.m. – Regular Board Meeting by Teleconference or In-Person

- I. August 6, 2 p.m. – Board of Directors’ Special Meeting - Policy/Administration
Workshop by Teleconference or In-Person
- J. August 11, 2 p.m. – Board of Directors’ Special Meeting - Resources/Engineering
Workshop by Teleconference or In-Person
- K. August 12, 1:30 p.m. – SBVW Conservation District Board Meeting
- L. August 14, 8:00 a.m. – Building Industry Association Southern California Water
Conference DoubleTree Hotel in Ontario, 222 N Vineyard Ave
- M. August 17, 6 p.m. – ASBCSD dinner (Location: TBD)
- N. August 18, 09:30 a.m. – SAWPA Commission Meeting by Teleconference or In-
Person
- O. August 18, 2 p.m. – Regular Board Meeting by Teleconference or In-Person
- P. August 19, 8:30 a.m. – Upper SAR WIFA by Teleconference (Cancelled)