



AGENDA

18700 Ward St.
Fountain Valley, CA 92708
(714) 378-3200

WATER ISSUES COMMITTEE MEETING WITH BOARD OF DIRECTORS * ORANGE COUNTY WATER DISTRICT Wednesday, December 10, 2025 12:00 p.m., Boardroom

*The OCWD Water Issues Committee meeting is noticed as a joint meeting with the Board of Directors for the purpose of strict compliance with the Brown Act and it provides an opportunity for all Directors to hear presentations and participate in discussions. Directors receive no additional compensation or stipend as a result of simultaneously convening this meeting. Items recommended for approval at this meeting will be placed on the **December 17** Board meeting Agenda for approval.

This meeting will be held in person. As a convenience for the public, the meeting may also be accessed by Zoom Webinar and will be available by either computer or telephone audio as indicated below. Because this is an in-person meeting and the Zoom component is not required, but rather is being offered as a convenience, if there are any technical issues during the meeting, this meeting will continue and will not be suspended.

Computer Audio: Join the Zoom Webinar by clicking on the following link:

<https://ocwd.zoom.us/j/98592928069>

Webinar ID: 985 9292 8069

Telephone Audio: (213) 338 8477

Teleconference Sites:

10382 Bonnie Drive, Garden Grove
1037 Sherwood Lane, Santa Ana
1454 Madison Street, Tustin
100 S Main Street, Los Angeles
303 W. Commonwealth Ave., Fullerton
6151 Baja Drive, Anaheim
1502 North Broadway, Santa Ana
2467 Juan Street, San Diego

* Members of the public may attend and participate at all locations.

PLEDGE OF ALLEGIANCE

ROLL CALL

ITEMS RECEIVED TOO LATE TO BE AGENDIZED

RECOMMENDATION: Adopt resolution determining need to take immediate action on item(s) and that the need for action came to the attention of the District subsequent to the posting of the Agenda (requires two-thirds vote of the Board members present, or, if less than two-thirds of the members are present, a unanimous vote of those members present.)

VISITOR PARTICIPATION

Time has been reserved at this point in the agenda for persons wishing to comment for up to three minutes to the Board of Directors on any item that is not listed on the agenda, but within the subject matter jurisdiction of the District. By law, the Board of Directors is prohibited from taking action on such public comments. As appropriate, matters raised in these public comments will be referred to District staff or placed on the agenda of an upcoming Board meeting.

At this time, members of the public may also offer public comment for up to three minutes on any item on the Consent Calendar. While members of the public may not remove an item from the Consent Calendar for separate discussion, a Director may do so at the request of a member of the public.

CONSENT CALENDAR (ITEMS NO. 1 – 10)

All matters on the Consent Calendar are to be approved by one motion, without separate discussion on these items, unless a Board member or District staff request that specific items be removed from the Consent Calendar for separate consideration.

1. **MINUTES OF WATER ISSUES COMMITTEE MEETING HELD NOVEMBER 12, 2025**

RECOMMENDATION: Approve minutes as presented

2. **TECH CONNECT SUPPORT AGREEMENT WITH ROCKWELL AUTOMATION FOR THREE-YEAR SUPPORT RENEWAL ON MEDIUM VOLTAGE AND LOW VOLTAGE DRIVES EQUIPMENT AND SOFTWARE SUPPORT**

RECOMMENDATION: Agendize for December 17 Board meeting: Authorize issuance of a 3-year purchase order agreement to Rockwell Automation for an amount not to exceed \$26,366 per year or \$79,097 over 3 years to provide electrical equipment and software support for Rockwell Automation devices and software

3. **MULTIPURPOSE CENTER FEASIBILITY STUDY REQUEST FOR PROPOSALS**

RECOMMENDATION: Agendize for December 17 Board meeting: Authorize issuance of Request for Proposals for a Multipurpose Center Feasibility Study

4. **WESTBAY MONITORING WELL SYSTEM WINCH, CABLE, AND COUNTER DISPLAY REPLACEMENT**

RECOMMENDATION: Agendize for December 17 Board meeting: Authorize the issuance of a purchase order in the amount of \$32,509 which includes tax to Mount Sopris Instrument Company, inc. for the purchase of one (1) Mount Sopris MXC-1-0-7-3 1000-meter Winch spooled with 1000 meters of single conductor cable and one (1) 5MDA-1000 Depth-Speed Display (MX Series)

5. **CONTRACT NO. SB-2026-1 SANTIAGO PUMP STATION MODIFICATIONS NOTICE OF INVITING BIDS**

RECOMMENDATION: Agendize for December 17 Board meeting: Authorize publication of Notice Inviting Bids for Contract No. SB-2026-1, Santiago Pump Station Modifications Project

6. **REQUEST FOR PROPOSALS: OCWD GAP RESERVOIR ASSESSMENT**

RECOMMENDATION: Agendize for December 17 Board meeting: Authorize issuance of a Request for Proposals for the OCWD GAP Reservoir Assessment

7. **CONTRACT GBM-2024-3 CONSTRUCTION OF SHALLOW AQUIFER PIEZOMETERS AND TALBERT GAP REPLACEMENT MONITORING WELL CLUSTER NOTICE OF COMPLETION**

RECOMMENDATION: Agendize for December 17 Board meeting: Accept completion of the work and authorize filing a Notice of Completion for Contract GBM-2024-3, Construction of Shallow Aquifer Monitoring Wells and Talbert Gap Monitoring Well Cluster

8. **AUTHORIZE AGREEMENT WITH JACOBS FOR ENGINEERING AND HYDROGEOLOGIC SERVICES - SANTA ANA RIVER RIVERBED FILTRATION SYSTEM FEASIBILITY STUDY**

RECOMMENDATION: Agendize for December 17 Board meeting: Authorize an Agreement with Jacobs for an amount not to exceed \$188,750 to provide engineering and hydrogeologic services for the Santa Ana River Riverbed Filtration System Feasibility Study

9. **CITY OF ORANGE WELL 29 PFAS TREATMENT SYSTEMS PROJECT: ENGINEER'S REPORT AND CATEGORICAL EXEMPTION**

RECOMMENDATION: Agendize for December 17 Board meeting:

- 1) Approve the Engineer's Report for the City of Orange Well 29 PFAS Treatment Systems Project and determine the project feasible, necessary and beneficial to the lands of the District; and
- 2) Authorize filing of a Categorical Exemption for the City of Orange Well 29 PFAS Treatment Systems Project in compliance with the California Environmental Quality Act (CEQA) guidelines

10. **AUTHORIZE NOTICE INVITING BIDS FOR BUENA PARK LINDEN WELL PACKER INSTALLATION AND AUTHORIZE AMENDMENT TO AGREEMENT WITH BESST, INC.**

RECOMMENDATION: Agendize for December 17 Board meeting:

- 1) Authorize publication of a Notice Inviting Bids for BP-2026-1 Inflatable Packer Installation at Buena Park's Linden Well; and
- 2) Authorize issuance of an amendment to the service agreement with BESST, Inc. for an amount not to exceed \$173,815 to procure the inflatable packers, oversee packer manufacturing, and provide field oversight of the testing

END OF CONSENT CALENDAR

MATTER FOR CONSIDERATION

11. **PREPARATION OF ENGINEER'S REPORT FOR LOWER SANTIAGO CREEK RECHARGE PROJECT**

RECOMMENDATION: Agendize for December 17 Board meeting: Authorize staff to prepare an Engineer's Report for the Lower Santiago Creek Project, including updating project costs and reviewing all aspects of the potential project

INFORMATIONAL ITEMS

12. **UCI MASTER OF ENGINEERING CAPSTONE PROJECT: RESEARCHING SANTA ANA RIVER SEDIMENT TRANSPORT BY RAIL**

13. **EMERGENCY WATER SUPPLIES TO SOUTH ORANGE COUNTY UPDATE**

CHAIR DIRECTION AS TO ITEMS IF ANY TO BE AGENDIZED AS MATTERS FOR CONSIDERATION AT THE DECEMBER 17 BOARD MEETING

DIRECTORS' ANNOUNCEMENTS/REPORTS

GENERAL MANAGER'S ANNOUNCEMENTS/REPORTS

ADJOURNMENT

WATER ISSUES COMMITTEE MEMBERS

Committee Members

Cathy Green – Chair
Erik Weigand – Vice Chair
Roger Yoh
Van Tran
Dina Nguyen

Alternates

Valerie Amezcua
Fred Jung
Natalie Meeks
Steve Sheldon
Denis Bilodeau

In accordance with the requirements of California Government Code Section 54954.2, this agenda has been posted at the guard shack entrance and in the main lobby of the Orange County Water District, 18700 Ward Street, Fountain Valley, CA and on the OCWD website not less than 72 hours prior to the meeting date and time above. All written materials relating to each agenda item are available for public inspection in the office of the District Secretary. Backup material for the Agenda is available at the District offices for public review and can be viewed online at the District's website: www.ocwd.com

Pursuant to the Americans with Disabilities Act, persons with a disability who require a disability-related modification or accommodation in order to participate in a meeting, including auxiliary aids or services, may request such modification or accommodation from the District Secretary at (714) 378-3234, by email at cfuller@ocwd.com by fax at (714) 378-3373. Notification 24 hours prior to the meeting will enable District staff to make reasonable arrangements to assure accessibility to the meeting.

As a general rule, agenda reports or other written documentation has been prepared or organized with respect to each item of business listed on the agenda and can be reviewed at www.ocwd.com. Copies of these materials and other disclosable public records distributed to all or a majority of the members of the Board of Directors in connection with an open session agenda item are also on file with and available for inspection at the Office of the District Secretary, 18700 Ward Street, Fountain Valley, California, during regular business hours, 8:00 am to 5:00 pm, Monday through Friday. If such writings are distributed to members of the Board of Directors on the day of a Board meeting, the writings will be available at the entrance to the Board of Directors meeting room at the Orange County Water District office.

MINUTES OF BOARD OF DIRECTORS MEETING
Water Issues Committee
Orange County Water District
November 12, 2025 @ 12:00 p.m.

Director Green called the Water Issues Committee meeting to order at 12:00 p.m. in the District Boardroom. Public access was also provided via Zoom webinar. The Secretary called the roll and reported a quorum as follows:

Committee Members

Cathy Green
Erik Weigand
Roger Yoh
Van Tran
Dina Nguyen (arrived 12:10 p.m.)

Alternates

Valerie Amezcua
Fred Jung
Natalie Meeks
Steve Sheldon (absent)
Denis Bilodeau

OCWD

John Kennedy – General Manager
Chris Olsen – Executive Director of Engineering/Water Resources
Mehul Patel – Executive Director of Operations
Jason Dadakis – Executive Director of Water Quality & Technical Resources
Lisa Haney – Executive Director of Planning & Natural Resources
Randy Fick – Treasurer/CFO
Sheryl Parsons – Natural Resources Director
Kevin O'Toole – Senior Planner
Jeremy Jungreis – General Counsel
Leticia Villarreal – Assistant District Secretary

CONSENT CALENDAR

The Consent Calendar was approved upon motion by Director Weigand, seconded by Director Yoh and carried [5-0], as follows:

Ayes: Green, Weigand, Yoh, Tran, Amezcua

1. Minutes of Water Issues Committee Meeting

The Minutes of the Water Issues Committee meeting held October 8, 2025, were approved as presented.

2. Sixth Amended Agreement with United States Army Corps of Engineers to Implement FIRO at Prado Dam

Recommended for approval at November 19 Board meeting: Authorize execution of the Sixth Amended Cooperative Research and Development Agreement (Appendix H) with the U.S. Army Corps of Engineers to support implementation of FIRO at Prado Dam, including Water Control Manual update coordination, continued participation in the FIRO Steering Committee, and related activities, subject to approval as to form and content by District's General Counsel, for an additional \$125,000 for a total amount not to exceed \$495,000.

3. Authorize RFP for GWRS Decarbonation Process Enhancements

Recommended for approval at November 19 Board meeting: Authorize issuance of a Request for Proposals for design of GWRS Decarbonation Process Enhancements.

4. Amendment 3 to Agreement 1547 with Falcon Services for Field Headquarters Aboveground Gasoline Storage Tank

Recommended for approval at November 19 Board meeting: Authorize issuance of Amendment No. 3 to Agreement 1547 with Falcon Services & Construction, Inc. for an amount not to exceed \$3,309 and to extend the termination date to November 30, 2025.

5. Purchase Order to Multiple Vendors for an Automated Flow Injection Analyzer for the Philip L. Anthony Laboratory

Recommended for approval at November 19 Board meeting: Authorize issuance of Purchase Orders to FIAlab Instruments, Inc., Environmental Express, and EZkem in the amounts of \$68,558, \$13,173, and \$6,872 respectively for the purchase of instrumentation to support the lab's Nitrate, Nitrite, Ammonia, and Total Cyanide analyses.

6. Purchase Order to Promochrom Technologies Ltd for Three Spe-03 Units for the Philip L. Anthony Water Quality Laboratory

Recommended for approval at November 19 Board meeting: Authorize issuance of Purchase Order to PromoChrom Technologies, Ltd. in the total amount of \$76,942 for the trade-in purchase of three replacement SPE-03 Solid Phase Extractors.

7. Contract No. FV-2024-1 Authorize Notice of Completion

Recommended for approval at November 19 Board meeting: Accept completion of work and authorize filing a Notice of Completion for Contract No. FV-2024-1: Annex Building Roof Replacement Project.

8. Authorize Request for Proposals for Field Headquarters Diesel Fuel Tank Replacement and Vehicle Charging Infrastructure Design

Recommended for approval at November 19 Board meeting: Authorize issuance of RFP for FHQ Diesel Fuel Tank Replacement and Vehicle Charging Infrastructure Design.

9. Agreement Extension with Orange County Sanitation District and Irvine Ranch Water District

Recommended for approval at November 19 Board meeting: Authorize execution of the GAP/GWRS Flows Agreement with the Orange County Sanitation District and the Irvine Ranch Water District subject to minor edits by legal counsel and/or the General Manager.

10. Bond Basin Slope Repair Authorize Amendment No. 1 to Butier Engineering Inc.

Recommended for approval at November 19 Board meeting: Authorize Amendment No. 1 to Agreement 1732 with Butier Engineering, Inc. for a not-to-exceed amount of \$85,478.

11. Multi-Building Roof Replacement Project - Publication of Notice Inviting Bids

Recommended for approval at November 19 Board meeting: Authorize publication of Notice Inviting Bids for Contract No. FV-2025-1: Multi-Building Roof Replacement Project.

12. Contract No. TUS-2022-1: Amendment No. 3 to Butier Engineering

Recommended for approval at November 19 Board meeting: Authorize issuance of Amendment No. 3 to Agreement No. 1558 with Butier Engineering Inc. for construction management and inspection services in the amount of \$63,132.

13. Request for Proposals for Destruction of Westbay Monitoring Well SAR-3

Recommended for approval at November 19 Board meeting: 1) Authorize filing of a Categorical Exemption for the destruction of monitoring well SAR-3 in compliance with CEQA guidelines; and 2) Authorize issuance of Request for Proposals for services for the destruction of Westbay monitoring well SAR-3.

MATTER FOR CONSIDERATION

14. Santa Ana River Ecoflow Study

Natural Resources Director Sheryl Parsons reported that OCWD is required under its regulatory agreements with the U.S. Fish and Wildlife Service (USFWS) to ensure riparian habitat within Prado Basin is not adversely affected by inundation caused by water storage behind Prado Dam. She stated that while the District's Digital Twin project is analyzing how inundation, groundwater levels, and sediment deposition can influence habitat, the role of Santa Ana River baseflows in sustaining the riparian forest has not been quantified and is a critical data gap that needs to be resolved. She advised that an Ecoflow study of the Santa Ana River and its tributaries will determine the minimum flow needed to support the habitat behind Prado Dam. Ms. Parsons stated that staff recommends entering into a sole source agreement with the Southern California Coastal Water Research Project to conduct this study for a cost not to exceed \$120,000.

Upon motion by Director Weigand, seconded by Director Amezcua and carried [5-0], the Committee recommended for approval at the November 19 Board Meeting: Approve entering into agreement with Southern California Coastal Water Research Project (SCCWRP) to conduct the Santa Ana River Ecoflow Study for an amount not to exceed \$120,000.

Ayes: Green, Weigand, Yoh, Tran, Amezcua

INFORMATIONAL ITEMS

15. Future of Santa Ana River Baseflows

Senior Planner Kevin O'Toole stated that staff closely monitors baseflows in the Santa Ana River and the factors that affect them. He advised that baseflows are defined as all flows not attributed to storm events and predominately consist of wastewater effluent, rising groundwater and dry weather urban runoff. Mr. O'Toole provided an overview of the factors impacting future baseflow in the Santa Ana River and the history and future drivers of Santa Ana River Baseflows. He reported on new efforts and tools that are being developed to better understand and anticipate future baseflows in the Santa Ana River available to OCWD for groundwater recharge.

CHAIR DIRECTION AS TO ITEMS IF ANY TO BE AGENDIZED AS MATTERS FOR CONSIDERATION AT THE NOVEMBER 19 BOARD MEETING

It was agreed to place all items on the Consent Calendar for the November 19 Board meeting.

ADJOURNMENT

There being no further business, the meeting was adjourned at 12:34 p.m.

Cathy Green, Chair

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: M. Patel/R. Raley

Budgeted: Yes

Budgeted Amount: \$20,000

Cost Estimate: \$79,098 for 3 years

Funding Source: General Fund

Program/Line Item No. 1050.57016

General Counsel Approval: N/A

Engineers/Feasibility Report Approved: N/A

CEQA Compliance: N/A

Subject: TECH CONNECT SUPPORT AGREEMENT WITH ROCKWELL AUTOMATION FOR THREE-YEAR SUPPORT RENEWAL ON MEDIUM VOLTAGE AND LOW VOLTAGE DRIVES EQUIPMENT AND SOFTWARE SUPPORT

SUMMARY

Staff is requesting Board approval to issue a 3-year Agreement to provide hardware and software technical support for Rockwell equipment and software used throughout the Groundwater Replenishment System (GWRS) Advanced Water Purification Facility and Fountain Valley campus. The three-year term will provide cost certainty and will be budgeted each year within the Water Production General Fund budget.

Attachment: Rockwell Automation quotation dated September 12, 2025

RECOMMENDATION

Agendize for December 17 Board meeting: Authorize issuance of a 3-year purchase order agreement to Rockwell Automation for an amount not to exceed \$26,366 per year or \$79,097 over 3 years to provide electrical equipment and software support for Rockwell Automation devices and software.

BACKGROUND/ANALYSIS

The GWRS and the Orange County Water District's (OCWD) Fountain Valley site have a large number of electrical equipment manufactured by Rockwell Automation. Among the types of electrical equipment are variable frequency drives (VFD's), soft starters and Programmable Logic Controllers (PLC's) that require specialized knowledge and troubleshooting procedures. These procedures also require technical support interaction with the manufacturer of the equipment, Rockwell Automation. The reliability and timely repair of this equipment is critical to the operation of the GWRS. With that in mind, a Technical Support agreement is crucial to ensure consistent production from the GWRS through timely resolution of issues that periodically arise with this type of equipment and its complicated software packages.

The cost of service has risen since the last 1-year contract term by \$6,567. This is a 33% increase, and the trend will most likely continue into the future. Rockwell Automation has offered a 3-year term for its technical support services that will provide a fixed price each year. This includes guaranteeing there will be no increase for the term of the 3-year agreement. Water Production budgets each year for these technical support services in its general fund budget.

Staff is recommending entering into a 3-year agreement with Rockwell Automation for a per-year price not to exceed \$26,366. These costs will continue to be budgeted each year in the Water Production General Fund operating budget.

PRIOR RELEVANT BOARD ACTION(S)

None



Rockwell Automation Contract Renewal

To renew support for another year, please review this quote and instructions below.

If no changes are required, please follow the purchase order instructions outlined in Section 2.3.

If changes are required before purchase, please contact your local Rockwell Automation Distributor.

Rockwell Automation Services Agreement - Renewal

FIXED PRICE PROPOSAL

3801025080

Orange County Water Dist
Fountain valley, CA

Date of Issue: Friday, September 12, 2025
Quotation #: 351796 (RA Approval - QXSK10533A)

Presented to:
Orange County Water Dist
18700 Ward St
Fountain valley, Ca 92708-6930
United States

Proposed by:
Onesource Distributors Inc
4278 N Harbor Blvd
Fullerton, CA 92835-1017
United States

expanding **human** possibility®

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1 Rockwell Automation Statement of Work for Services

This proposal is offered to Onesource Distributors Inc for resale to Orange County Water Dist ("Customer").

1.1 TechConnectSM Support Agreement

This TechConnectSM Support Agreement ("Agreement") allows plants to be connected to Rockwell Automation's world-class phone and electronic technical support.

Rockwell Automation's technical support team will provide assistance with installing, configuring and maintaining equipment and software, obtaining current software updates, diagnosing and fixing operating problems, or performing basic programming tasks.

1.1.1 Agreement Term

Agreement Coverage Period: Thursday, January 1, 2026 to Thursday, December 31, 2026

1.1.2 TechConnectSM Support Levels

Product Family	Description	Support Level	Service Level
9800-DC8MVSTART	Medium Voltage Starter	Product Support	8 x 5 M-F
9800-DC8AUTOA	Automation Control Hardware	Product Support	8 x 5 M-F
9800-DC8ABDRIVMHPA	LV Drives Med HP	Product Support	8 x 5 M-F
9800-DC8ABDRIVHHPA	LV Drives High HP	Product Support	8 x 5 M-F
9800-DC8MVDE	Medium Voltage Hardware	Product Support	8 x 5 M-F
9800-DC8LEHDWA	Legacy Hardware	Product Support	8 x 5 M-F

Table 1: TechConnectSM Support Levels

1.1.3 Product Coverage Details

Rockwell Automation will provide TechConnectSM Support coverage to Customer for the Rockwell Automation Product Families & software serial numbers listed below. Please ensure the following information is complete and includes any new "Software Maintenance" products you wish to add to this support agreement.

Hardware Type
Medium Voltage Starter
Automation Control Hardware
LV Drives Med HP
LV Drives High HP
Medium Voltage Hardware
Legacy Hardware

Product Family & Software Serial Numbers	Description	Install Count
9800-DC8AUTOA	Automation Control Hardware	
9324-RL0300ENE		1
1012525488	RSLogix 500 Standard Edn ESD S/W	1
9324-RLD300ENE		1
1203188677	Studio 5000 Standard Edition ESD S/W	1
9324-RLD600ENE		1
2445044462	Studio 5000 Full Edition ESD Software	1
9701-VWSTMENE		1
1564153907	FT View Studio for ME EN ESD Software	1

Note: If changes to the TechConnectSM Support Product Coverage Details above are required, please contact your local Rockwell Automation sales office or Allen-Bradley® authorized distributor to request an updated proposal.

1.1.4 TechConnectSM Support Information

1.1.4.1 TechConnectSM Support Options

Rockwell Automation offers progressive levels of support to meet your business needs; see table below for all available support level options. Please refer to *Table 1: TechConnectSM Support Levels* regarding support levels included in this Statement of Work.

Support Level	Support Services Description
Application Support	<p>You are partnered with a team of technical support engineers who are uniquely designated to support your key applications. This team visits your site, becomes familiar with the applications, and gathers system drawings and documentation. This team will become an extension of your support staff, providing technical account management and scheduled consulting time.</p> <p>Application Support includes the support elements of Product Support, System Support and the following support elements:</p> <p>Real-time, Application-Level Support <i>Designated support team / Dedicated telephone and email / Documentation and case familiarization / Application knowledge management / Periodic performance reviews</i></p> <p>Surveillance and Alarming Options <i>Device and/or process monitoring and alarming at Rockwell Automation facility</i></p>

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Support Level	Support Services Description
	<p><i>or remotely / Access to historical data for troubleshooting</i></p> <p>Application-Level Administration Option <i>Emergency backup / Performance tuning / Guaranteed field service call-out</i></p>
System Support	<p>System Support allows your calls to be routed to a group of technical support engineers with proven expertise in Rockwell Automation control systems. You will work with an engineer who manages your case through resolution and follow-up.</p> <p>System Support includes the support elements of Product Support, and the following support elements:</p> <p>Real-time, System-Level Support <i>Standard product and programming software / Advanced software / Proactive follow up / Single-point resolution</i></p> <p>Advanced Engineering Expertise <i>Get support from system-level support engineers that have multiple years of experience in the industrial automation industry</i></p>
Product Support	<p>As often as Customer needs require, you can contact Rockwell Automation technical support engineers for real-time phone support. Our engineers have deep knowledge of our products, software and legacy hardware and can use remote desktop technology to help troubleshoot or assist in the configuration of products quickly.</p> <p>Product Support includes the support elements of Self-Assist Support, and the following support elements:</p> <p>Real-Time, Product-Level Support <i>Standard product and programming software / Telephone and live chat support available in 20 languages / Remote desktop troubleshooting</i></p> <p>Learning+ Subscription Available for Purchase <i>Highly interactive learning featuring lessons, software simulations, and demonstration videos to help reinforce learning concepts. Available on any tablet or PC using Chrome, Safari, IE, Edge or Firefox. Each course has a knowledge assessment, requiring 80% to pass. Upon successful completion of the course, a learner will be awarded CEUs (where applicable).</i></p> <p>Live View <i>An enhanced support experience connecting you with Rockwell Automation Technical experts leveraging a live video feed and augmented reality annotations.</i></p> <p>Software Maintenance II</p>

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Support Level	Support Services Description
	<i>Software update media / Emergency software replacement</i>
Self-Assist Support	<p>Take advantage of the Knowledgebase, an online resource for technical information, support, and assistance. The Knowledgebase can assist in increasing productivity by finding solutions to technical questions more quickly - saving both time and money. The KnowledgeBase is maintained by the same engineers who provide TechConnectSM Support and is updated with the hardware and software solutions from actual support cases. These updates are incorporated dynamically. Self-Assist includes the following support elements:</p> <p>Welcome Kit <i>Essential support agreement information / Support authorization number / Local support telephone number / User guide</i></p> <p>Digital Assist Library <i>Cloud-hosted augmented reality library of work instructions. Leverage augmented reality to walk through the proper steps to complete tasks related to the repair and maintenance of Allen-Bradley hardware</i></p> <p>Software Maintenance I <i>Software update downloads</i></p> <p>Online Support Centre Access <i>Knowledgebase tech notes / Interactive forums / Product notifications / Manage service tickets / Submit questions via email</i></p>

1.1.4.2 Definitions of Common Terms Used in Services

Technical Phone Support: Rockwell Automation phone support provides technical assistance for installation, configuration, troubleshooting, diagnosis, basic instruction programming and best practice recommendations. With an unlimited phone support agreement, Customer can call as often as needed throughout the term of your Agreement. Standard hours of coverage are 8:00 AM to 5:00 PM Monday – Friday (based on your local calling time; Rockwell Automation observed holidays excluded). Information on Rockwell Automation observed holidays can be found via the Knowledgebase in article #QA33258 (https://rockwellautomation.custhelp.com/app/answers/answer_view/a_id/819086/redirect).

Case Handling: Rockwell Automation handles cases that require further investigation as a priority with automatic escalation procedures, and call Customer back to provide a progress update if an answer is not immediately available.

Case Resolution Follow-up: For cases where Rockwell Automation could not confirm resolution on the initial call, Customer will receive a proactive follow-up within one business day (target response) to confirm that the problem was resolved or continue troubleshooting, if necessary.

1.1.4.3 Product Families

Rockwell Automation groups products into product families, making it simpler to deliver integrated support for hardware and software, including older and discontinued products. The lists available at the following link are not comprehensive; however, they illustrate how products are classified.

[TechConnect Support Product Family Coverage | Rockwell Automation | US](https://www.rockwellautomation.com/en-us/capabilities/industrial-maintenance-support/product-application-support/remote-support/product-family-coverage.html)

<https://www.rockwellautomation.com/en-us/capabilities/industrial-maintenance-support/product-application-support/remote-support/product-family-coverage.html>

1.1.5 Learning+ Subscription (Optional)

1.1.5.1 Solution Description

Rockwell Automation offers Learning+, an online training platform accessible on any internet enabled device. Options offered for sale include either short term access to a single automation course or an annual subscription. An annual Learning+ subscription provides modular, self-paced lessons, on-demand webinars, and unlimited access to scheduled Virtual Instructor Led Training Courses.

1.1.6 Changes to Agreement

1.1.6.1 Updates to Supported Software Installed Base

Support included with new Licenses purchased during the agreement term are not covered by this scope of work. Each new software purchase includes an independent support contract which may be co-termined with your TechConnect anniversary date. Renewal of these purchases will occur in the Rockwell Automation commerce portal as a separate agreement.

Please work with your Rockwell Automation Customer Success Manager during each TechConnect renewal to consolidate and extend existing contracts to your next TechConnect renewal date.

1.1.6.2 Upgrade Options

Updates to existing TechConnectSM Support Agreement and/or upgrades must be custom quoted by Rockwell Automation. Customer has the following upgrade options:

Coverage Level: Product and System Support agreements can be upgraded to 24x7x365 coverage (e.g., 8:00AM – 5:00PM to 24x7x365), which provides the option to call at any time, including weekends and holidays.

Support Level: Customer may upgrade support levels (e.g., Product Support to System Support) during the term of an existing agreement.

1.1.6.3 Changes to Scope

Contact your local Rockwell Automation sales representative if any adjustments are required during Agreement term, such as:

- Adding or removing a site from support
- Moving supported equipment and software to another supported facility
- Closing a plant and selling to another entity

1.1.6.4 Reinstatement Policy

If Customer does not renew their contract until after the expiration date of the contract, the Customer has the following options to reinstate their support:

- a. If an agreement is not renewed on time and it has been less than 12 months since expiration, the renewed agreement will be backdated to the original expected start date and a 10% fee¹ will be added to the cost of the renewal.
- b. If an agreement is not renewed on time and it has been longer than 12 months since expiration, the support agreement will be priced as a new agreement with current price levels and any previous discounts will not be applied.
- c. For software packages that are removed from support and later reinstated, often referred to as “frozen” and “unfrozen,” a 30% premium will be applied to each piece of software which carries a fee for maintenance as part of the TechConnectSM program.

Note: There is a grace period of 10 days after the date of the Agreement expiration during which Customer can still access support. If Customer renews after the expiration date of the Agreement, the policy above applies regardless of this grace period.

1.1.7 Product Coverage Exclusions

Rockwell Automation products excluded from TechConnectSM Support coverage under this Agreement (if applicable) are listed below:

1.2 Customer Responsibilities

1.2.1 Maintenance, Electrical, and Operations Staff

When applicable, Customer will provide dedicated and available appropriate personnel knowledgeable in the process, operation, control system, and facility layout to assist Rockwell Automation personnel during onsite visits. They will remain onsite and available as necessary for project and/or safety reasons.

1.2.2 System Maintenance and Use

Customer is responsible for (i) the overall performance and overall design of the machine or manufacturing system, including safety features failure modes; (ii) properly using, calibrating, operating, monitoring and maintaining the products and system consistent with all Rockwell Automation or third-party provided instructions, warnings, recommendations, and product and system documentation; (iii) ensuring that properly trained personnel use, operate and maintain the products and system at all times; (iv) staying informed of product updates and alerts and implementing all updates and fixes; (v) notifying Rockwell Automation of any problems with the products or system; and (vi) all other factors affecting the products or system that are outside of the direct control of Rockwell Automation.

¹ If Customer's TechConnectSM Support Agreement has never included support for the product family in question, then the commercial “waive reinstatement” program applies for the respective packages.

1.2.3 Access to the System

Customer will make the applicable processes and/or systems available to Rockwell Automation personnel during the mutually agreed upon schedule for services and equipment implementation as described in this Statement of Work.

1.3 Assumptions, Clarifications and Exceptions

The following assumptions, clarifications and exceptions have been made by Rockwell Automation in the development of this Statement of Work:

Reference	Assumptions (A), Clarifications (C) and Exceptions (E)
A1	Safety. All aspects of mechanical, electrical, and process safety are responsibilities of Customer.
A2	Installation. If applicable, all mechanical and electrical installation is to be provided and managed by Customer and their selected Contractor.
C1	Quotation Scope. Any elements not explicitly outlined within this Statement of Work are not included in the deliverables for this Rockwell Automation Services Agreement.
C2	Documentation. All project and system documentation will be in English and furnished in electronic format unless otherwise stated. Translation into other languages is not included in this Statement of Work.
C3	RoHS. Customer supplied/specified products will meet all applicable material restrictions as defined in RoHS. If it does not, Customer will notify Rockwell Automation prior to shipment of Customer supplied/specified products to Rockwell Automation. Customer will indemnify Rockwell Automation against any claim arising out of Rockwell Automation's use of Customer supplied/specified products.
C4	Existing Devices. Customer represents that any existing operator, machine-mounted, or field devices that are in use or are to be reused are in good working order and will be repaired or replaced by Customer when required. Repair and/or replacement of damaged devices is not included in Rockwell Automation's Statement of Work.
C5	Documented Change Request (DCR) Process. Changes to this scope of work requested by Customer throughout the duration of the Support Agreement will be identified and communicated through project management at Rockwell Automation. Estimates for the material costs, labor, and schedule impacts will be prepared when a change in scope is identified. Refer to the Rockwell Automation Changes provision for additional terms.
C6	Customer Specific Requirements. This proposal does not include Customer specific requirements or onsite activities such as Customer or site specific safety training, background checks, health-related testing or vaccinations, international work visas, and copies of expense receipts. Rockwell Automation must be made aware of any such requirements prior to contract award. Costs for associated time and expenses incurred while complying with such requirements will be at Customer expense.
C7	Infectious Disease Planning. Rockwell Automation is committed to health, safety, and doing all we can to maintain a high level of service for our customers. We are committed to communicating with you about the impact that an infectious disease and any related governmental restrictions may have on the deployment of our personnel and delivery of the project and truly appreciate your cooperation and understanding. In submitting any purchase order, you acknowledge and agree that Rockwell Automation will be excused from performance, or delay in performance, of its obligations under this purchase order, regardless of whether a contract is currently in place governing the parties' relationship, to the extent that Rockwell Automation is unable to perform such obligations due to the effects of a known infectious disease affecting Rockwell Automation and/or third parties, including, without limitation, logistics and materials suppliers.

C8	On-site Working Hours. Rockwell Automation Standard working hours may differ by country. Contact your local Rockwell Automation Distributor or Sales Office to obtain current local standard working hours.
C9	Stand-by time is defined as time spent on-site waiting for completion of customer activities. This includes, but is not limited to, waiting for correction of construction, installation, and wiring or piping errors, and other delays beyond the control of, or not within, Rockwell Automation's specific responsibilities. Stand by time will be invoiced separately at applicable time and expense rates.
C10	Work Site Safety. Customer is responsible for assuring a safe and secure work environment, compliant with relevant local, state, provincial, and nationally recognized standards and regulations, for work at the site.
C11	Safety and Substance Abuse. Rockwell Automation will comply with its own Substance Abuse Policy which meets the intent of the DRUG FREE WORKPLACE Act and all other legal requirements regarding drug testing. A copy of this policy can be supplied upon request.
C12	Ethics and Compliance. All of Rockwell Automation's employees and every person who performs work for, or on behalf of Rockwell Automation are treated with respect and dignity. Rockwell Automation has a no-tolerance policy for discrimination, harassment, and zero tolerance for workplace violence and weapons. Please see the PartnerNetwork Code of Conduct and the Rockwell Automation Global Policy People for further details. https://www.rockwellautomation.com/en-us/company/about-us/sustainability/ethics-compliance.html .
C13	Third Party Software. This Statement of Work may include third party software that is subject to third party license terms ("Third Party Software"). Customer's right to use such Third Party Software as part of or in connection with the Work is subject to any applicable acknowledgements and license terms accompanying such Third Party Software contained therein. If there is a conflict between the licensing terms of such Third Party Software and this Statement of Work, the licensing terms of the Third Party Software shall prevail in connection with the related Third Party Software.
C14	<p>Information Security Standards</p> <p>In the performance of all Work pursuant to this Agreement and Statement of Work, Customer and Rockwell Automation will comply with the following standards and practices:</p> <p>Data Transmission</p> <p>Customer agrees that all transmission or exchange of sensitive data with Rockwell Automation shall take place using secure, industry acceptable, standards (e.g., password-protected, using a complex password; encrypted WinZip sent via e-mail, or, for large files, an encrypted file transfer service; physical media such as paper/DVD sent securely; or another equally secure means of transport). If Customer requires Rockwell Automation to use Customer specified system, the security of the data in transit and at rest once sent from Rockwell Automation is Customer's sole responsibility.</p> <p>Customer-Provided Hard Disk</p> <p>If Rockwell Automation personnel are required to use Customer provided hard disks, Customer agrees to provide the hard disk with designated backup and recovery processes and in encrypted form, using commercially supported or industry standard open-source encryption solutions. The Customer must use commercially reasonable efforts to prevent the Customer-provided hard disk from introducing any malicious software into Rockwell Automation's systems. These efforts shall include, but are not limited to, the use of anti-virus and/or anti-malware and the regular deployment of security patches to remediate any vulnerabilities.</p> <p>Remote Access</p> <p>Remote access by Rockwell Automation's personnel into Customer's control system(s) must be accomplished in accordance with either Customer or Rockwell Automation procedures, whichever is more stringent. If Customer requires Rockwell Automation personnel to use Customer-specified procedures, the security of the connection/session is Customer's sole responsibility, and Customer is solely responsible for logging activities of all users accessing the Customer's system.</p>
C15	Cybersecurity for Solutions. Sub-contractors and/or third-party vendors will follow any applicable industry best practices and/or guidelines for cybersecurity and data protection with

	regard to IEC 62443 2-4.
C16	Personal Data. To the extent Rockwell Automation processes personal data in the performance of the services under this Statement of Work, such processing of personal data will be conducted in accordance with the Data Processing Addendum ("DPA") available at https://www.rockwellautomation.com/en-us/company/about-us/legal-notice/data-processing-addendum.html .
C17	Customer Information. Rockwell Automation will share with its authorized distributor or partner of record Customer Data collected under this Agreement pursuant to the terms herein and the Rockwell Automation Privacy and Cookies Policy located at https://www.rockwellautomation.com/en-us/company/about-us/legal-notice/privacy-and-cookies-policy.html .
C18	Customer Success Publication. Sharing customer success stories helps position customers as leaders among companies pursuing excellence in their industrial operations. Customer agrees that Rockwell Automation can reference and disclose Customer's name and logo in internal and external marketing materials and will share only the solutions and services purchased, Customer industry, location, and general results through a customer success story. Rockwell Automation will make no claims that Customer endorses the product or solution, and the success story will be used for marketing purposes only.

1.4 TechConnectSM - Termination for Convenience

Either party may terminate this Agreement with a prior written 30-day notice. In the event Customer cancels, Customer would be subject to a termination fee equal to 25% of the remaining Agreement value. Termination request is invalid if remaining term of service is less than 2 months.

1.5 Rockwell Automation Commitment for Sales Through Distribution

The Rockwell Automation Commitment for Sales Through Distribution (the "Commitment Terms") found at <https://www.rockwellautomation.com/en-us/company/about-us/legal-notice/commitment-for-sales-through-distribution.html> covers purchases by Distributor's customer ("Customer") from Distributor of the Products and Services described and integrated pursuant to this Statement of Work to be provided by Rockwell Automation, Inc. and/or its affiliates. The Commitment Terms apply directly to Customer and Rockwell Automation.

Accepted.

Customer: _____

Date: _____

2 Distributor Commercial Terms

2.1 Pricing Summary

Onesource Distributors Inc's price is based on the Statement of Work set forth in Section 1 above. All prices are in USD.

Item	Product	Price
1	9800-DC8MVSTART <i>Medium Voltage Starter, Product Support, 8 x 5 M-F, 1-10000 Total Devices</i>	1,392.16
2	9800-DC8AUTOA <i>Automation Control Hardware, Product Support, 8 x 5 M-F, 1-4 Total Devices</i>	1,207.36
3	9800-DC8ABDRIVMHPA <i>LV Drives Med HP, Product Support, 8 x 5 M-F, 1-4 Total Devices</i>	526.68
4	9800-DC8ABDRIVHHPA <i>LV Drives High HP, Product Support, 8 x 5 M-F, 1-4 Total Devices</i>	1,357.25
5	9800-DC8MVDE <i>Medium Voltage Hardware, Product Support, 8 x 5 M-F, 5-10 Total Devices</i>	19,662.72
6	9800-DC8LEHDWA <i>Legacy Hardware, Product Support, 8 x 5 M-F, 1-5 Total Devices</i>	2,219.65

TOTAL PRICE: **USD 26,365.82**

Multi-Year Option – Fixed-Price 3-Year Contract
One-Time Payment or Billed Annually – Single PO for 3-Year Amount Required **USD 79,097.46**

Contract Reinstatement Fee: **USD 2,636.58**

If this contract is not renewed before the current Contract Expiration Date, a 10% Contract Reinstatement Fee will be applied to the Suggested Resale Price.

LEARNING+ SUBSCRIPTION (OPTIONAL): Web hosted, self-paced training courses including virtual classroom sessions are available for customers with an active TechConnect support agreement, as either single course access or annual subscription to all course content available in the Rockwell Automation Digital Learning Library. Please add the net amount for the Learning+ option desired in the correct quantity of desired users to your renewal PO.

Catalog Number	Description	List Price per User
LP-3TC	Learning+ 1 Class available for 3 months	USD 820.00
LP-SU1	Learning+ Single User Subscription	USD 4,940.00

2.2 Invoicing Schedule

Contract Start Date

2.3 Purchase Order Instructions

Please Issue a Single Purchase Order to: Onesource Distributors Inc
Ref: Proposal # 3801025080

Purchase order should match the value and term proposed above. If a purchase order received does not match the term of the agreement, pricing will be subject to annual price adjustments.

2.4 Distributor Terms and Conditions of Sale

<https://www.1sourcedist.com/about/terms>

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: C. Olsen/G. Ayala

Budgeted: No

Budgeted Amount: \$0

Cost Estimate: \$150,000

Funding Source: Gen. Fund

Program/ Line Item No. TBD

General Counsel Approval: NA

Engineers/Feasibility Report: NA

CEQA Compliance: NA

Subject: MULTIPURPOSE CENTER FEASIBILITY STUDY REQUEST FOR PROPOSALS

SUMMARY

The OCWD Water Education Corridor in the administration building was constructed approximately 12 years ago to enhance the Groundwater Replenishment System (GWRS) tour program and support visitor learning. The Corridor has served as the starting point for GWRS tours during this time. The OCWD Tour Ad Hoc Committee and staff have identified and visited local education centers to evaluate the potential development of a standalone multipurpose center that could support a range of internal and external uses, including visitor tours, staff training, large events, and meetings.

RECOMMENDATION

Agendize for December 17 Board meeting: Authorize issuance of Request for Proposals for a Multipurpose Center Feasibility Study.

BACKGROUND/ANALYSIS

Since the Groundwater Replenishment System (GWRS) came online in January 2008, more than 55,000 visitors have toured the facility. Visitor interest is expected to remain steady or increase, including ongoing requests from other agencies and international delegations. Dedicated space that can adequately support tours and other GWRS activities continues to be a core operational need.

In 2010, the District formed the Visitor Center Ad Hoc Committee and contracted with Townsend Public Affairs to identify exemplary educational centers and exhibits, and to facilitate tours and meetings with local facilities to assess potential concepts, costs, and timelines for a visitor center at OCWD. At that time, it was determined that a meaningful and effective educational experience could be created within the existing administration building foyer and hallway, rather than constructing a separate, larger facility. The Water Education Corridor was subsequently built in that hallway and was intended to be used as a tour orientation and education space. However, this approach has proven to be ineffective due to the size of tour groups and the Corridor's location within a primary employee circulation area.

Recently, a Tour Ad Hoc Committee was formed, and Committee members and staff have visited the City of Anaheim Sustainability Education Center, Mesa Water Education Center, Albert Robles Learning Center, Los Angeles Sanitation Education Learning Center

and OC San Headquarters Building to reevaluate the concept of a stand-alone center.

A Feasibility Study (FS) would evaluate potential locations on the OCWD campus, such as the previous laboratory space (now an internal parking lot) and landscape space in front of the administration building, for a Multipurpose Center Building. The FS would provide building layout options, including a large meeting room and exhibit hall, as well as supporting spaces (e.g., restrooms and storage). The facility would be designed to serve both as the primary hub for GWRS and OCWD tours and as a highly versatile space for District meetings, training, community outreach events, and partner activities. The FS would verify the total square footage needed and develop a cost estimate for the building, exhibits, and interior furnishings.

At this time, staff is requesting authorization to issue a Request for Proposals (RFP) for a Multipurpose Center Feasibility Study.

PRIOR RELEVANT BOARD ACTION(S)

None

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: P. Versluis/J. Dadakis

Budgeted: Yes

Budgeted Amount: \$380,000

Cost Estimate: \$412,509

Funding Source: R&R

Program/Line Item No. R24001

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

**Subject: WESTBAY MONITORING WELL SYSTEM WINCH, CABLE, AND
COUNTER DISPLAY REPLACEMENT**

SUMMARY

The winch, cable, and counter display in the Water Quality Department's Westbay van require replacement due to deterioration after 26 years of use. The replacement will provide continued safe and precise groundwater sample collection from the District's more than 50 Westbay monitoring well installations located throughout the service area. Procurement of these components now will allow them to arrive in time for installation into the new Water Quality Department Westbay van scheduled for delivery during the first quarter of 2026.

Attachment: Mount Sopris Instrument Company, Inc. Quotation (valid through 2/19/2026)

RECOMMENDATION

Agendize for December 17 Board meeting: Authorize the issuance of a purchase order in the amount of \$32,509 which includes tax to Mount Sopris Instrument Company, inc. for the purchase of one (1) Mount Sopris MXC-1-0-7-3 1000-meter Winch spooled with 1000 meters of single conductor cable and one (1) 5MDA-1000 Depth-Speed Display (MX Series).

BACKGROUND/ANALYSIS

Westbay multi-port monitoring wells provide depth-discrete water level measurement and groundwater sampling using a system of inflatable packers that isolate individual screened intervals within a single well casing. Since the late 1980s, OCWD has installed and monitored 56 of these specialized wells throughout the groundwater basin. Collectively, they provide more than 550 discrete monitoring points to depths up to approximately 2,100 feet.

These wells are a foundational component of the District's basin-wide monitoring network and support numerous initiatives, including:

- Hydrogeologic characterization and development of the OCWD groundwater model
- Annual basin storage and accumulated overdraft determinations
- North Basin VOC plume delineation
- Former MCAS El Toro TCE and PFAS plume monitoring
- Seawater intrusion monitoring
- Basin-wide PFAS characterization
- Other long-term water quality assessments

The winch system is contained within a custom sampling van, raising and lowering the Westbay sampling probe and bottles to precise depths corresponding to specific monitoring ports within the well casing. Depth accuracy is essential for collecting representative samples from the designated zones. Over time, mechanical wear, repeated lowering and retrieval cycles, and prolonged exposure to groundwater have degraded the cable, motor components, and counter display. The cable, containing a single conductor used for communication with the Westbay sampling tool, is particularly vulnerable, and its deteriorating condition now threatens sampling reliability and safety.

The current winch and counter display, purchased in 1999 from Mount Sopris Instruments to equip the original Westbay sampling van, are integral to the sampling process and have performed reliably, with minimal issues during its long service. Purchase of a new winch system was considered a couple of years ago during budgeting and ordering a replacement custom Westbay van (scheduled for delivery during the first quarter of 2026). However, at that time the current winch system was operating well and not showing any major operational issues, and thus it was planned to be moved to the new sampling van. More recently, the mechanical components of the winch and the cable system have begun to show signs of age and are now in need of replacement.

Mount Sopris Instruments manufactures specialty winch systems for the mining and oil industries. This winch system is compatible with the Westbay sampling system and capable of reaching the depths needed to sample OCWD's network of Westbay monitoring wells. The replacement winch and counter display will be installed in the District's new Westbay sampling van upon its delivery. The quoted purchase price with delivery fees included for the winch, cable, and counter is \$29,892.32 plus sales tax for a total amount of \$32,509. The winch system (\$32,509) plus the van purchase (original budget \$380,000) totals the new cost estimate of \$412,509.

Staff recommends approval of this purchase to ensure continued safe, accurate, and reliable Westbay groundwater monitoring across the basin.

PRIOR RELEVANT BOARD ACTION(S)

R24-9-111: Authorize Issuance of Purchase Order to LDV Custom Specialty Vehicles for Mobile Water Sampling Lab Vehicle



Mount Sopris Instrument Company, Inc.

4975 East 41st Avenue
Denver, CO 80216
USA
Phone: +1 303-279-3211

QUOTATION

Pro Forma / Quote Number: 250886
Pro Forma / Quote Date: Nov 19, 2025
Page: 1

Quoted To:
Orange County Water District Attn: Accounts Payable P.O. Box 20845 Fountain Valley, CA 92728-0845

Ship To:
Orange County Water District Attn: Accounts Payable P.O. Box 20845 Fountain Valley, CA 92728-0845

Customer ID	Good Thru	Payment Terms	Sales Rep
OCWDIS	2/19/26	Net 30 Days	097

Quantity	Item	Description	Unit Price USD	Amount USD
1.00	MXC-1-0-7-3-9999	1,000 Meter Winch, 120VAC - Spooled with 1,000 m of 3.17mm (1/8 in) single conductor cable - Includes tripod, and heavy-duty case - Does not include cablehead	27,876.00	27,876.00
1.00	5MDA-1000	Depth-Speed Display MX Series winches	1,740.00	1,740.00
1.00	13-100-900	Shipping, Handling, Insurance -FedEx LTL Economy \$625.40 3-day -FedEx LTL Priority \$757.59 2-day -R&L Carriers Standard Service \$276.30 2-day	276.30	276.30

Please note that if any items in this quote are subject to tariffs or import duties upon entry into the United States, those costs will be added to the final price. Any applicable tariffs will be billed separately and are the responsibility of the customer. We will notify you of any such charges as soon as they are determined.

Subtotal	29,892.30
Sales Tax	
TOTAL	29,892.30

Direct to: Wire Routing Transit No 121000248
If ACH Payment: Use Routing No. 102000076
Bank Name: Wells Fargo Bank, N.A.
Address: 420 Montgomery Street
San Francisco, CA 94104

Acct Number, (BNF): 3002299341
SWIFT Address: WFBIUS6S
Beneficiary Name: MOUNT SOPRIS INSTRUMENT

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/L. Esguerra

Budgeted Amount: \$3,500,000

Cost Estimate: \$3,500,000

Funding Source: R&R

Program/Line Item No.: R22014

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

**Subject: CONTRACT NO. SB-2026-1 SANTIAGO PUMP STATION
MODIFICATIONS NOTICE OF INVITING BIDS**

SUMMARY

Final plans and specifications for the Santiago Pump Station Modifications Project are nearing completion. Staff recommends issuing a Notice Inviting Bids for the construction contract.

RECOMMENDATION

Agendize for December 17 Board Meeting: Authorize publication of Notice Inviting Bids for Contract No. SB-2026-1, Santiago Pump Station Modifications Project.

BACKGROUND/ANALYSIS

Orange County Water District (OCWD) owns Blue Diamond and Bond Basins, collectively known as Santiago Basin, which are located near the intersection of Villa Park Road and N. Hewes Street in the City of Orange. OCWD pumps Santa Ana River water from Burris Basin to the Santiago Basins for groundwater recharge. There is a floating pump station in Santiago Basin that allows the District to pump water from the Basin to Santiago Creek or back to Burris Basin to increase the groundwater recharge capacity of the system. The configuration of the Santiago Basin and pump stations is shown in Figure 1 on the next page.

In October 2018, the Board authorized an agreement with Tetra Tech to prepare engineered construction drawings and bid documents to modify the floating pump station to work at higher water elevations since the submerged pump station stopped functioning. The project was placed on hold for a few years while the Santiago Intertie Repairs were completed. Staff continued design for the modification project and found that one of the pump drives and the power cables to the floating pump station were damaged. This damage made the floating pump station inoperable. Tetra Tech performed an additional assessment of the 1,400-foot-long power conduits and multiple cable bundles that connect the pump station control building to the floating pump station to detail the damage and design a permanent repair. The project was placed on hold a second time to repair the existing power wires to the pumps to enable Staff to operate one pump and lower the water level to perform repairs of the failing slope in the southeast corner of Bond Basin.

Figure 1 – Santiago Basin



In June 2024, the Board authorized an agreement with T.E. Roberts to perform Phase 1 repairs to the pump station that included repairs to the eight existing power wires and 12-inch floating conduits connected to the two existing pumps at the floating pump station. During Phase 1 construction, approximately 600 feet of damaged power wires were removed from the conduits, and the remaining wires were tested. Three of eight power wires failed electrical testing and would require over 4,000 feet of new replacement wire. Due to the quantity and cost of replacement power wire combined with the need to lower the water level to facilitate basin repairs during Summer 2025, Staff repowered one of two pumps and began lowering the water surface of Santiago Basin. The pump has been in operation since April 2025.

After completion of Phase 1 Staff determined that replacement of all eight (8) existing power wires and the existing 20-year-old pump drives are necessary to maximize operational reliability and were included in the Santiago Pump Station Modifications project. Final plans and specifications for the Santiago Pump Station Modifications project are nearing completion, and Staff recommends issuing a Notice Inviting Bids for the construction contract. A summary of the projected schedule is shown in Table 1, below:

Table 1: Santiago Pump Station Modifications Schedule Summary

Description	Dates
Design	August 2018 – January 2026
Construction Contract	March 2026 – August 2027

PRIOR RELEVANT BOARD ACTIONS

2/19/2025 R25-2-18: Amendment to Agreement with T.E. Roberts for the Santiago Floating Pump Station Power Wire and Conduit Repairs

6/19/2024 R24-6-68: Authorize Agreement with T.E. Roberts for the Santiago Floating Pump Station Power Wire and Conduit Repairs

5/18/2022 R22-5-56: Authorize Amendment to Agreement with Tetra Tech for Santiago Pump Station Modifications Project Design and Construction Support Services

10/16/2019 R19-10-146: Authorize Amendment to Agreement with Tetra Tech for Santiago Pump Station Modifications Project Design and Construction support Services

10/17/2018 R18-10-144: Authorize Agreement to Tetra Tech for Santiago Pump Station Modifications Project Design and Construction Support Services

08/15/2018 M18-97: Establish A Project Budget and Authorize Issuance of RFP for Santiago Pump Station Modifications Design Services

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/F. Almario

Budgeted: Yes

Proposed Budget: \$95,000

Cost Estimate: \$95,000

Funding Source: R&R

Program/Line Item No. R24033

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

Subject: REQUEST FOR PROPOSALS: OCWD GAP RESERVOIR ASSESSMENT

SUMMARY

The OCWD GAP reservoir in Santa Ana shows signs of deterioration, including concrete spalling, observable rust of reinforcement steel, and water leakage when the water levels are high. Staff recommends issuance of a Request for Proposals (RFP) for a structural assessment and a report of findings for the OCWD GAP Reservoir.

RECOMMENDATION

Agendize for December 17 Board meeting: Authorize issuance of a Request for Proposals for the OCWD GAP Reservoir Assessment.

BACKGROUND/ANALYSIS

Orange County Water District (OCWD) and City of Santa Ana (City) share a reservoir site containing a city reservoir used for storage of potable water and an OCWD reservoir used for storage of recycled water. The site is located at the northeast corner of Bear Street and Alton Avenue in the City of Santa Ana. The city refers to the site as "South Station", while OCWD refers to the site as the "GAP SAR" (Green Acres Project Santa Ana Reservoir). Both reservoirs were constructed in 1965 by the city for potable water storage. OCWD purchased the south reservoir from the city in 1995 and performed structural and piping retrofits in 1997. The City's reservoir has also had structural retrofits performed, and both reservoirs had roof repairs performed in 1999. The OCWD GAP reservoir shows signs of deterioration, including concrete spalling, observable rust of reinforcement steel, and water leakage when the water levels are high.

Staff is preparing an RFP that will seek proposals from qualified engineering firms to perform a structural inspection of OCWD's GAP Reservoir and provide recommendations for its deficiencies.

At a minimum, the scope of work will include the following:

- Review of existing structural drawings to determine whether the GAP SAR meets current seismic design code and AWWA requirements;
- Interior inspection of the roof, walls, columns, floors, and structural interfaces;

- Reservoir exterior inspection of all structural elements, including visible footings, walls, roof, and previous retrofits; and
- Preparation of a report of findings, conclusions, and recommendations with costs analysis.

Proposals will be due in February 2026, and staff expects to bring a recommendation for an agreement award to the Board in March.

PRIOR RELEVANT BOARD ACTION(S)

None

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R.Herndon/D.Field

Budgeted: Yes

Budgeted Amount: \$199,025

Cost Estimate: \$199,939

Funding Source: CIP

Program/ Line Item No.: C24009

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: Yes

**Subject: CONTRACT GBM-2024-3 CONSTRUCTION OF SHALLOW AQUIFER
PIEZOMETERS AND TALBERT GAP REPLACEMENT MONITORING
WELL CLUSTER NOTICE OF COMPLETION**

SUMMARY

J&H Drilling Co, Inc. dba MR Drilling (MR Drilling) has completed all work under Contract GBM-2024-3 for construction of Shallow Aquifer piezometers (monitoring wells) and a Talbert Gap replacement monitoring well cluster. The final cost was \$199,939 which is \$914 over the initially awarded contract amount, but \$6,280 under the amended contract award after issuing Change Order No. 1.

Attachments:

- Figure 1 – Shallow Aquifer Piezometer FM-41 and OM-12 Locations
- Figure 2 – Talbert Gap Monitoring Well Cluster OCWD-M29R Location
- Change Order No. 1
- Change Order No. 2

RECOMMENDATION

Agendize for December 17 Board meeting: Accept completion of the work and authorize filing a Notice of Completion for Contract GBM-2024-3, Construction of Shallow Aquifer Monitoring Wells and Talbert Gap Monitoring Well Cluster.

BACKGROUND/ANALYSIS

The purpose of monitoring wells FM-41 and OM-12 is to provide groundwater level data for the Shallow Aquifer near the basin margins where no wells exist (Figure 1). Groundwater level data at those locations will help refine basin storage calculations in those areas.

The purpose of Talbert Gap replacement monitoring well cluster OCWD-M29R is to provide vertical resolution of seawater intrusion in the Talbert Aquifer on the west side of the Talbert Gap (Figure 2). In addition to improving staff's ability to track salinity changes, the monitoring well cluster will be an important calibration target for upcoming refinement of the OCWD Talbert Gap computer model. The previous OCWD-M29 monitoring well had been lost when the site was developed, and the well was most likely paved over during construction. Staff made two attempts to try to locate the well

including use of a metal detector and concluded that it was developed over with pavement or structures.

The Board approved construction of two Shallow Aquifer monitoring wells (FM-41 and OM-12) and replacement Talbert Gap monitoring well cluster (OCWD-M29R) in November 2024. The Notice Inviting Bids for Contract GBM-2024-3 was issued on November 21, 2024. The Board awarded Contract GBM-2024-2 to MR Drilling in the amount of \$199,025 in February 2025. MR completed construction of the wells in October 2025.

Change Order No. 1

The City of Huntington Beach required the OCWD-M29R vaults to be installed per City Standards, not OCWD's typical specifications included in the Contract. The City's standards included grinding the existing asphalt around the vaults followed by patching with hot asphalt. The additional out-of-scope vault installation cost was \$7,194 which was approved under the General Manager's authority. The Contract was also extended by 184 calendar days due to delays obtaining encroachment permits from Huntington Beach.

Change Order No. 2

Several bid item adjustments were made to reconcile the original bid amounts with the actual quantities of work/materials completed/installed. The total of these adjustments resulted in a Contract credit to OCWD for \$6,280 which was approved under the General Manager's authority.

After completion of Change Order Nos. 1 and 2, the total cost for well construction was \$199,939 which is \$914 over the initially awarded contracted amount, but \$6,280 under the amended contract amount after issuing Change Order No. 1. Table 1 below summarizes the budget and expenditures for the project.

Table 1: Shallow Aquifer Monitoring Wells and Talbert Monitoring Well Cluster Budget

Task	Approved Budget	Actual & Anticipated Expenditures
Wells FM-41, OM-12, M29RA, & M29RB Construction	\$ 199,025	
Award Contract GBM-2024-3	--	\$ 199,025
Change Order No. 1	--	7,194
Change Order No. 2	--	(6,280)
Subtotal Contract GBM-2024-3	\$ 199,025	\$ 199,939
Construction Inspection Services ¹	0	0
Well Survey ²	10,000	10,000
SUBTOTAL:	209,025	209,939
CONTINGENCY (10%):	20,900	0
TOTAL:	\$ 229,925	\$ 209,939

¹Inspection services completed in-house by OCWD geologists.

²Survey not completed yet.

PRIOR RELEVANT BOARD ACTIONS

2/19/25, R25-2-12 Award Contract No. GBM-2024-3 Construction of Shallow Aquifer Monitoring Wells and Talbert Gap Monitoring Well Cluster, to J&H Drilling Co, dba MR Drilling.

11/20/2024, R24-11-138 Approve Installation of two Shallow aquifer monitoring wells and Talbert Gap monitoring well cluster, including establishing a project budget of \$256,000.

5/15/2024, R24-5-48 Award Contract No. GBM-2024-2, 2024 Shallow Aquifer Monitoring Well Construction, to BC2 Environmental, LLC.

10/18/2023, R23-10-137 Approve installation of three Shallow aquifer monitoring wells for annual water level maps and storage calculation.

3/15/23, R23-3-34 Award Contract No. GBM-2023-1, 2023 Shallow Aquifer Monitoring Wells, to BC2 Environmental, LLC.

12/21/22, R22-12-169 Approve installation of two Shallow aquifer monitoring wells for annual water level maps and storage calculation.

3/16/22, R22-3-23 Award Contract No. GBM-2022-1, 2022 Shallow Aquifer Monitoring Wells, to BC2 Environmental, LLC.

10/20/21, R21-10-154 Approve installation of two Shallow aquifer monitoring wells for annual water level maps and storage calculation.

3/21/07 M07-44 Receive and file staff report titled "Evaluation of Orange County Groundwater Basin Storage and Operational Strategy," and adopt new three-layer storage change methodology with the associated new full basin condition.

Figure 1: Locations of installed Shallow aquifer piezometers FM-41 and OM-12 to improve accuracy of annual water level maps and groundwater storage calculations.

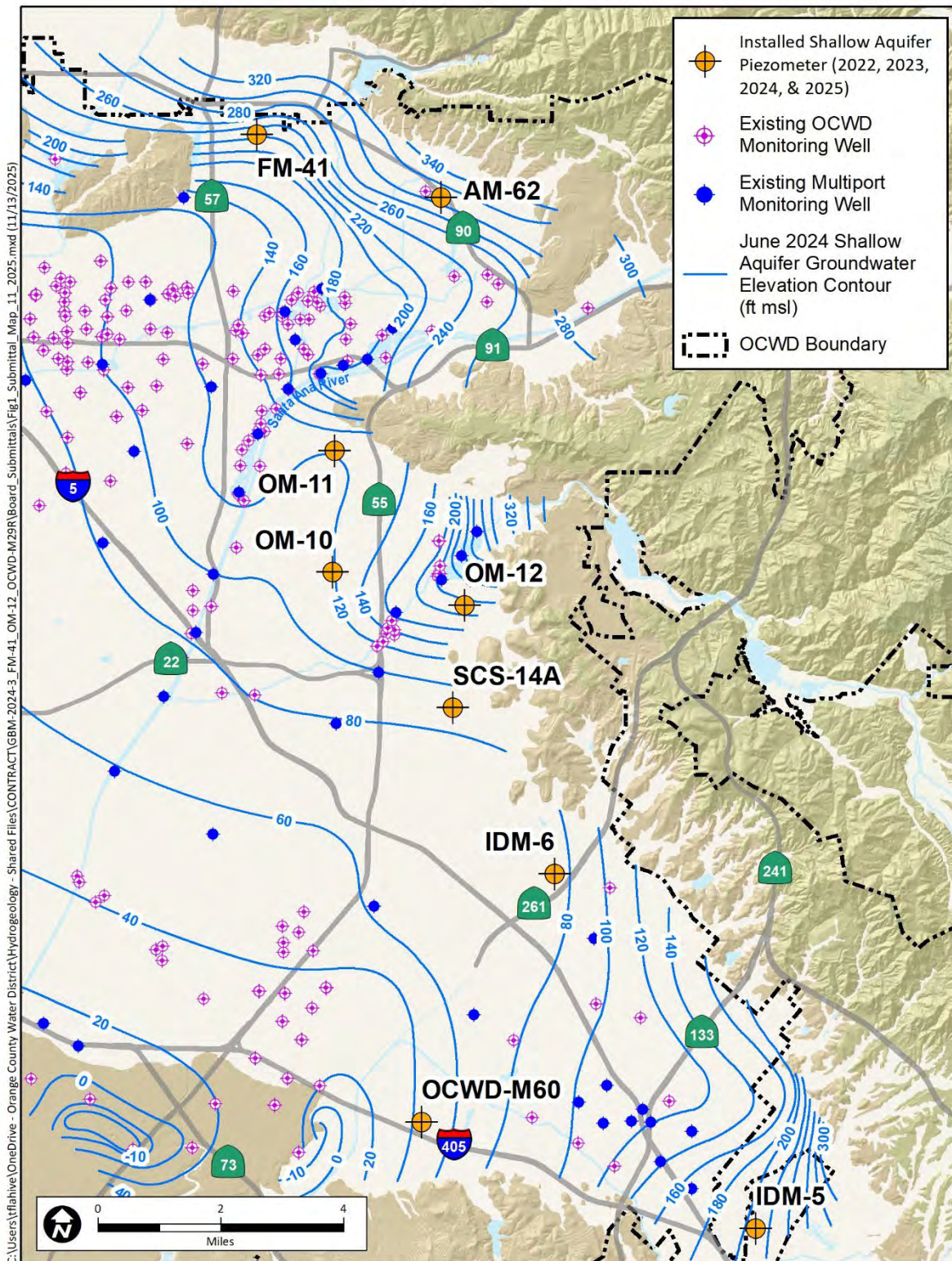
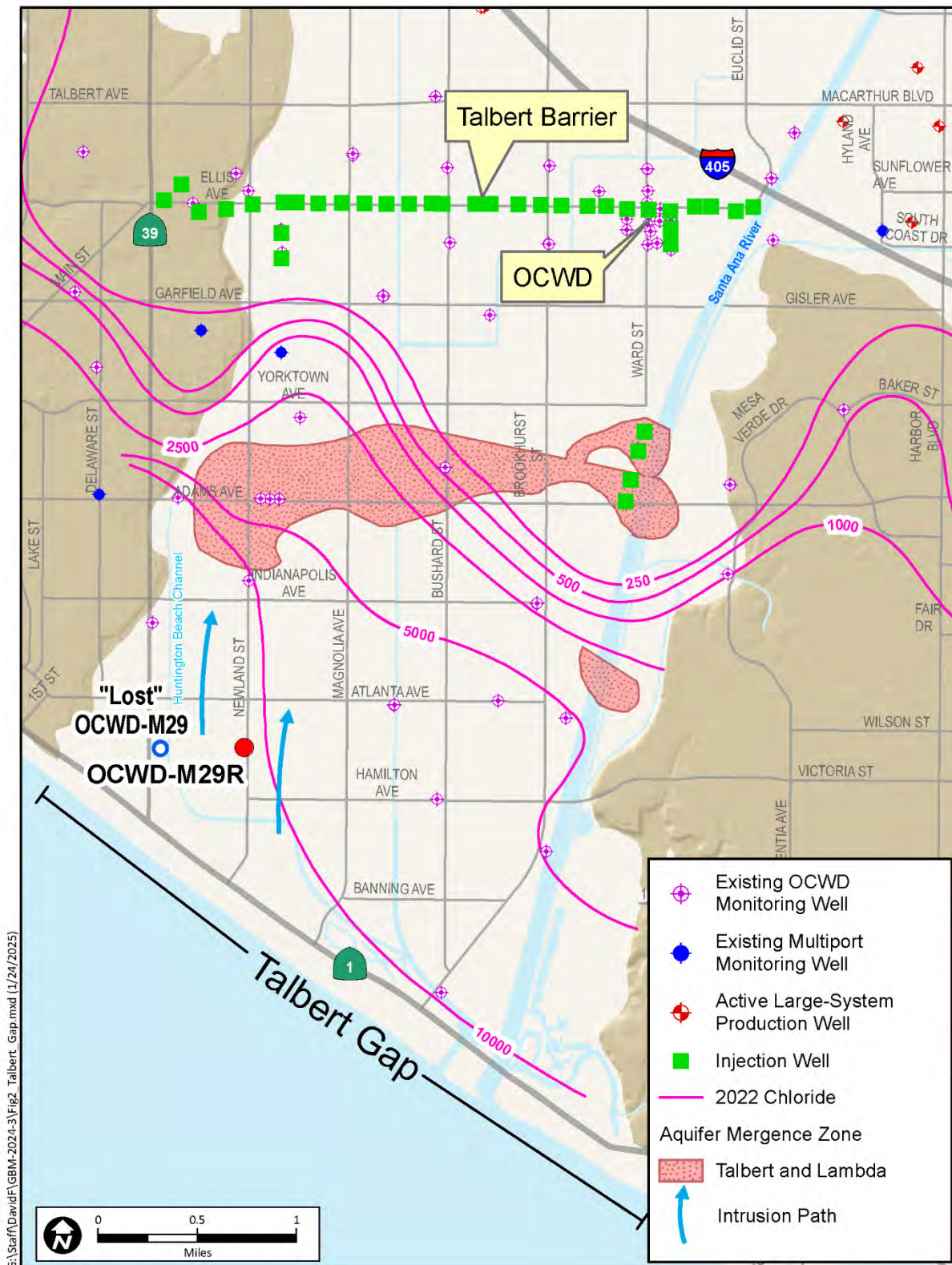


Figure 2: Location of Talbert Gap replacement monitoring well cluster OCWD-M29R, existing OCWD-owned monitoring wells, and large system production wells.





CHANGE ORDER NO. 1

CONTRACT NO. GBM-2024-3

TO: J.&H. Drilling Co., Inc. dba M R Drilling
13124 Firestone Blvd.
Santa Fe Springs, CA 90670

You are hereby directed to provide the extra work necessary to comply with this Change Order.

DESCRIPTION OF CHANGE:

Out of Scope work to install OCWD-M29R monitoring well vaults (2) per City of Huntington Beach request per City Standards.

PAYMENT:

An increase in contract price of: \$7,194

CONTRACT TIME:

Increase contract time by 184 calendar days.

ACCEPTANCE:

Contractor accepts the terms and conditions stated above as full and final settlement of any and all claims arising from this Change Order and acknowledges that the compensation (time and cost) set forth in the Change Order comprises the total compensation due for the work or change defined in the Change Order, including all impact on any unchanged work. By signing the Change Order, the Contractor acknowledges and agrees that the stipulated compensation includes payment for all Work contained in the Change Order, plus all payment for the interruption of schedules, extended overhead costs, delay, and all impact, ripple effect or cumulative impact on all other Work under this Contract. The signing of the Change Order acknowledges full mutual accord and satisfaction for the change, and that the time and/or cost under the Change Order constitute the total equitable adjustment owed the Contractor as a result of the change. The Contractor agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause that shall arise out of or as a result of this Change Order or the impact of this Change Order on the remainder of the Work under this contract.

Contractor agrees to perform the above-described work in accordance with the above terms and in compliance with applicable sections of the Contract Documents

This Change Order is hereby agreed to, accepted and approved, all in accordance with the General Provisions of the Contract Documents.

ORANGE COUNTY WATER DISTRICT

By: David M. Telep 10/31/25
Project Manager Date
By: David H. Hurdan 10/31/25
District Hydrogeologist Date
By: [Signature] 10/31/25
Executive Director Date
By: John C. Hardy 10/30/25
General Manager Date

CONTRACTOR

By: [Signature] 11/17/25
Date
Title: OPERATIONS MANAGER
By: [Signature] 11/17/25
Date
Title: GENERAL MANAGER



CHANGE ORDER NO. 2
CONTRACT NO. GBM-2024-3

TO: J.&H. Drilling Co., Inc. dba M R Drilling
13124 Firestone Blvd.
Santa Fe Springs, CA 90670

You are hereby directed to provide the extra work necessary to comply with this Change Order.
DESCRIPTION OF CHANGE:

1. Increase Bid Item 4 by 25 Linear Feet, FM-41 Borehole Drilling: \$2,000.00.
2. Increase Bid Item 5 by 20 Linear Feet, FM-41 Casing and Screen: \$520.00.
3. Decrease Bid Item 6 by 5 Linear Feet, FM-41 Filter Pack: (\$70.00).
4. Increase Bid Item 7 by 20 Linear Feet, FM-41 Bentonite and Cement Seals: \$460.00.
5. Decrease Bid Item 8 by 4 Hours, FM-41 Development: (\$1,300.00).
6. Increase Bid Item 14 by 2 Linear Feet, OM-12 Casing and Screen: \$52.00.
7. Decrease Bid Item 15 by 20 Linear Feet, OM-12 Filter Pack: (\$340.00).
8. Increase Bid Item 16 by 20 Linear Feet, OM-12 Bentonite and Cement Seals: \$500.00.
9. Decrease Bid Item 17 by 1 Hour, OM-12 Development: (\$350.00).
10. Decrease Bid Item 22 by 10 Linear Feet, M29R Borehole Drilling: (\$950.00).
11. Increase Bid Item 23 by 32 Linear Feet, M29R Casing and Screen: \$448.00.
12. Decrease Bid Item 24 by 40 Linear Feet, M29R Filter Pack: (\$560.00).
13. Increase Bid Item 25 by 30 Linear Feet, M29R Bentonite and Cement Seals: \$660.00.
14. Decrease Bid Item 26 by 3 Hours, M29R Development: (\$1,350.00).
15. Remove Bid Item 28, Borehole Abandonment: (\$6,000.00).

PAYMENT: Net Contract Adjustment: (\$6,280.00)

CONTRACT TIME: No Extension.

ACCEPTANCE:

Contractor accepts the terms and conditions stated above as full and final settlement of any and all claims arising from this Change Order and acknowledges that the compensation (time and cost) set forth in the Change Order comprises the total compensation due for the work or change defined in the Change Order, including all impact on any unchanged work. By signing the Change Order, the Contractor acknowledges and agrees that the stipulated compensation includes payment for all Work contained in the Change Order, plus all payment for the interruption of schedules, extended overhead costs, delay, and all impact, ripple effect or cumulative impact on all other Work under this Contract. The signing of the Change Order acknowledges full mutual accord and satisfaction for the change, and that the time and/or cost under the Change Order constitute the total equitable adjustment owed the Contractor as a result of the change. The Contractor agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause that shall arise out of or as a result of this Change Order or the impact of this Change Order on the remainder of the Work under this contract.

Contractor agrees to perform the above-described work in accordance with the above terms and in compliance with applicable sections of the Contract Documents

This Change Order is hereby agreed to, accepted and approved, all in accordance with the General Provisions of the Contract Documents.

ORANGE COUNTY WATER DISTRICT

By: [Signature] 11/19/25
Project Manager Date
By: [Signature] 11/19/25
District Hydrogeologist Date
By: [Signature] 11/19/25
Executive Director Date
By: [Signature] 11/19/25
General Manager Date

CONTRACTOR

By: [Signature] 11-19-25
Date
Title: OPERATIONS MANAGER
By: [Signature] 11-19-25
Date
Title: GENERAL MANAGER

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: L. Haney/A. Hutchinson

Budgeted: Yes

Budgeted Amount: \$188,750

Cost Estimate: \$188,750

Funding Source: General Fund

Program/Line Item No. 1044.53001

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

**Subject: AUTHORIZE AGREEMENT WITH JACOBS FOR ENGINEERING AND
HYDROGEOLOGIC SERVICES - SANTA ANA RIVER RIVERBED
FILTRATION SYSTEM FEASIBILITY STUDY**

SUMMARY

Modeling suggests an expanded full-scale Santa Ana River Riverbed Filtration System (RFS) could add 8,000-10,000 acre-feet per year of new recharge. Staff recommends entering into an Agreement with Jacobs for engineering and hydrogeologic services to conduct a feasibility study to determine the optimal size, location, configuration, and cost of a full-scale RFS. A key objective of the feasibility study is to assess potential costs so a detailed cost-benefit analysis can follow.

Attachment: Jacobs Scope and Price Proposal for RFP-25-008, dated November 12, 2025

RECOMMENDATION

Agendize for December 17 Board meeting: Authorize an Agreement with Jacobs for an amount not to exceed \$188,750 to provide engineering and hydrogeologic services for the Santa Ana River Riverbed Filtration System Feasibility Study.

BACKGROUND/ANALYSIS

OCWD's recharge system is limited by clogging caused by suspended solids in recharge water. A demonstration-scale RFS built in 2015 proved effective at addressing this issue by removing about 96% of suspended solids and more than doubling the recharge capacity of Olive Basin. The 10-acre demonstration RFS (Figure 1) tested from 2015 to 2023 showed strong water-quality improvements and recharge gains consistent with other basins that receive water with low suspended solids. Modeling indicates that an expanded RFS could add 8,000–10,000 acre-feet per year of new recharge in key large recharge basins such as Anaheim Lake, Kraemer Basin, and Miller Basin.

Given this significant potential to increase local water supply and reduce losses to the ocean, in May 2025, the Board authorized issuance of a Request for Proposals (RFP) for engineering and hydrogeologic services to conduct a feasibility study to determine

the optimal size, location, configuration, and cost of an expanded full-scale RFS so a detailed cost-benefit analysis can follow.

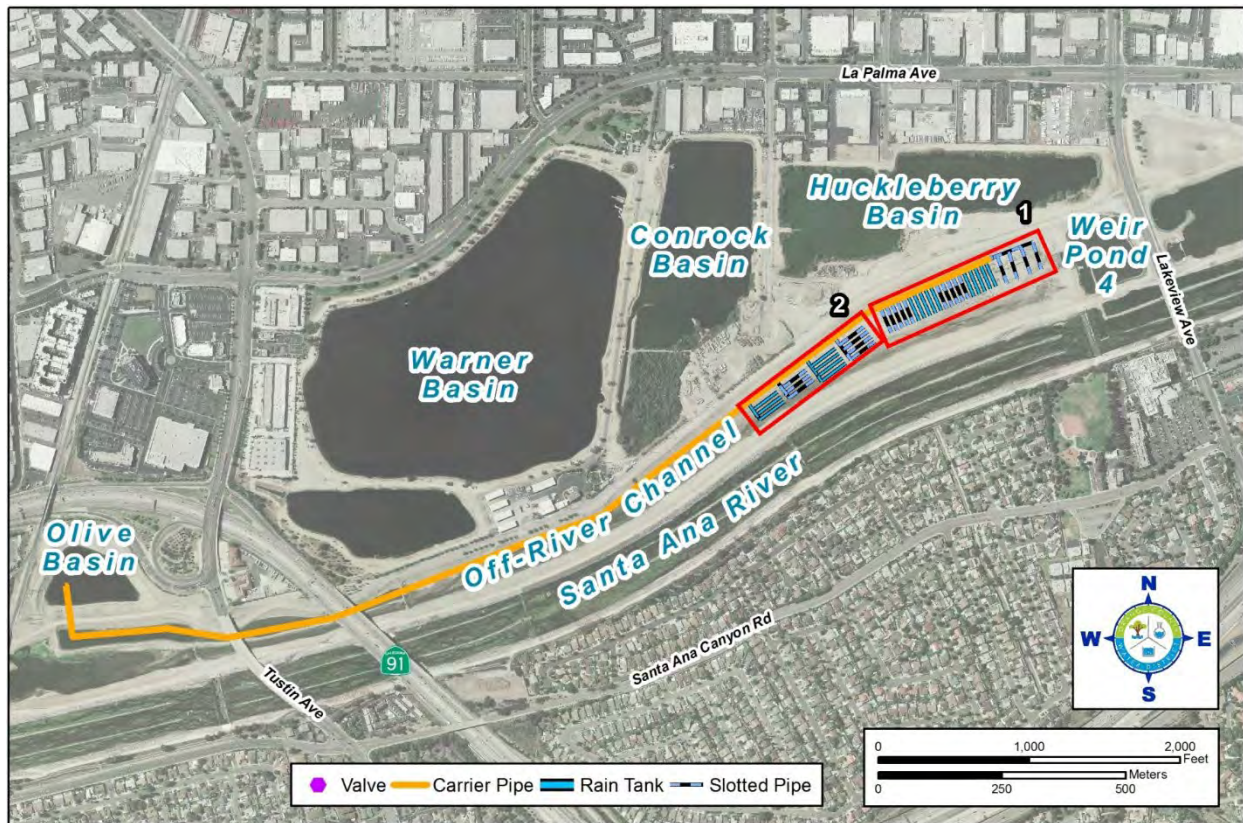


Figure 1: Location of Demonstration Riverbed Filtration System

The RFP was posted on October 8, 2025, on the District's website and multiple firms were invited to propose. Staff received four proposals on November 12, 2025. Planning, Engineering, and Operations staff independently reviewed and scored the proposals. The scoring of the proposals included evaluating each firm's experience, qualifications of project team members, approach and schedule, experience on similar projects, commitment of key staff and organization support services, and fee. Table 1 presents the scores and proposed fees for each of the proposals received.

Table 1: Proposal Score and Proposed Fee

Firm	Score (out of 100)	Proposed Fee
Jacobs	76	\$188,750
Woodard & Curran	72	\$75,370
PACE	71	\$415,164
WSP USA	62	\$378,760

Staff recommends award of the work to Jacobs for the following reasons:

- Jacobs has a commendable track record of success on large engineering design and construction projects of a similar nature.
- Jacobs' proposed project management and engineering team has significant experience in planning, design, recharge modeling, and construction projects relevant to this study, including engineers who have worked on various OCWD projects over the past decade.
- Although Woodard & Curran provided a competent team, their level of effort was deemed insufficient to adequately evaluate the feasibility and cost-effectiveness of scaling up the RFS. Jacobs' level of effort and proposed fee are reasonable and are lower than PACE and WSP USA.

Staff recommends authorizing an agreement with Jacobs for an amount not to exceed \$188,750 to provide engineering and hydrogeologic services for the Santa Ana River Riverbed Filtration System Feasibility Study. The study is expected to be completed in approximately one year.

This effort is part of OCWD's Resilience Plan Priority Project No. 11, Desilting Santa Ana River Flows.

PRIOR RELEVANT BOARD ACTIONS

5/21/25, R25-5-79 - Authorize issuance of Request for Proposals for the Riverbed Filtration System Feasibility Study.

2/19/25, R25-2-19 - Receive and File OCWD Resilience Plan and Authorize Filing of a Notice of Exemption

4/15/15, R15-4-46 - Ratify issuance of the following Change Orders 1-4 to Mike Bubalo Construction, Co.; Change Order 1 for \$6,260; Change Order 2 for \$3,836; Change Order 3 for \$70,485; and Change Order 4 for a no cost time extension; and Accept completion of work and authorize filing of Notice of Completion for Contract No. SAR-2013-1, Riverbed Filtration Desilting Demonstration Project.

5/22/13, R13-5-55 - Receive and file Affidavit of Publication of Notice Inviting Bids for Contract No. SAR-2013-1: Riverbed Filtration Desilting Demonstration Project; and ratify issuance of Addendum No. 1; and accept lowest responsive bid of Mike Bubalo Construction Co.; and authorize execution of Agreement with Mike Bubalo Construction Co. for Contract No. SAR-2013-1: Riverbed Filtration Desilting Demonstration Project

3/20/13, R13-3-26 - Authorize issuance of Amendment No. 1 to Agreement No. 836 with RMC Water and Environment for an amount not to exceed \$14,970 for an amended total of \$73,762; and authorize publication of Notice Inviting Bids for Contract No. SAR-2013-1: Riverbed Filtration Desilting Demonstration Project

9/12/12, R12-9-00 - Contract No. SAR-2010-2: Cloth Filter Desilting Demonstration Project – Notice of Completion (4-CON Engineers, Inc.).

5/16/12, R12-5-50 - Authorize execution of Agreement to RMC in the amount of \$58,792 for design of the Riverbed Filtration Desilting Demonstration Project

3/21/12, M12-43 - Issue Request for Proposals for the design of the Riverbed Filtration component of the Desilting Demonstration Project

9/21/11, R11-9-139 - Receive and file Affidavit of Publication of Notice Inviting Bids for Contract No. SAR-2010-2, Cloth Filter Desilting Demonstration Project, ratify issuance of Addendum Nos. 1 and 2, and accept bid, and accept withdrawal of SCW bid without penalty, and award contract to 4-Con Engineering, Inc. for an amount not to exceed \$989,406; and Authorize issuance of Amendment No. 2 to Agreement No. 0679 with Mead & Hunt for design of the Cloth Filter Desilting Demonstration Project for an amount not to exceed \$32,248 for an amended total of \$76,803; and Authorize Agreement with Ninyo & Moore for geotechnical testing services during construction of the Cloth Filter Desilting Demonstration Project for an amount not to exceed \$24,290; and Revise Cloth Filter Desilting Demonstration Project budget.

4/21/10, R10-4-61 - Authorize the Desilting Demonstration Project; authorize the project budget in the amount of \$1,570,000; and Authorize issuance of the Request for Proposals for Design of Cloth Filter component of Desilting Demonstration Project

4/16/08, R08-4-64 - Issue Professional Services Agreement to HDR Engineering for an amount not to exceed \$428,500 for preparation of a Feasibility Study on the removal of sediment from Santa Ana River water.

Proposal for
Orange County Water District

Engineering and Hydrogeologic Services Santa Ana River Riverbed Filtration System Feasibility Study

Part One – Statement of Qualifications

Contact:
Brent Yamasaki
Principal-in-Charge

Address:
2600 Michelson Drive, Suite 500
Irvine, CA 92612

Phone: 714.742.1222
Fax: 949.224.7501
Email: brent.yamasaki@jacobs.com



Submission date: November 12th, 2025

Jacobs

Challenging today.
Reinventing tomorrow.



COVER LETTER

November 12, 2025

Orange County Water District
Administration Office Building
Attention: Ashlie Palamara, Contracts Administrator
18700 Ward Street
Fountain Valley, CA 92708

SUBJECT: Proposal for Engineering and Hydrogeologic Services – Riverbed Filtration System Feasibility Study (RFP-25-008)

Dear Selection Committee,

The Orange County Water District's reputation for innovation and exemplary management of the Orange County groundwater basin is world renowned. From the expansion of the replenishment system to include multiple spreading basins, rubber dams, pumping stations and SCADA control, to the implementation of the world's largest reuse program - Groundwater Replenishment System (GWRS), you have developed the premier groundwater management system. From low Basin Pumping Percentages (BPP) of 60% as recently as 2010, the BPP has increased to recent highs of 80%-85%, in spite of an historic statewide drought that caused significant mandatory conservation throughout California, with the noteworthy exception being your service area.

The Riverbed Filtration System further builds on this history of innovation and makes best use of the available resources to enhance water supply reliability for the constituents you serve. Mitigating the impacts of turbidity clogging the replenishment basins, especially at the beginning of the water year, is important to help ensuring that all of the water available is captured and that the turbidity doesn't negatively impact basin efficiency.

Success for this project will involve our approach of working side by side with OCWD to deliver a data-driven, scalable Riverbed Filtration System that enhances recharge capacity, reduces maintenance demands, and provides lasting value to the District's groundwater replenishment program.

Jacobs has an extensive *understanding of the Orange County groundwater basin* and how best to protect it. We will harness the skills and experience of our local Irvine office staff, supplemented by a strong team of experts nationwide to support this project. Jacobs' experience in *designing, building, and operating facilities* is a diverse skillset, unique among consulting firms. The *ability to design with an operational mindset* is part of our corporate culture and we will bring that to your project. This work will be challenging, and you'll need a team that can effectively anticipate and overcome obstacles. Jacobs is that team.

Our team recognizes that your vision combines long-term water reliability with environmental stewardship and fiscal responsibility. Jacobs is aligned with that vision—we *share your goal of integrating technical excellence, resilience, and innovation* to develop solutions that protect and enhance regional water resources.

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- EEO and Affirmative Action
- Addenda Acknowledgment Form(s)

APPENDIX | Resumes

PART 2 | PRICE PROPOSAL

(separate sealed envelope)

COVER LETTER | REQUIRED INFORMATION

RFP TITLE | Proposal for Engineering and Hydrogeologic Services – Riverbed Filtration System Feasibility Study (RFP 25 008)

LEGAL NAME AND ADDRESS OF OFFICE SUBMITTING | Jacobs Engineering Group Inc.

CONTACT PERSON | Brent Yamasaki, PE | 2600 Michelson Drive, Suite 500, Irvine, CA 92612 | 714.742.1222 | fax: 949.224.7501 |

SIGNATURE AUTHORITY | Brent Yamasaki has authority to sign this proposal and this contracting agreement for this work.

DATE OF PROPOSAL SUBMISSION | November 12, 2025

NUMBER OF EMPLOYEES | Corporate office headquarters 507 | **NUMBER OF OFFICES** | 11 in California | Jacobs is a global firm in 40 countries

OFFICE LOCATIONS RELEVANT TO THIS CONTRACT | Irvine Office at 2600 Michelson Drive, Suite 500, Irvine, CA 92647 | **STAFF SIZE** | 422 Irvine office | 2,191 in California | 45,000 worldwide

DISCIPLINES | Water, Transportation, Advanced Manufacturing, Cities & Places, Energy, Environmental, and Life Sciences

ADDENDUM ACKNOWLEDGEMENT | As shown in Section 6, we acknowledge receipt of Addendum 1 dated 10/23/25 and Addendum 2 dated 10/30/25.

Our proposal has satisfied all the requirements of this RFP following the District's provided Attachment No. 1, RFP Submittal Checklist complying with and responding to all requirements of the RFP.

INDUSTRY-LEADING RECOGNITION

- Placed in the Dow Jones Sustainability World Index 2024 for the third consecutive year
- Disability Index® Best Places to Work for Disability Inclusion
- Earned record score in Pride at Work, Canada's 2024 Workplace Audit
- N° 1 on Engineering News-Record (ENR)'s 2025 list of Top 100 Pure Designers and N° 2 on ENR's Top 50 Program Management Firms
- World Environment Center Gold Medal 2023 for International Corporate Achievement in Sustainable Development



Having partnered with OCWD on the Recharge Facilities Model, our team is eager to continue that collaboration on the Riverbed Filtration System project. We share the District's goal of enhancing recharge performance and delivering data-driven, cost-effective solutions that strengthen Orange County's water future.

Building on Our Proven Partnership to Advance the District's Next Generation of Recharge Solutions



Marcelo Reginato, PE • Nate Scheevel, PE • Brent Yamasaki, PE • Marielle Coquia, PE

Our team brings you the following benefits:

PROVEN EXPERTISE IN GROUNDWATER AND SURFACE WATER INTEGRATION. Jacobs brings decades of experience delivering feasibility studies, hydrogeologic analyses, and treatment technology evaluations that balance technical rigor with constructability and cost effectiveness. Jacobs led the development of OCWD's Recharge Facilities Model in 2009 in partnership with the District to ensure effective operation of the replenishment facilities and as a planning tool to evaluate facility and operational enhancements. We have also collaborated through the years to provide many upgrades to the model to further meet OCWD's evolving needs and increase the model's utility.

COLLABORATIVE PARTNERSHIP AND RESPONSIVENESS. We are committed to being an extension of your team—responsive, transparent, and adaptable. Our proven approach to communication and quality assurance enables you to meet your objectives are met efficiently and without surprises. As shown in Section 2, Jacobs has collaborated with many public sector clients and stakeholders such as OC SAN, LA SAN, City of Tustin, and more. Jacobs also has unique insights into OCWD's replenishment program objectives through Marcelo Reginato's understanding of the basin through the development of the Recharge Facilities Model, and Brent Yamasaki's 20-year relationship with OCWD along with your groundwater programs and operations as an Operations Manager at the Metropolitan Water District.

END-TO-END PROGRAM SUPPORT. From planning through design and funding support, Jacobs offers comprehensive capabilities to help you transition seamlessly from feasibility study to implementation, maximizing value and minimizing delivery risk. With **Marielle Coquia, PE** serving as Project Manager, the District will have a single, accessible local point of contact who ensures consistency and responsiveness from kickoff through completion. Marielle's hands-on leadership style and familiarity with local water agency priorities will help maintain clear communication, smooth task transitions, and alignment with OCWD's goals. Success for this project will involve our approach of integrating proven hydrogeologic modeling, disciplined project management, and phased, gravity-first filtration design—**building on our end-to-end delivery of OCWD's Recharge Facilities Model (RFM)**, which Jacobs developed to simulate percolation, clogging, and system performance and is now the foundation for this Riverbed Filtration System feasibility study.

In accordance with the requirements of the RFP and shown in Section 6 | Administrative Items with our comments, we confirm that Jacobs will:

- Meet the insurance requirements listed in Exhibit C of your standard Services Agreement
- Accept the OCWD Standard Services Agreement with only minor, non-substantive changes if necessary
- Comply with all billing, reporting, and conflict-of-interest provisions specified in Sections 6.1.9 through 6.1.12 of the RFP

Jacobs is fully committed to providing the District with high-quality, technically sound, and responsive services that uphold the standards of excellence OCWD expects from your partners. We appreciate the opportunity to partner with your team on this important program and are ready to begin immediately upon notice of award. We look forward to collaborating closely with your staff to advance the vision of a resilient, sustainable, and secure water future for Orange County. For all communications regarding this proposal, please contact **Brent Yamasaki**, Principal-in-Charge.

Sincerely,
Jacobs Engineering Group Inc.



Brent Yamasaki, PE
Principal-in-Charge
brent.yamasaki@jacobs.com
714.742.1222



Marielle Coquia, PE
Project Manager
marielle.coquia@jacobs.com
949.224.7626

1 EXPERIENCE AND RECORD OF PAST PERFORMANCE



1 | EXPERIENCE AND RECORD OF PAST PERFORMANCE

In this section you will find:

- ✓ Client references reflecting lasting partnerships and proven results
- ✓ Broad public agency experience that earns Jacobs' reputation as a trusted advisor
- ✓ Consistent performance excellence across complex water programs



PROVEN EXPERIENCE. TRUSTED RESULTS

Jacobs brings a proven record of success delivering engineering and hydrogeologic services for complex recharge and river filtration programs throughout Southern California. In accordance with The District's requirements, below we highlight relevant project experience, record of past performance, and client satisfaction on assignments of similar scope and complexity. Each project demonstrates Jacobs' ability to manage multidisciplinary teams, maintain schedule and budget discipline, and deliver innovative, data-driven solutions that enhance recharge system performance. EXHIBIT 1.1 below provides three client references that exemplify our reliability, responsiveness, and long-term commitment to project success and Exhibit 1.1 lists public sector clients we have worked with over the past five years.

EXHIBIT 1.1 | CLIENT REFERENCES



City of Redding

Sacramento River, Collector Well Feasibility Study (Jacobs Engineering)

SCOPE | Jacobs provided feasibility-level siting and hydraulics for riverbank/collector well alternatives drawing from the Sacramento River; permitting path and intake protection considerations.

COMPLEXITY | Provided Hydraulic variability, sediment management, permitting and environmental coordination.

RESULTS | Defined screening-level siting and conceptual layout to support decision-making, coordination with City Water Manager.



Sonoma County Water Agency

Russian River Radial Collector Wells and Mirabel Diversion (Jacobs Engineering)

SCOPE | Jacobs supported evaluations of collector well, vertical wells, and rubber dam diversion efficiencies and risks related to seismic and water quality risks. Conducted long-term modeling of effectiveness of collector wells, diversion, and disinfection infrastructure for regional water supply resilience to over 600,000 retail customers.

COMPLEXITY | Six collectors at two locations with radial wells in the Russian River alluvium, inflatable rubber dam for enhance riverbed infiltration, organic carbon and treatability concerns, flooding, and regulatory complexity.

RESULTS | Long-term production of collectors and reliability of water supply under a range of hazards; recommended mitigation projects to increase the reliability and resilience of collectors.



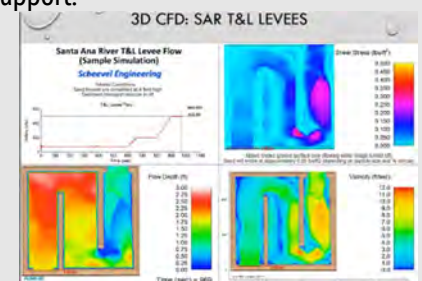
OCWD

Santa Ana River Sediment Monitoring Program (Scheevel Engineering)

SCOPE | Scheevel Engineering collected field data (suspended sediment concentration, bedload, bed material, stream flow measurements and cross section surveys).

COMPLEXITY | Analysis to compare field data to sediment transport models for the Santa Ana River.

RESULTS | full scale sediment removal field project with field data collection and design. Also supported the Upper SAR HCP Support.



**City of Redding**

Sacramento River, Collector Well
Feasibility Study (Jacobs Engineering)

Cost

\$7.07M contract | 2030 completion

Duration**Contact | Josh Watkins**

Water Utility Manager

530.224.6040

jwatkins@cityofredding.gov

**Sonoma County Water Agency**

Russian River Radial Collector Wells and
Mirabel Diversion (Jacobs Engineering)

Cost

\$600,000 contract | 2021-2025
(Ongoing)

Duration**Contact | Donald Seymour**

Deputy Director of Engineering (Resource
Planning)

707.547.1925 | 707.547.1900 main

donald.seymour@scwa.ca.gov

**OCWD**

Santa Ana River Sediment Monitoring
Program (Scheevel Engineering)

Cost

\$200,000 contract | 2019 completion

Duration**Contact | Lisa Haney**

Executive Director of Planning & Natural
Resources

714.378.3275 desk | 714.330.6827 cell

lhanev@ocwd.com

EXHIBIT 1.2 | LIST OF CITIES, MUNICIPALITIES, AND PUBLIC AGENCIES WE HAVE SERVED**CALIFORNIA PUBLIC SECTOR CLIENTS WITHIN THE PAST FIVE YEARS****Cities:**

Anderson, Campbell, Claremont, Corona, Crescent City, Escondido, Folsom, Fontana, Fortuna, La Mesa, Livermore, Los Angeles, Palo Alto, Paradise, Pico Rivera, Redding, Rocklin, Roseville, Sacramento, San Diego, San Jose, San Luis Obispo, San Mateo, Santa Barbara, Santa Monica, Santa Rosa, Shasta Lake, Sunnyvale, Tracy, Whittier, and Yuba City.

Counties:

El Dorado, Merced, Orange, Siskiyou, Solano, Sonoma.

Water and Wastewater Agencies and Districts:

Alameda County Water District, Bay Area Air Quality Management District, Byron Bethany Irrigation District, California Department of Water Resources, Central California Irrigation District, Central Contra Costa Sanitary District, Coachella Valley Water District, Colusa County Water District, Eastern Municipal Water District, Enterprise-Anderson GW Sustainability Agency, Glenn-Colusa Irrigation District, Henry Miller Reclamation District, Inland Empire Utilities Agency, Jurupa Community Services District, Lake County Sanitation District, Las Virgenes Metropolitan Water District, Los Angeles County Public Works, Los Angeles County Sanitation Districts, Los Angeles Department of Water and Power, Lower San Joaquin Levee District, Marin Municipal Water District, Merced Irrigation District, Metropolitan Water District of Southern California, Orange County

Water District, Rancho California Water District, Sacramento Area Sewer District, Sacramento Regional County Sanitation District, Santa Clara Valley Water Agency, Santa Clarita Valley Water Agency, Santa Cruz Water Department, Santa Margarita Water District, Sewerage Commission Oroville Region, Sonoma County Water Agency, South San Joaquin Irrigation District, Sutter Butte Flood Control District, Tahoe-Truckee Sanitation District, Thermalito Water and Sewer District, Union Sanitary District, United Water Conservation District, Water Replenishment District of Southern California, West County Wastewater, and Western Municipal Water District, and Zone 7 Water Agency.

Agencies and Authorities:

California Department of General Services, California Water Commission, Encina Wastewater Authority Los Angeles County Department of Beaches & Harbors, and Los Angeles County Sewer Maintenance Department, Port of Los Angeles, Sacramento Area Council of Governments, San Diego Association of Governments, San Diego County Water Authority, San Francisco Public Works, San Francisco Public Utilities Commission, San Joaquin River Flood Control Project Agency, Stanislaus Regional Water Authority, Three Rivers Levee Improvement Authority, Truckee Meadows Water Authority, and Western Riverside County Regional Wastewater Authority.

EXHIBIT 1.3 | SCHEEVEL ENGINEERING EXPERIENCE

LARGE DIAMETER CONVEYANCE

Santa Ana River Enhanced Recharge Phase 1B (SBVMWD) – Consultant to Valley District for the final design (part of a design team) of 20 new recharge basins (> 200 acres wetted) below Seven Oaks Dam and extensive open channel and pipeline conveyance, flumes, weirs and rated channel sections. System is designed for recharge of SWP water as well as stormwater. Provided field infiltration rate testing, O&M modeling, 3D CFD analysis, final design assistance for specialty groundwater recharge features for the project. Provided construction phase services and technical support, engineer of record and startup and testing assistance. Develop a comprehensive O&M Manual for the Enhanced Recharge System.

City of Rialto Supplemental Recycled Water Supply (IEUA) – Owners advisor and subject matter expert for a 6.25 – 10.0 MGD pump station and 11 mile 24-inch-diameter pipeline to convey City of Rialto WWTP recycled water to IEUA's RP-4.

La Sierra Pipeline & Sterling Reservoir & Pump Station Project (WMWD) – Consultant to Western to provide specialty project management and construction management services for a new 5-mile long, 30" pipeline and 30 cfs pump station.

CF – EBX Intertie (SBVMWD) – Consultant to SBVMWD for design specification development of the 78" diameter Central Feeder Pipeline 60" diameter EBX Intertie.

County Line Recharge Basins Turnout (SBVMWD) – Consultant to SBVMWD to develop plans and specifications for 16" diameter piping, valves and a weir box structure for a connection to DWR's 54" EBX pipeline.

Cactus Bain Connector (SBVMWD) – Consultant to SBVMWD to analyze, design and prepare plans and specifications for a turnout facility (valves & meters) and 30" diameter, ½ mile long pipeline.

Redlands Pump Station Startup & Testing (SBVMWD) – Consultant to SBVMWD for the startup and testing of their Phase 1 Pump Station and 78" diameter Central Feeder Pipeline to supply water to MWD's 144" diameter Inland Feeder Pipeline.

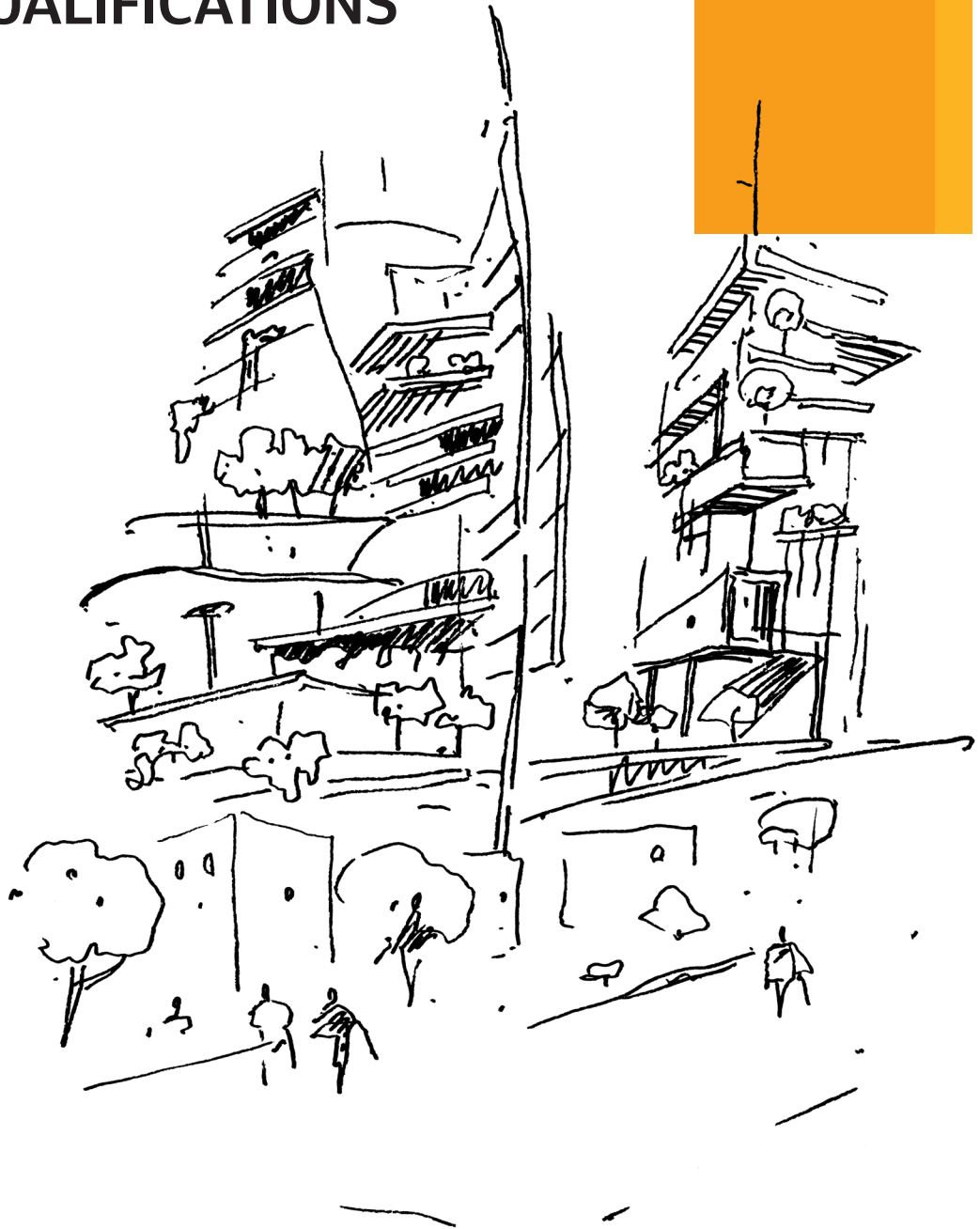
PERMITTING

Prado Basin Ecosystem Restoration Feasibility Study (OCWD) – Consultant to OCWD to provide engineering and technical analysis services to support a U.S. Army Corps Ecosystem Restoration Feasibility Study to increase water conservation, ecosystem restoration and sediment management for Prado Basin and the Lower Santa Ana River. Includes engineering analysis, environmental restoration design, cost estimating, sediment transport analysis, scheduling, regulatory & permitting coordination and implementation planning.

Victoria Basin Groundwater Recharge Improvements & Operations Optimization (WMWD) – Consultant to WMWD for preliminary design, final design, permitting and CEQA compliance and for construction phase services, startup and testing specialty services and maintenance for performance monitoring and basin improvements. Improvements included monitoring wells, flow meters, level sensors and basin re-grading/rehabilitation.



2 PROJECT TEAM AND QUALIFICATIONS



2 | PROJECT TEAM AND QUALIFICATIONS

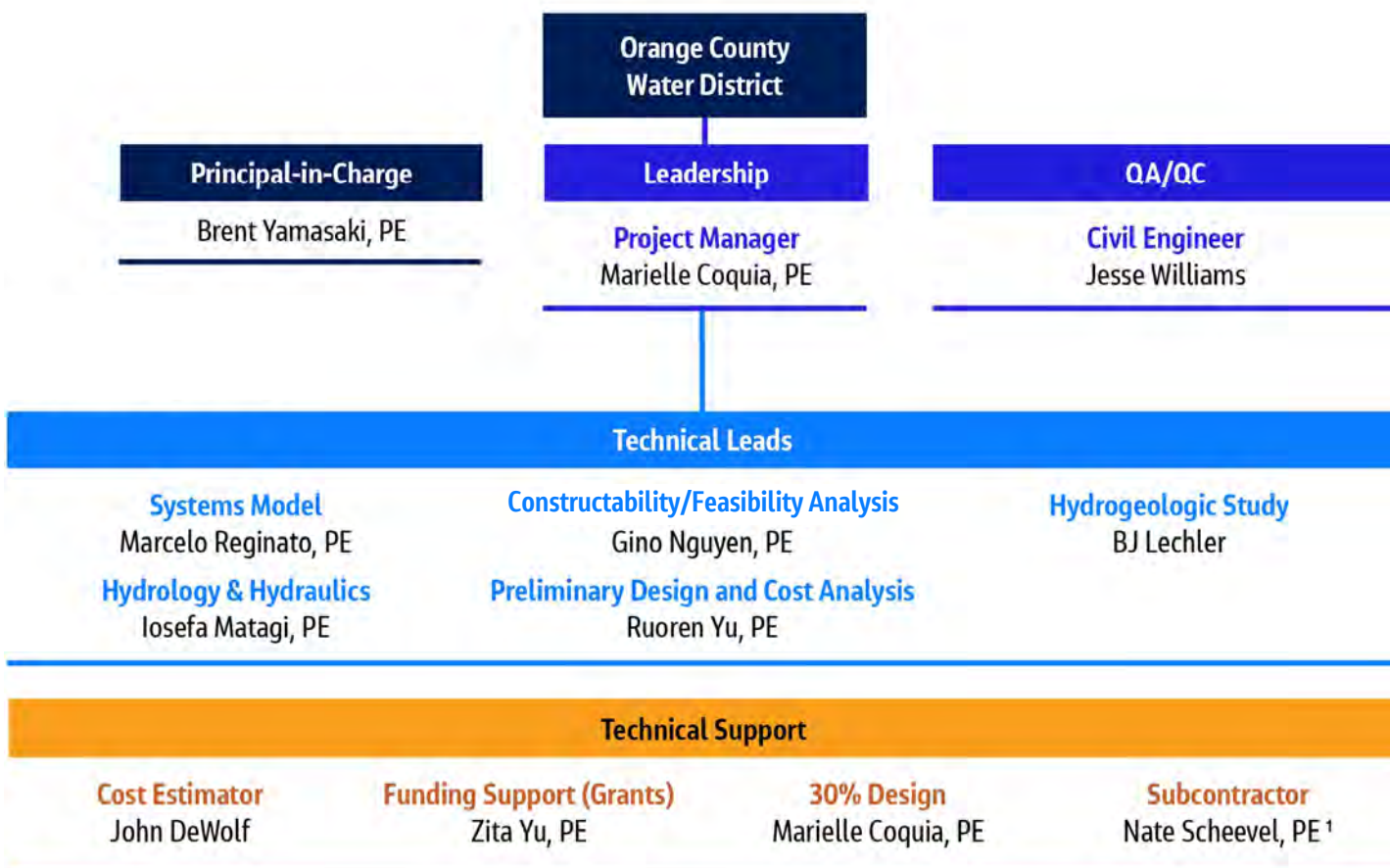
In this section you will find:

- ✓ A seasoned Jacobs team with deep water-sector expertise.
- ✓ Clearly defined roles for efficient project delivery.
- ✓ Proven hydrogeologic and recharge system specialists.

Jacobs has assembled a team with deep local roots, hands-on experience, and a proven record of exceeding client expectations. Many of our proposed staff are familiar to the District—well-versed in its standards, operations, and long-term goals. Our collective experience, motivation, and technical insight position us to deliver results that go beyond expectations. This future-ready team combines reliability, cost efficiency, and innovation to provide high-quality solutions today while laying the groundwork for lasting value to the District.

The chart below shows Jacobs' integrated team and communication lines with the District, ensuring clear accountability, efficient coordination, and seamless collaboration across all disciplines.

EXHIBIT 2.1 | ORGANIZED TO DELIVER



"I'm personally invested in achieving The District's vision for a reliable, efficient recharge system—on schedule, on budget, and beyond expectations."

Marielle Coquia, PE
Project Manager



1. Scheevel Engineering

LEADERSHIP

Brent, Principal-in-Charge, and Marielle, Project Manager, bring decades of public-sector experience in both management and operations. Their firsthand understanding of the challenges this project presents enables them to align closely with the District's needs and deliver practical, informed solutions.

EXPERT DESIGN TEAM AND QA/QC-DRIVEN STRUCTURE

Jacobs' design team is experienced, collaborative, and structured to deliver exceptional quality at every stage. Marielle will lead quality oversight, supported by Senior Reviewers implementing Jacobs' formal QA/QC program. These discipline leads will guide mid-level staff and perform detailed reviews to ensure every deliverable aligns with District expectations and industry best practices. When applicable, technical advisors with extensive plant operations and treatment process expertise will collaborate with the design team to enhance constructability, compatibility, and overall system performance.

INTEGRATED TEAM STRUCTURE FOR SEAMLESS COLLABORATION

Jacobs' organizational structure fosters clear communication, efficient decision-making, and close coordination with District staff. Defined roles, reporting relationships, and communication pathways ensure a responsive and unified project delivery team. Each team member has been carefully selected for technical expertise, project relevance, and full availability throughout the project's duration.

ACCESS TO JACOBS' BROADER RESOURCES

Beyond the core project team, the District will benefit from Jacobs' extensive network of technical experts, specialized tools, and national resources—available to support unique challenges or emerging needs. Detailed resumes in the Appendix highlight each team member's qualifications. Upon notice to proceed, all proposed staff will be fully dedicated to the District's success and committed to delivering exceptional results on this project.

COLLABORATIVE STRUCTURE SUPPORTING QUALITY DELIVERY

Jacobs' team structure is built to streamline communication, strengthen accountability, and maintain rigorous quality control. The Project Manager leads day-to-day coordination with OCWD, supported by task leads who manage discipline teams and ensure technical alignment across deliverables. QA/QC oversight is embedded throughout, with senior reviewers engaged early to validate assumptions and maintain consistency across tasks. This integrated approach promotes timely decision-making, efficient resource use, and delivery of work products that meet OCWD's standards for quality, accuracy, and performance.

TEAM DESCRIPTION AND STAFF QUALIFICATIONS

On the following page in Exhibit 2.2, we include roles, expertise, availability, current workload, contact information, and office location for each proposed staff member in addition to their professional licenses and registrations. We understand that key individuals will remain assigned and not be substituted without District approval.

"My role is to align the right people and resources to guide this project's success and reinforce The District's confidence in our partnership."

Brent Yamasaki, PE
Principal-in-Charge



"I'm committed to delivering accurate, defensible modeling results that give the District the clear insight needed to make confident, data-driven decisions."

Marcelo Reginato, PE
Systems Modeling





EXHIBIT 2.2 | KEY PERSONNEL AND SUPPORT STAFF (KEY PERSONNEL WILL NOT BE SUBSTITUTED OR REASSIGNED WITHOUT THE DISTRICT'S PRIOR APPROVAL)

NAME ROLE LICENSES CERTIFICATIONS	TASK(S)	CONTACT INFO + OFFICE LOCATION	PROJECT EXPERIENCE +QUALIFICATIONS	AREA OF EXPERTISE (SPECIALIZATION)	AVAILABILITY +WORKLOAD (OTHER PROJECT COMMITMENTS)
Marielle Coquia, PE Project Manager PE CA #C54906 (PE dates are included in the appendix)	Tasks 1 & 2	714.679.3796 marielle.coquia@jacobs.com Irvine, CA	<ul style="list-style-type: none"> U.S. EPA Groundwater Treatment Plant, San Gabriel Basin EMWD - Perris Valley, Moreno Valley, and San Jacinto Valley Water Reclamation Facilities Sodium Hypochlorite Conversion Project EMWD - Perris II Desalter Preliminary Design Update 	<ul style="list-style-type: none"> General civil and environmental engineering + GW treatment Site development, design, and permitting Wastewater treatment facilities, landfills, hazardous waste containment facilities, and closures 	55% available 45% other projects
Brent Yamasaki, PE Principal-in-Charge PE CA #30017	N/A	714.742.1222 brent.yamasaki@jacobs.com Irvine, CA	<ul style="list-style-type: none"> MWD of Southern California, Diamond Valley Lake Project Imported Water Delivery, Supply, & Storage Programs Asset Management - MWD Capital Investment Program 	<ul style="list-style-type: none"> Planning, design, construction, project management Operations, and water resource management Feasibility studies and implementation planning Groundwater, agricultural, and replenishment 	10% available 90% other projects
Jesse Williams Civil Engineer PE WA #45577; PE CA #75123; Leadership in Energy and Environmental Design (LEED) Accredited Professional (AP™) (BD+C)	Tasks 1-7	206.595.8175 jesse.williams@jacobs.com Bellevue, WA	<ul style="list-style-type: none"> South Annex Base - King County Metro Transit City of Renton - Ginger and Honey Creek Subbasins Plan Seattle DOT - Willow Creek Restoration King County WTD - South Park Basement Flooding Study 	<ul style="list-style-type: none"> Stormwater & Green Infrastructure (GSI) Design Sustainable & Resilient Infrastructure Habitat Restoration & Stream Daylighting Climate Adaptation & Flood Resilience 	50% available 50% other projects
Marcelo Reginato, PE Systems Model Technical Lead PE CA # C71505	Task 3	858.405.2408 marcelo.reginato@jacobs.com Irvine, CA	<ul style="list-style-type: none"> Sonoma Water Resiliency Study - Sonoma Water Strategic Water Supply Assessment - Marin Municipal Water District SAWPA - Santa Ana River Conservation and Conjunctive Use Project 	<ul style="list-style-type: none"> Groundwater basin yield assessments Water quality evaluations Groundwater modeling Drought mitigation projects Recharge analyses 	50% available 50% other projects
Iosefa Matagi, PE Hydrology & Hydraulics Technical Lead PE CA, AK, IL, AZ, ID: #75026	Task 4B	949.224.7500 iosefa.matagi@jacobs.com Irvine, CA	<ul style="list-style-type: none"> Caltrans - I-805 South Widening and Sound Walls Drainage Design SBCTA - I-10 Express Lanes Design-Build Caltrans - I-10 and I-405 BMP Analysis 	<ul style="list-style-type: none"> Hydrology, hydraulics and water resources engineering BMP and water quality facility design Floodplain mapping and GIS-based watershed modeling 	70% available 30% other projects
Gino Nguyen, PE Constructability Analysis Technical Lead PE CA #62140 Qualified SWPPP Developer/Practitioner (QSD/QSP), Caltrans SWPPP Developer Certification	Task 5 & 7	714.724.0649 gino.nguyen@jacobs.com Irvine, CA	<ul style="list-style-type: none"> MWD - Colorado River Aqueduct Pumping Plant Facilities Physical Security Improvements MWD - Eagle Rock Operations Control Center Security Upgrades USN - P-704 Berth Lima, Naval Air Station North Island 	<ul style="list-style-type: none"> Stormwater permitting, compliance, and BMP implementation Advanced training in erosion and sediment control Expertise in preparing construction drawings and specifications for pipelines, water/wastewater, landfill, and utility infrastructure 	60% available 40% other projects
Ruoren Yu, PE Preliminary Design & Cost Analysis PE CA #85038; Board Certified Environmental Engineer, AAEE: #23-10034	Task 6	949.224.7500 ruoren.yu@jacobs.com Los Angeles, CA	<ul style="list-style-type: none"> LASAN - Hyperion WRF Pipe Galleries Integrity and Resiliency Assessment IEUA - RP-1 Mechanical Restoration Improvements Brunswick County - Ocean Isle Beach WWTP Centralization & Rehabilitation LACSD - On-Call Sewer Rehabilitation Projects 	<ul style="list-style-type: none"> Modeling: biological process, hydraulic analysis Design: membrane bioreactor, pump station, screening Biosolids processes Granular media filtration 	50% available 50% other projects
BJ Lechler Hydrogeologic Study California Certified Hydrogeologist: #1071 California Professional Geologist: #8229	Task 4A	949.224.7500 bj.lechler@jacobs.com Irvine, CA	<ul style="list-style-type: none"> EMWD - Perris N. GW Contamination Prevention and Remediation Program UWCD - Extraction Barrier and Brackish WT Phase 1 Monitoring Wells EPA - Montrose and Del Amo Superfund Site Dual Site Operable Unit WRD - Goldsworthy Desalter Expansion and Brackish GW Supply Wells 	<ul style="list-style-type: none"> Groundwater consulting for municipal, federal, and industrial Contaminated water resources and water reuse wells Anthropogenic impacts on groundwater quality Regional water quality and hydraulic investigations 	40% available 60% other projects
TECHNICAL SUPPORT					
John DeWolf Cost Estimator	Tasks as needed	559.908.3568 john.dewolf@jacobs.com San Jose, CA	<ul style="list-style-type: none"> San Diego North City Water Reclamation Plant (WRP) San Mateo Clean Water Program Recharge Fresno Groundwater Program 	<ul style="list-style-type: none"> Estimates from 30% - 100% detailed design Quality reviews of contract documents and engineering estimates Utility estimating: storm, sewer, & pipelines 	30% available 60% other projects
Zita Yu, PE Funding Support (Grants) PE CA #86610; Drinking Water Operator T2, CA #41670; Envision Sustainability Professional	Tasks as needed	949.224.7500 zita.yu@jacobs.com Los Angeles, CA	<ul style="list-style-type: none"> Technical Evaluation of Existing Desal Facility & Expansion for Acquisition Ocean Water Desalination Program Regional WWRF Exp. & Upgrade Design & Construction 	<ul style="list-style-type: none"> Potable and Non-Potable Reuse Regulations Membrane Processes Envision/LEED/Sustainability Emerging Contaminants, e.g. PFAS 	30% available 70% other projects
Nate Scheevel, PE Subcontractor PE CA #C80056, CO# 46839, MN# 50556	Task 4A & other tasks as needed	714.470.9045 nathanscheevel@yahoo.com Anaheim, CA	<ul style="list-style-type: none"> Santa Ana River Enhanced Recharge Phase 1B (SBVMWD) Victoria Recharge Basin (WMWD) Santa Ana River Enhanced Recharge O&M Modeling (SBVMWD) 	<ul style="list-style-type: none"> Civil and environmental engineering Field testing/investigation Feasibility analysis Risk management Preliminary & final design 	70% available 30% other projects






THE PROJECTS SUMMARIZED IN

Exhibit 2.3 illustrate Jacobs' proven ability to deliver feasible, cost-effective, and data-driven solutions for water recharge and filtration systems. These case studies provide clear evidence of our team's understanding of OCWD's objectives, showing

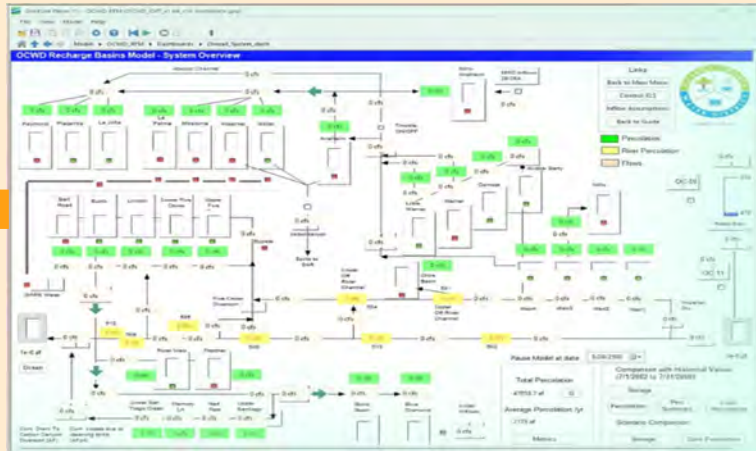
how lessons learned from past efforts translate into lower risk and higher value for this study. Together, these examples demonstrate the technical depth and adaptability of Jacobs' team in addressing complex recharge and filtration challenges.

The same integrated expertise and coordination shown in these projects will guide our delivery approach for the Santa Ana River Riverbed Filtration System Feasibility Study.

EXHIBIT 2.3 | KEY PERSONNEL AND SUPPORT STAFF

PROJECT NAME	CLIENT	SCOPE OF WORK	KEY CHALLENGES	OUTCOMES / RESULTS	RELEVANCE TO OCWD SANTA ANA RIVER RFS	RISKS / MITIGATION	TRANSFERABLE LESSONS	OCWD RFP TIE (TASKS/NOTES)
Ballona Creek Watershed Water Quality / Stormwater Enhancements	Los Angeles County Public Works 	Planning and concept development for multi-benefit stormwater capture/treatment facilities to meet MS4/TMDL compliance in the Ballona Creek watershed.	Urbanized watershed; bacteria/TSS load reductions; site constraints; stakeholder coordination.	Advanced concepts and programmatic measures aligned with EWMP/CIMP implementation; identified capture/treatment opportunities.	Source-water solids management and conveyance integration experience informs RFS pretreatment expectations and recharge performance needs.	Regulatory approvals; constructability in constrained corridors; phased delivery—mitigated by early agency coordination and pilot validation.	Define performance metrics early (TSS, bacteria); select materials/operations that minimize clogging and O&M burden; integrate monitoring plans.	Background data & alternatives framing (Task 2); informs flow condition assumptions and solids reduction benefits review with RFM outputs (Task 3).
South El Monte Stormwater Improvements (Rio Hondo Watershed)	Los Angeles County Public Works 	Nature-based stormwater capture and quality improvements near South El Monte HS; planning/design support and program funding documentation.	School-site constraints; funding/phasing; bacteria/TSS reduction goals.	Concepts and materials list supporting implementation through Safe, Clean Water Program.	Experience with solids reduction and infiltration benefits relevant to RFS goal of delivering low-TSS water to basins.	Public access & safety; O&M clarity—addressed via design standards, operations plans, and stakeholder communication.	Demonstrate incremental benefits with monitoring; align design with maintenance capabilities; leverage grant frameworks.	Supports Task 2 (background) and Task 6 (implementation planning).
City of Redding – Collector Well Feasibility (Sacramento River)	City of Redding 	Feasibility-level siting and hydraulics for riverbank/collector well alternatives drawing from the Sacramento River; permitting path and intake protection considerations.	Hydraulic variability; sediment management; permitting and environmental coordination.	Defined screening-level siting and conceptual layouts to support decision-making; coordination with City Water Manager.	Direct analog for riverbed/riverbank filtration intake design, conveyance tie-ins, and recharge system compatibility.	Sediment/clogging and seasonal flows—addressed with staged development and operations envelopes; early engagement with resource agencies.	Use pilot/field data to bound clogging rates; phase capacity and monitor basin response before expansion.	Tasks 3–5 (RFM review, conceptual designs, yield/cost comparisons).
Russian River Radial Collector Wells and Mirabel Diversion	Sonoma Water 	Operation and study of radial collector wells adjacent to the Russian River with diversion infrastructure supplying regional customers.	Hydraulic connectivity; pathogen attenuation; sediment transport during high flows.	Long-term production using bank filtration with documented water quality benefits and reliable yields.	Proven performance of RBF in a California river system; informs intake layout, staging, and monitoring for TSS/QA/QC.	Regulatory approvals and environmental windows—mitigated by data-driven operations and adaptive management.	Design for maintenance access; integrate monitoring for turbidity/TSS; plan for wet-year peak operations.	Tasks 3–4 (flow assumptions/alternatives); Task 7 (documenting Phase I/II concepts).
Prairie Waters – Riverbank Filtration & Advanced Treatment	Aurora Water (City of Aurora, CO) 	Indirect potable reuse system recapturing flows via riverbank filtration wells and advanced purification; conveyance to treatment and distribution.	Water quality variability; regulatory acceptance; scaling production.	Commissioned system with sustained production and expansion planning to increase recovered yield.	Demonstrates RBF as pretreatment to reduce solids and fouling ahead of recharge; life-cycle cost insights.	Source variability—addressed with robust monitoring and flexible operations; redundancy in conveyance.	Pair RBF with clear O&M regimes; quantify unit life-cycle cost per AF; stage capacity to demand.	Task 5 (life-cycle unit cost per AF); Task 7 (documented outcomes).

CASE STUDY



OCWD Recharge Facilities Model (RFM)

Client: Orange County Water District

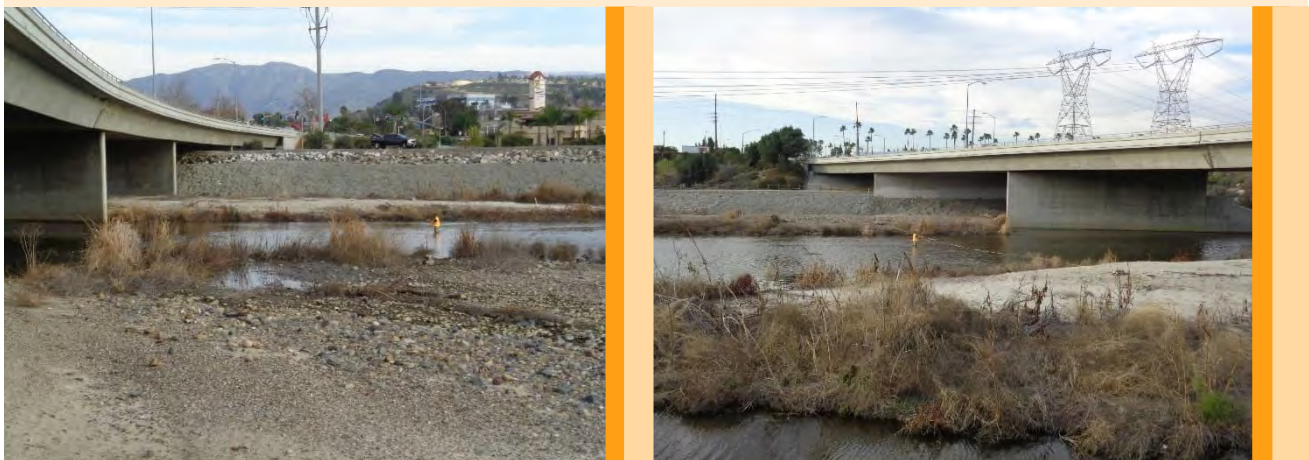
Jacobs Lead: Marcelo Reginato

Jacobs developed a dynamic groundwater-recharge operations model for OCWD's 1,200 acres of spreading facilities. Built on the **GoldSim** platform, the **Recharge Facilities Model (RFM)** serves as a planning tool to estimate total percolation and evaluate system performance under varying inflow conditions and configurations.

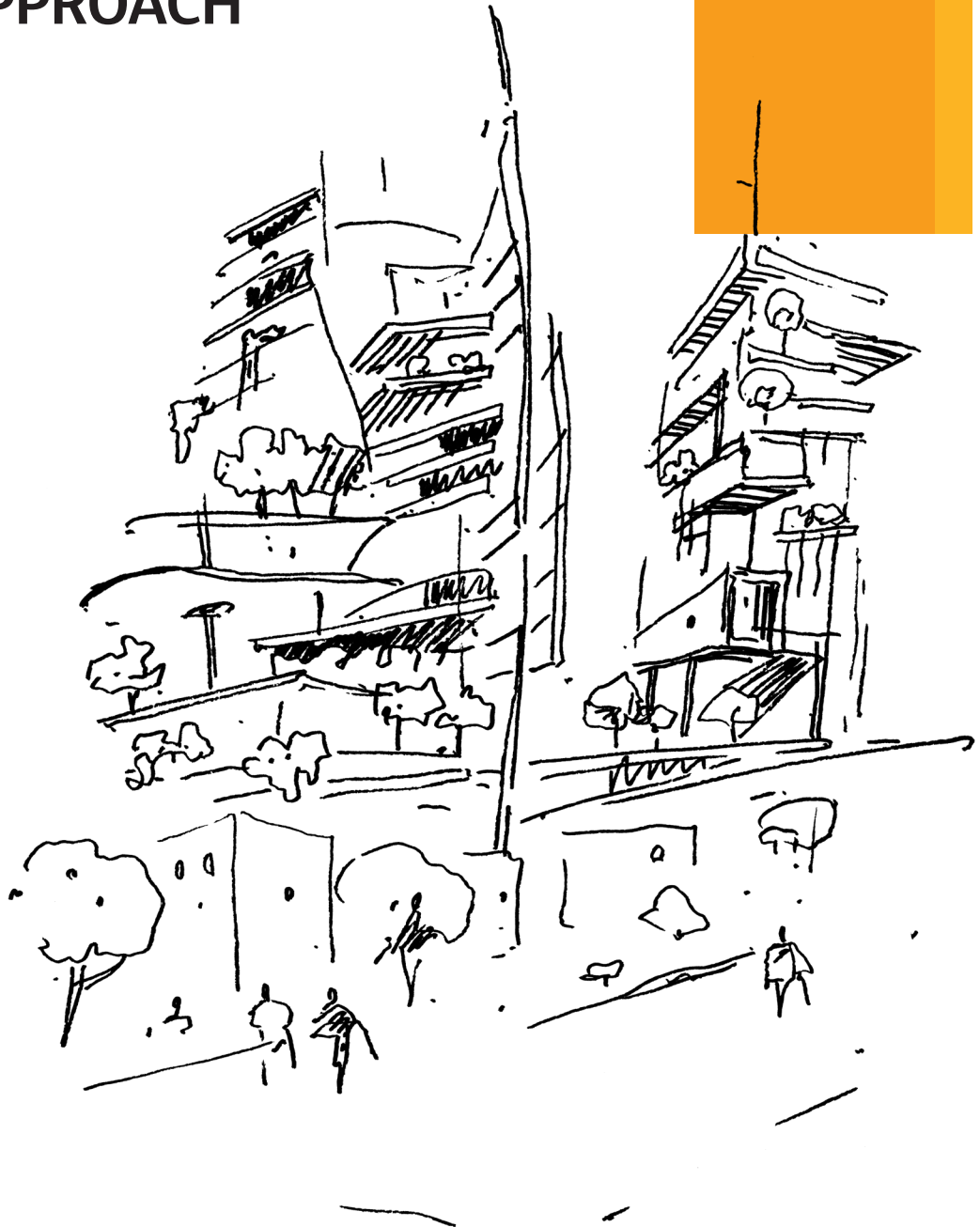
The model integrates:

- **Pipeline capacity constraints** and basin-specific percolation equations.
- **Cleaning and maintenance cycles** that simulate recharge rate recovery.
- **Clogging dynamics** to forecast how recharge declines over time.

By accounting for these factors, the RFM predicts how additional recharge can be achieved through use of purified water, new infrastructure, or modified upstream operations. The model has since been applied to estimate potential benefits of the **Riverbed Filtration System (RFS)**—providing OCWD with a powerful decision-support tool for optimizing long-term groundwater management.



3 PROJECT OVERVIEW AND APPROACH



3 | PROJECT OVERVIEW AND APPROACH

In this section you will find:

- ✓ Understanding of your specific project requirements
- ✓ Overall approach
- ✓ Technical plan for accomplishing the work assignments
- ✓ Communications protocol
- ✓ Deployment strategies



PROJECT UNDERSTANDING

OCWD's Riverbed Filtration System (RFS) Feasibility Study will determine the technical, operational, and economic viability of delivering filtered Santa Ana River (SAR) water to the Terminal Recharge Basins—while evaluating the capacity to expand service to the Warner Basin System via a single or phased implementation. The Study will synthesize hydrogeologic insights, hydraulic systems analysis, and conceptual/preliminary design to identify practicable alternatives that increase recharge rates, minimize clogging, and optimize life-cycle cost. Our approach is built on three pillars: technical depth, close coordination with OCWD, and deliverable-driven execution mapped directly to Tasks 1–7, with scalable support for Task 8 (Optional Services).

OCWD aims to enhance groundwater recharge efficiency by reducing suspended solids in SAR water before it enters the recharge basins. High sediment loads accelerate clogging, decrease infiltration rates, and increase basin cleaning frequency, limiting OCWD's ability to capture storm flows and optimize groundwater replenishment.

Previous studies and pilot testing have evaluated two primary sediment removal technologies: Riverbed Filtration System (RFS) and Cloth Media Filtration. While both technologies significantly reduce total suspended solids (TSS), OCWD's feasibility analysis and pilot study concluded that RFS offers superior long-term benefits for large-scale implementation. RFS leverages natural filtration processes, requires minimal energy and no chemicals, and integrates seamlessly with existing river channels. Pilot testing demonstrated that RFS removed up to 96–99% of TSS, more than doubled recharge rates, and reduced basin cleaning events by over 40%.

The proposed feasibility study will assess the scalability of RFS to supply filtered water to the Warner Transmission Pipeline and downstream basins, considering hydraulic constraints, constructability, and phased implementation strategies. The study will also address regulatory requirements, permitting challenges, and infrastructure needs such as conveyance pipelines and pump stations.

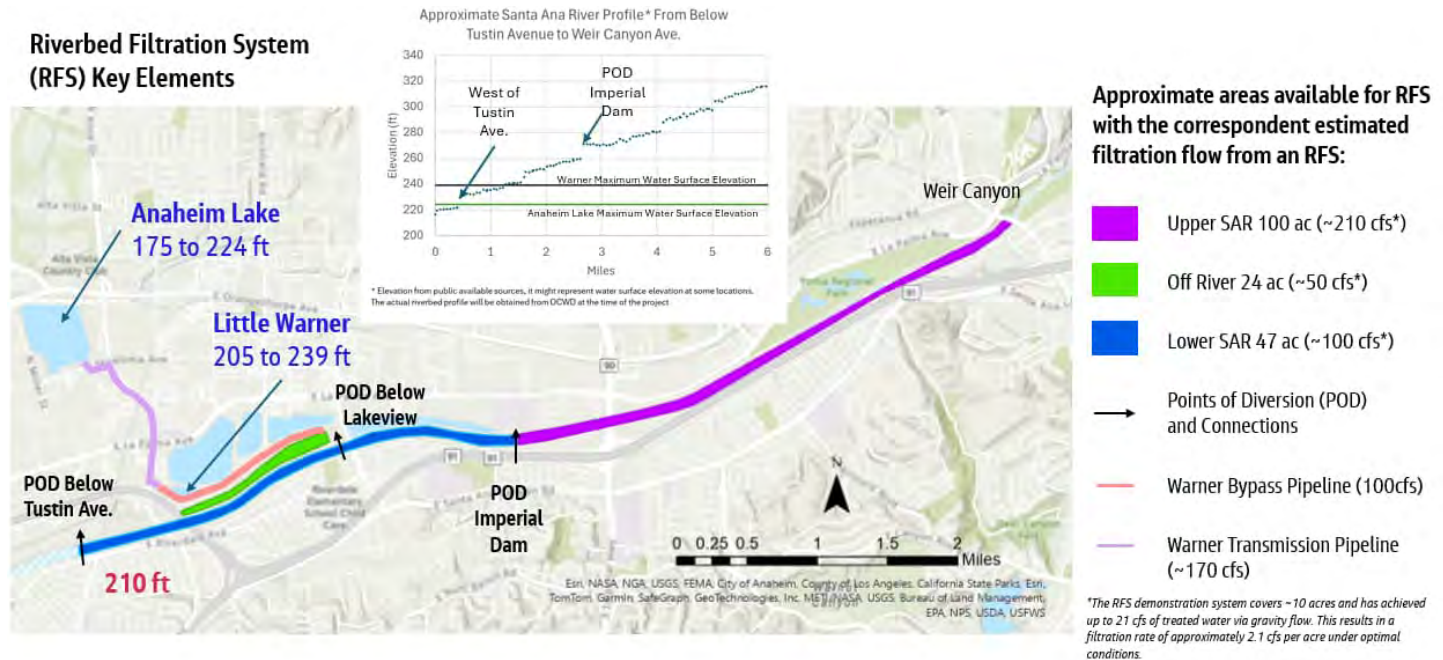
EXHIBIT 3.1 summarizes the key system components and available areas for RFS construction, including estimated filtration production by location. Based on pilot results—where a 10-acre footprint produced approximately 21 cfs—the total potential effluent is estimated at ~200 cfs. The figure also illustrates invert elevations of critical points, from the Point of Diversion at Imperial Rubber Dam (~271 ft) to the POD below Tustin Avenue (~210 ft). It highlights the Warner Transmission Pipeline, which begins at Mini-Anaheim Lake (invert 205 ft, max water surface elevation 239 ft), and the Warner Bypass Pipeline with a 100 cfs capacity connecting to the Warner Transmission Pipeline. These components form the foundation for the phased approach described below.



We're focused on outcomes and a technically sound, data-driven feasibility study that creates measurable value for OCWD by:

- Using proven science and modeling to quantify recharge potential and optimize design—cutting uncertainty and supporting sound decisions.
- Aligning design, hydraulics, and hydrogeology through clear task ownership for consistent, traceable results.
- Driving efficient decisions with disciplined project management—defined roles, regular reviews, and active risk tracking.

EXHIBIT 3.1 | MAIN SYSTEM COMPONENTS FOR RFS IMPLEMENTATION



APPROACH SUMMARY

Jacobs will execute a disciplined plan that couples clear task ownership with proactive communication and rigorous QA/QC. We will (1) confirm assumptions collaboratively with OCWD early, (2) integrate multi-disciplinary specialists to keep analyses and designs consistent, and (3) maintain schedule agility for short-notice requests, while preserving quality and traceability across all deliverables.

Our approach is built around OCWD's priority to maximize recharge benefits while controlling costs and minimizing operational complexity. To achieve this, we propose a **phased implementation strategy** that begins with a gravity-fed Riverbed Filtration System (RFS) requiring minimal infrastructure and no pumping. The challenge of this first approach is the implementation of a RFS in areas upstream of the Imperial dam, out of the OCWD domain. This first phase will deliver up to 170 cfs to the Terminal basins achieving improvements at the lowest feasible cost.

Only if additional capacity is needed will Phase 2 be initiated, expanding the RFS footprint and incorporating pumping facilities to overcome elevation constraints. This deliberate sequencing ensures that OCWD invests in pumping infrastructure—and its associated higher capital and O&M costs—only when justified by recharge performance and system demand. By combining technical rigor with cost-conscious planning, our approach provides flexibility, scalability, and long-term value for OCWD's groundwater replenishment program.

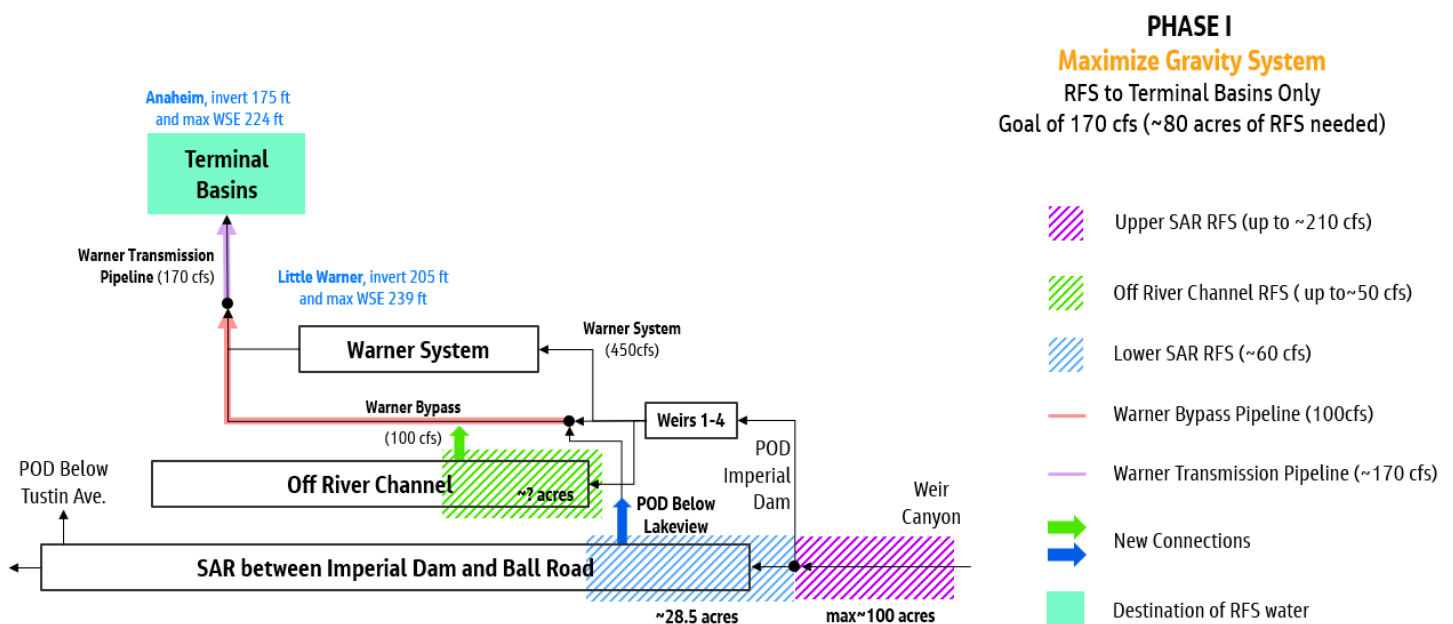
The District has recommended a two-phase approach to balance cost efficiency and recharge performance. The first phase focuses on a gravity-only system to minimize initial capital investment, while the second phase introduces pumping facilities to maximize RFS capacity if additional recharge is required.

PHASE 1 – RIVERBED FILTRATION SYSTEM TO TERMINAL BASINS

- **Objective:** Construct a lower-cost RFS that relies solely on gravity flow to deliver filtered water to the Warner Transmission Pipeline.
- **Key Features** (see EXHIBIT 3.2):

- Implement RFS between Imperial dam and POD below Lakeview (~28.5 acres)
- Investigate the possibility of using a partial area of the Off River Channel and still have a gravity system (dependent on Warner bypass invert)
- Rely on upper SAR between Weir Canyon and Imperial dam and the Imperial Dam POD to maximize the 170 cfs goal of this Phase
- Use current POD, limit initial footprints and infrastructure to reduce cost and expedite permitting.
- **Expected Benefit:** Phase 1 could provide up to 110 cfs of filtered water at a significantly lower cost compared to pumped systems.
- **Expected Challenges:** OCWD owns the Santa Ana River channel only from Imperial Highway to Ball Road. The area upstream of Imperial Dam to Weir Canyon Road is owned by Orange County Public Works (OCPW) and falls under the jurisdiction of the U.S. Army Corps of Engineers (USACE).

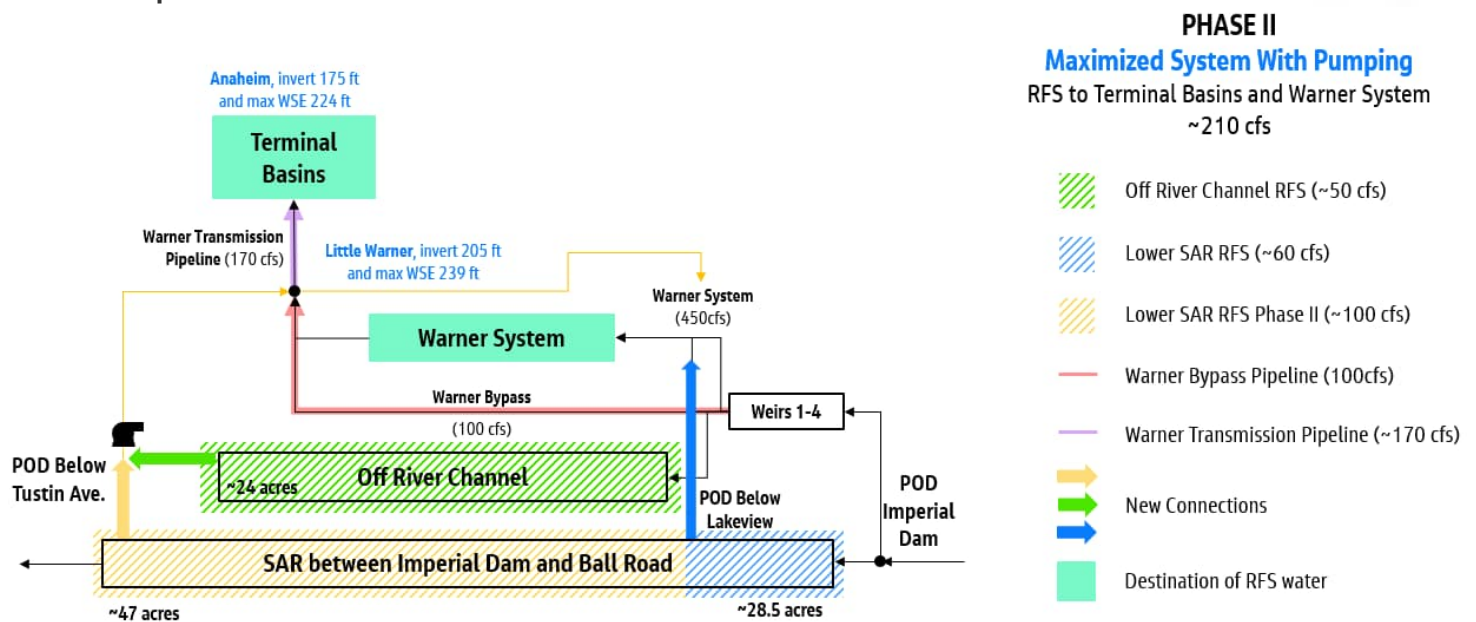
EXHIBIT 3.2 | CONCEPTUAL LAYOUT OF PHASE 1 GRAVITY-FED SYSTEM



PHASE 2 – EXPANDED SYSTEM TO TERMINAL BASINS AND/OR WARNER SYSTEM (SEE EXHIBIT 3.3)

- **Objective:** Expand RFS capacity and incorporate pumping facilities to overcome elevation constraints if additional recharge is needed. Option to have Phase II as the only phase since it relies solely on areas owned by OCWD.
- **Key Features:**
 - Implementation of RFS in all OCWD owned areas downstream of Imperial dam
 - Install additional laterals along SAR downstream of Lakeview Avenue to the POD below Tustin Avenue.
 - Design pump stations and pressurized pipelines to convey water to Warner Basin or through the Warner Bypass Pipeline to downstream recharge facilities.
 - Evaluate integration with Warner Bypass Pipeline and discharge points at Huckleberry Basin.
- **Expected Benefit:** Expansion of Phase I capacity or a system that is fully under OCWD owned areas
- **Expected Challenges:** Pumping facilities significantly increase capital and O&M costs; therefore, Phase 2 will only proceed if recharge benefits justify the investment.

EXHIBIT 3.3 | CONCEPTUAL LAYOUT OF PHASE 2 PUMPED SYSTEM



While these phases provide a useful framework, the project team is not strictly tied to them. Optional task 8.3 could explore alternative concepts and Phasing, such as extending Phase I downstream of Lakeview Point of Diversion to allow flows up to the Warner transmission line capacity, which may require supplemental pumping. This flexibility ensures that design decisions remain responsive to performance data and evolving operational priorities.

Both phases will be evaluated using OCWD's Recharge Facilities Model (RFM) prior to Task 5. Accurate invert elevations and flow estimates will be confirmed during Task 2 (Data Collection).

ABILITY TO SUCCESSFULLY COMPLETE ASSIGNMENTS ON TIME (AND ON SHORT NOTICE)

Schedule control. We will establish a resource-loaded baseline schedule at kickoff with defined milestones for data requests, workshops, and reviews. A rolling four-week look-ahead will forecast near-term work and surface risks early.

Rapid mobilization. Our SoCal team can flex staffing for urgent analyses, field coordination, or stakeholder queries without disrupting the critical path. In addition, combined with our team's extensive experience and deep domain knowledge, we are well positioned for rapid mobilization and effective execution.

Assurance measures. Weekly progress huddles, variance tracking, and decision logs keep scope, budget, and schedule aligned; contingencies are pre-baked for long-lead items and external review windows.

ASSIGNMENT OF WORK AND DELIVERABLE DEVELOPMENT

Clear task ownership. Each Scope of Services task has a designated lead responsible for day-to-day execution and integration with adjacent tasks; the PM holds final accountability and approval.

Integrated collaboration. Hydrogeology, hydraulics, civil/mechanical, cost estimating, and GIS/modeling collaborate through Jacobs' standard document control and shared workspaces to ensure version control and a single source of truth.

Deliverable workflow. Drafts pass internal technical review and PM review before OCWD submittal; comment resolution matrices will document how District feedback is incorporated, maintaining full traceability.

PROJECT MANAGEMENT AND COMMUNICATION PROTOCOL

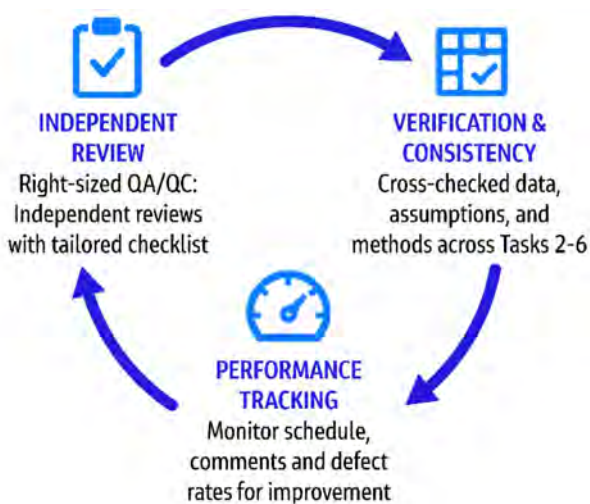
Single point of contact. The Project Manager is OCWD's primary contact, supported by a Deputy PM and task leads.

Meeting cadence. A formal Kickoff aligns assumptions and deliverables; monthly progress meetings and targeted working sessions (as needed) maintain momentum. Jacobs will issue concise agendas, minutes, action items, and decision logs.

Progress reporting. Monthly reports summarize accomplished work, percent complete, earned-value status, upcoming actions, and risks/mitigations.

Collaboration tools. Shared workspaces enable secure, immediate access to current drafts and figures—reducing email churn and improving transparency.

EXHIBIT 3.4 | REVIEW, VERIFY, AND TRACK



QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) AND PERFORMANCE

Right-sized QA/QC. Under Task 1, all deliverables undergo independent technical review by qualified staff not involved in preparation, with checklists tailored to each product type (analyses, figures, models, cost estimates).

Verification and consistency. Dataset provenance, model assumptions, and calculation methods will be documented and cross-checked for consistency across Tasks 2–6 so the Feasibility Study reads as one, coherent technical record.

Performance tracking. We'll monitor schedule adherence, comment turnarounds, and defect rates to drive continuous improvement throughout the engagement.

TECHNICAL APPROACH AND DEPLOYMENT STRATEGY (MOBILIZATION → DEMOBILIZATION)

TASK 1 – PROJECT MANAGEMENT AND QA/QC

Project Management

Jacobs' Project Manager, **Marielle Coquia**, will be the primary point of contact for the District. She will track the project schedule and budget and will communicate regularly with the District during project execution. As an initial task, Marielle will lead a project kickoff meeting with the District and Jacobs staff to review key team roles and responsibilities, stakeholders, key deliverables, and the project schedule. Marielle will also conduct monthly meetings with the District to review progress and participate in conference calls and District-led stakeholder meetings during the project. Jacobs assumes the kickoff meeting and periodic stakeholder meetings will be in person, but other meetings will be virtual. Jacobs will prepare agendas and meeting minutes for each of these meetings. Marielle will prepare monthly invoices and progress reports that meet the District's requirements.

QA/QC Management of all work products

Marielle will oversee the crucial aspect of quality assurance and quality control reviews for this project. One of her primary responsibilities is to develop a comprehensive quality management plan (QMP) that meticulously outlines the roles, responsibilities, and processes involved in QA/QC. This document will serve as a blueprint for maintaining the highest standards throughout the project. Additionally, our esteemed technical advisor team, as outlined in Section 3, will actively participate in the QA/QC process, lending their expertise and insights to ensure exceptional quality at every stage. Exhibit 2.1 illustrates the quality review cycle for our project deliverables.

Jacobs will lead budget, schedule, risk, and quality management; conduct the kickoff; run monthly progress meetings; prepare agendas/minutes, monthly invoices, and progress reports; and perform QA/QC on all submittals (reports, calcs, cost estimates).

Assumptions:

- **Kick-off Meeting** – two hour in-person meeting to meet key staff (PM, Civil Lead, Technical SME, and Subconsultant)
- **Monthly Status Meeting** – Attend h-hour virtual meeting, preparation of meeting agenda and brief meeting minutes

Deliverables:

- Meeting Agenda and minutes for Kick-off Meeting and monthly progress meetings

TASK 2 – BACKGROUND INFORMATION COLLECTION

Jacobs will initiate Task 2 by developing an **information request matrix** to guide collection of all relevant background data, including prior studies, demonstration or pilot results, USACE and County data, boring logs, sediment profiles, design and construction drawings, and presentations.

A **comprehensive review** of the project vicinity, existing conveyance systems, and associated hydraulic model will provide the foundational context for identifying and screening alternatives. During this effort, Jacobs will also identify **data gaps** significant to feasibility evaluations and document a plan to resolve them through focused follow-ups or reasonable assumptions for transparency.

To consolidate findings and requests, Jacobs will prepare a **Technical Memorandum (TM)** summarizing available background information and outlining additional data needs. The TM will be submitted to the District for review and input.

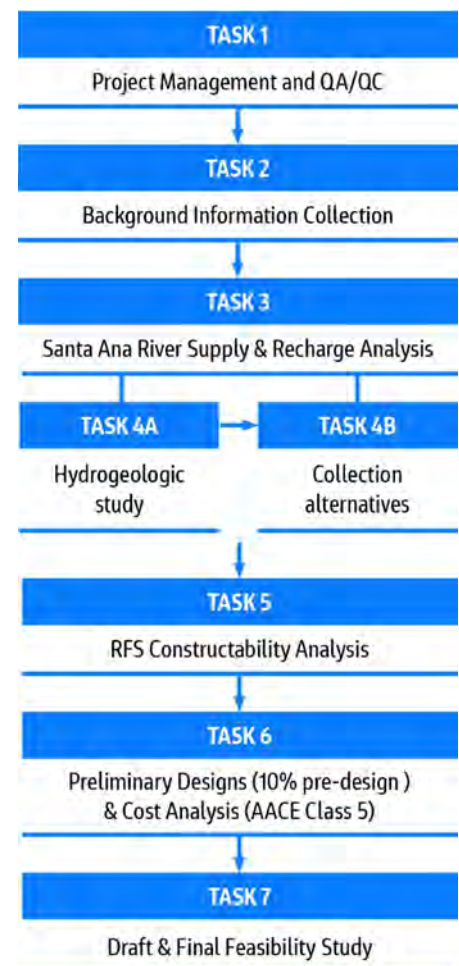
Based on our preliminary assessment, the TM will likely include requests for:

- Results of groundwater modeling for the project
- Property ownership and right-of-way information
- Locations of existing utilities and nearby projects (existing or planned)
- Critical habitat mapping in the project vicinity
- Existing pipeline inverts, basin elevations, and LiDAR-based topography
- Existing conveyance system hydraulic modeling input/output

EXHIBIT 3.56: QUALITY REVIEW PROCESS



EXHIBIT 3.7: TASK DEPLOYMENT



- Representative groundwater quality for brackish, deep (amber), and ambient zones
- Water quality and reliability data for potential source waters
- Updated hydrogeologic estimates of injection and extraction rates (including seasonal variability and well counts)
- Favorable areas for groundwater extraction and injection, including target aquifer depths, screen intervals, expected yields, and any pumping limitations

Jacobs will **coordinate with the District and other entities** as needed to obtain missing information and ensure that the compiled dataset fully supports development of robust and practical feasibility alternatives.

Assumptions:

- District will provide electronic files or pdfs format documents and reports
- This task does not include performing field investigations, inspections, or site visits to collect information

Deliverables:

- Written information request
- Technical Memorandum identifying data gaps or other information needed to aid in alternatives development and analysis

TASK 3 – SANTA ANA RIVER SUPPLY & RECHARGE ANALYSIS

The Recharge Facilities Model (RFM), developed by Jacobs, was used to generate preliminary estimates of the additional recharge that could be achieved with a riverbed filtration system (RFS). The district currently operates its basins in an optimized manner, so obtaining a realistic estimate of potential incremental recharge is critical to the project's success and will influence the ultimate scale of the system. Each additional acre-foot of water added to the system carries an associated cost, making accuracy essential. The initial model simulations relied on high-level assumptions; however, these will be refined as more detailed data becomes available. Updated assumptions will support improved modeling and provide a more accurate projection of the additional recharge achievable with an RFS.

Working with OCWD, we will review the Recharge Facilities Model (RFM) assumptions, finalize flow up to 2 flow condition scenarios, and interpret OCWD-generated runs (daily flow rates at key nodes and aggregate recharge).

As the original developer of the RFM, Jacobs brings direct knowledge of its framework, data structure, and calibration history—enabling us to efficiently validate model performance. Results from Task 3 will parameterize yield expectations and boundary conditions for evaluating collection alternatives and comparing cost–yield performance across scenarios.

Assumptions:

- Two model scenarios inflows will be run from existing time series of flows that the OCWD model currently has or will be provided by OCWD. OCWD will run the 2 model scenarios and provide the summary and results to Jacobs.
- If desired by OCWD, Jacobs can run new simulations in-house to test additional recharge or conveyance alternatives which would be done under an optional task approved by OCWD (Task 8.3.A).

Deliverables:

Check of model results and assumptions provided by OCWD, propose changes in assumptions to better represent the RFS in the OCWD RFM. The summarized check of model results and assumptions will be reported in a two page TM delivered electronically to the District.

TASK 4 – STREAMBED & COLLECTION SYSTEM CAPACITY ANALYSIS

TASK 4A – HYDROGEOLOGIC STUDY

We will review pilot/demonstration-phase performance, vadose zone modeling, and sediment stratigraphy to develop an Excel-based conceptual capacity model for SAR and Off-River channels (candidate RFS laterals). Based on an initial review of the information included in the RFP, the subsurface conditions where the pilot and demonstration projects were located are sand-rich in the upper 10 to 20 feet of the subsurface with high hydraulic conductivities. In addition, the findings of these studies provide estimates of infiltration properties and RFS yields that can be extrapolated to full-scale systems (e.g., 20 CFS over 10 acres, or approximately 4 feet/day/ acre). The available boring logs will be reviewed to identify reaches of the SAR and Off-River channels that have similar conditions and are therefore suitable for construction of RFS systems.

After identifying reaches of the SAR and Off-River channels that are favorable, we will develop a custom MS Excel Model to simulate RFS performance for these areas with a goal of estimating RFS yields at full scale. The MS Excel Model will be based on a custom spreadsheet model that Scheevel Engineering has developed/refined over the last 10 years and has been used to evaluate dozens of groundwater recharge projects in the SAR Watershed. The MS Excel Model is currently set to simulate in hourly time steps and includes infiltration rate decay functions (if needed).

Assumptions:

- This task does not include site visits or field investigations
- A 10-year base case simulation and 2, 10-year RFS simulations will be performed.
- Previously available hydrology and District provided assumptions will be used for the relevant model boundary conditions.
- For more rigorous MS Excel Model development, reporting, and extended simulation periods, and optional Task 8.3.x

Deliverables:

- TM with model results as graphs in Excel and pdf format and summary describing the model algorithms, results and recommendations

TASK 4B – COLLECTION ALTERNATIVES

Building on 4A, we will quantify feasible conveyance facilities for gravity, pumped, and hybrid options, benchmarking against relevant references (e.g., similar systems such as Turlock Irrigation District where applicable). Our extensive knowledge and experience with a wide spectrum of hydraulic modeling methodologies and techniques that will incorporate energy and momentum fluid dynamic equations will provide immense benefit. This experience and hydraulic modeling knowledge can be utilized in highly detailed modeling software chosen to best represent the conditions of this project. The development of project specific hydraulic models from existing as-built data will be conducted to identify current conditions prior to analysis of any proposed conveyance systems. These hydraulic models will then be modified to represent multiple alternatives that represent Phase I and Phase II scenarios as needed for a 30% design.

For Phase I, the development of hydraulic models that represent feasible tie-ins to the Warner Transmission Pipeline will inform the need to include additional conveyance capacity for a 30% design. Additional conveyance capacity investigations will include upsizing, parallel alignment, or conversion to pressure service of the Warner Transmission Pipeline. Additional analysis will be completed that will include the potential use of the Warner Bypass Pipeline.

For Phase II, hydraulic modeling efforts will mimic those identified as a part of Phase I, but will include conveyance features that tie-in to the Warner Basin System in addition to the Warner Transmission Pipeline.

Defining existing system opportunities and constraints (including but not limited to Warner Transmission and Warner Bypass Systems) will help identify system bottlenecks/constraints/challenges to overcome those constraints. It will be important to identify RFS elevations and operating pressures. We will likely need to isolate higher elevations from lower elevations in the

system to avoid back pressuring the lower elevations causing reverse flow and destabilizing the riverbed due to high HGL's in the lower elevations of the system. This may require separate zones to isolate pressures, or pressure regulating valves/check valves to manage potential back pressure in the lower elevations.

These efforts will promote the most accurate results to inform feasibility of potential solutions. Feasible alternatives will be presented at the appropriate detail to inform and adequate cost analysis for educated selection of a preferred solution.

Assumptions:

- As-built data of existing systems will be provided.
- Existing surface elevation data will be provided.
- Flow rates will be determined by RFS calculations determined as part of Tasks 3 and 4A.
- Normal depth estimations utilizing Mannings Equation are acceptable for pipe capacity feasibility.
- HDR alignments are acceptable baseline concepts.
- Pump sizing based on general parameters of flow and head difference.
- Alignment exhibits are acceptable for a feasibility study

Deliverables:

- TM of assumptions, analysis, and results for the alternatives.

TASK 5 – RFS CONSTRUCTABILITY ANALYSIS

We will perform a conceptual-level constructability review of the RFS addressing: river access and sequencing; lateral drain constructability; maintenance and sediment management; gravity vs. pump station siting; tie-ins to existing riverside or off-river infrastructure; effective construction methods, and likely permitting interfaces (e.g., USACE, OCPW). Constraints and data gaps will be cataloged with actionable recommendations to de-risk preferred concepts. Constructability Analysis will include specific considerations for working around high groundwater in the system, construction around existing OCWD, USACE & OCPW assets and OCWD operations that may constrain/dictate constructability. Assumes most work is done by Jacobs with regular input from Scheevel Engineering. The Team will provide recommendations to overcome challenges and constraints. The constructability analysis will provide valuable insights to optimize the design and construction process, reduce risks, and ensure successful project delivery.

Assumptions:

- Rely on existing data and documents that were obtained and reviewed as part of Task 2.
- No field investigations or site visits will be performed.

Deliverables:

- Constructability TM that summarizes the proposed conditions, recommendations to overcome challenges, and constraints.

TASK 6 – PRELIMINARY DESIGNS (10% PRE-DESIGN) & COST ANALYSIS (AACE CLASS 5)

With OCWD, we will define two Phase I concepts (supplying Warner Transmission only) and two Phase II concepts (supplying Warner System plus downstream basins). For each, we will develop 10% pre-design level layouts and major equipment lists sufficient for AACE Class 5 cost estimates (capital, O&M, and life-cycle). We will compute unit life-cycle cost (\$/AF) by linking RFM-derived additional yield to life-cycle cost, and compare against projected imported water rates using collaboratively agreed economic assumptions.

We understand that, from prior studies and testing, an expanded RFS demonstrated the greatest potential to increase the recharge rates of the Terminal Recharge Basins. For a gravity-type RFS, the demonstration testing resulted in an average production rate (or yield) of 1.8 cfs/acre in the Upper SAR Channel, which will be the design basis for full-scale RFS.

One other takeaway from the demonstration testing was that the RFS efficiency is not sensitive to collector system construction (i.e., slotted PVC pipe or rain tank) or orientation to surface water flow direction but may be sensitive to diameter and spacing of collectors. The preliminary designs will further evaluate and determine the collector pipe size and spacing to optimize the RFS yield, as well as the carrier pipe size for desired system capacity.

Phase I and Phase II projects will be implemented with the gravity RFS facilities. To maximize the use of the Warner System and Terminal Basins recharge capacities, Phase II will include recharge water pumping facilities to lift filtered water and feed the Warner System. The anticipated design pumping flow rate from the Lower SAR facility would be 150 cfs or 67,300 gpm. Vertical axial-flow or mixed-flow pumps are commonly used for the high flow, low head application. The pump turndown requirement will be evaluated to determine number of units and unit capacity of pumps.

We will evaluate the extent of O&M activities, such as solids management and lateral cleaning, to inform facility designs and life-cycle cost.

Assumptions:

- Average production rate from the demonstration project
- 10% Designs will be based on the specific analysis described in Task 6
- OCWD will provide consolidated comments from all stakeholders to Jacobs

Deliverables:

- Preliminary Designs to include four 10% pre-design layouts
- Cost Analysis to include cost estimate for four rough order of magnitude (ROM) cost estimates which will include capital costs, O&M costs, and life cycle costs
- TM that summarizes the assumptions and present the preliminary design elements and associated cost estimates

TASK 7 – DRAFT & FINAL FEASIBILITY STUDY

After completing the collection analyses and determining the effective alternatives (Task 4), the RFS constructability analysis (Task 5), and developing up to four preliminary designs and corresponding cost estimates (Task 6) we'll develop siting alternatives for the four alignments, RFS, and associated infrastructure. Up to four facility siting alternatives will be defined and evaluated. The evaluation will consider multiple factors, including:

- Capacity
- Operational Benefits and Flexibility
- Relative costs, including both capital and life-cycle cost estimates
- Constructability
- Operability
- Potential impacts on adjacent land use
- Safety
- Permitting challenges
- Aesthetics and noise
- Implementation timeline

Jacobs will combine the results of Tasks 1 through 6 into a Feasibility Study (FS) report that documents the selection of the preferred project concept. The FS report will be sufficiently detailed to support future procurement activities and environmental permitting studies (e.g., CEQA) performed by the District.

Jacobs will prepare a document responding to comments, for each set of comments received for the draft versions of the FS report. All three versions of FS report will be submitted electronically. We will produce an Administrative Draft Feasibility

Study (Executive Summary; Tasks 1–6 results; Phase I/II alternatives; costs; risks; recommendations), facilitate a review meeting, incorporate a consolidated set of District comments, and issue the Final Feasibility Study ready for presentation.

Assumptions:

- The Technical Memorandums generated for Tasks 1 through 6 will be consolidated with an Executive Summary
- Response to comments will be reflected in redlined documents and Response to Comments Table for each Draft.

Deliverables:

- Administrative Draft version for District review
- Draft version for District and stakeholder review
- Final version

We've identified solutions and best practices below for some of your key issues.

EXHIBIT 3.8 | KEY TECHNICAL CHALLENGES, JACOBS' MITIGATION STRATEGIES, AND RELEVANT EXPERIENCE

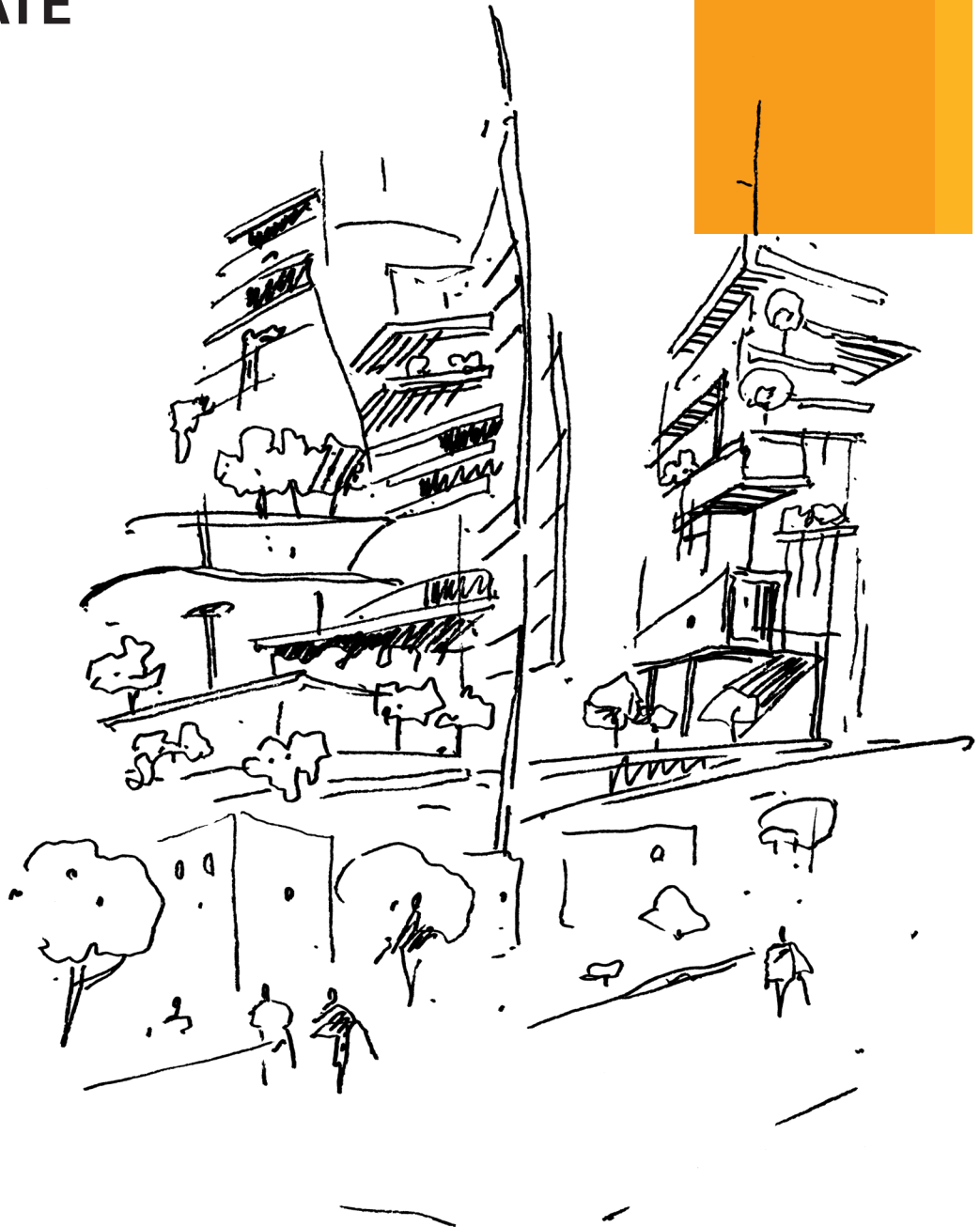
KEY ISSUE / CONSTRAINT	MITIGATION	SOLUTIONS & BEST PRACTICES
Variable Santa Ana River hydrology and recharge yield uncertainty	Integrate OCWD's Recharge Facilities Model (RFM) to evaluate multiple flow scenarios and stress-test collection concepts under variable hydrologic conditions.	Applied adaptive hydraulic modeling frameworks for regional recharge optimization and surface-groundwater interaction studies across Southern California.
Sediment accumulation and clogging risk in riverbed and off-river channels	Incorporate vadose-zone and infiltration modeling from prior pilot studies; include design provisions for maintenance access, sediment removal intervals, and channel reconditioning.	Developed sediment management and clogging-mitigation strategies for river filtration and infiltration basins in comparable alluvial systems.
Complex permitting and multi-agency coordination (USACE, OCPW, regulatory bodies)	Establish early coordination matrix with agencies; sequence permit pathways in parallel with feasibility design; document permitting assumptions in constructability analysis.	Led multi-jurisdictional permitting for hydraulic conveyance and recharge infrastructure with concurrent CEQA/NEPA compliance planning.
Limited transmission capacity and conveyance bottlenecks	Evaluate upsizing, parallel, or pressure conversion options for the Warner Transmission Pipeline and integration with the Warner Bypass system; optimize based on hydraulic grade line modeling.	Designed and analyzed large-diameter conveyance pipelines and pumping systems under phased implementation scenarios.
Operational cost sensitivity and energy consumption for pumped systems	Develop AACE Class 5 life-cycle cost models linked to RFM yield outputs; perform energy and O&M cost sensitivity analysis to support long-term decision-making.	Delivered life-cycle economic evaluations and energy-optimization studies for groundwater and surface-water recharge projects.
Potential schedule compression and expedited District review cycles	Use a rolling four-week lookahead schedule, dedicated review windows, and surge resource capability to maintain milestone delivery and accommodate short-notice assignments.	Successfully executed accelerated feasibility and design deliverables for municipal water and recharge programs under tight review deadlines.

Completion of the Feasibility Study Report (Task 7) will establish the technical foundation and implementation strategy for the Santa Ana River Riverbed Filtration System. With the study's findings in place, Task 8 provides a logical next step—advancing the recommended Phase I concept toward readiness for design, funding, and eventual construction. These optional services allow OCWD to seamlessly transition from planning to implementation by transforming feasibility-level concepts into a defined 30 percent design, a Class 4 cost estimate and schedule, and identification of funding pathways that support near-term execution.

CLOSING SUMMARY

Jacobs will deliver a cohesive, decision-ready Feasibility Study that integrates hydrogeologic capacity, hydraulic conveyance, constructability, and life-cycle economics so the District can confidently advance a phased RFS implementation that increases recharge reliability and value to ratepayers. Our plan to execute deliverables that are precise, collaborative, and built to hold up under technical and operational scrutiny.

4 MAN-HOUR ESTIMATE



4 | MAN-HOUR ESTIMATE

LEVEL EFFORT AND STAFFING ASSUMPTIONS

Below, we present an estimate of the labor hours for each major task and key personnel, along with the total estimated hours for Jacobs to complete the project. We understand that man-hour estimates will be evaluated for reasonableness and clarity to demonstrate efficient use of resources while maintaining the highest level of quality.

Baseline Level of Effort (Staff Hours)

Orange County Water District SAR Riverbed Filtration FS

Task	Description	Project Manager	QA/QC	Technical Staff										CAD		Admin/Clerical	Controls & Contracts	Document Processing	Health and Safety	Jacobs Labor Hours	Sub-consultant
		M. Cioquia	J. Williams	R. Yu	I. Matagi	A. Morales	B. Ackermann	M. Reginaldo	B.J. Lechler	D. McClelland	J. DeWalt	G. Nguyen	A. Gordon	Engineer Technician	Technician	Admin	Admin	Technician	Senior Professional		Schweibel Engineering
1	Project Management and QA/QC	52	4		4			8										4	2	74	8
	Project Management and Coordination	32																		32	4
	Meetings	20			4			8												32	4
	QA/QC		4																	4	10
2	Background Information Collection	4		8	16			8	4			4								44	10
3	SAR Supply and Recharge Analysis							20												20	9
4	Streambed and Collection System Capacity Analysis	2	4	8	20				16											50	45
	4A. Hydrogeologic Study Streambed Capacity Analysis		2						16											18	40
	4B. Collection System Analysis	2	2	8	20															32	5
5	RFS Constructability Analysis	8	2	20	32					16	8	24						2		112	5
6	RFS Preliminary Designs and Cost Analysis	8	2	24	24	24	20				48	16	40							208	12
7	Draft and Final Feasibility Study Preparation	8	4	24	24		20	8		8	8	16	16	16	16	8		4		164	10
	Baseline Tasks 1 to 7 Total Hours	82	16	84	120	24	40	44	20	24	64	60	50	16	8		4	6	2	670	99

Optional Level of Effort (Staff Hours)

Orange County Water District SAR Riverbed Filtration FS

		Project Manager	Design Manager	DA&E	Technical Staff													CAD			Admin/Clerical	Controls & Contracts	Document Processing	Health and Safety	Jacobs Labor Hours	Sub-consultant
					M. Cioquia	G. Nguyen	J. Williams	J. Hite	A. Nichols	M. Meng	R. Yu	I. Matagi	M. Wang	S. Halverson	A. Morales	B. Ackermann	M. Reginaldo	Z. Yu	G. Strykowski	J. DeWalt						
Task	Description	Principal Professional 1	Principal Professional 2	Principal Professional 3	Senior Professional 1	Senior Professional 2	Project Professional 1	So. Professional 1	Senior Professional 2	Project Professional 1	Staff Professional 2	Staff Professional 1	Staff Professional 1	Principal Professional 1	Principal Professional 2	Senior Professional 1	Senior Professional 2	Engineer Technician	Technician	Technician	Senior Professional 1			Schweibel Engineering		
8	Task 8 (Optional)																									
8.1	Draft and Final Preliminary Design, Class A Construction Estimate and Project Schedule and Design Worksheet	32	92	44	10	16	40	32	64	80	40	160	180	8			48	80	156	278	8	4	4	0	1362	0
8.1A	A. Draft and Final Preliminary Design (50% Drawings and list of Specifications)	20	60	60	10	16	40	32	40	60	40	120	100				80	156	278		4	4			1122	
8.1B	B. Class A Construction Cost Estimate and Project Schedule	8	16	4									40				40								144	
8.1C	C. Design Worksheet	8	16						24			40		8											96	
8.2	Funding Support	8													16	24									46	
8.3	Proposer-Defined Tasks Beneficial to the Development of the FS	48	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	14	0	4	180	366	
8.3A	A. (Task 3 Enhancement) - Additional Modeling Support	4												40							5				46	
8.3B	B. (Task 4B Enhancement) - SWIRL Hydraulic Modeling and collection	4								60											2				86	
8.3C	C. (Task 4A Enhancement) - Field Data Augmentation	8																			2		2	12	95	
8.3D	D. (Tasks 4A and B Enhancement) - 3D CFD Simulation	8																			2			10	150	
8.3E	E. (Task 4B Enhancement) - Repetitive Feature Risk Testing	8																			2		3	12	192	
8.3F	F. (Task 4B Enhancement) - RFS Recharge to SWRG Testing	8																			2			10	240	
8.3G	G. (Task 4A Enhancement) - Enhanced MB Error Modeling	8																			2			10	178	
	OPTIONAL Task 8 TOTAL	88	92	44	10	16	40	32	144	80	40	160	180	54	16	24	40	80	156	278	0	18	4	4	1590	865
	Estimate TOTAL	162	92	60	10	16	40	116	260	80	40	184	220	56	16	24	120	136	156	294	8	22	10	6	2210	965

In this section you will find:

- ✓ Scope man-hour estimate
- ✓ Estimated total hours to complete project
- ✓ Assumptions



We acknowledge that the scope elements from Addendum 2 are discussed and covered within Task 2. Our summarized assumptions supporting these estimates are provided below and are also included in Part II: Price Proposal (submitted under separate sealed cover) for further specificity on the assumptions underlying our estimated hours.

ASSUMPTIONS

- Scope elements from Addendum 2 are included within Task 2.
- The following assumptions apply to Tasks 1 through 7 of this project.

Task 1 – Project Kick-off Meeting

- A total of four (4) participants will attend the Kick-off Meeting.
- The meeting will be scheduled for two (2) hours.
- Preparation activities will include:
 - Development of the meeting agenda.
 - Documentation of meeting minutes.
- The Project Manager (PM) has allocated 4 hours per month for:
 - General project management.
 - Coordination activities.
 - Monthly status meetings.
 - Preparation of agendas and minutes.

Tasks 2 through 7

- These tasks will be performed as described in their respective task descriptions.
- No additional assumptions are made beyond the scope outlined in each task.

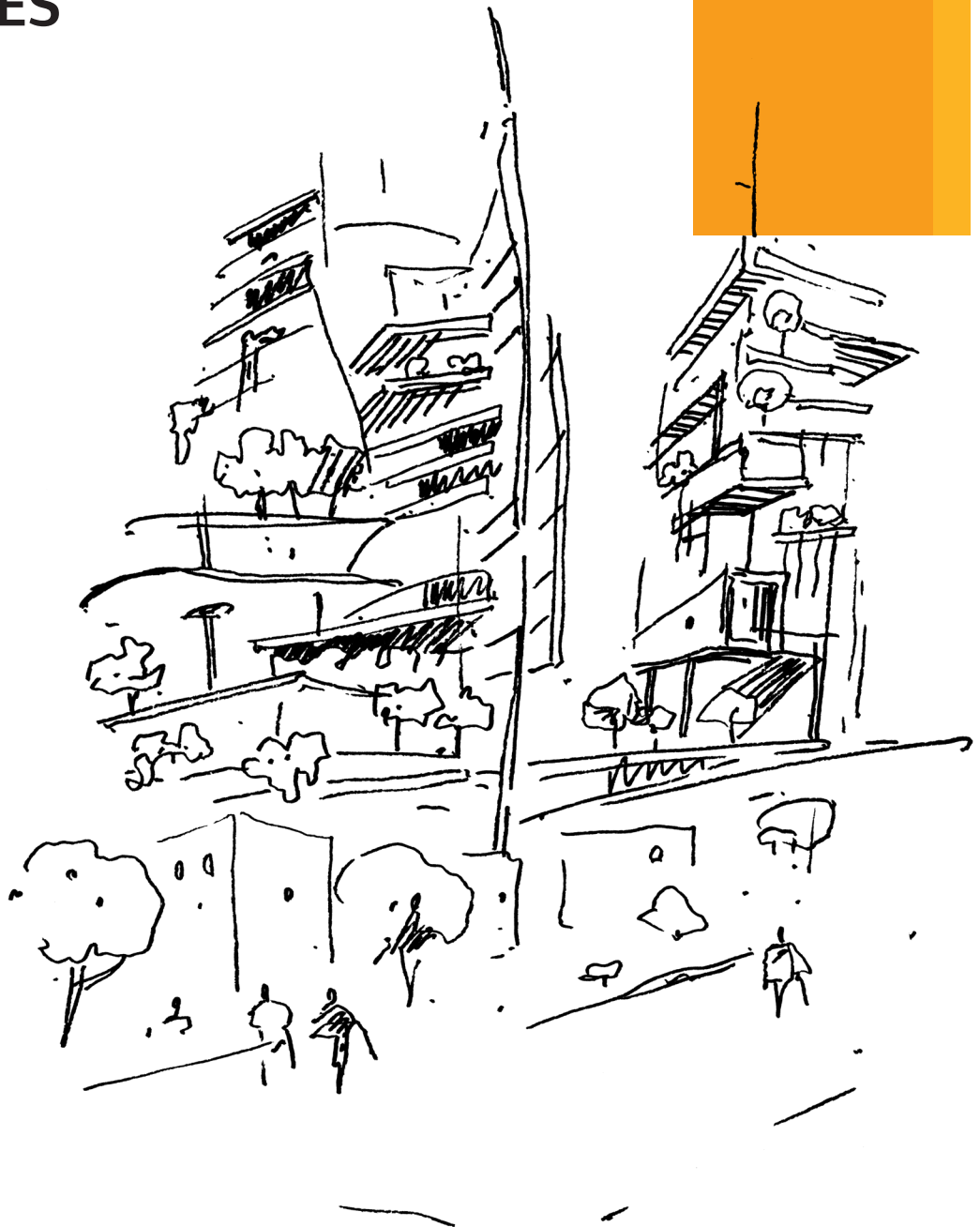
Task 7 – Feasibility Study (FS)

- The FS will include the preparation of:
 - A Draft Technical Memorandum (TM).
 - A Final Technical Memorandum (TM).
- The FS will include integration of the Final TMs developed as part of Tasks 2 through 6.
- These deliverables are considered part of the Task 7 scope and effort.

Task 8 – Optional Tasks - Additional Services

- Task 8 provides optional tasks for OCWD's consideration. We believe the proposed items under Task 8.3 will add value and increase confidence in the Feasibility Study and help support subsequent analysis and design efforts. The tasks selected for implementation will be collaboratively reviewed by the team and OCWD, to better define the scopes and fees as necessary to best fit the Study objectives and expectations.

5 ADDITIONAL SERVICES



5 | ADDITIONAL SERVICES

In this section you will find:

- ✓ Scope suggestions
- ✓ Potential impacts
- ✓ Potential benefits



OPTIONAL TASKS

This section outlines a suite of optional services designed to enhance the technical robustness, cost certainty, and implementation readiness of the Feasibility Study, providing OCWD with additional tools to optimize project outcomes.

Task 8 – Optional Services (If Directed)

Task 8 outlines optional services for the District's consideration. Jacobs and Scheevel Engineering believe these tasks will add value, enhance confidence in the Study, and support future analysis and design efforts. We recommend collaboratively reviewing any tasks selected for implementation and adjusting their scopes and fees as needed to align with the Study's objectives and expectations.

Task 8.1 – Preliminary Design (30 %)

Jacobs will advance the recommended Phase I concept to the 30 percent design level. The objective is to translate the feasibility-level findings into a clearly defined preliminary design package that confirms hydraulic performance, informs cost and schedule development, and supports future funding pursuits.

The Preliminary Design is an optional task that will be performed if directed by the District and prepared in accordance with District standards. We also recommend developing a 30 percent design report to document the District's concurrence with the selected design prior to advancing into the final design phases.

The 30% Preliminary Design Package will include the following key deliverables:

- Preliminary 30% Design Drawings (Table 8.1):
- 30% Specifications Table of Content
- Draft Basis of Design Report (BODR) with Supporting Calculations and Evaluations
- Class 4 Construction cost Estimate 3
- 30% Design Project Schedule
- 30% Design Review Workshop

Upon completion of the 30-percent design phase, senior members of our team will review the design and construction methodology, drawings, calculations, project design report, and overall design integrity in accordance with our Quality Assurance/Quality Control (QA/QC) program. Internal reviews by senior engineers, using standardized quality review forms, will be conducted for all deliverables.

Comments received from the QA/QC reviewers will be evaluated and addressed by the design team, with all necessary revisions incorporated into the design documents prior to submittal to the District. Following the District's review of the submittal, Jacobs will coordinate and conduct a workshop with key District staff to present and discuss review comments.

A. Draft and Final Preliminary Design (30% Drawings and Preliminary Specifications)

Jacobs will develop a 30 percent design drawing package, as outlined in Exhibit 5 below titled "Table 8.3.1 Preliminary Design Drawings" to define the proposed facilities at a preliminary design level. The package will include overall arrangement drawings, as well as structural, mechanical, electrical, and instrumentation layouts, along with a preliminary list of specification sections relevant to construction.

To confirm design adequacy and flow conveyance, Jacobs will adopt or develop a hydraulic model representing the conveyance network and filtration components of the Phase I concept. The model will be used to simulate proposed system conditions and validate the hydraulic performance of the design.

EXHIBIT 5 | PRELIMINARY DESIGN DRAWINGS

Table 8.3.1 PRELIMINARY DESIGN DRAWINGS DRAWING INDEX		
SHEET NO.	DWG. NO.	TITLE
GENERAL		
1	G-1	COVER SHEET LOCATION, VICINITY MAPS, AND DRAWING INDEX
2	G-2	GENERAL NOTES, LEGEND AND ABBREVIATIONS
3	G-3	PIPING SCHEDULE AND FLOWSTREAM IDENTIFICATIONS
4	G-4	CIVIL LEGEND
5	G-5	PROCESS FLOW DIAGRAM
6	G-6	HYDRAULIC PROFILE
CIVIL		
7	C-1	OVERALL SITE PLAN, SURVEY CONTROL POINTS, CONTRACTOR'S WORK AREAS
8	C-2	RFS GRADING PLAN
9	C-3	PIPING PLAN AND PROFILE
10	C-4	PIPING PLAN AND PROFILE
11	C-5	PIPING PLAN AND PROFILE
12	C-6	CIVIL SECTIONS
13	C-7	CIVIL DETAILS
STRUCTURAL		
14	S-1	STRUCTURAL NOTES, LEGEND, AND ABBREVIATIONS
15	S-2	PIPING INLET STRUCTURE PLAN, SECTIONS, DETAILS
16	S-3	PIPING OUTLET STRUCTURE PLAN, SECTIONS, DETAILS
17	S-4	PIPING CONCRETE ENCASEMENT DETAILS
MECHANICAL		
18	M-1	GENERAL NOTES, LEGEND AND ABBREVIATIONS
19	M-2	PUMP PLANS
20	M-3	SECTIONS
21	M-4	DETAILS
ELECTRICAL		
22	E-1	ELECTRICAL NOTES, LEGEND, AND ABBREVIATIONS
23	E-2	SITE SINGLE LINE DIAGRAM (coordinate with Edison)
24	E-3	ELECTRICAL DISTRIBUTION SITE PLAN
25	E-4	GROUND PLAN
INSTRUMENTATION AND CONTROLS		
26	N-1	GENERAL NOTES, LEGEND AND ABBREVIATIONS
27	N-2	CONTROL SYSTEM BLOCK DIAGRAMS/NETWORK ARCHITECTURE
28	N-3	PROCESS AND INSTRUMENTATION DIAGRAMS

B. Class 4 Construction Cost Estimate and Project Schedule

Using the preliminary design information and hydraulic modeling results, Jacobs will prepare a Class 4 construction cost estimate in accordance with AACE standards. The estimate will address capital, operations and maintenance (O&M), and lifecycle cost considerations to support informed decision-making and potential funding applications. A preliminary project schedule will also be developed to outline key milestones for design, permitting, procurement, and construction activities.

C. Design Review Workshop

After submittal of the draft 30 percent design package, Jacobs will organize and facilitate a structured design review workshop with the District. During this session, Jacobs will present the design basis, hydraulic modeling results, cost estimate, and schedule. Feedback received from the District will be incorporated, and Jacobs will submit the final 30 percent design package in both PDF and native CAD/Revit formats.

Task 8.2 — Funding Support

Jacobs will identify and evaluate state and federal funding opportunities—including programs such as DWR, SWRCB, WIFIA, and EPA grant or loan initiatives—to support implementation of the Santa Ana River Riverbed Filtration System.

Jacobs may also recommend targeted, value-added analyses to enhance project readiness, such as constructability reviews, permitting roadmaps, and benefit-cost assessments aligned with

funding agency criteria. These efforts will position the District to advance from feasibility to implementation with a clear technical and financial roadmap and to determine whether to proceed with preparing a funding application.

Our team has extensive experience developing funding strategies and applications that have helped clients secure low-interest loans and grants. Because funding opportunities vary by project size, timing, and agency priorities—which often shift from one cycle to the next—Jacobs will evaluate the most viable paths for the District. The California State Revolving Fund (SRF) and the Water Infrastructure Finance and Innovation Act (WIFIA) are both considered promising options for the Project.

Liz Stryjewski, a dedicated funding resource, will assess SRF and WIFIA eligibility and identify additional funding sources as appropriate. She will also develop a strategy for engaging SRF and WIFIA program staff at the appropriate stage. These submissions typically require partial design completion (30 to 60 percent), as well as initiation or completion of permitting and CEQA processes, depending on the funding source.

Jacobs' team is experienced with all facets of regulatory compliance and will support the District throughout the application and coordination process to maximize funding potential.

Task 8.3 – Proposer-Defined Tasks Beneficial to the Development of the Feasibility Study Anticipated Constraints, Problems, and Mitigation

- **Task 8.3 a - Enhanced Modeling and Operational Scenario Evaluation** - This task involves refining the existing model to incorporate more realistic assumptions and evaluate additional operational scenarios beyond the currently proposed two-phase approach. The objective is to improve the accuracy of groundwater recharge estimates resulting from implementation of the Riverbed Filtration System (RFS). Key enhancements may include:
 - **Clogging Effects:** Incorporating more realistic clogging dynamics in recharge basins due to filtered water, which may impact infiltration rates over time.
 - **Alternative Water Routing:** Exploring different routing strategies for Santa Ana River (SAR) and RFS flows, beyond the two-phase configuration, to optimize recharge potential.
 - **Operational Flexibility:** Assessing alternative system operations, such as varying recharge basin priorities and evaluating potential modifications to the Warner transmission capacity.

These refinements will be developed in close coordination with the District to ensure alignment with operational realities and planning goals. The objective is to produce a more robust estimate of the additional water recharged through the system as a result of RFS implementation. This quantified recharge benefit can then be translated into a monetary value, allowing for a cost-benefit comparison against the capital and operational costs of the RFS.

■ **Task 8.3 b - Enhancement of the Collection System**

Analysis – Building on the hydraulic calculations completed during the feasibility study, Jacobs will perform enhanced hydraulic modeling to inform a 30 percent conveyance network design. Refined RFS flow rates will be hydraulically routed through the preferred conveyance network facilities using SWMM or WSPG software platforms that apply energy and momentum fluid dynamic equations.

The level of effort (LOE) under this optional task will produce enhanced hydraulic modeling results to better support development of the 30 percent design. A Hydrology and Hydraulics Technical Memorandum (TM) documenting the design criteria, methodology, modeling parameters, and results will be prepared and submitted to the District for review.

- **Task 8.3 c. – Field Data Augmentation** – Scheevel Engineering recommends field data collection to determine Santa Ana River (SAR) infiltration rates between the Weir and Imperial crossings. The effort will also include collecting bed material samples for laboratory analysis and performing spot elevation checks to verify critical elevations and “ground-truth” LiDAR or other survey data used as base maps and design references. Scheevel Engineering will perform all associated fieldwork and provide the geotechnical laboratory analyses.

- **Task 8.3 d. – 3D CFD Simulations** – Scheevel Engineering recommends conducting three-dimensional (3D) computational fluid dynamics (CFD) simulations of the existing RFS demonstration project to develop a calibrated model. The calibrated model will then be used to evaluate study alternatives through 3D CFD simulations, allowing prediction of system performance and visualization of operational behavior to support project advancement. In addition, Scheevel Engineering will perform two-dimensional/three-dimensional

(2D/3D) hybrid sediment transport modeling to simulate bed gradation changes over time within the Santa Ana River (SAR) and assess their potential impacts on the long-term performance of the RFS.

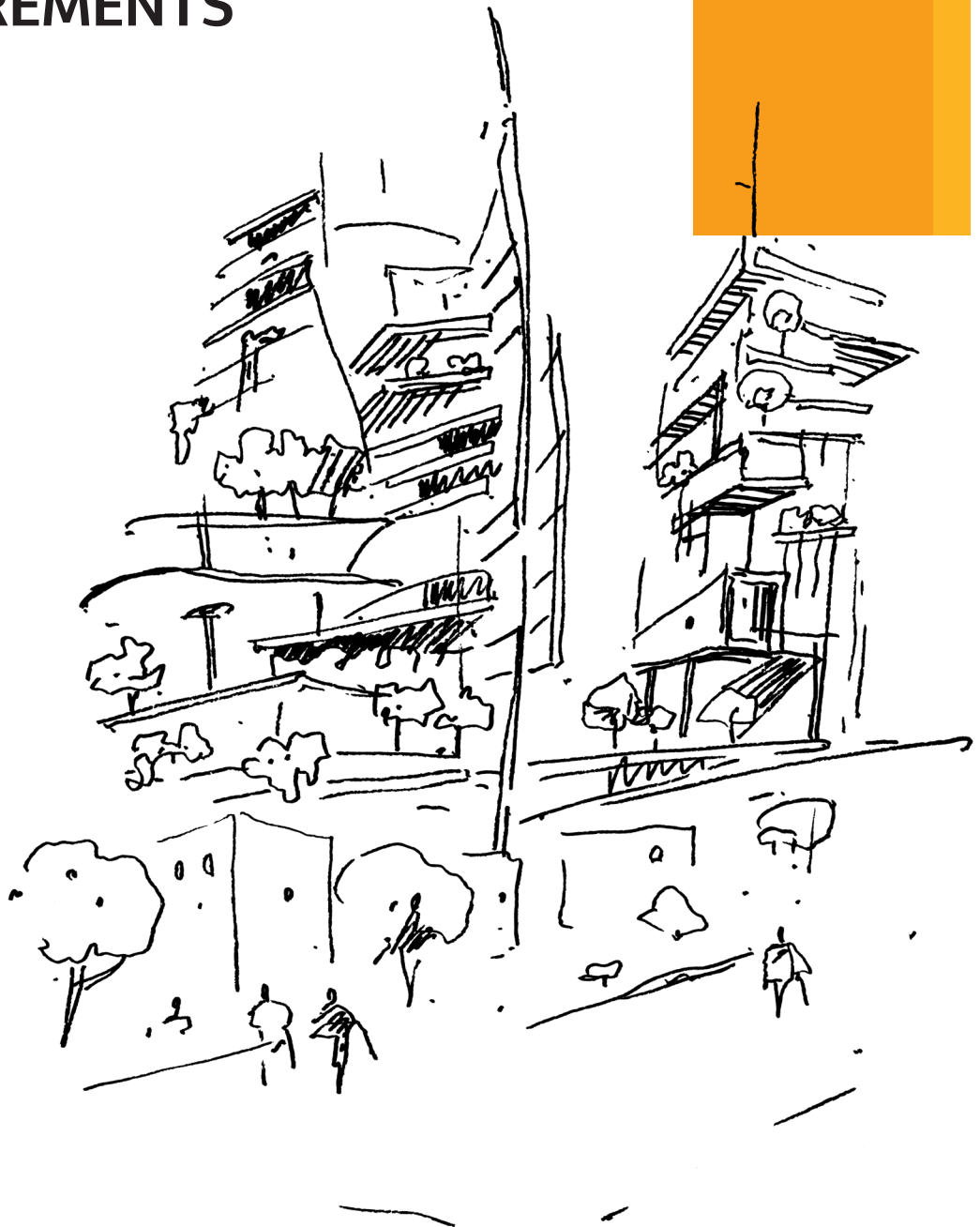
■ **Task 8.3 e. – Specialty Feature Field Testing** –

Scheevel Engineering recommends field testing and selective dissection of small sections of the existing Riverbed Filtration System (RFS) to optimize and refine the design. This effort would involve carefully excavating and exposing one or more sections of the existing RFS to examine current sediment conditions, materials, and clogging characteristics through sampling and analysis. Insights gained from this work would help inform uniform design improvements for future RFS configurations.

Additional activities may include installing and testing specialized features within the existing RFS, such as water quality monitoring devices, video inspection systems, and flow measurement and control equipment. Scheevel Engineering has developed an initial budgetary estimate for this task based on extensive prior field experience but recommends a follow-up discussion with Jacobs and the District to further refine the scope and fee should this item be selected for implementation.

- **Task 8.3 f. – RFS Recharge in SSRG Testing** – Scheevel Engineering recommends evaluating the potential for recharging RFS water through Subsurface Recharge Galleries (SSRG) using preliminary analysis and small-scale pilot testing. If successful, this approach could create new opportunities to recharge Santa Ana River (RFS) water in locations that were previously unavailable. SSR recharge could be implemented beneath basin bottoms that experience rapid clogging or infrequent cleaning, as well as in other suitable areas near the RFS system—such as rights-of-way, parks, or parking lots.
- **Task 8.3 g. – Enhanced MS Excel Modeling** – Scheevel Engineering can develop a refined and calibrated model based on beta runs from the base scope of work. This effort will also include extended model simulations to evaluate additional study alternatives. A detailed technical memorandum will be prepared to document the model development, calibration process, input assumptions, sensitivity analyses, and results.

6 ADMINISTRATIVE REQUIREMENTS



6 | ADMINISTRATIVE ITEMS

In this section you will find compliance statements for:

- ✓ Insurance
- ✓ Standard agreement
- ✓ Billing
- ✓ Conflict of interest
- ✓ EEO and Affirmative Action
- ✓ Addenda acknowledgment



STATEMENT OF INSURANCE COMPLIANCE (RFP ITEM 6.1.9)

Jacobs hereby affirms that it will comply with all insurance requirements specified in the Services Agreement (Exhibit C) of this Request for Proposals. Jacobs maintains insurance coverage that meets or exceeds the limits and types stipulated by the Orange County Water District (OCWD), including but not limited to Commercial General Liability, Automobile Liability,

Workers' Compensation, and Professional Liability Insurance

Upon award of contract, Jacobs will provide OCWD with all required insurance certificates, endorsements, and related documentation evidencing compliance with these requirements prior to contract execution. Jacobs' insurance policies are issued by carriers rated "A-" or better by A.M. Best and are fully compliant with California law.

OCWD STANDARD AGREEMENT (RFP ITEM 6.1.10)

Jacobs has reviewed Orange County Water District Exhibit C Services Agreement in Request for Proposal (RFP) No. 25-008 Engineering and Hydrogeologic Services Santa Ana River Riverbed Filtration System Feasibility Study and find terms and conditions to be generally acceptable as the basis for a mutually agreeable contract. If selected, we would like to discuss items such as indemnity provision and insurance requirements as previously negotiated on contracts 1474 and 1578.

BILLING (RFP ITEM 6.1.11)

Jacobs affirms that it will comply with all billing and invoicing requirements specified in Section 6.1.11. Each invoice submitted to OCWD will include the Purchase Order Number, Agreement Number, and an itemized summary of each authorized project task. Invoices will identify personnel by name, job title, hours worked, and hourly billing rate. Jacobs will adhere to all reporting and formatting requirements provided by OCWD to ensure timely and accurate payment processing.

CONFLICT OF INTEREST (RFP ITEM 6.1.12)

Jacobs certifies that neither the firm, its employees, nor any affiliated subconsultants have a conflict of interest with the Project. Jacobs maintains policies and procedures to prevent any actions or conditions that could create or appear to create a conflict of interest. Should any potential conflict arise, Jacobs will promptly notify OCWD in writing.

EQUAL EMPLOYMENT OPPORTUNITY AND AFFIRMATIVE ACTION REQUIREMENTS (RFP ITEM 6.1.13)

Jacobs is an Equal Opportunity Employer and maintains policies and practices that prohibit discrimination in employment based on race, color, religion, national origin, ancestry, disability, medical condition, marital status, sex, sexual orientation, gender identity, or any other characteristic protected by law. Jacobs and its subconsultants will comply with all applicable federal, state, and local equal employment and affirmative action requirements and maintain policies consistent with those of OCWD.

ADDENDA ACKNOWLEDGMENT

We acknowledge receipt of Addendum 1, received on 10/23/25 and Addendum 2, received on 10/30/25 the following page reflects that with our signature. Following that, we include our resumes in the appendix.

END OF ADDENDUM

MANDATORY FORM

ACKNOWLEDGE RECEIPT OF ADDENDUM NO. 1

**Request for Proposal (RFP-25-008)
ENGINEERING AND HYDROGEOLOGIC SERVICES SANTA ANA
RIVER RIVERBED FILTRATION SYSTEM FEASIBILITY STUDY**

10/23/25

Proposer shall acknowledge receipt of this addendum by detaching, signing and attaching to his/her proposal, one (1) copy of this sheet.

I, Brent Yamasaki, Jacobs

Name of Proposer, Company Name

2600 Michelson Drive, #500, Irvine, CA 92547

Address, City, State, Zip

Hereby acknowledge receipt of Addendum No. 1 to the **Request for Proposal (RFP-25-008) Engineering and Hydrogeologic Services Santa Ana River Riverbed Filtration System Feasibility Study** and have considered these revisions in the preparation of my proposal. This addendum, consisting of this acknowledgement, shall become a part of any contract made pursuant thereto.



Proposer's Signature

Brent Yamasaki

Printed Proposer's Name

11/12/2025

Date

END OF ADDENDUM

MANDATORY FORM

ACKNOWLEDGE RECEIPT OF ADDENDUM NO.2

REQUEST FOR PROPOSAL

**Engineering and Hydrogeologic Services Santa Ana River Riverbed
Filtration System Feasibility Study
(RFP-25-008)**

10/30/2025

Proposer shall acknowledge receipt of this addendum by detaching, signing and attaching to his/her proposal, one (1) copy of this sheet.

I, Brent Yamasaki, Jacobs

Name of Proposer, Company Name

2600 Michelson Drive, #500, Irvine, CA 92547

Address, City, State, Zip

Hereby acknowledge receipt of Addendum No.2 to the **Request for Proposal Engineering and Hydrogeologic Services Santa Ana River Riverbed Filtration System Feasibility Study** and have considered these revisions in the preparation of my proposal. This addendum, consisting of this acknowledgement, shall become a part of any contract made pursuant thereto.



Proposer's Signature

Brent Yamasaki

Printed Proposer's Name

11/12/2025

Date

APPENDIX

Resumes





Marielle Coquia, PE

PROJECT MANAGER

Marielle is a professional civil engineer with over three decades of experience in general civil and environmental engineering. Her project experience includes site development, design, and permitting on projects involving water and wastewater treatment facilities, landfills, hazardous waste containment facilities, and closures. She has also developed project work scopes; budget estimates; scheduling; and performed project management duties such as staff coordination, budget tracking, billing, and client management.

AVAILABILITY

55%

EDUCATION | QUALIFICATIONS

- BS, Civil Engineering, San Jose State University

LICENSES | CERTIFICATIONS

- Professional Engineer, CA: # C54906 (Issued: 1996 | Expires 2026)

YEARS WITH COMPANY

27

HOME OFFICE LOCATION

Irvine, CA

Relevant project experience

Groundwater Treatment Plant | U.S. Environmental Protection Agency | Los Angeles County, San Gabriel Basin, CA | Lead Site Civil/Piping Engineer. Constructed \$13M, large-scale (11,000 gpm of continuous extraction) ground water cleanup action in Southern California—the largest capacity groundwater treatment plant ever constructed by EPA's Superfund program. Responsible for procuring the construction contractor and provided complete construction management and engineering services throughout construction, startup, performance testing, and initial operation.

Perris Valley, Moreno Valley, and San Jacinto Valley Water Reclamation Facilities Sodium Hypochlorite Conversion Project | Eastern Municipal Water District | CA | Site Civil and Yard Piping Engineer. Served as the lead civil engineer preparing structural drawings, details, and specifications to convert the three facilities from gaseous chlorine to sodium hypochlorite. Worked with process leads and the client

to establish the location of new facilities and perform modifications to the water reclamation facilities and yard piping. Prepared final design for the new piping and sitework and the modifications.

Perris II Desalter Preliminary Design Update | Eastern Municipal Water District (EMWD) | CA | Site/Civil Engineer.

The facilities included the Perris II treatment and product water pumping facilities, brine discharge station, as well as the site improvement and landscaping. The site layout allows for separate secure access to Perris II Desalter, Perris I and Menifee Desalters and brine discharge station. The future extension of Valley Boulevard and landscaping/site screening concepts were also incorporated in the overall site layout. Prepared the site layout and site circulation plan for Perris II Desalter as a part of PDR Update.

J.B. Latham Advanced Wastewater Treatment (AWT) Preliminary Design | South Orange County Wastewater Authority | Dana Point, CA | Site/Civil Engineer. Led the site/civil engineering and site layout development for the AWT facility and recycled water pump station preliminary design. Completed an assessment of demolition as well as site modification requirements for the implementation of the new AWT facilities and high head pump station. Developed the site circulation and drainage considerations for the preliminary design.

Advanced Treatment Facilities for Laguna County Wastewater Treatment Plant | Laguna County Sanitation District | Santa Barbara County, CA | Site/Civil Engineer. Prepared construction plans and specifications for the expansion of the Laguna County Wastewater Treatment Plant. Responsibilities included incorporating survey and construction survey controls, preparing a grading and drainage plan for the expanded area, reservoir berms, concrete pads, and asphalt concrete access road.

Owens Lake Dust Mitigation | Los Angeles Department of Water and Power, Grading, Drainage and Erosion | Owens Lake, CA | Lead Civil Engineer. The Owens Lake Dust Mitigation project consists of providing dust control and mitigation measures for approximately 25 square miles consisting of managed vegetation, shallow flooding, and drainage measures. Responsible for the design and preparation of construction-level plans for mass excavation and grading, borrow soil excavation, grading, drainage, erosion control, concrete pad grading, and road design for access to proposed pumping and utility stations.

Design for Modifying the Feeder Lines of Stormwater Outfall 9 (SWO9) at the National Steel and Shipbuilding Company (NASSCO) Facility | National Steel and Shipbuilding Company | San Diego, CA | Stormwater Engineer. The project entails connecting the stormwater feeder lines to the existing sewer system at the NASSCO facility. The system will include stormwater storage tanks for each of the six proposed drainage areas, submersible pumps to convey water from the catch basins to the sewer/storage tanks, sewer manholes, and associated piping, fittings, valves and electrical appurtenances. Prepared construction drawings and specifications to connect SWO9 to the existing 18-inch sewer.

Advanced Treatment Facilities | Laguna County Wastewater Treatment Plant | Santa Barbara County, CA | Lead Civil Engineer. Prepared construction plans and specifications to expand the Laguna County Wastewater Treatment Plant. Responsibilities included incorporating survey and construction survey controls, preparing a grading and drainage plan for the expanded area, and designing reservoir berms, concrete pads, and asphalt concrete access road.



Brent Yamasaki, PE

PRINCIPAL-IN-CHARGE

Brent's 36 years of professional knowledge and experience includes planning, design, construction, project management, operations, and water resource management in Southern California water. As the Chief of Operations and past Section Manager for Operations and Planning, Brent was responsible for the operations and planning for America's largest purveyor of treated drinking water and the regional imported water supplier to Southern California. His experience has encompassed all aspects of a project lifecycle, including feasibility studies, design, project management, equipment selection and procurement, construction management, startup, commissioning, operations, and maintenance. The most significant example of this experience was his involvement in the Diamond Valley Lake Project – Southern California's largest reservoir.

Relevant project experience

Regional Water Management | Metropolitan Water District of Southern California | CA | Operations and Planning Manager. Brent was responsible for the operation and planning of Metropolitan's regional water system. This included coordinating and scheduling deliveries of Colorado River and State Water Project supplies, development of the annual shutdown plan with the member agencies, as well as operating and administering Metropolitan's imported water programs, including replenishment, interim agricultural, and groundwater conjunctive use programs. He closely collaborated with member agencies, State and Federal partners, and groundwater management agencies to coordinate operations, effectively implement programs, and verify consistent program compliance. When surplus supplies were available, the programs represented as much as 20 percent of Metropolitan's total annual deliveries. Managing the programs to provide effective collaboration and implementation required in-depth understanding of partner agency systems, policies, and operations.

Program Management for the RAMP Program | Rancho Water District | CA | Principal-in-Charge. Brent oversees quality delivery, responsiveness, and team performance to Rancho Water's complete satisfaction for the management of projects to expand groundwater delivery and quality programs, as well as the development of a decision support model of their system to evaluate new ways of operating the existing system and assessing potential new projects. This includes

AVAILABILITY

10%

EDUCATION | QUALIFICATIONS

- MBA, California State University, Fullerton, California
- BS, Mechanical Engineering, Cal Poly Pomona, California

LICENSES | CERTIFICATIONS

- Professional Mechanical Engineer, CA: #30017 (Issued: 1996 | Expires 2026)

MEMBERSHIPS | AFFILIATIONS

- American Water Works Association (active)
- American Society of Mechanical Engineers (active)
- Southern California Leadership Network Alumnus, Class of 2011

YEARS WITH COMPANY

2.5

HOME OFFICE LOCATION

Irvine, CA

potential facilities to better integrate Vail Lake storage opportunities to enhance reliability

Asset Management | Metropolitan Water District of Southern California | CA | Chief of Operations, Capital Investment Program Champion. This effort involved the prioritization and selection of hundreds of projects to be incorporated into the \$600M biannual Capital Investment Program. This program included projects to expand system resilience, refurbishment and replacement upgrades, and facility expansions. A notable contribution was his leadership on a new Asset Management Program that improved the project selection process to include evaluation of project risk and consequence of failure, historical condition information, as well as better integration of engineering and operations staff efforts into the process. Many of the new AM processes were carefully designed and automated to ensure consistency, efficiency, and thoroughness throughout the process.

Executive Leadership | Metropolitan Water District of Southern California | CA | Chief of Operations. Led a team of ~900 staff responsible for meeting MWD's main mission of delivering safe and reliable supplies of high-quality water to 19 million Southern Californians. Responsible for operations and maintenance of a ~\$7B water system, including the Colorado River Aqueduct. Led the team through many of MWD's toughest challenges including record droughts, keeping field employees safe during COVID-19, directing emergency response, and upgrading aging regional infrastructure through the \$300M/yr. Capital Investment Plan, while minimizing outage impacts to customers. Initiated numerous improvement efforts in the Asset Management Program, Health & Safety Program, SCADA system upgrade, system resilience and operational flexibility programs, and drought mitigation and response. Managed a \$300M annual O&M budget for eight core operational business units.

Diamond Valley Lake Project | Metropolitan Water District of Southern California | CA | Design and Startup Engineer. As design and startup testing engineer, was the lead mechanical engineer during the Secondary Inlet project for Diamond Valley Lake. Unique experience included cradle-to-grave participation in every phase of the Secondary Inlet project: design, specifications, field inspection, equipment installation, testing and commissioning. Was startup testing engineer for all DVL hydraulic facilities, including the Wadsworth Pumping Plant, and overseeing the lake's initial fill. Was also the field/test engineer for the rapid conversion of the DVL pumps to hydroelectric generation during the statewide energy crisis in 2001. Later, as manager of Operations and Planning, was responsible for the put and take operations of the reservoir during periods of drought and surplus.



AVAILABILITY

50%

EDUCATION | QUALIFICATIONS

- BS, Civil and Environmental Engineering, University of Washington

LICENSES | CERTIFICATIONS

- Professional Engineer: CA # 75123 (Issued: 2009 | Expires 2025)
- Leadership in Energy and Environmental Design (LEED) Accredited Professional (AP™) (BD+C)

MEMBERSHIPS | AFFILIATIONS

- APWA Member, Washington Chapter Sustainability Committee Member
- LEED AP™ BD+C, USGBC No. 86118
- Envision SP

YEARS WITH COMPANY

13

HOME OFFICE LOCATION

Bellevue, WA

Jesse Williams, PE, LEED AP BD+C, ENV-SP™

QA/QC - CIVIL ENGINEER

Jesse is an accomplished project engineer with more than 24 years of civil engineering experience, leading multidisciplinary design teams on green stormwater infrastructure (GSI), stormwater and CSO retrofits, conveyance systems, flow control, treatment and infiltration facilities, underground utilities, roads, parks, and urban development sites.

He has developed engineering drawings and specifications for a wide range of public facilities, including water quality ponds, bioretention systems, and underground storage vaults designed to protect aquatic habitats and downstream infrastructure. His work at Totem Lake Park in Kirkland exemplifies his integrated design approach, creating a bioretention facility that improves water quality, enhances terrestrial habitat, and buffers the open-water wetland of Totem Lake.

In addition to his technical expertise, Jesse has created online stormwater training content and led in-person workshops across Washington, California, and Hawaii. He has presented topics such as low-impact development (LID) siting and design, construction and post-construction inspection, and operations and maintenance.

Jesse's experience spans project management, design, permitting, and construction monitoring for transportation and utility projects. He has prepared specifications, cost estimates, bid packages, master plans, utility studies, and environmental documentation. As Lead Engineer on the Delridge project, he collaborated closely with Dustin Atchison and guided his team in delivering sustainable, innovative GSI solutions, playing a key role in obtaining SDOT SIP permits for multiple Seattle projects.

A passionate advocate for sustainable, community-centered design, Jesse approaches every project with curiosity and respect for natural systems. He believes that effective, resilient design requires multidisciplinary collaboration and a balance between engineering practicality and ecological function, bringing creative, constructible, and meaningful solutions from concept to reality.

Relevant project experience

Honolulu Post-Construction Certification Training | City and County of Honolulu | Honolulu Hawaii | Senior Technical Resource. Senior technical resource for creation of an interactive on-line training for City and County of Honolulu. Using past presentations from City officials, revised City Water Quality Rules, and new technical

input, Jesse created introductory and post-construction certification training modules. Jesse also contributed unique content regarding inspection recommendations for post-construction inspection and certification. Jesse also created and delivered Post-Construction Inspection training to City and County of Honolulu staff from multiple departments, with separate trainings for inspection during and post-construction. Jesse created a Field Manual, available for use by City and County staff during stormwater inspections.

Pier 3 Renovation | Port of Everett | Everett, WA | Lead Stormwater Engineer. Part of an on-call contract. Jesse and team developed stormwater treatment and conveyance alternatives for the Pier 3 renovation concept report.

South Park Basement Flooding | King County WTD | Seattle, WA | Task 8 Lead. As a subconsultant to Kennedy Jenks under an on-call contract, Jesse supported King County's Wastewater Treatment Division and Seattle Public Utilities in investigating the causes of recurring sewer backups in South Park homes between 2017 and 2022. During high tides and heavy rain events, limited overflow capacity caused sewage to back up into residences with low basement plumbing elevations. The project informed next steps for addressing sewer backups under increasing rainfall intensity and sea level rise driven by climate change. Work included a vulnerability assessment, evaluation of sea level rise impacts, and development of climate adaptation strategies. Jesse and the Jacobs team are now continuing this effort under their own on-call contract with SPU/King County as part of the GSI Program Support Services.

Ginger and Honey Creek Subbasins Plan | City of Renton | Renton, WA | Lead Design Engineer. Jesse led the Jacobs technical team—including ecology, landscape architecture, permitting, hydrologic and hydraulic modeling, and condition assessment—to identify cost-effective, ecologically sensitive, and community-focused solutions that address flood risk in urban creek basins. He and the team identified locations where stormwater retrofits could reduce the City's maintenance burden while providing water quality treatment and habitat improvements, particularly within two existing parks. Under Project Manager Jana Crawford, the team reviewed existing pipe and culvert conditions and conveyance capacity, and identified opportunities for stream daylighting, habitat creation, and water quality enhancement within the Ginger and Honey Creek subbasins.

Fauntleroy Ferry Dock Replacement | WSDOT | Seattle, WA | Stormwater Subject Matter Expert. Jesse served as the Stormwater Subject Matter Expert for the planning effort to replace Colman Dock. He established stormwater requirements and developed concept designs to support space planning and cost estimating.

Ne 45th and Holman Road Bridge Replacements | SDOT Structures On-Call | Seattle, WA | Storm Drainage and Utilities Lead. Jesse was the storm drainage and utilities lead for the seismic retrofit of two pedestrian bridges in North Seattle.

King County South Annex Base | King County Metro Transit | Tukwila, WA | Stormwater Lead. Jesse served as Stormwater Lead for the battery electric bus base project south of Seattle. He and his team performed conveyance, flow control, and water quality calculations in accordance with the 2021 King County Surface Water Design Manual, the Living Building Challenge (LBC), and King County's Clean Water Healthy Habitats goals. The site presented significant challenges due to existing wetlands, high groundwater, and the County's goal to daylight two piped streams within tight space constraints. The adjacent wetland and branches of Riverton Creek—partially tidally influenced by the Duwamish River—created unique design conditions requiring a balance between streambed protection and maintaining runoff volumes to the existing wetland.

Taking a systems ecology approach, Jesse led development of a tailored design combining conventional detention with green stormwater infrastructure, including rainwater harvesting, to protect water resources, mimic historic hydrology, and provide adaptable water quality treatment. As part of the project, he oversaw daylighting of a piped segment of Riverton Creek to enhance salmon habitat and fish passage by enlarging and shortening culverts. The project pursued multiple sustainability pathways, including LEED and LBC certification. Jesse identified strategies to meet LBC Water Petal requirements, performed detailed calculations, and coordinated technical documentation. He also prepared final engineering drawings and permit applications for daylighting two branches of Riverton Creek and developed specifications for a nature-based water quality treatment train designed to remove 6 ppdq while creating upland habitat and biophilic site elements. The stormwater design and infrastructure reduced flooding risk, improved aquatic habitats and water quality, and supported local, state, and federal permitting, including the U.S. Army Corps of Engineers Section 404 permit.

I Line Bus Rapid Transit | King County Metro Transit | Renton, Kent, and Tukwila, WA | Stormwater Design Lead.

Jesse led stormwater design from 15% through 60% for this regionally significant bus rapid transit project. Jesse and his team completed site investigation and downstream analysis and performed conveyance, flow control, and water quality calculations for each of the three applicable jurisdictions, each with their own stormwater manual and requirements.

Willow Creek | SDOT | CA | Utilities Lead. Jacobs, HBB, and partners served the Seattle Department of Transportation to plan and design a creek restoration and habitat project on Seattle Parks property that will both provide ecological benefits and transform open space. Spanning both right-of-way and existing park property, the project considered existing utilities and transportation facilities, existing tree canopy, and nearby residences. Other potential benefits considered include tree canopy, floodplain storage, stormwater treatment. The project team will support SDOT's goals and process to incorporate race and social justice into the planning and design, considering both the immediate neighbors and the broader community. The project includes creation of conceptual alternatives for stream alignment and open space features, consideration for existing habitat and utilities, and may include new stormwater treatment for the adjacent roadway. The project included creation of conceptual alternatives for stream alignment and open space features, consideration for existing habitat and utilities, and will include new stormwater treatment for the adjacent roadway. The realigned and daylighted portion of Willow Creek will consist of three distinct streambed material gradations, corresponding to the stream slope, and various Large Woody Material (LWM) structures. The LWM layout is intended to be random, and mimic what would be expected in nature. LWM will be partially buried, with root masses typically exposed and interacting with the water column below the OHWM. In steeper reaches, LWM will act as grade control, and form naturally occurring steps and pools within the channel. A new pedestrian bridge will provide access to the passive-use park. The team created 90% design plans and specifications and submitted permit documentation.

Jesse served as Utilities Lead for the Seattle Department of Transportation's project to restore fish passage to Willow Creek as off-site mitigation for the Northgate Pedestrian Bridge project across I-5. He supported the civil design team in integrating infrastructure improvements with the restored stream. Willow Creek, a tributary to Thornton Creek in North Seattle, presented complex challenges requiring a balance between habitat restoration and existing infrastructure, including utilities and roadways.

The design daylighted the creek through removal of two culverts and rerouting the channel to create hydraulic complexity and high-flow refuge. It also reconfigured NE 100th Street to maintain access and included a new pedestrian bridge to serve property owned by Seattle Parks and Recreation (SPR). Jesse and the team coordinated extensively with SDOT, WSDOT (due to the site's proximity to Lake City Way), Seattle Public Utilities (as manager of the City's stream assets), SPR (as the landowner), and local residents and environmental groups.

The Jacobs team guided the project through SPR's ProView process—its internal review for projects located on SPR property—addressing concerns about minimizing impacts to neighbors, habitat, and ecology during site investigations, while maintaining access to SPR property during construction. The multidisciplinary team provided expertise in hydraulics, geomorphology, geotechnical engineering, aquatic and riparian ecology, cultural resources, and permitting.



AVAILABILITY

50%

EDUCATION | QUALIFICATIONS

- MS, Civil Engineering, University of Nevada Las Vegas
- BS, Civil Engineering, Universidade Estadual de Campinas (Unicamp), Brazil

LICENSES | CERTIFICATIONS

- Professional Engineer: #C71505 (Issued: 2007 | Expires 2027)

YEARS WITH COMPANY

23

HOME OFFICE LOCATION

Irvine, CA

Marcelo Reginato, PE

SYSTEMS MODEL

Marcelo is a Water Resources Project Engineer with more than 25 years of experience in water resources planning, modeling, and decision-support system development. Based in Jacobs' Irvine, California office, Marcelo specializes in creating dynamic, data-driven tools that help clients make informed, strategic decisions about water supply, storage, and system resiliency. His expertise spans large-scale regional planning, integrated resource management, and climate adaptation studies across municipal, industrial, and mining sectors.

A recognized expert in GoldSim Monte Carlo simulation modeling, Marcelo has led the development of complex water balance and decision-support models for clients including LADWP, Sonoma Water, the Water Replenishment District of Southern California, Marin Municipal Water District, and the U.S. Environmental Protection Agency. His modeling work has supported long-term planning efforts, drought resiliency studies, and system optimization analyses for groundwater, surface water, and recycled water systems.

Throughout his 23 years with Jacobs, Marcelo has also managed multidisciplinary teams and client engagements focused on risk evaluation, climate uncertainty, and sustainable infrastructure investments. His leadership combines strong technical rigor with a collaborative approach that bridges engineering, data science, and stakeholder communication—helping agencies develop resilient, actionable solutions for complex water management challenges.

Relevant project experience

Strategic Water Supply Assessment | Marin Municipal Water District | CA | Project Engineer/Project Manager.

Project Manager and technical lead on the development and use of a decision support model (DSM) using GoldSim. In February of 2022 Jacobs was selected to lead a Strategic Water Supply Assessment (SWSA) to help develop a water supply roadmap for MMWD. Mr. Reginato has been working on delivering the strategic and technical aspects of the SWSA while also participating in several workshops with the Board of directors and the public to present preliminary findings on options to minimize potential future drought impact on customers.

Sonoma Water Resiliency Study | Sonoma Water | CA | Project Engineer/Project Manager. Project Manager and technical lead on the development of a decision support tool (DST) using GoldSim. The DST will be used in the study to evaluate the Sonoma water system resiliency to many possible risk scenarios that could impact the agency operations and ability to meet system demands. Sonoma water manages and maintain a water transmission system that provides water to nine cities and special districts that supply drinking water to more than 600,000 residents in portions of Sonoma and Marin counties California.

Operation Next | LADWP | CA | Technical Lead. Operation NEXT is a new water supply initiative being developed by LADWP in partnership with LA Sanitation and Environment (LASAN) that aims to improve the overall water supply resiliency and reliability for Los Angeles. Mr. Reginato is the technical lead to support project tasks related to systems model including tasks that evaluate the system resiliency with new water supplies.

Central Valley Integrated Regional Water Supply Plan California | CalWater | CA | Project Manager. Project Manager for 350k on task order #51 to conduct an integrated regional water supply reliability study for the individual four districts that comprise the Central Valley CalWater region. The study will characterize the risk of relying on existing supplies under different projected demands and supply conditions, including climate uncertainty.

Lava Cap | EPA | CA | Project Engineer. Technical lead on the development of a water balance model using GoldSim that represents the current conditions of a former mine (average 500 gpm outflow) with the addition of a future water treatment facility. Developed a site wide water balance tool that has the ability to model various water management and water treatment scenarios. This model will help planning for appropriate size of treatment facilities and estimating water quality concentrations under different scenarios.

WRD and LADWP Joint Los Angeles Basin Master Plan | WRD/LADWP | Los Angeles, CA | Project Engineer. Task Lead developing a regional approach to identify a comprehensive list of existing and potential new replenishment water sources, treatment facilities, and replenishment and extraction locations for the West Coast and Central groundwater Basins in the Los Angeles County. Development of a Multi Objective Decision Analysis methodology to screen potential projects and develop implementable, complementary projects that can be initiated upon completion of the plan. Lead developer of a systems model (water balance model) that guided the decision-making process by evaluating different project scenarios.

Western Municipal Water District Decision Support Tool | Riverside, California | Project Engineer/Project Manager. Project Manager and technical lead on the development of a decision support modeling tool (DSM) using GoldSim. The WMWD Water Resources Decision Support Tool (WMWD DST) developed for the Western Municipal Water District is a flexible and high-level oriented tool, able to address District's questions related to operation of the system under different project conditions, capacities, demands, supplies, cost and uncertainties. Western is one of the largest public agencies in Riverside County, California providing water, wastewater, and recycled water services to nearly 1 million people, both wholesale and retail customers.

Modeling Studies | Confidential Client | CA | Project Engineer. Independent technical reviewer for a number of studies that included spreadsheet models and CALSIM II California water model. Provided comments on the overall validity of different model results related to a large regional investment program to be implemented in California.

Santa Ana River Conservation and Conjunctive Use Project (SARCCUP) | San Bernardino Valley Municipal Water District | CA | Project Engineer/Deputy Project Manager. Technical lead on the development of a decision support modeling tool (DSM) using GoldSim. The DSM will help the five SAWPA agencies, Eastern Municipal Water District, Inland Empire Utilities Agency, Orange County Water District, San Bernardino Valley Municipal Water District (Valley District) and Western Municipal Water District optimize the conjunctive use element of the SARCCUP. The SARCCUP DSM offers the benefits of quickly evaluating conceptual projects and has common quantitative metrics to evaluate and communicate projects benefits.

Resolution Copper Mine Water Balance | AZ | Project Engineer. Technical lead on the development of a water balance model using GoldSim that represents future operations of the Resolution Copper Mine, a massive high-grade porphyry copper-molybdenum system located east of the Town of Superior, Arizona. Developed a site wide water balance tool that has the ability to model various water supply scenarios during prior to the full operation of the mine. This will help planning for critical water supplies that will be an essential part of the mine operations.

San Diego County Water Authority (SDCWA) Sales Forecast | San Diego County, CA | Project Engineer. Technical lead on the additional development of the support/planning GoldSim model tool developed under the San Diego Master Plan update project. The expansion of the model estimates water sales for the next 3 years based on latest climate and economic forecast indicators, current reservoir storage status, and limitation on the system network (reservoirs, pump stations and pipelines).

Montebello Forebay Recharge Enhancement Study | Water Replenishment District of Southern California | CA | Project Engineer/Project Manager. Project Manager and technical lead on the development of a GoldSim groundwater recharge operation computer model for the Montebello Forebay Spreading Grounds (MFSG) in Los Angeles County, CA. The MFSG is the main groundwater recharge area for the entire Central and West Coast Basin, which provides approximately 40% of the water supply for the county. The objective of the model is to simulate the complex operations of the MFSG, which can be used to assess alternative operating scenarios for optimization of recharge at the spreading grounds.

Mine Water Balance Model Development | Confidential Client | AR | Project Engineer. Technical lead on the development of a GoldSim model for the restoration phase of a former mine site of more than 500 acres in Arkansas. The model was used to understand the different water balance and water quality components at the site, to understand how the site contaminants move through the system, and to assess the efficiency and impact of site management alternatives on the flow and water quality leaving the mine site.

Highland Fairview | Confidential Client | San Bernardino County, CA | Project Engineer. Developed a simple water balance model in GoldSim to estimate the impact that a land development project would have on the precipitation infiltration. The model considered two scenarios, pre- and post-development and results were included in the project EIR documentation.

Long Lake Mine | Ontario Ministry of Northern Development and Mines | Ontario, Canada | Project Engineer. Developed a simplified GoldSim water balance model that was used to estimate contaminant loads at different locations of the mine site based on field and historical measurements of contaminant concentrations and surface water runoff flows. In the future, the model could be also used to predict arsenic levels in Long Lake considering different remediation scenarios.

Faro Mine Remediation Project | Yukon Government | Yukon, Canada | Project Engineer. Technical lead on the improvement and development of a GoldSim water balance/water quality model for the Faro Mine during the mine closure horizon. The model considered groundwater, surface water, reservoirs, water treatment, geochemistry, and site wide water quality/operations aspects to address challenges relevant to the comprehensive Faro Mine Remediation Project. The model was made available to project stakeholders to evaluate different scenario configurations affecting water quality at the site.

San Diego County Water Authority (SDCWA) Master plan Update | San Diego County Water Authority | San Diego County, California | Project Engineer. Technical lead on the development of a decision support/planning model tool to rapidly evaluate alternative operations or facilities at a screening level. This was completed by developing a model using GoldSim, a Monte Carlo, system dynamics modeling platform. The model included demands from 24 different county water agencies, 18 reservoirs, 7 different water supplies and a number of scenarios based on the 2010 UWMP. The model helped decision makers determine the benefits of future CIP projects and when they should come in place for the next 20 years.

Colorado River Basin Study | USBR-Lowe Colorado Region | Colorado River Basin, CO | Project Engineer. As part of the Water Supply team, developed quantitative tools to evaluate stream flows, droughts, and teleconnections (ENSO and PDO) correlations with stream flow for the Colorado River basin. The stream flow evaluation included historical natural flows, paleo reconstructed natural flows and a series of stream flow traces derived from Variable Infiltration Capacity (VIC) model results that used parameters from climate change projections as model inputs.

Groundwater Recharge Model | Confidential Client | Mojave Desert, CA | Project Engineer. Review and evaluation of previous developed groundwater recharge estimates for an approximate 600,000 acres area. Use of the USGS gridded based model INFIL3.0 to estimate groundwater recharge for the project area based on historical climate data. Use of advanced GIS techniques to produce INFIL3.0 model input files and to post process results. Use of GIS 3D tools to calculate the saturated volume of the aquifer based on estimated bedrock elevation and measured water surface depth on wells.



AVAILABILITY

70%

EDUCATION | QUALIFICATIONS

- MS, Water Resources Engineering, Utah State University
- BS, Civil Engineering, Utah State University

LICENSES | CERTIFICATIONS

- Professional Engineer, Civil: PE CA #75026 (Issued: 2009 | Expires 2027)

YEARS WITH COMPANY

20

HOME OFFICE LOCATION

Irvine, CA

Iosefa Matagi, PE

HYDROLOGY & HYDRAULICS

Iosefa is a water resources engineer with 14 years of experience in hydrology, hydraulics and water resources engineering project. Iosefa is proficient with hydrologic and hydraulic modeling tools including PondPack, StormCAD, FlowMaster, CulvertMaster, HEC RAS, HY-8, InRoads and AutoDesk Storm & Sanitary Analysis, EPA SWMM, Advanced Engineering Software and HEC HMS. His experience includes using ESRI GIS applications for mapping, spatial analysis, floodplain mapping, basins and channel delineation, hydrologic modeling, network modeling, 3D Analyst, and ArcHydro. Sefa has been a transportation drainage design lead for multiple large budget projects throughout the country from concept through construction.

Relevant project experience

I-805 South Widening and Sound Walls Drainage Design | Caltrans | San Diego County, CA | Hydrologic and Hydraulic Engineer. Completed final roadway drainage design beginning from the concept level. Involved in the creation of plans, profiles, details, and quantity sheets for the final drainage design. Main role included hydraulic analysis of final drainage design of storm drain systems for calculation of hydraulic grade line within proposed pipes and drainage structures. This project involved widening along the exterior of the roadway for incorporation of proposed sound walls. Only onsite roadway drainage design was required with the roadway design being completed by Caltrans. The project involved strategic location of existing systems and integration of these existing systems while accommodating design requirements managed by CalTrans.

I-10 Express Lanes Design-Build | San Bernardino County Transportation Authority | San Bernardino County, CA | Hydrologic and Hydraulic Engineer. Completed conceptual hydraulic analysis related to highway widening of

the I-10 corridor through San Bernardino County to accommodate express lanes within the HOV prism. Ongoing final design of storm drain systems and accompanying analyses including special designs of regional storm drain systems. Ongoing final analysis utilizing ArcHydro of offsite hydrologic parameters and AES modeling of a combined offsite and onsite storm drain trunkline. Stormwater and water quality calculations to accommodate technical provisions related to construction practices and permit regulations are currently critical path to completion of this unique and challenging technical design.

I-10 and I-405 BMP Analysis | Caltrans | Los Angeles County, CA | Hydrologic and Hydraulic Engineer Discipline Segment Lead. Completed conceptual (PAED) hydraulic analysis related to proposed installation of multiple BMP's along the I-10 corridor within Los Angeles county. Led the drainage and water quality design of bioswales, DPPIA's and biostrips for one segment of the project corridor. Ongoing work to complete final PS&E drawing packages for the current project.

I-5 HOV Managed Lanes PS&E | Los Angeles County Metropolitan Transportation Authority | Los Angeles County, CA | Hydrologic and Hydraulic Engineer Discipline Segment Lead. Completed final design and analysis of the proposed onsite drainage features including storm drain and stormwater facilities meeting CalTrans design criteria. Final drainage design features include proposed storm drain, stormwater facilities such as bioswales and DPPIA's and open channel conveyance features. Proposed drainage features accommodate highway widening primarily on the inside with the addition of multiple HOV lanes through the project corridor.



Gino Nguyen, PE, QSD, QSP

CONSTRUCTABILITY/FEASIBILITY ANALYSIS

Gino is an experienced Civil Engineer with a wide range of skills to meet SFPUC's project needs. He is a senior professional with a positive attitude and the right experience, with the goal of finding SFPUC the best solutions. Gino has a breadth of knowledge working in California and other states and for a variety of clients including water and wastewater treatment plants and pumping stations, military installations, Caltrans, and municipalities requiring higher levels of protection. Through his experience, Gino excels at working with large teams to provide cost-effective and efficient design approaches to meet client needs. He will communicate regularly and hold team members account Port of Long Beach table throughout the duration of this contract. Gino puts serving the needs for the community above all else and enjoys seeing his hard work pay off.

Gino is currently the Project Manager and Civil Design Lead for multiple security projects for the Metropolitan Water District to harden their pumping plants, water treatment plants, and operations center. In the past, Gino designed security gates and fencing for Berth Lima on Naval Air Station North Island in San Diego. This was specifically for Nimitz class aircraft carrier berths. The USSS Abraham Lincoln, Carl Vinson, and Theodore Roosevelt are all berthed there.

Relevant project experience

Physical Security Improvements | Preliminary Design Report (PDR), Colorado River Aqueduct Pumping Plant Facilities | Metropolitan Water District of Southern California | Los Angeles, CA | Civil Lead. This project developed a PDR and accompanying 30% design drawings and construction cost estimate for security upgrades at the five Colorado River Aqueduct Pumping Plant facilities. Physical security improvements identified at the pumping plants include cameras, motion detectors, and permanent guard stations; updated facility signage, access control and road improvements at main entrances; perimeter fencing and access gates at patrol routes and evaluation of security measures to protect critical electrical infrastructure.

AVAILABILITY

60%

EDUCATION | QUALIFICATIONS

- BS, Civil Engineering, California State Polytechnic University
- MBA, Information Systems, California State Polytechnic University

LICENSES | CERTIFICATIONS

- Professional Engineer: CA #62140 (Issued: 2001 | Expires 2027)
- Qualified SWPPP Developer/Practitioner (QSD/QSP), Caltrans SWPPP Developer Certification

YEARS WITH COMPANY

24

HOME OFFICE LOCATION

Irvine, CA

Eagle Rock Operations Control Center Security Upgrades | Metropolitan Water District of Southern California | Los Angeles, CA | Civil Lead. This project includes project management; development of detailed design drawings, technical specifications, standard details, reference drawings, a biddable set of drawings for the Eagle Rock OCC Site Security Improvements and support through bidding process and issuing of addenda, to fulfill the requirements of final design services.

Naval Air Station North Island | P-704 Berth Lima | US Navy | San Diego, CA | Task Lead. Gino was the Engineer of Record for the civil upgrades for Berth Lima to accommodate Nimitz class aircraft carriers and support vessels. Approximately 1,600 feet of wharf was repaved with high-strength concrete, and utilities were added and rerouted. A high security perimeter fence was also designed and built, as well as watch towers and a new security building.

Interim Fireboat Station #20 | Port of Long Beach, CA | Task Lead / Senior Civil Reviewer. Reviewed site civil design of the interim fireboat station for grading and drainage with respect to local standards and design criteria. Provided QC oversight of design calculations and methodology.

SWPPP QSD | Marine Corps Base Camp Pendleton | Oceanside, CA | Task Lead. Prepared SWPPP for the Advanced Wastewater Treatment Plant project. Coordinated with site staff to design and implement BMPs. Prepared Annual Reports.

SWPPP QSD | Sempra | Various Sites, CA | Task Lead. Leading effort to prepare and permit SWPPPs for Sempra Pipeline sites. Designed BMPs and plans for subcontractor implementation. Coordinating BMP performance and reports with Qualified SWPPP Practitioner. Preparing Annual Reports, Notice of Termination, and other related reports. Worked with Regional Board staff to obtain permit closure. Utilized RUSLE2 to document site stabilization.

Task Lead, Southern California Edison SWPPP Developer for Devers to Palo Verde 2 Project, CA. Project encompasses construction of 150 miles of 500 kV transmission line, four substations, helicopter platforms and landing zones, and other appurtenant facilities. Qualified SWPPP Developer certification from SWRCB. Initiated SWPPP permitting on behalf of SCE, prepared SWPPP documents, coordinated inspections, monitored projects for amendments, interacted with SWRCB on technical SWPPP issues, terminated SWPPP permits at the end of the project, and prepared annual reports. Utilized RUSLE to obtain permit closure with Regional Water Quality Control Board.

SWPPP | Southern California Edison | CA | Project Manager. Project manager for an on-call SWPPP projects for SCE. Typically managed 50 or more active linear and traditional SWPPP projects for SCE, with durations of several weeks to several years. Initiated SWPPP permitting on behalf of SCE, prepared SWPPP documents, coordinated inspections, monitored projects for amendments, interacts with SWRCB on technical SWPPP issues, terminated SWPPP permits at the end of the project, and prepared annual reports. Extensive Caltrans experience in developing Caltrans format SWPPP and Water Pollution Control Plans when SCE conduits cross Caltrans right of way.

Pipeline Design | Heraeus Metals | Santa Fe Springs, CA | Design Engineer. Designed and prepared plans and specifications for a 3-mile industrial sewer pipeline in the City of Santa Fe Springs and Norwalk, California. Proposed a high-density polyethylene pipeline due to high TDS and constructability issues in a heavily congested street right-of-way.

Water Reclamation Plant Expansion | El Toro Water District | CA | Design Engineer. Prepared site civil plans, drainage plans, grading plans, and specifications for the civil engineering components of the El Toro Recycled Water Treatment Plant.

Pipeline Design | Eastern Municipal Water District | Murrieta, CA | Design Engineer. Designed and prepared plans and specifications for an 18-inch-diameter reclaimed water pipeline in the City of Murrieta, California. Pipeline crossed many existing and proposed utilities and had to cross a new bridge.

SWPPP QSD | Port of Long Beach | Long Beach, CA | Task Lead. Assists POLB staff in BMP design and implementation for Pier S. Update figures and site-specific Erosion Control Plan for POLB. Provide annual SWPPP training for up to 50 POLB staff.

SWPPP QSD | Fort Irwin | Fort Irwin, CA | Task Lead. Reviews and approves all SWPPP work related to the waste water treatment facility operated by CH2M. This work includes any pipeline and appurtenant facilities related to the wastewater facility.

SWPPP QSD | Pacific Gas and Electric | Various Sites, Northern CA | Task Lead. Leading effort to prepare and permit SWPPPs for PG&E remediation sites. Designed BMPs and plans for subcontractor implementation. Coordinate BMP performance and reports with Qualified SWPPP Practitioner. Prepare Annual Reports, Notice of Termination, and other related reports. Worked with Regional Board staff to obtain permit closure. Prepared Risk Level 2 SWPPP for a remediation site in Red Bluff. Implementing REAPs and storm water sampling.

SWPPP QSD, QISP | UPRR | Various Sites, Southern CA | Task Lead. Leading effort to update and revise Industrial SWPPPs for UPRR sites. Designed BMPs and plans for subcontractor implementation. Assisting with water quality sampling. Reviewing Annual Reports. Making recommendations for BMP improvements. Prepared SWPPP for Risk Level 2 site in downtown Los Angeles. Implements REAPs and other Risk Level 2 monitoring.

SWPPP | Southern California Edison (SCE) | CA | Project Manager. Project manager for an on-call SWPPP projects for SCE. Typically managed 50 or more active linear and traditional SWPPP projects for SCE, with durations of several weeks to several years. Initiated SWPPP permitting on behalf of SCE, prepared SWPPP documents, coordinated inspections, monitored projects for amendments, interacts with SWRCB on technical SWPPP issues, terminated SWPPP permits at the end of the project, and prepared annual reports. Extensive Caltrans experience in developing Caltrans format SWPPP and Water Pollution Control Plans when SCE conduits cross Caltrans right of way. Reference: John Slayton, Transmission Distribution Business Unit SWPPP Coordinator, 310.990.1745, john.slayton@sce.com.

Hydrology and Water Quality | Confidential Client | CH2M, Walnut Creek, CA. | Team Member. Audited client's SWPPP team for the hydrotest project. Evaluated multiple hydrotest test sites for SWPPP compliance. Reviewed all SWPPP manuals and made recommendations for improving SWPPP compliance.

Oxnard Advanced Water Purification Facility | CH2M | Oxnard, CA | Senior Civil Design Reviewer. Reviewed site civil design for the Oxnard AWWP and provided input on grading drainage, and yard piping. Assisted design engineers in Low Impact Development Design concepts and LEED accreditation.

Southern California Edison (SCE) | Tehachapi Renewable Transmission Project (TRTP) – Segments 4-11 Compliance Monitoring | Kern, Los Angeles, and San Bernardino Counties, CA | Task Lead, Hydrology and Water Quality. Provided hydrology and water quality support for the SCE TRTP Segments 4-11 Compliance Monitoring project. CH2M provided environmental compliance support to SCE during construction of the TRTP in accordance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). The TRTP included construction of new and upgrade of 173 miles of transmission lines, construction of one new substation, major upgrade of one existing substation and upgrade of other ancillary facilities. The TRTP will deliver up to 4300 MW of renewable energy to the Los Angeles Basin and the western Inland Empire. CH2M provided for the TRTP during construction include: engineering, environmental, and regulatory review, and technical evaluation and strategy support to comply with CEQA and NEPA. Additional environmental compliance support includes technical consulting, mitigation monitoring and reporting, agency coordination support, variance support, mitigation plan preparation, environmental P6 scheduling, and photographic documentation.

Hydrology and Water Quality | Pacific Gas and Electric – Selma Manufactured Gas Plant SWPPP Preparer | Selma, CA | Task Lead. Lead effort to prepare and permit SWPPP for PG&E MGP Selma facility. Designed BMPs and plans for subcontractor implementation. Coordinate BMP performance and reports with Qualified SWPPP Practitioner. Will prepare Notice of Termination at project completion.

Olinda Alpha Landfill | Orange County, CA | Design Engineer. Was the design engineer for a variety of projects in support of site expansion. Mr. Nguyen's responsibilities included earthwork calculations, layout of trapezoidal channel, preparation cross-sections, and plan checking of final plans.

Mid-Valley Landfill | San Bernardino County, CA | Design Engineer. Served as design engineer for excavation and stockpile plans. Mr. Nguyen's responsibilities also included drainage design, earthworks, and liner design.

Gregory Canyon Landfill | San Diego County, CA | Design Engineer. Design engineer for excavation, stockpiling, liner, drainage, leachate collection and recovery system, final cover, hydrology, hydraulics, and gas collection systems.



Ruoren Yu, PE

PRELIMINARY DESIGN AND COST ANALYSIS

Ruoren has 12 years of experience in the water and wastewater industry, delivering engineering, consulting, and field services of more than \$600 million in capital value. His project experience covers preliminary and detailed design for water reclamation, advanced water treatment and reuse, piloting systems, and conveyance infrastructure. As a project technical lead, his responsibilities have included technical decision making, inter-discipline design managing, scope and schedule management, quality control, and client interfacing. Ruoren specializes in hydraulic and process modeling, detailed design, alternative delivery, cost estimate, and permitting. In Ruoren's current role as a water resource recovery engineer, he focuses on applying advanced treatment technologies in upgrading water reclamation facilities and implementing potable reuse.

Relevant project experience

Hyperion Water Reclamation Facility Pipe Galleries Integrity and Resiliency Assessment | LA Sanitation and Environment | Los Angeles, CA | Project Technical Lead. Led the consultant team consisting of 4 disciplines including 2 subconsultants. Managed the project scope, schedule, and quality of deliverables and coordinated field inspections, internal and external communications.

The project provided a comprehensive assessment to the underground pipe galleries, utility tunnels, and pump rooms throughout the Hyperion Water Reclamation Plant, for systems of process-mechanical, electrical, instrumentation and controls, supporting structures, and life safety. The main objectives include identifying the deficiencies in existing structure and systems, evaluating potential improvement alternatives, and recommending suitable solutions to each improvement area. The project's contract value was approximately \$640,000.

The innovative solutions set a pathway for the client to implement various future projects to enhance resiliency and robustness of the plant operations.

Preliminary Design for Ocean Isle Beach Wastewater Treatment Plant Centralization and Rehabilitation | Brunswick County | Ocean Isle Beach, NC | Project Technical Lead. Led the design team to deliver multiple technical workshops and memoranda for presenting different options of technologies and solutions. Led the development of the Preliminary Engineering Report and preliminary opinion of probable construction cost.

The County of Brunswick looks to convert the existing Ocean Isle Beach WWTP to their third regional WWTP. The preliminary design was to expand the existing treatment facility's (maximum month) flow capacity from 1.05 MGD to 3.0 MGD,

with provisions for a future expansion to 5.0 MGD. The expanded facility was designed to consist of coarse screening, grit removal, fine screening, flow equalization, aerated granular sludge (AGS) process, cloth filtration, and UV disinfection. The project also included additional biosolids handling systems, consisting of rotary drum thickeners, autothermal thermophilic aerobic digestion, and sludge dewatering. The project's contract value was approximately \$1,500,000.

AVAILABILITY

50%

EDUCATION | QUALIFICATIONS

- MS, Environmental Engineering, Georgia Institute of Technology
- BS, Mechanical Engineering, Zhejiang University

LICENSES | CERTIFICATIONS

- Professional Engineer (Civil), California BPELSG: #85038 (Issued: 2015 | Expires 2026)
- Board Certified Environmental Engineer, AAEEs: #23-10034 (Issued: 2024 | Expires: 2026)

MEMBERSHIPS | AFFILIATIONS

- Certified Member, American Academy of Environmental Engineers and Scientists (AAEES), 2024, Active
- Member, American Asian Architects / Engineers Association (AAa/e), 2023, Active

YEARS WITH COMPANY

1

HOME OFFICE LOCATION

Los Angeles, CA

The recommended AGS system would replace existing SBR processes while utilizing original reactor tanks with minimal modifications and almost doubling the treatment capacity. This would avoid excessive site development and thus save the capital cost. The added biosolids handling systems would save operational cost for pumping sludge to another regional plant and free up solids treatment capacity at that facility.

On-Call Engineering Services for Sewer Rehabilitation | Los Angeles County Sanitation Districts | County of Los Angeles, CA | Project Technical Lead. Led technical design of sewer pipe rehabilitation, including drawings, specifications, front-end documents, and OPCC. Conducted regular progress meetings internally and externally. Tracked technical decisions and workflow. Developed and maintained project quality management plan. Supported the project manager in scope and schedule monitoring and controls.

The series of task orders provided six projects of sewer rehabilitation, 12-inch to 28-inch in diameter, for a total of over 13 linear-miles long, using the cured in place pipe (CIPP) lining technology, including rehabilitation of manholes with high-performance protective linings. In addition to design and bid package preparation, the project scope also included permitting, bidding, and engineering services during construction. The project's contract value was approximately \$2,100,000.

The project team was able to simultaneously develop and deliver multiple project design packages to meet aggressive schedules. The key factors to achieving the goal included sharing of past knowledge throughout project team, understanding of client standard templates, and planning of quality control reviews.

Herondo Street Pumping Plant Upgrades | Los Angeles County Sanitation Districts | Redondo Beach, CA | Civil and Process-Mechanical Discipline Lead. Led design of sewer force main replacements and mechanical upgrades in the existing pumping plant.

The project was to replace an existing 10-inch sewer force main of approximately 1,200 linear feet and upgrade the sewage pumping plant, including the wet well structure rehabilitation, mechanical piping system improvements, and instrumentation replacements. The project's contract value was approximately \$450,000.

The design included a detailed sequencing plan and site layout of the pump flow bypass system, which should help mitigate risks in contractor bidding and operational issues during construction, such as spills and disruption of service.

Valley Sanitary District Recycled Water Project Phase 1 Design-Build | Schneider Electric (prime design-builder) | Indio, CA | Design Manager. Planned, managed, and coordinated design disciplines' work. Monitored and controlled the quality and schedule of design deliverables. Also conducted meetings and communications with the prime (design-builder), subcontractors, vendors, and the end client, and tracked comments, changes, and decisions from different entities.

As Valley Sanitary District's first recycled water project, this design-build project upgraded the headworks by adding a finer bar screen and a vortex grit removal system, added a waste activated sludge thickening facility, an anaerobic digester with ancillary equipment, a second digester gas flare, a dewatering filtrate flow equalization and pumping facility, and replaced a main switchboard. The project improvements will be capable of future plant average flow up to 10 MGD. The total project cost was approximately \$79,000,000.

The energy service company (ESCO) project delivered with progressive design-build method enhanced the financing capability for the client to achieve bigger scope in a more aggressive schedule. By the end of the 100% design, major demolition work, certain earth work, and yard piping installation had been completed.

Bogert Trail Sewage Lift Station and Forcemain | City of Palm Springs | Palm Springs, CA | Project Technical Lead.

Conducted civil and mechanical engineering, coordinated design development with structural, electrical, and instrumentation & control, and interfaced with the client. Also led and provided engineering services during construction.

The project implemented a new sewage lift station, 120 gpm flow capacity dry-pit configuration, and a 4-inch sewer force main of 830 feet across a bridge. The objective was to replace the existing sewer syphon across the Canyon Wash Channel with associated issues of maintenance and odor control. The conveyance capacity also accounted for future flow of the build-out service areas. The project's contract value was approximately \$550,000.

The compact lift station design with performance specification enabled the new pump station to fit in existing easement and public right-of-way with minimal disturbance to the community and surroundings, as well as shortened duration for site construction and reduced risks.

RP-1 Mechanical Restoration Improvements | Inland Empire Utilities Agency | Ontario, CA | Project Technical Lead.

Led process-mechanical design. Planned, managed, and coordinated engineering disciplines' work. Monitored and controlled the quality and schedule of design deliverables. Conducted formal and informal communications with the owner, contractor, and vendors, and tracked comments, changes, and decisions from different entities.

The project upgraded the outdated equipment and piping systems associated with three return activated sludge (RAS) pumping stations (48 mgd total capacity), two waste activated sludge (WAS) pumping stations, two scum pumping stations, and two thickened sludge pumping stations. It also upgrades the entire utility water, power, and control systems that serviced the pumping facilities. The total project cost was approximately \$7,400,000.

The project's main challenge was the maintain of plant operations (MOPO) due to the criticality of the regional facility. The design included detailed MOPO plan and shutdown tie-in requirements which helped mitigate risks during bidding and construction and increased the confidence of Operations team.

RP-1 Primary Effluent Conveyance Improvements Phase II | Inland Empire Utilities Agency | Ontario, CA |

Project Engineer. Conducted the hydraulic analysis, pipeline design, demolition, and site improvements. Prepared construction plans and specifications, cost estimation, and technical memo. Led engineering service work during construction.

The project involved an upgrade of the effluent conveyance system for two backup primary clarifiers and three sludge thickeners for near- and long-term plant expansions. It included decommissioning of the existing effluent pumping facility to address associated maintenance and odor issues. The total project cost was approximately \$2,200,000.

The Phase II project commenced during the finalization of Phase I design and was completed in an aggressive schedule (less than 10 months). It ensured the construction contract was approved by the Board within the targeted fiscal year.

RP-1 Primary Effluent Conveyance Improvements Phase I | Inland Empire Utilities Agency | Ontario, CA | Project

Technical Lead. Conducted the hydraulic analysis, pipeline design, equipment evaluation, and mechanical design. Developed construction plans and specifications, cost estimation, and engineering reports. Led engineering service work during construction.

The project improved flow capacities and diversion capabilities of existing diversion structure and piping systems that conveyed 80-mgd peak flow (primary effluent) and provided high-performance protective coatings to the primary effluent launders, conveyance piping, and diversion structures. The total project cost was approximately \$4,800,000.

The project's main challenge was the maintain of plant operations (MOPO) due to the criticality of the regional facility. The design included detailed MOPO plan and shutdown tie-in requirements which helped mitigate risks during bidding and construction and increased the confidence of Operations team.



Benjamin (BJ) Lechler, PE

HYDROGEOLOGIC STUDY

BJ is a hydrogeologist and project manager with 23 years of experience in groundwater consulting for municipal, federal, and industrial clients. Throughout his career, he has focused almost exclusively on groundwater projects in Southern California. His expertise includes addressing contaminated water resources and water reuse, characterizing anthropogenic impacts on groundwater quality, conducting regional water quality and hydraulic investigations, evaluating impacted water supply wells, exploring alternative water supplies, and collaborating with multi-party stakeholder groups and regulatory agencies to resolve water resource and quality challenges for clients.

AVAILABILITY

40%

EDUCATION | QUALIFICATIONS

- MS, Hydrology, New Mexico Institute of Mining and Technology
- BS, Geology, University of Cincinnati

LICENSES | CERTIFICATIONS

- California Certified Hydrogeologist: #1071 (Issued: 2019, Expires: 2026)
- California Professional Geologist: #8229 (Issued: 2006, Expires: 2026)

YEARS WITH COMPANY

20

HOME OFFICE LOCATION

Irvine, CA

Relevant project experience

Perris North Groundwater Contamination Prevention and Remediation Program | Eastern Municipal Water District (EMWD) | Riverside County, CA | Lead Hydrogeologist. Prepared the preliminary well design and specifications for four groundwater extraction wells and a monitoring well network consisting of 51 well casings at 16 locations for EMWD's Prop-1 grant-funded Perris North Program. Responsibilities included presenting preliminary designs to stakeholders, preparing work plans for submission to the State, drafting specifications for inclusion in EMWD's public bid packages, and providing bid evaluation support. Led a team of 19 hydrogeologists, geologists, and engineers who provided 24/7 contractor oversight and construction management services during flooded-reverse-circulation and mud-rotary pilot borehole drilling, isolated aquifer zone construction and testing, geophysical logging, final well design, well construction, mechanical and chemical well development, step-rate and constant-rate aquifer testing, and well acceptance testing. Additionally, prepared documentation for the California Drinking Water Source Assessment Protection (DWSAP) Program, developed design parameters for well equipping, and authored a well completion report summarizing the project.

San Gabriel Valley Superfund Site, Area 3 Operable Unit | U.S. Environmental Protection Agency | Alhambra, CA |

Hydrogeologist. Hydrogeologist for RI/FS activities for large area impacted by a relatively dilute VOC plume at the EPA San Gabriel Valley Superfund Site, Area 3 Operable Unit. Conducted RI/site characterization activities, individual site investigations to identify potential source areas, and data gap investigations. Responsible for preparing planning documents (SAPs, QAPPs, work plans), oversight of investigation activities, data analysis, assisting in RI report and supplemental investigation report preparation, data analysis, and coordination of quarterly groundwater monitoring. Field activities included installation of deep (up to 800 feet) Westbay multiport and single-screened monitoring wells. Provided oversight of mud rotary drilling and well installation activities. Assisted in designing wells using a combination of geophysical and lithologic logs. Field team lead for RI activities between 2002 and 2009. Technical lead for data gap investigations 2014 to 2017 and 2019-2020.

Extraction Barrier and Brackish Water Treatment Phase 1 Monitoring Wells | United Water Conservation District (UWCD) | Ventura County, CA | Project Manager. Managed a team supporting the UWCD with the technical, permitting, and logistical requirements for drilling, installing, and testing new monitoring wells at Naval Base Ventura County Point Mugu as part of the Extraction Barrier and Brackish Water Treatment (EBB Water) project. The scope included the drilling, installation, development, and testing of 21 monitoring well casings at five locations, utilizing rotosonic drilling for shallow wells and mud rotary drilling for deeper wells. Well clusters were installed at each location, comprising 3-inch diameter single-screened wells, 3-inch diameter nested wells, and 5-inch diameter single-screened wells. Jacobs prepared specifications and plans for a public bid package, provided well design and bid support, oversaw drilling, well construction, and development, and conducted pumping tests to characterize aquifer parameters in the area of potential future extraction wells.

Montrose and Del Amo Superfund Site Dual Site Operable Unit | U.S. Environmental Protection Agency | Torrance, CA | Lead Hydrogeologist. Senior hydrogeologist overseeing potentially responsible parties (PRPs) implementing groundwater remediation projects and tracking groundwater contamination at the Montrose/Del Amo sites. Groundwater impacts at the site include comingled plumes of chlorobenzene, benzene, PCE, TCE, and para-chlorobenzene sulfonic acid originating from numerous source areas. Supports EPA with technical review of PRP documents including field sampling plans, well installation and destruction work plans, standard operating procedures for field monitoring and well rehabilitation, annual groundwater monitoring reports, reports related to nature and extent and fate and transport of contaminants, performance evaluation reports, data gaps investigations, and other documents related to characterization and remediation of groundwater contamination.

Manhattan Beach Desalter Feasibility Study | Water Replenishment District of Southern California (WRD) | Manhattan Beach, CA | Hydrogeologist/Technical Lead. Senior hydrogeologist supporting the Manhattan Beach Desalter Feasibility Study to develop a conceptual design for a remote desalter in the City. The desalter is intended to remediate an isolated plume of brackish groundwater inland of the West Coast Basin Barrier Project which was constructed to prevent seawater intrusion along the west coast of Los Angeles County. Evaluated chloride data and identified data gaps in the lateral and vertical delineation of brackish groundwater in the area proposed for the desalter. Developed a work plan that included additional exploratory drilling, zone testing, and monitoring well construction to address data gaps in water quality delineation of the saline plume in the City.

Goldsworthy Desalter Expansion, Feasibility Study and Brackish Groundwater Supply Wells | Water Replenishment District of Southern California | Torrance, CA | Senior Hydrogeologist. Served as Senior Hydrogeologist for this project addressing remediation of a seawater intrusion plume in the coastal portion of the West Coast Basin while supporting an expanded desalter facility for an alternative water supply. The scope included siting and installing two new brackish water extraction wells, each with chloride concentrations exceeding 1,000 mg/L and capable of producing 2,200 gpm. As project manager and technical lead, responsibilities included preparing hydrogeologic cross-sections to identify optimal well sites to meet target chloride levels and yield, assisting with DDW and RWQCB permitting, drafting specifications and plans for well installation and testing, providing technical oversight for the well installation and testing program, designing the wells and aquifer testing program, and analyzing and presenting well installation and testing data.

Conceptual Site Model Data Gaps Investigation | Confidential Power Utility | Mojave Desert, NV | Hydrogeologist. Primary author for work plan to address data gaps in the conceptual site model for a TDS plume surrounding former evaporation ponds at coal fired power plant. The former power plant at the site was co-owned by the power utility and a state agency. The work plan outlined an approach which utilized multiple investigative techniques to evaluate the lateral and vertical extent of TDS in the alluvial aquifer and underlying bedrock. In the alluvium, a hydraulic profiling tool was specified to identify various hydrostratigraphic units within the alluvial aquifer and select depth intervals to collect grab groundwater samples using a direct push rig. In bedrock, where push-ahead techniques were not feasible, the plan specified advancing sonic borings to identify bedrock and constructing temporary wells, which were developed and sampled to assess water quality impacts. Work plan preparation required coordination with the state agency and their consultants, and the approval process included multiple meetings and engagement with the state environmental regulatory agency.

San Fernando Valley Superfund Site, Glendale Chromium Operable Unit | U.S. Environmental Protection Agency | Los Angeles County, CA | Hydrogeologist. Hydrogeologist and Task Manager for EPA RI of regional hexavalent chromium contamination in the San Fernando Valley. Responsibilities included preparation of RI planning documents, interfacing with project stakeholders (including a group of responsible parties and local water purveyors), management of field team, subcontractors, site investigation budget, siting and design of monitoring wells, coordination of well installation activities, evaluation of water level and water quality data, refining the conceptual site model, evaluation of the nature and extent and fate and transport of regional chromium contamination.

Joint Los Angeles Basins Replenishment and Extraction Master Plan | Water Replenishment District of Southern California (WRD) | Los Angeles County, CA | Hydrogeologist. Supported this master plan effort with land availability and well siting evaluations for future injection and extraction wellfields in the Central Basin. Coordinated with groundwater modeling and right of way consultants to evaluate hydrogeologic feasibility of injection locations and assess potential locations for development as future well sites. In addition, led development of a work plan to install monitoring wells and a pilot injection well to assess water quality data gaps.

Environmental Compliance and Groundwater Remediation Program | Kinder Morgan | Various Locations, CA | Senior Hydrogeologist and Assistant Project Manager. RWQCB compliance groundwater monitoring, groundwater remediation, and environmental compliance activities at two fuel storage and transfer terminals. The study area includes a complex hydrogeologic environment with an extensive perched groundwater unit containing non-aqueous phase liquids and high concentrations of fuel-related compounds that is underlain by a regional aquifer. A pump and treat system is used to contain impacted groundwater within the terminal property. Responsible for well siting, managing field investigation and groundwater modeling activities, interpretation of groundwater monitoring data, conceptual site model refinement, RWQCB compliance reporting, and interfacing with project stakeholders including RWQCB (Santa Ana Region). Project manager for all groundwater field investigation activities conducted at the terminal; responsibilities include preparation of task order proposals, management of scope, schedule, and budget, managing support staff, and regulatory compliance reporting.

Project Manager and Hydrogeologist for RWQCB compliance groundwater monitoring and remediation activities at a fuel storage and transfer terminal. The terminal is in a dynamic hydrogeologic environment along the Mojave River and downgradient of an artificial recharge facility. Responsible for interpretation of groundwater monitoring data, conceptual site model refinement, RWQCB compliance reporting, and interfacing with project stakeholders including RWQCB (Lahontan Region) and the Mojave Water Agency. Designed and conducted oversight of the drilling and installation of nested groundwater monitoring wells, ozone sparge wells, and air sparge/soil vapor extraction wells used to remediate dissolved phase MTBE in groundwater and residual MTBE contamination in soil. The Cleanup and Abatement Order was satisfied and case closure with the RWQCB was granted in 2015 after addressing all regulatory comments and concerns.

Rockets, Fireworks, and Flares, and Fireworks Superfund Site | U.S. Environmental Protection Agency | San Bernardino County, CA | Hydrogeologist. Hydrogeologist and Task Manager for basinwide RI in the Rialto-Colton groundwater basin to characterize an approximately 5-mile long perchlorate and VOC plume in the drinking water aquifer. Duties included well siting, management of the drilling and installation of six deep (up to 900 feet) multi-port (Westbay) monitoring wells, evaluation of groundwater flow, and contaminant transport evaluations. Groundwater flow analysis included evaluation of the effect of structural controls (faults and basin thickness) on flow directions and the subsequent effect on perchlorate migration. Refinement of the conceptual site model and technical support of groundwater flow model construction. In addition to regional groundwater evaluations, conducted soil vapor probe installation and sampling in the suspected source area for the contamination (160-Acre Area) to evaluate linkage between the source area and regional contamination. Also, on behalf of EPA, conducted oversight of field activities and reviewed technical reports prepared by responsible parties. Managed field staff, subcontractors, and budgets for field activities.



John DeWolf

COST ESTIMATOR

John's experience encompasses a wide range of projects, including major water programs throughout California. He has extensive experience with underground utility construction projects including storm, sewer, and water pipelines, as well as small plant and lift stations. He has been the senior cost estimator for the \$500 million City of Fresno Ground Water Recharge and Surface Water Treatment Facility and Pipelines program responsible for estimating water and recycle water lines and plant projects for their 500M program.

AVAILABILITY

30%

EDUCATION | QUALIFICATIONS

- BS, Industrial Technology
California State University Fresno

YEARS WITH COMPANY

11

HOME OFFICE LOCATION

San Jose, CA

Relevant project experience

San Diego North City Water Reclamation Plant (WRP) Expansion | City of San Diego | San Diego, CA | Senior Cost Estimator. Part of project team for the sewer treatment plant improvements and expansion for providing recycled water. Responsible for providing estimating services from the 30% level through to the 100% documentation level of this multi-package construction project (\$300M program).

San Mateo Clean Water Program | City of San Mateo | San Mateo, CA | Senior Cost Estimator. Part of program management team for sewer line replacement and treatment plant improvements. Responsible for providing estimating services at the budget feasibility level for the program. Assists the construction management team with contract change order review and evaluation.

Recharge Fresno Groundwater Program | City of Fresno | Fresno, CA | Senior Cost Estimator. Responsible for estimating the recycled water lines and treatment plant for the program. Projects ranged from 6-inch to 72-inch pipelines for a total of 72 miles of pipeline. Provided quality reviews of contract documents and design engineers' estimates. Assisted the construction management team with contract change order review and evaluation.

Sewerage and Water Board of New Orleans (SWBNO) Power Master Plan and Implementation Projects | SWBNO | New Orleans, LA | Cost Estimator. Jacobs developed the PMP involved conceptualizing and evaluating alternatives and identifying the optimal strategy for upgrading SWBNO's 100-year-old 25 Hz and 60 Hz power infrastructure. The first phase of critical power projects, currently underway, includes design, procurement support, construction, and commissioning management for the initial static frequency converter, SFC-1, and the first of three combustion turbine generators, CTG-7. Additionally, provide engineering and site support for multiple emergency need projects covering repair or improvement of existing assets. Size: 20 MW new 60 Hz generation, 25 MW 60 Hz/25 Hz conversion capacity. Responsible for preparing detailed cost estimates related to the PMP Implementation projects.

Clovis Water Treatment Plant Transmission Mains | City of Clovis | Clovis, CA | Cost Estimator. Estimated and managed the 42-inch through 12-inch treated water transmission mains. Coordinated with the plant contractors, City of Clovis, Fresno County, and Clovis Unified School District for the successful completion of the project.

Hughes Research Lab Expansion Water Main | HRL Laboratories | Malibu, CA | Cost Estimator. Estimated and managed the 36-inch water main to facilitate the expansion project. Project involved connection to existing system on Pepperdine University main entrance road and proceed down to the main highway and the main was routed up the cliff to connect at the lab.

Shaver Lake Sewer Collection System | Fresno County Dept. of Public Works and Planning | Shaver Lake, CA | Cost Estimator/Project Engineer. Estimated and worked as a Project Engineer on the sewer collection system. This project was in a mountain community which had a wide variety of soil conditions for granite rock to decomposed granite.

California Fiber Optic Backbone | Time Warner | Statewide | Cost Estimator. Estimated and managed the installation of the fiber optic backbone, distribution hubs, and signal booster stations. This project was a fast-track project in all weather conditions. Projects that were constructed during winter months were tented to facilitate the continued construction regardless of weather.



Zita Yu, PhD, PE, BCEE, ENV SP

FUNDING SUPPORT (GRANTS)

Dr. Zita Yu's expertise spans across a broad spectrum within the water and wastewater space with an emphasis on the treatment and use of alternate water sources for potable and nonportable uses, including water reuse and desalination. She has served as a technical lead and project manager for a wide range of projects, including planning, design, technical evaluation of water treatment systems for drinking water supply and for potable and non-potable reuses, pilot studies, and sustainability.

AVAILABILITY

30%

EDUCATION | QUALIFICATIONS

- Doctor of Philosophy, Chemical Engineering
- MSc, Environmental Engineering
- BSc, Earth Sciences

LICENSES | CERTIFICATIONS

- Professional Civil Engineer, CA #86610 (Issued: 2016 | Expires 2027)
- Drinking Water Operator T2, CA #41670
- Envision Sustainability Professional

YEARS WITH COMPANY

17

HOME OFFICE LOCATION

Los Angeles, CA

Relevant project experience

Technical Evaluation of Existing Desalination Facility and Expansion

Requirements for a Facility Acquisition | Confidential Client | Corpus Christi, TX |

Technical Lead and SME. The project involved evaluating the design of an existing 9.4 MGD seawater desalination to identify upgrade or improvement needs for the existing facility and O&M costs to produce three grades of demineralized water using UF, double RO and electro-deionization technologies. Additionally, capital costs for expanding the facility with a production capacity of 22 MGD for an acquisition. Zita served as a subject matter expert (SME) on this project to lead the evaluation and analysis. She conducted modeling using IMSDesign Hydranautics to evaluate the adequacy of the current design and identify key design constraints and production limitations. She also evaluated the O&M costs as well as capital cost for expansion of the facility up to 22 MGD.

Ocean Water Desalination Program | West Basin Municipal Water District | Carson, CA | Program Manager and Lead Engineer.

Dr. Yu was responsible for managing the program and providing technical and strategic directions for of technical analyses conducted to support the development the Ocean Water Desalination Program. These analyses include preliminary engineering design to comply with drinking water requirements as well as California Ocean Plan requirements, land acquisition negotiations, environmental document preparation (CEQA Plus), project delivery method evaluation and rate impacts.

Engineering Design and Construction Support Services for the Regional Wastewater Reclamation Facility Expansion and Upgrade | Elsinore Valley Municipal Water District | City of Lake Elsinore, CA | Technical Lead. The project involved providing engineering design and construction support for the expansion and upgrade of the Regional Wastewater Reclamation Facility' Upgrade. As part of the scope of work, Parsons will complete a Title 22 Engineering Report for submission to California Division of Drinking Water (DDW) so that the necessary approval for the construction and operation of the upgraded and expanded facilities to expand their recycled water service. Zita served as the technical lead to guide the preparation of the Title 22 Engineering Report.

Regional Brackish Groundwater Reclamation Program Feasibility Study | West Basin Municipal Water District | Carson, CA | Project Manager and Technical Lead. Water Replenishment Water District Southern California was leading the effort for this joint project involving multiple stakeholders, including West Basin. This project involved evaluating the options and feasibility of producing 20 MGD of drinking water through brackish groundwater desalination. Dr. Yu representing West Basin

to serve as a technical lead on this project. She participated in the development of the Memorandum of Understanding for the stakeholder group. She was responsible for providing technical inputs for the conceptual design, treatment and distribution alternatives to ensure that the ultimate selected option would meet the economic and technical criteria.

Membrane Bioreactor (MBR) Pilot Study at Hyperion Water Reclamation Facility | West Basin Municipal Water District | Carson, CA | Project Manager and Technical Lead. This pilot study would be conducted to develop design basis as well as demonstration of log removal values achievable by the MBR system for a future 70-MGD MBR facility that would produce denitrified effluent for water reuse purposes. Dr. Yu was responsible for the development and negotiation of the Memorandum of Agreement between West Basin, Los Angeles Department of Water and Power and Bureau of Sanitation for this pilot study. She was also the technical lead to develop the scope of work to manage and provide technical inputs for the development of conceptual and detailed design and construction documents, sampling protocols, and demonstration of MBR pathogen log removal strategies using the Tier 2 and Tier 3 approaches.

Iron Mountain and Gene Pumping Plants Water and Wastewater System Replacement Project | Task Order #4, Metropolitan Water District of Southern California | CA | Project Engineer and Deputy Project Manager. This project involved the design of replacement systems for potable water and non-potable irrigation water distribution and wastewater collection and onsite treatment systems for Iron Mountain and Gene Pumping Plants along the Colorado Aqueduct. As part of the project, 2 lift stations would be designed as part of the wastewater collection system at Iron Mountain. Hydraulic analysis using InfoWater and InfoSewer were conducted to confirm pipe sizing. Zita served as the project engineer and deputy project manager to lead the development of Basis of Design Report, conducted design review and initiated specification preparation. Additionally, she managed the design team and subconsultants, interfaced with the Metropolitan team, and managed action items, various logs, and prepared progress reports, budget, and schedule updates.

R&D Program | West Basin Municipal Water District | Carson, CA | Program Manager and Technical Lead. Dr. Yu was responsible to representing West Basin as a subject matter expert to participate in research projects proposed by external or internal research teams. Also, she served on the project advisory committee and / or West Basin technical lead for projects such as:

- Challenges and Practical Approaches to Water Reuse Pricing evaluated what has affected the pricing strategy for recycled water. (Water Research Foundation)
- Intake Biofouling and Corrosion Study evaluated fouling and corrosion characteristics of various stainless steel and copper-nickel alloys in ocean water environments. (Metropolitan Water District Southern California)
- Improving Membrane Treatment Energy Efficiency Through Monitoring the Removal of Colloidal Particle Foulants evaluated the use of nano-size particle counters to optimize coagulant dose to retard and reduce fouling in microfiltration and ultrafiltration membranes. (California Energy Commission)
- Evaluation of a Validation Protocol for Membrane Bioreactor Based on a Correlated Surrogate to Achieve Pathogen Credit for Potable Reuse (Water Research Foundation RFP 4959).

Evaluation of Membrane-Based Renewable Energy Using Salinity Gradients via Pressure Retarded Osmosis and Reverse Electrode Dialysis | Department of Civil and Environmental Engineering | University of California, Los Angeles, CA | Researcher. Ms. Yu was involved in a theoretical modeling and evaluation of membrane-based technology to produce renewable energy using salinity gradient via pressure retarded osmosis (PRO) and reverse electrodialysis (RED). The work involved a side-by-side comparison between the two technologies and evaluate the theoretical limits for producing power using these two technologies. Additionally, hindrances for limiting energy production using forward osmosis membranes for PRO and ion-exchange membranes for RED were evaluated to better inform future membrane design. Her work was published in a peer-review journal as well as presented at a professional conference.



Nate Scheevel, PE

SUBCONSULTANT

President and Principal Engineer of Scheevel Engineering, Nate Scheevel brings more than two decades of hands-on experience in groundwater recharge, stormwater, and recycled water projects throughout Southern California. A licensed civil engineer in California, Colorado, and Minnesota, Nate specializes in the planning, design, modeling, and operation of complex water resource and heavy civil systems. His expertise spans from infiltration testing, O&M modeling, and 3D CFD hydraulic analysis to construction and program management for regional agencies such as OCWD, SBVMWD, WMWD, IEUA, and RCFCWCD. Known for blending field-based insight with advanced technical analysis, Nate delivers innovative, cost-effective solutions that enhance long-term system performance and groundwater sustainability.

Relevant project experience

Santa Ana River Enhanced Recharge Phase 1B | SBVMWD | Santa Ana, CA | Consultant. Consultant to Valley District for the final design (part of a design team) of 20 new recharge basins (> 200 acres wetted) below Seven Oaks Dam and extensive open channel and pipeline conveyance, flumes, weirs and rated channel sections. System is designed for recharge of SWP water as well as stormwater. Provided field infiltration rate testing, O&M modeling, 3D CFD analysis, final design assistance for specialty groundwater recharge features for the project. Provided construction phase services and technical support, engineer of record and startup and testing assistance. Develop a comprehensive O&M Manual for the Enhanced Recharge System.

Victoria Recharge Basin | WMWD | CA | Sub-Consultant. Sub-Consultant to Western for infiltration rate field pilot testing, preliminary design, final design, construction management assistance, O&M manual development and 3D CFD modeling of a new groundwater recharge basin. Scheevel Engineering performed pre-design, exploratory excavation and final design service for the pilot test project, as well as

assistance with construction management, data collection and final performance reporting including final design recommendations. Provided project management and construction management services during construction.

Santa Ana River Enhanced Recharge O&M Modeling | SBVMWD | CA | Consultant. Consultant to Valley District to develop a O&M model to simulate groundwater recharge for a 40-basin (500 cfs) recharge facility. Model will be used to analyze long-term system performance, inform USACE FIRO related activities and optimize long-term O&M of the system.

Subsurface Recharge Gallery Pilot Project | OCWD | Orange County, CA | Consultant. Consultant to OCWD for the analysis, design, construction, operation, data collection, analysis and reporting of a pilot project to test the recharge of GWRS water in sub-surface recharge galleries.

Victoria Basin Groundwater Recharge Improvements & Operations Optimization | WMWD | CA | Consultant. Consultant to WMWD for preliminary design, final design, construction phase services, startup and testing specialty services and maintenance for performance monitoring and basin improvements. Improvements included monitoring wells, flow meters, level sensors and basin re-grading/rehabilitation.

AVAILABILITY

70%

EDUCATION | QUALIFICATIONS

- BSc, Civil Engineering, University of California at Berkeley, Berkeley, CA
- Diploma - Heavy Construction Equipment Mechanics, Dakota County Technical College, Rosemount, MN

LICENSES | CERTIFICATIONS

- Professional Civil Engineer: CA #C80056, CO #46839, MN #50556 (Issued: 2012 | Expires 2026)

YEARS WITH COMPANY

13

HOME OFFICE LOCATION

Anaheim, CA

OCWD Recharge Basins | OCWD | CA | Senior Engineer. Senior engineer at the Orange County Water District provided design input, recommendations and peer review on a number of improvements to existing and new groundwater recharge basins for the District:

- La Palam Basin (New)
- Miraloma Basin (New)
- La Jolla Basin (Improvements)
- 5 Coves Basins (Improvements)
- Anaheim Lake (Improvements)
- Mini Anaheim (Improvements)
- Miller Basin (Improvements)
- Kreamer Basin (Improvements)
- Weir Ponds 1-3 (Improvements)
- Riverview Basin (Improvements)
- Santiago Basins (Improvements)

San Sevaire Basin Improvements Project | IEUA | CA | Consultant. Consultant to IEUA responsible for the subsurface investigation and the project development report (PDR), including pre-design concepts, calculations and analysis. The PDR presents analysis of several alternatives (including pump station and pipelines) to improve/increase groundwater recharge at San Sevaire Basins.

Riverside North Aquifer Storage and Recovery Project | SBVMWD/WMWD | CA | Consultant. Consultant to Valley District and Western to provide design review, value engineering, cost estimating, infiltration rate determinations and operations and maintenance modeling and recommendations for a new Santa Ana River rubber dam diversion and recharge basin system in Riverside, CA.

Active Recharge Project | SBVMWD | CA | Consultant. Consultant to Valley District for the preliminary design, diversion design, rubber dam preliminary design, 3D CFD modeling, O&M modeling, cost estimating and benefit analysis of 9 new groundwater recharge basins and 4 existing flood control basins.

Weaver Basin Project | SBVMWD | CA | Provided infiltration rate field testing, 3D CFD hydraulic analysis and final design review and consulting for recycled water recharge basins.

Kansas Avenue Basin | RCFCWCD | CA | Consultant. Consultant to Riverside County Flood Control & Water Conservation District for field infiltration rate pilot testing and preliminary design of groundwater recharge improvements for an existing flood control basin. Includes development of a preliminary design report. Performed pre-design, exploratory excavation and final design service for the pilot test project, as well as assistance with construction management, data collection and final performance reporting including final design recommendations. Design included 3 infiltration rate test cells and a temporary pipeline system.

Wineville Basin Proof of Concept Project | IEUA | CA | Consultant. Consultant to IEUA for pre-design, final design and implementation of an infiltration rate testing project. Scheevel Engineering performed pre-design, exploratory excavation and final design services, as well as assistance with construction management, data collection and final performance reporting including design recommendations. Design included 6 infiltration rate test cells and a temporary pipeline system.

Lower Day Basin Improvements Project | IEUA | CA | Consultant. Consultant to IEUA for preparation of a Preliminary Design Report (PDR), permitting assistance and final design assistance to develop design concepts and provide a basis of design for the Lower Day Basin Improvements Project. Perform 3D CFD modeling of Day Creek Channel diversion alternatives. The

purpose of the Project is to increase the amount of storm water and supplemental water captured and recharged into the Chino Groundwater Basin.

RMPU Improvements Preliminary Design Project | IEUA | CA | Sub-Consultant. Sub-Consultant to IEUA for the preliminary design of improvements for 9 groundwater recharge basins including rubber dam designs. Tasks include field investigations/testing, infiltration rate determinations, operation and maintenance analysis/recommendations, design review and operations modeling.

RMPU Operations Plan | IEUA | CA | Consultant. Consultant to IEUA for developing operations and maintenance plan for the RMPU Projects. The O&M Plan covers 8 groundwater recharge basins maintenance, pipelines, pump stations, rubber dams, spillway gates and other groundwater recharge related facilities and features.

Weir Pond Rehabilitation Project | OCWD | CA | Project Manager. Project Manager for the pre-design and final design to reconfigure 3 de-silting basins used to remove fine-grained sediments from storm water. Design included CFD model analysis and review.

Lower Five Coves Basin Infiltration Improvement Project | OCWD | CA | Designed and constructed a series of excavations to perforate a near surface confining layer in Lower Five Coves Basin to increase storm water recharge in the basin.

San Antonio & Thompson Creek Spreading Grounds O&M Manual | PVPA | Sub-Consultant. Sub-Consultant to PVPA for the development of a spreading grounds operations and maintenance manual, includes spreading grounds improvements recommendations.

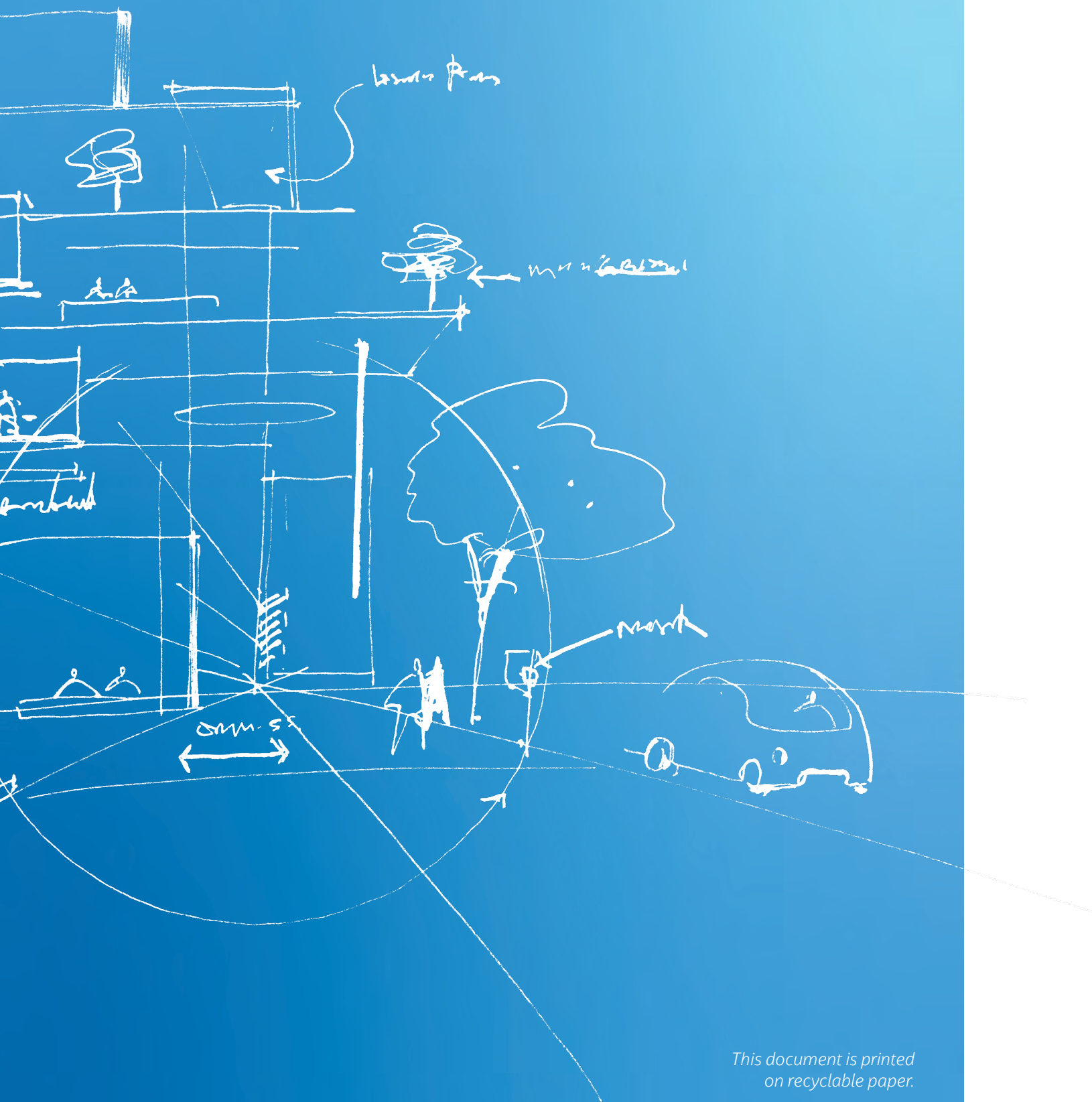
Devils Canyon Recharge Projects | SBVMWD | CA | Consultant. Consultant to Valley District for alternatives analysis, preliminary design, final design and O&M optimization for State Water Project water turnout, piping, stormwater diversion, and basin improvements for 3 recharge basin system.

Basin Cleaning Vehicle (BCV) Operations | OCWD | CA | Operations Supervisor. Operations supervisor for a program to remove fine-grained sediments from groundwater recharge basins, while leaving the basins full of water and in service. Two primary technologies were used to achieve this objective: a fully submersible ROV system, and a floating barge system. Responsible for all operation and maintenance of the systems. A wide variety of operational data was gathered and analyzed for 4 basins to determine the effect of the BCVs on percolation rates. Full basin percolation rate testing was performed over an 8-year period.

Basin Cleaning Vehicle (BCV) Engineering | OCWD | CA | Responsible for designing and implementing modifications to the BCVs and recharge basins to increase effectiveness and efficiency. Designed and constructed basin modifications for infiltration rate testing. Collected, reduced and analyzed data. Prepared reports and presentations as to basin and BCV performance.

Alternative Basin Cleaning Technology Development | OCWD | CA | Responsible for developing and testing alternative basin cleaning methods. Methods tested included: beach cleaning technologies, sweeping/broom technologies, rock picking technologies and windrowing technologies.

Atascadero Wastewater Disposal Pond Study | Atascadero WWTP | Sub-consultant. Sub-consultant for a study, field testing and evaluation of existing disposal pond performance and enhancement options. Provide long-term O&M optimization recommendations.



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Jacobs

Challenging today.
Reinventing tomorrow.

Proposal for
Orange County Water District

Engineering and Hydrogeologic Services Santa Ana River Riverbed Filtration System Feasibility Study

Part Two – Price Proposal

Contact:
Brent Yamasaki
Principal-in-Charge

Address:
2600 Michelson Drive, Suite 500
Irvine, CA 92612

Phone: 714.742.1222
Fax: 949.224.7501
Email: brent.yamasaki@jacobs.com



Submission date: November 12th, 2025

Jacobs

Challenging today.
Reinventing tomorrow.

In this section you will find:

- ✓ Labor hour breakdowns by project task and subtask
- ✓ Fully loaded hourly billing rates
- ✓ Labor hours and fees for optional tasks in separate table

In keeping with OCWD's request, labor hours and associated fees for optional tasks are presented separately to maintain clarity between baseline and supplemental scope elements. This structured and comprehensive pricing format reflects Jacobs' commitment to accountability, technical excellence, and partnership—demonstrating why we are the right team to deliver lasting value and measurable results for the Santa Ana River Riverbed Filtration System Feasibility Study.

Page 1

Optional - Level of Effort and Cost Detail

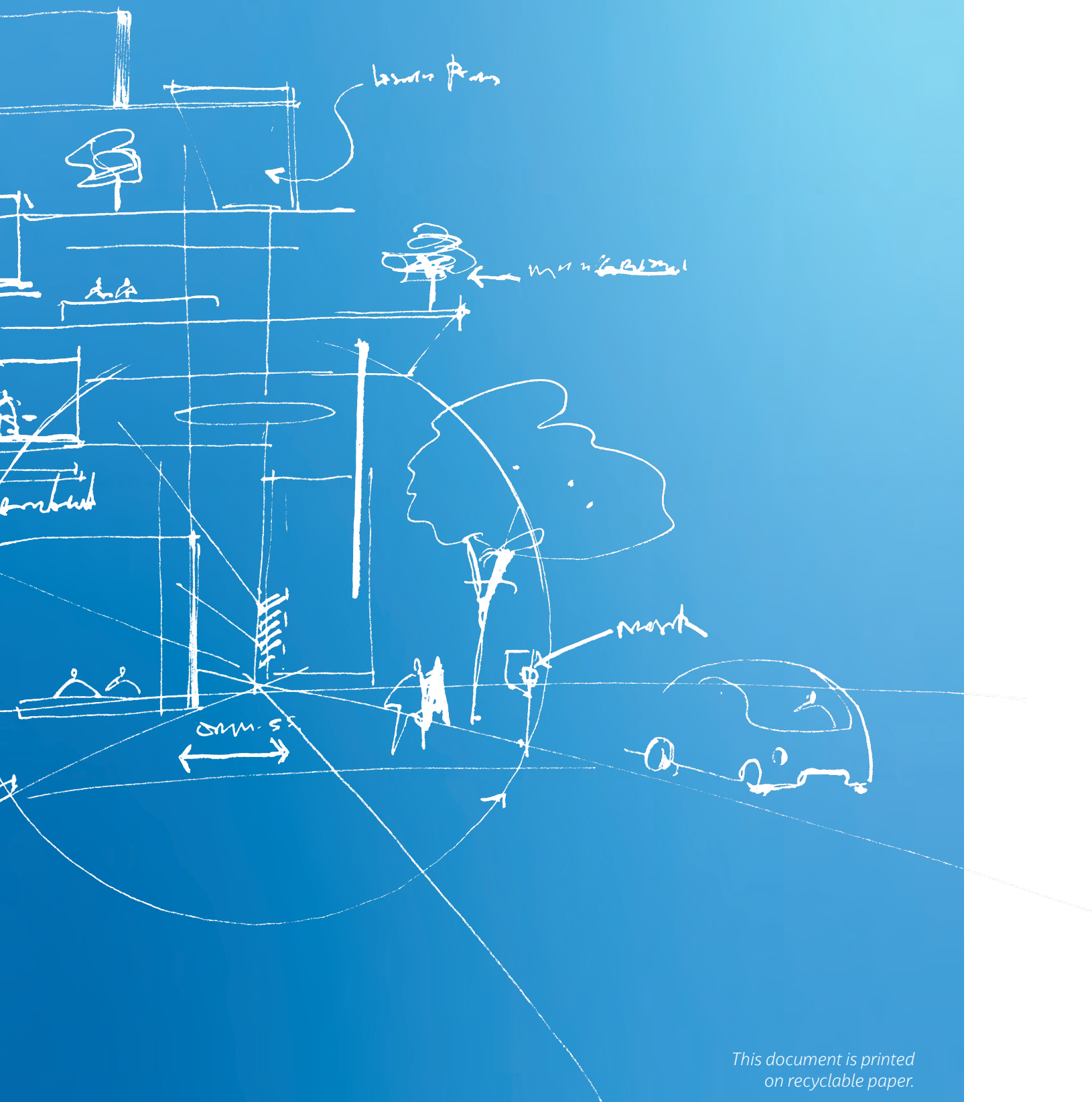
Orange County Water District SAR Riverbed Filtration FS

Task		Optional Task 8 Description	Project Manager	Design Manager	QA/QC	Technical Staff												CAD			Admin/ Clerical	Contracts & Contracts	Document Processing	Health and Safety	Jacobs Labor Hours	Jacobs Labor Dollars	Sub-consultant \$300	TOTAL SUB-CONSULTANTS	Expenses	Sub-consultant Mark Up (10%)	Total Expenses	TOTAL FEE	
			\$300	\$261	\$261	\$232	\$232	\$204	\$232	\$232	\$179	\$146	\$136	\$136	\$261	\$200	\$232	\$232	\$207	\$134	\$145	\$145	\$145	\$134									\$232
			M. Gonzalez	G. Nguyen	J. Williams	J. Hise	A. Nichols	R. Meng	R. Yu	I. Matagi	M. Wang	S. Halvorsen	A. Morales	B. Ackermann	M. Regimato	Z. Yu	L. Bryjlewski	J. Dettlaff	A. Gordon														
			Principal Professional 2	Principal Professional 1	Principal Professional 1	Senior Professional 2	Senior Professional 2	Senior Professional 2	Senior Professional 2	Project Professional 2	Project Professional 1	Staff Professional 2	Staff Professional 1	Staff Professional 1	Principal Professional 1	Principal Professional 2	Senior Professional 2	Senior Professional 2	Engineer Technician	000 Technician	Technician		Admin	Technician									Senior Professional 2
			Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours									Hours
8.1	Draft and Final Preliminary Design, Class A Construction Estimate and Project Schedule and Design Workshop		32	52	44	10	16	40	32	64	80	40	160	180	8			40	80	158	278	0	4	4		1362	\$236,866	8	\$0		\$0	\$0	\$236,866
8.1A	A. Draft and Final Preliminary Design (30% Drawings and prelim		30	80	40	10	16	40	32	64	80	40	120	100					80	158	278		4	4		1122	\$180,814		\$0		\$0		\$180,814
8.1B	B. Class A Construction Cost Estimate and Project Schedule		4	16	4													40								144	\$28,880		\$0		\$0		\$28,880
8.1C	C. Design Workshop		8	16						24																96	\$19,872		\$0		\$0		\$19,872
8.2	Funding Support		8														16	24								48	\$12,768						\$12,768
8.3	Proposer Defined Tasks Beneficial to the Development of the FS		48						80						40							14		4		186	\$46,358	866	\$259,000	\$87,000	\$1,468	\$381,460	\$427,838
8.3A	A. (Task 3 Enhancement)- Additional Modeling Support		4												40							2				48	\$11,930						\$11,930
8.3B	B. (Task 4B Enhancement)- SWMI Intersect Modeling and optimization		4						80													2				86	\$20,650						\$20,650
8.3C	C. (Task 4A Enhancement) - Field Data Augmentation		8																			2		2		12	\$3,154	96	\$28,800	\$6,500	\$3,730	\$41,030	\$61,464
8.3D	D. (Tasks 4A and B Enhancement) 3D CFD Simulations		8																			2				10	\$2,690	160	\$48,000	\$0	\$4,800	\$52,800	\$105,600
8.3E	E. (Task 4B Enhancement) - Specialty Feature Field Testing		8																			2		2		12	\$3,154	192	\$57,600	\$23,580	\$8,110	\$89,210	\$178,420
8.3F	F. (Task 4B Enhancement) - RFS Redesign to SBRD Testing		8																			2				10	\$2,690	240	\$72,000	\$55,000	\$ 2,700	\$139,700	\$279,400
8.3G	G. (Task 4A Enhancement) - Enhanced MS Excel Modeling		8																			2				10	\$2,690	178	\$53,400	\$0	\$6,340	\$59,740	\$117,480
OPTIONAL Task 8 TOTAL			88	92	44	18	16	40	32	144	80	40	160	180	48	16	24	40	80	158	278	0	18	4	4	1386	\$295,992	866	\$259,000	\$87,000	\$1,468	\$381,460	\$677,472

Hourly Billing Rates for Professionals and Technicians

Classification	2026 Rate
Principal-in-Charge	\$330
Principal Professional 2	\$300
Principal Professional 1	\$261
Sr. Professional 2	\$232
Sr. Professional 1	\$219
Project Professional 2	\$204
Project Professional 1	\$179
Staff Professional 2	\$146
Staff Professional 1	\$136
Engineering Technician	\$145
Technician	\$145
Admin/Clerical	\$145
EXPENSES	
Expense Type	Rate
Auto Mileage	Not Applicable
Auto Rental	Not Applicable
Other Travel (FTR Guidelines)	Not Applicable
Equipment Rental	Not Applicable
Postage/Freight	Not Applicable
Reprographics	Not Applicable
Subcontractors	Actual + 10%

Note: Hourly rates shall remain the same for a duration of one year from the date of contract award.
Annual escalation thereafter is 4%.



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AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/F. Almario

Budgeted: Yes

Proposed Budget: N/A

Cost Estimate: N/A

Funding Source: CIP/PFAS Grant

Program/Line Item No.: C19018

General Counsel Approval: Yes

Engineers Report: Completed

CEQA Compliance: Cat. Ex.

**Subject: CITY OF ORANGE WELL 29 PFAS TREATMENT SYSTEMS PROJECT:
ENGINEER'S REPORT AND CATEGORICAL EXEMPTION**

SUMMARY

The design for the City of Orange Well 29 PFAS Treatment Systems Project is currently in progress. The design, construction, construction management and other eligible project costs will be funded, in part, by an Emerging Contaminant Principal Forgiveness Grant through the State Water Resources Control Board. Staff recommends approving the Engineer's Report for the project and filing a Categorical Exemption in compliance with the California Environmental Quality Act guidelines.

Attachment: Engineer's Report for the City of Orange Well 29 PFAS Treatment Systems Project

RECOMMENDATION

Agendize for December 17 Board Meeting:

1. Approve the Engineer's Report for the City of Orange Well 29 PFAS Treatment Systems Project and determine the project feasible, necessary and beneficial to the lands of the District; and
2. Authorize filing of a Categorical Exemption for the City of Orange Well 29 PFAS Treatment Systems Project in compliance with the California Environmental Quality Act (CEQA) guidelines

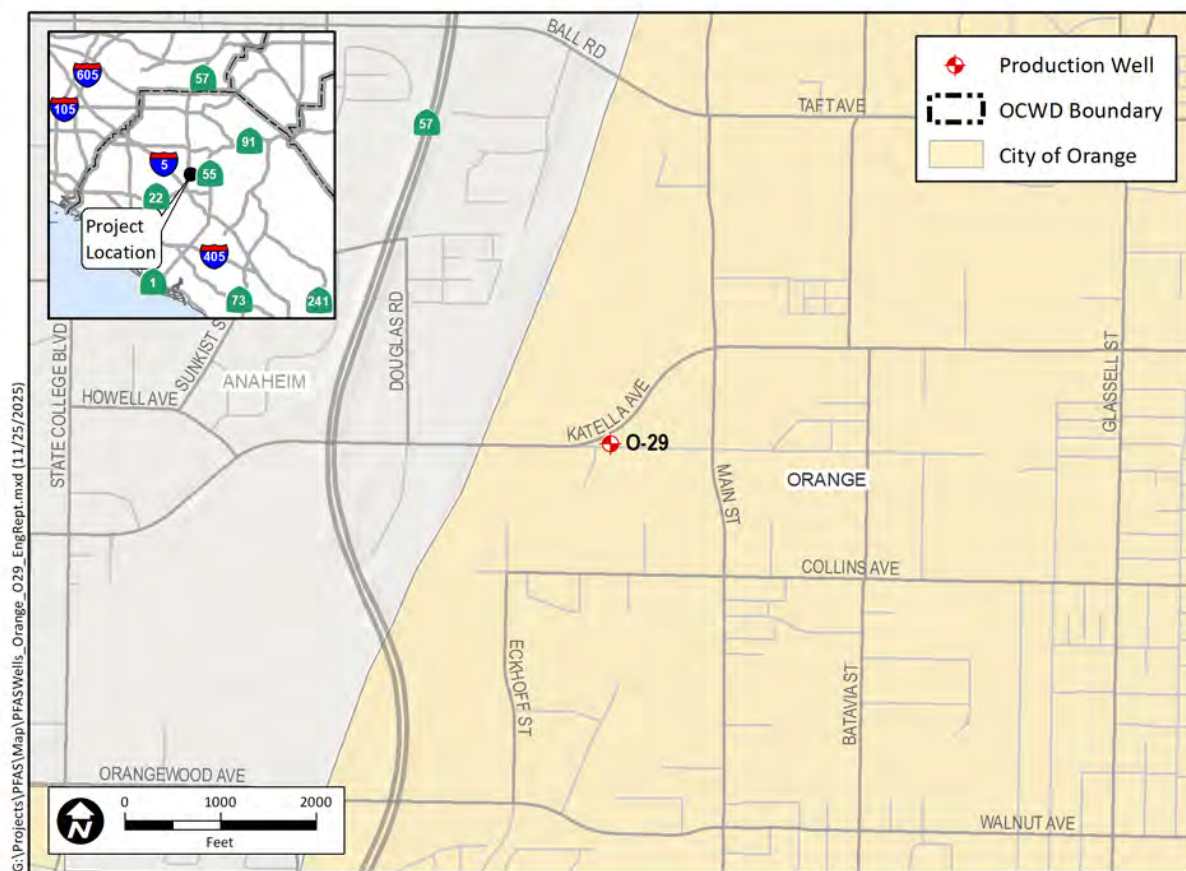
BACKGROUND/ANALYSIS

Well 29 is a new well that the City of Orange constructed to replace the existing Well 8. The design, construction, and construction management for Well 29 will be paid for by the City and reimbursed by OCWD as part of the PFAS program. Additionally, the Well 29 PFAS Treatment Systems Project will be bid and managed by the City. All work for this project will be located at the former Well 8 site.

To restore the use of groundwater supplies impacted by PFAS contaminants with minimal delay, the engineering firm Tetra Tech began design of the City of Orange Well 29 PFAS Treatment Systems Project. Due to property constraints at the Well 29 site, an Ion Exchange (IX) treatment plant has been selected as the treatment method. The

number of vessels and required support systems needed for IX allows for less area to be occupied by the treatment plant than would be required for Granular Activated Carbon (GAC), Nanofiltration (NF), or Reverse Osmosis (RO). Without additional land acquisition, IX quickly became the treatment choice for this site. Tetra Tech is currently working on the design of the PFAS treatment systems, and plans will be available for review by OCWD and the City of Orange in February 2026. Figure 1 shows the location of the City of Orange Well 29:

Figure 1: City of Orange PFAS Well Treatment Site



The City of Orange Well PFAS Treatment Systems Project will include installing IX vessel systems and all pre-filtration, site piping, well modifications, electrical upgrades, and other appurtenances. Staff has determined that the Well 29 PFAS Treatment Systems Project is consistent with a California Environmental Quality Act (CEQA) Categorical Exemption for New Construction or Conversion of Small Structures (Class 3) because it consists of the construction and operation of a limited number of new, small facilities or structures. The expected project schedule is shown in Table 1.

**Table 1: City of Orange PFAS Treatment Systems Project
Schedule Summary**

Description	Date
City of Orange Well 29 PFAS Treatment Systems Project	
Design	Dec 2024 – Feb 2026
DDW Permitting	Aug 2025 – Nov 2027
Construction Contract	June 2026 – Nov 2027

Staff submitted a financial assistance application for an Emerging Contaminant (EC) Principal Forgiveness (PF) Grant in the amount of \$5.8 Million through the State Water Resources Control Board (SWRCB) Division of Financial Assistance in October 2025. This application represents the third Grant application for the City of Orange. This project was included in the Drinking Water State Revolving Fund EC Supplemental IUP for State fiscal year 2024-25 approved by the SWRCB. Therefore, the City of Orange Well 29 PFAS Treatment Systems Project is eligible to receive an EC PF Grant for PFAS projects. Staff is currently working with the SWRCB on the review and the approval of the District's Grant application for this project.

Prior to any construction project costs being considered eligible for EC PF Grant reimbursement, the SWRCB requires that the District files a Categorical Exemption as part of CEQA compliance. Upon completion of CEQA, the SWRCB will act as the lead agency for compliance with the National Environmental Policy Act (NEPA); specifically, the Tribes Consultation and the Section 106 Cultural Consultation with the State Historic Preservation Office. This NEPA process is in addition to OCWD filing the CEQA Categorical Exemption and cannot proceed until after OCWD's filing is complete. Both the CEQA and NEPA environmental compliances require an Engineer's Report to provide the basis for the proposed PFAS project. The recommended action in this submittal only includes approving the Engineer's Report and authorizing the filing of a Categorical Exemption in compliance with CEQA guidelines for the City of Orange Well 29 PFAS Treatment Systems Project.

PRIOR RELEVANT BOARD ACTION(S)

None



ENGINEER'S REPORT

FOR

**CITY OF ORANGE
WELL 29**

**PFAS TREATMENT SYSTEMS
PROJECT**



Prepared By:

Fernando Almario, P.E.
November 2025

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1.0 EXECUTIVE SUMMARY

The purpose of this Engineer's Report is for Orange County Water District (OCWD; the District) and the City of Orange (City; Orange) to evaluate the need, benefits, and cost of constructing a Per- and Polyfluoroalkyl Substances (PFAS) treatment systems for City Well 29 (formerly City Well 8).

In April of 2024, the United States Environmental Protection Agency (EPA) issued final National Primary Drinking Water Regulation for six PFAS. EPA established enforceable maximum contaminant level (MCL) and non-enforceable maximum contaminant level goal (MCLG) for the following PFAS.

Compound	Final MCLG	Final MCL (enforceable levels)
PFOA - perfluorooctanoic acid	Zero	4.0 parts per trillion (ppt)
PFOS - perfluorooctane sulfonate	Zero	4.0 ppt
PFHxS - perfluorohexanesulfonic acid	10 ppt	10 ppt
PFNA - perfluorononanoic acid	10 ppt	10 ppt
HFPO-DA - hexafluoropropylene oxide dimer acid (Commonly known as GenX Chemicals)	10 ppt	10 ppt
Mixtures containing two or more PFHxS, PFNA, HFPO-DA, and PFBS) ¹	1 Hazard Index ²	1 Hazard Index ²

¹ - perfluorobutane sulfonic acid (PFBS)

$$^2 \text{ Harad Index (unitless)} = \frac{\text{PFBS ppt}}{2,000 \text{ ppt}} + \frac{\text{PFHxs ppt}}{10 \text{ ppt}} + \frac{\text{PFNA ppt}}{10 \text{ ppt}} + \frac{\text{HFPO-DA ppt}}{10 \text{ ppt}}$$

In February 2020, the State Water Resources Control Board's Division of Drinking Water (DDW) issued revised drinking water response levels of 10 parts per trillion (ppt) for PFOA and 40 ppt for PFOS. In March 2021, DDW issued a drinking water response level of 5 parts per billion (5,000 ppt) for PFBS and in October 2022 DDW issued a response level of 20 ppt for PFHxS. DDW recommends that sources exceeding these limits be taken out of service, treated, or blended. When groundwater sources are taken out of service, their production is commonly replaced with more expensive imported water from the Metropolitan Water District of Southern California (MWD).

In 2019, the District hired Carollo to conduct a PFAS Planning Study to evaluate options for the treatment of groundwater wells that are potentially impacted by PFAS and to develop preferred alternatives. The five alternatives evaluated in the Planning Study

were shutting down the potentially impacted well and replacing the source with imported water, blending well water with imported water, blending well water with other groundwater, packing part of the well to avoid zones with PFAS, and engineered treatment. Although Orange Well 29 is a newly drilled well, it was not part of the original Planning Study efforts, but it was determined that engineered treatment, specifically ion exchange, would be the preferred given the similar nature of all the wells that were part of the study. Well 8 was located at the current Well 29 site, but it was abandoned and replaced with Well 29. The District also hired Jacobs in 2019 to perform pilot testing and life-cycle cost analysis of various treatment technologies. Preliminary results from the Jacobs study indicate that ion-exchange is an efficient technology to remove PFAS.

This project will consist of installing ion exchange vessel systems in lead-lag configuration (4 vessels) at Well 29, including the necessary piping, prefilters and related appurtenances.

Benefits of constructing a PFAS Treatment System at the wells sites include:

- Allow the City of Orange to continue to utilize its well and infrastructure investment.
- Allow the City of Orange to maintain a diversified water supply portfolio with a substantial local supply component.
- Save the OCWD service territory approximately \$5,019,283 per year in water supply costs.
- Save OCWD approximately \$1,975,034 per year by paying for the treatment plant instead of losing RA revenue.
- Save the City of Orange approximately \$3,045,000 per year by utilizing groundwater instead of imported water.

In November 2019, the District adopted a PFAS policy to design and construct the lowest reasonable cost but efficient treatment system to remove PFOA and PFOS compounds for Groundwater Producers, such as Orange. Additionally, the policy states that OCWD will provide a 50 percent subsidy for future operation and maintenance expenses up to \$92.47 per acre-foot.

The current estimated capital cost of this project is \$11,675,000. The current estimated Operation and Maintenance cost is \$160 per acre-foot per year, to be split between OCWD and Orange. These costs will be adjusted as the engineering details are finalized and construction is completed.

2.0 BACKGROUND

In 2009, the United States Environmental Protection Agency (EPA) established a provisional health advisory of 400 ppt for PFOA and 200 ppt for PFOS to assess the potential risk for short-term exposure through drinking water. The EPA later released a non-regulatory health advisory level of 70 ppt for PFOA and PFOS (combined) in 2016.

In March 2019, the DDW issued mandatory PFAS testing orders to 12 public water systems (Groundwater Producers) in the District's service area. Dozens of wells in the District's service area had water quality testing results exceeding the DDW Notification Levels. Affected Producers were required to provide governing body notifications for exceedances of the Notification Level. Later in 2019, DDW lowered the Notification Limits to 5.1 ppt for PFOA and to 6.5 ppt for PFOS. In February 2020 DDW lowered the Response Levels to 10 ppt for PFOA and 40 ppt for PFOS. In March 2021, DDW issued a drinking water response level of 5 parts per billion (5,000 ppt) for PFBS and in October 2022 DDW issued a response level of 20 ppt for PFHxS.

In April of 2024, the EPA issued final National Primary Drinking Water Regulation for six PFAS. EPA established enforceable MCLs and non-enforceable MCLGs for the following PFAS.

Compound	Final MCLG	Final MCL (enforceable levels)
PFOA - perfluorooctanoic acid	Zero	4.0 parts per trillion (ppt)
PFOS - perfluorooctane sulfonate	Zero	4.0 ppt
PFHxS - perfluorohexanesulfonic acid	10 ppt	10 ppt
PFNA - perfluorononanoic acid	10 ppt	10 ppt
HFPO-DA - hexafluoropropylene oxide dimer acid (Commonly known as GenX Chemicals)	10 ppt	10 ppt
Mixtures containing two or more PFHxS, PFNA, HFPO-DA, and PFBS) ¹	1 Hazard Index ²	1 Hazard Index ²

¹ - perfluorobutane sulfonic acid (PFBS)

$$^2 \text{ Harad Index (unitless)} = \frac{PFBS \text{ ppt}}{2,000 \text{ ppt}} + \frac{PFHxs \text{ ppt}}{10 \text{ ppt}} + \frac{PFNA \text{ ppt}}{10 \text{ ppt}} + \frac{HFPO-DA \text{ ppt}}{10 \text{ ppt}}$$

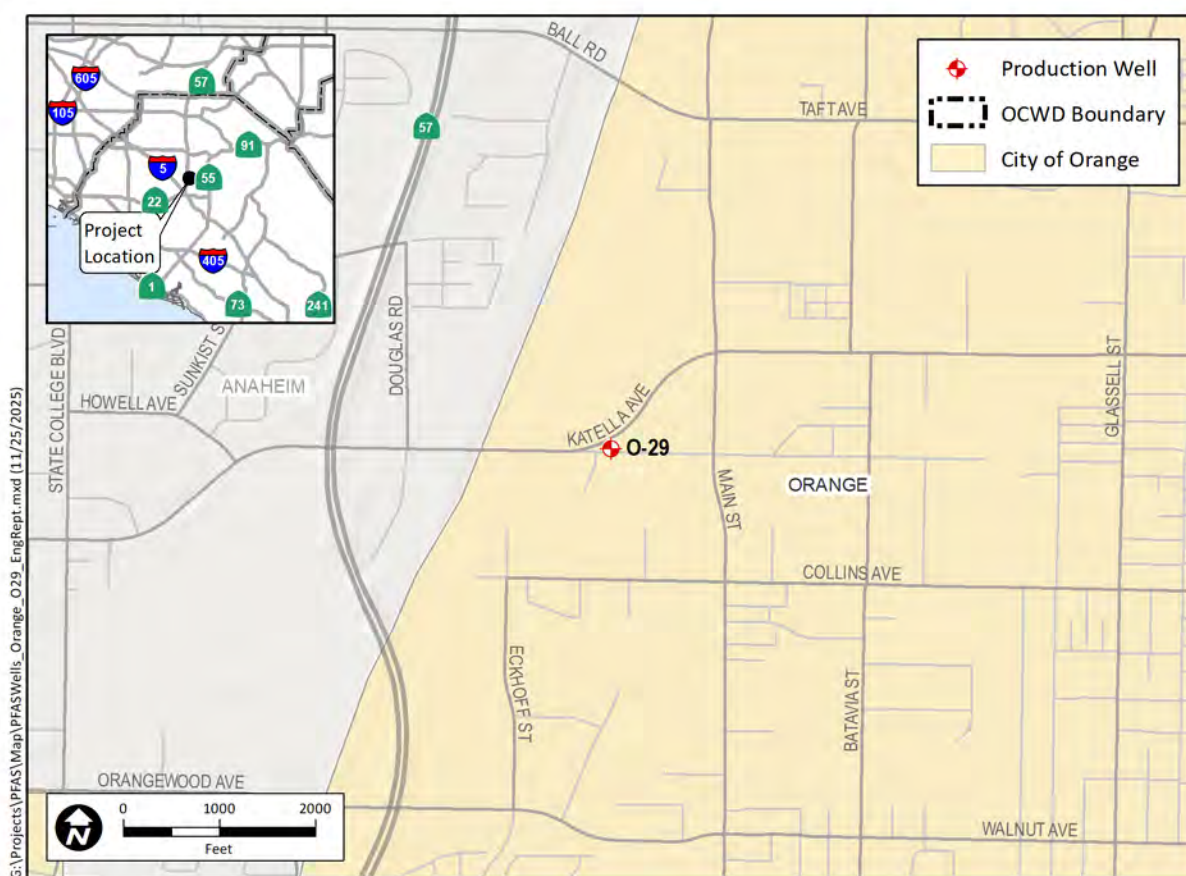
In preparation for the impacts of PFAS to groundwater supplies, the District adopted a PFAS policy in November 2019. Among other items, the policy states that OCWD will fund the lowest reasonable and efficient treatment system design and construction costs to remove PFAS compounds for Groundwater Producers. Additionally, the policy states that OCWD will provide a 50 percent subsidy for operation and maintenance

expenses up to \$75 per acre-foot. The rate is adjusted annually each July 1 (beginning July 1, 2021) and the maximum subsidy for operation and maintenance has been updated to \$92.47 per acre-foot for fiscal year 2025/2026.

When groundwater sources are taken out of service, their production is commonly replaced with more expensive imported water from the Metropolitan Water District of Southern California (MWD).

The City of Orange Well currently under consideration for PFAS treatment systems is shown in Figures 1. The site is owned by the City of Orange and currently houses the well.

Figure 1: City of Orange Well 29 Vicinity Map



IX is the preferred and most efficient treatment for the well site due to site area limitations. The number of vessels and support systems required for IX allows for less area to be occupied by the treatment plant than would be required for Granular Activated Carbon (GAC), and IX would be more cost-effective than Nanofiltration (NF) or Reverse Osmosis (RO). RO is a treatment technology that ensures high reliability for PFAS removal but would generate a liquid waste stream containing PFAS and would be more expensive than the other technologies. Additionally, a RO plant would likely

require additional City of Orange staff with the appropriate water treatment certifications to operate. Although RO would be the most effective option for long-term removal of PFAS, the costs associated with RO make IX the most feasible treatment choice for the wells at this time.

The Jacobs-OCWD joint pilot study of various treatment medias began testing of IX in December 2019. The study has shown that IX successfully removes PFAS.

3.0 PROJECT PURPOSE AND DESCRIPTION

3.1 Project Purpose

The purpose of this project is to design, permit, construct, and operate PFAS removal systems for the well sites in accordance with the District PFAS policy. The proposed IX treatment system is to remove PFOA and PFOS to less than 2 ppt (the current non-detect limit). Use of this PFAS removal treatment system will ensure the groundwater supplied by the well sites can be served in compliance with PFAS regulations.

3.2 Project Components

The PFAS treatment systems located at the Well 29 (formerly Well 8) site will be sized to treat the maximum well discharge flow rate from Well 29. Trains (or systems) of two IX vessels will be used in lead-lag configuration. The treatment systems will have four IX systems and the treatment capacity will be design for the well pumping capacity. See Table 1 for the treatment capacity and vessel dimensions and quantity for the centralized treatment plant.

Table 1: Well Treatment Capacity Summary

Well Site	IX Vessels	Pumping Capacity (gpm)	Treatment Capacity (gpm)
Treatment Systems at Well 29	Two (2) Trains; Four (4) Vessels; 12 feet diameter x 13 feet height	3,000	3,200

The IX vessels are expected to be provided by Evoqua Water Technologies or Aqueous Vets. The influent and effluent supply pipelines can be operated in a way to switch which vessel is the lead and lag position by controlling valves. The lead-lag arrangement is beneficial because once the PFAS constituents reach a predetermined threshold in the lead vessel's effluent, then the lead vessel can be switched to the lag position once the spent resin in it is replaced with fresh resin. The new lead vessel houses pre-loaded IX resin from when the vessel was formerly in the lag position. Replacement of the IX media is performed before the lead vessel returns to service in the lag position. Sample ports are located at several positions in the vessel so that resin performance can be monitored.

Prior to the water entering the IX vessels, it first passes through a pre-filtration system. Since IX media should not be backwashed, its lifespan would be greatly reduced if solids loading were to occur. It is proposed to use 5-micron bag-filters prior to the IX vessels to catch solids that may be discharged by the well.

The existing disinfection systems used at the well must be modified/replaced to facilitate the operation and replacement activities.

Electrical and telemetry systems will be integrated into the treatment plant to convey information into the existing SCADA system. Flow rates, pressure differential, and flood alarms are included in the list of proposed instrumentation.

3.3 Permits and Regulatory Issues

The City's drinking water system operates under a DDW permit that would need to be amended for the proposed PFAS treatment systems. Submittals for the amendment shall be submitted to DDW for review, including the 90% completed design. The permit amendment is not officially granted until after the system is constructed and satisfactorily inspected by DDW.

Several permits will be required from the City of Orange:

- A right of entry permit will be required to grant the District and its consultants and contractors control of the site during construction.

In accordance with the California Environmental Quality Act (CEQA) guidelines, it is proposed to file a Categorical Exemption for the project. The project is consistent with the Categorical Exemption for New Construction or Conversion of Small Structures (Class 3) because it consists of the construction and operation of a limited number of new, small facilities or structures.

4.0 FINANCIAL ANALYSIS

4.1 Construction Cost Estimates

The estimated construction cost for the IX project is \$7,675,000, as detailed in Table 2.

Table 2: IX Construction Cost Estimate

Description	Quantity	Units	Unit Cost (\$/unit)	Cost (\$)
Mobilization	1	LS	\$ 600,000	\$ 600,000
General Conditions	1	LS	\$ 500,000	\$ 500,000
Pre-Filtration System	1	LS	\$ 675,000	\$ 675,000
Vessel Systems with IX Resin	1	EA	\$1,100,000	\$1,100,000
IX Systems (appurtenances, install)	1	LS	\$1,950,000	\$1,950,000
Yard Piping	1	LS	\$1,000,000	\$1,000,000
Site Work	1	LS	\$ 975,000	\$ 975,000
Electrical and Communication	1	LS	\$ 875,000	\$ 875,000
Total =				\$7,675,000

The estimated construction cost for the Reverse Osmosis system is \$11,500,000, as detailed in Table 3.

Table 3: RO Construction Cost Estimate

Description	Quantity	Units	Unit Cost (\$/unit)	Cost (\$)
Mobilization	1	LS	\$ 600,000	\$890,000
General Conditions (5%)	1	LS	\$ 600,000	\$890,000
Pre-Filtration System	1	LS	\$ 350,000	\$500,000
RO Treatment Systems & Pumps	1	LS	\$2,800,000	\$4,100,000
RO Membranes	1	LS	\$ 750,000	\$980,000
Chemical Storage	1	LS	\$ 750,000	\$850,000
Sewer Connection & Fees	1	LS	\$ 825,000	\$1,200,000
Yard Piping & Mechanical	1	LS	\$1,675,000	\$2,500,000
Building	1	LS	\$ 750,000	\$900,000
Site Work	1	LS	\$ 900,000	\$1,300,000
Electrical and Communication	1	LS	\$1,500,000	\$2,000,000
Total =				\$11,500,000

4.2 Capital Cost Estimate

The estimated total capital cost for the IX project is \$11,675,000, as shown in Table 4. The estimated total capital cost for a RO treatment plant is \$19,300,000 as shown in the same table. The table includes the cost of constructing the site improvements for the PFAS treatment system, engineering services for design and construction phases, construction management and the cost associated with meeting regulatory requirements.

Table 4: Capital Cost Estimate

Item	IX Cost	RO Cost
Engineering, Permitting, Construction Management and Inspection & CEQA	\$ 2,000,00	\$ 4,800,000
Construction	\$ 7,675,000	\$ 11,500,000
Contingency	\$ 2,000,000	\$ 3,000,000
Total =	\$ 11,675,000	\$ 19,300,000

4.3 Annual Operation and Maintenance Cost Estimate

The estimated annual Operation and Maintenance (O&M) cost for the IX project is \$672,500 per year, as detailed in Table 5. It conservatively assumes that visual inspection will be performed daily, and analytical testing will be performed by an outside entity instead of OCWD.

The approximate annual production from the Orange Well is approximately 4,200 acre-feet. Using this value results in a unit O&M cost of \$160 per acre-foot. Per the District's PFAS policy, the O&M costs will be split between OCWD and the City of Orange with OCWD's portion being no larger than \$92.47 per acre-foot. The estimated \$160 per acre-foot O&M unit cost would cause OCWD to incur \$80 per acre-foot and the City of Orange to incur \$80 per acre-foot.

Table 5: IX Annual O&M Cost Estimate

Description	Quantity	Units	Unit Cost (\$/unit)	Cost (\$)
Power	12	Month	\$ 20,000	\$240,000
Labor	1	Year	\$ 6,000	\$ 6,000
Maintenance	1	Year	\$ 16,700	\$ 16,750
Analytical Testing	12	Month	\$ 5,000	\$ 60,000
Media Replacement	1	Year	\$350,000	\$350,000
Total =				\$ 672,750

Table 6 shows an itemized breakdown of O&M cost for a RO treatment plant. Using an annual volume of 4,200 acre-feet, the RO O&M unit cost is estimated to be \$288 per acre-foot.

Table 6: RO Annual O&M Cost Estimate

Description	Quantity	Units	Unit Cost (\$/unit)	Cost (\$)
Power	12	Month	\$40,000	\$480,000
Chemicals	12	Month	\$6,000	\$72,000
Labor	1	Year	\$100,000	\$100,000
Maintenance	1	Year	\$100,000	\$100,000
Analytical Testing	12	Month	\$5,000	\$60,000
Membrane Replacement	1	Year	\$400,000	\$400,000
			Total =	\$ 1,212,000

4.4 Ion-Exchange Cost Comparisons

Three methods to evaluate the economic effectiveness of the IX project are presented below. All three methods indicate that there is a financial benefit to move forward with this project.

- 1) OCWD Service Territory Perspective - The total project cost of providing water to the OCWD service territory via treated groundwater versus purchasing MWD imported water.
- 2) OCWD Perspective - The OCWD lost revenue due to no City of Orange groundwater production versus the OCWD cost to construct and operate the treatment plant.
- 3) City of Orange Perspective – The cost of providing treated groundwater versus purchasing MWD imported water.

Method 1: OCWD Service Territory Perspective

The unit cost for the City of Orange to acquire treated imported water through MWD will be \$1,595 per acre-foot (\$1,528 Full Service Treated + \$65 readiness to serve) on January 1, 2025. An annual volume of 4,200 acre-feet would cost \$6,703,200.

If the capital cost is amortized over 30 years at a 4% interest rate, the annual payment for the PFAS treatment plant would be \$675,166, or \$161 per acre-foot for 4,200 acre-feet. The well power cost to pump groundwater averages \$80 per acre-foot. The PFAS treatment system's O&M expense is estimated to be \$160 per acre-foot. As shown in Table 7, the total unit cost of the treated groundwater would be \$401 per acre-foot, or \$1,683,916 per year for 4,200 acre-feet. Note that the Replenishment Assessment (RA) is not considered in this calculation because it would be both paid and received by agencies within the OCWD Service Territory.

Implementation of the PFAS treatment system at the City of Orange Wells is estimated to save the OCWD service territory \$5,019,283 per year in water supply costs.

Table 7: OCWD Service Territory Perspective

Groundwater			MWD Import		
Description	Annual Cost	Unit Cost	Description	Annual Cost	Unit Cost
Project Capital	\$ 675,166	\$161	Full Service Treated	\$ 6,417,600	\$ 1,528
Project O&M	\$ 672,750	\$160	Readiness to Serve	\$ 285,600	\$ 68
Well Power	\$ 336,000	\$80			
Total	\$1,683,916	\$401	Total	\$ 6,703,200	\$ 1,596

Method 2: OCWD Perspective

Taking the City of Orange Wells out of service would reduce the RA payments made by Orange to OCWD. This assumes that other wells are not available to pump the volume. At an annual volume of 4,200 acre-feet and the current RA of \$711 per acre-foot, OCWD would lose revenue of \$2,986,200.

The District's expenses to construct the PFAS treatment plants at the Orange Well includes the capital expense and \$80 of the O&M. As previously discussed, the amortized unit capital expense is \$160 per acre-foot and OCWD's portion of the estimated O&M expense is \$80 per acre-foot. The resulting unit cost of constructing and operating PFAS plants at the wells would be \$241 per acre foot, or \$1,011,166 per year using 4,200 acre-feet per year.

Table 8: OCWD Perspective

Project Cost			Lost Revenue		
Description	Annual Cost	Unit Cost	Description	Annual Cost	Unit Cost
Project Capital	\$ 675,166	\$ 161	Replenishment Assessment	\$ 2,986,200	\$ 711
Project O&M	\$ 336,000	\$ 80			
Total	\$ 1,011,166	\$ 241	Total	\$ 2,986,200	\$ 711

Implementation of PFAS treatment systems at City of Orange Wells is estimated to save OCWD \$1,975,034 per year by utilizing the treatment plant instead of losing RA revenue.

Method 3: City of Orange Perspective

Given the need for the City of Orange to acquire water supplies to meet the demands of its customers, it is faced with a situation to utilize the PFAS treatment system or to purchase MWD imported water. As previously discussed, the cost to the City of Orange to purchase 4,200 acre-feet of MWD water would be \$6,703,200 per year, or \$1,596 per acre-foot.

The costs for the City of Orange to produce groundwater from the Orange Wells and operate the PFAS treatment plant include payment of the RA (\$711 per acre-foot), their portion of the O&M expenses and well power costs (\$160 per acre-foot). The total unit cost would be \$871 per acre-foot, or \$3,658,200 per year for 4,200 acre-feet.

Table 9: City of Orange Perspective

Groundwater			MWD Import		
Description	Annual Cost	Unit Cost	Description	Annual Cost	Unit Cost
Replenishment Assessment Project O&M and Well Power	\$ 2,986,200	\$ 711	Full Service Treated	\$ 6,417,600	\$ 1,528
	\$ 672,000	\$ 160	Readiness to Serve	\$ 285,600	\$ 68
Total	\$ 3,658,200	\$ 871	Total	\$ 6,703,200	\$ 1,596

Implementation of PFAS treatment systems at the Orange Wells is estimated to save the City over \$3,045,000 per year by utilizing groundwater instead of MWD imported water.

4.5 Reverse Osmosis versus Ion Exchange Unit Cost

RO would provide a more robust, comprehensive, and reliable treatment for long-term removal of PFAS. However, the capital and operating cost of the treatment system are more expensive. If the estimated RO capital cost of \$19,300,000 is amortized over 30 years at a 4% interest rate, the annual payment for the RO PFAS treatment plant would be \$1,116,121, or \$266 per acre-foot for 4,200 acre-feet. The RO PFAS treatment system's O&M expense is estimated to be \$289 per acre-foot for 4,200 acre-feet. As shown in Table 10, the total unit cost of the RO treated groundwater would be \$554 per acre-foot, or \$2,328,121 per year for 4,200 acre-feet. The IX project costs are also summarized in the same table.

Table 10: Reverse Osmosis versus Ion Exchange Unit Cost

IX			RO		
Description	Annual Cost	Unit Cost	Description	Annual Cost	Unit Cost
Project Capital	\$ 675,166	\$ 161	Project Capital	\$ 1,116,121	\$ 266
Project O&M	\$ 672,750	\$ 160	Project O&M	\$ 1,212,000	\$ 289
Total	\$ 1,347,916	\$ 321	Total	\$ 2,328,121	\$ 554

5.0 CONCLUSIONS AND RECOMMENDATIONS

Constructing the proposed IX PFAS Treatment Plant at the City of Orange Well 29 will:

- Allow the City of Orange to continue to utilize its well and infrastructure investment.
- Allow the City of Orange to maintain a diversified water supply portfolio with a substantial local supply component.
- Save the OCWD service territory approximately \$5,019,283 per year in water supply costs.
- Save OCWD approximately \$1,975,034 per year by paying for the treatment plant instead of losing RA revenue.
- Save the City of Orange approximately \$3,045,000 per year by utilizing groundwater instead of imported water.

Given the financial benefits to the OCWD service territory, OCWD, and the City of Orange to utilize a less expensive treated groundwater supply instead of MWD water, it is recommended that OCWD proceed with PFAS Treatment System Project for the City of Orange Well 29. Additionally, the City of Orange would be able to continue using their well investment and maintain their local water component of their supply portfolio.

6.0 PROPOSED IMPLEMENTATION SCHEDULE (TENTATIVE)

<u>Date</u>	<u>Activity</u>
March 2026	Board authorizes Notice Inviting Bids
April 2026	Advertise for construction bids
June 2026	Board awards construction contract
November 2027	Completion of construction

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/D. Mark

Budgeted: Yes

Budgeted Amount: \$173,815

Cost Estimate: \$173,815

Funding Source: CIP

Program/Line Item No.: C24015

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

Subject: AUTHORIZE NOTICE INVITING BIDS FOR BUENA PARK LINDEN WELL PACKER INSTALLATION AND AUTHORIZE AMENDMENT TO AGREEMENT WITH BESST, INC.

SUMMARY

The Work Plan and Specifications are nearly complete for installing an inflatable packer to isolate specific screened intervals in the City of Buena Park (City) Linden Well to reduce PFAS concentrations and avoid the cost of constructing a treatment system. Staff recommends authorizing publication of a Notice Inviting for BP-2026-1 Inflatable Packer Installation at Buena Park's Linden Well and issuance of an amendment to the services agreement with BESST, Inc. (BESST) in the amount of \$173,815 to procure the inflatable packers in parallel with the bidding process, oversee packer manufacturing, and provide field oversight of the testing.

Attachment: Scope of work and cost estimate dated December 2, 2025 from BESST.

RECOMMENDATION

Agendize for December 17 Board meeting:

1. Authorize publication of a Notice Inviting Bids for BP-2026-1 Inflatable Packer Installation at Buena Park's Linden Well; and
2. Authorize issuance of an amendment to the service agreement with BESST, Inc. for an amount not to exceed \$173,815 to procure the inflatable packers, oversee packer manufacturing, and provide field oversight of the testing.

BACKGROUND/ANALYSIS

Depth-specific flow profiling and water quality sampling were conducted in April 2025 by BESST under a services agreement with OCWD to evaluate the potential for isolating specific screened intervals in Buena Park's Linden Well (BP-LIND) to reduce PFAS concentrations below federal Maximum Contaminant Levels (MCLs). Results of that testing indicated that most of the PFAS enter BP-LIND from three or four of the nine screened intervals. If the screened intervals contributing most of the PFAS are sealed off, the well can still produce enough water to meet City's supply needs, and wellhead concentrations of PFAS are reduced below MCLs, then a PFAS treatment plant may not be needed.

To seal off those screened intervals and reduce PFAS concentrations below MCLs, staff recommends installing inflatable packers. This involves removing the well pump, installing two inflatable packers with a flow-through pipe to isolate screened intervals between the packers, reinstalling the pump, then operating the well for several days to measure possible loss in production and sample for PFAS. For BP-LIND, two tests are proposed, initially with three screened intervals isolated, then, if needed, a second test with a fourth screened interval isolated. Once the packer installation is complete and the test shows favorable results, they will become a semi-permanent fixture in the well. This would be in lieu of Ion Exchange treatment at this well. This would allow Buena Park to continue pumping groundwater much sooner than if treatment was installed and would save OCWD approximately \$7 million in capital costs plus ongoing annual O&M costs.

Ideally, the inflatable packer installation work would be completed during winter months when well demand is lower. Staff recommends publication of a Notice Inviting Bids for BP-2026-1 Inflatable Packer Installation at Buena Park's Linden Well to start this process as soon as possible. Staff will request project award as soon as possible after bids are received.

The packer installation and testing will be conducted by a pump contractor hired under a competitively bid public works contract. However, this is specialized work, and the inflatable packer equipment is highly specialized. There is only one identified supplier of packers that meet NSF requirements for drinking water. Staff recommends authorizing an amendment to the agreement with BESST to procure the inflatable packer equipment. Due to the specialized nature of the equipment, BESST's expertise during the procurement process will assure the packers are constructed to the proper specifications. Also, this will take advantage of a discount BESST receives from the packer manufacturer (20% for a total of \$11,325).

Procuring the packers in parallel with bidding the installation work will also save a considerable amount of time and allow the work to be completed closer to the ideal winter timeframe. In addition to oversight of the packer manufacturing, BESST would provide oversight of the packer installation and testing. Staff recommends authorizing issuance of an amendment to the service agreement with BESST, Inc. for an amount not to exceed \$173,815 to procure the inflatable packers, oversee packer manufacturing, provide field oversight of the testing, and prepare a report documenting the packer installation and testing results. This includes an initial packer test, and an option for a second test if results from the first test are not favorable.

PRIOR RELEVANT BOARD ACTIONS

8/20/25, R25-8-139: Authorize Amendment to Agreement with BESST, Inc. to prepare a work plan and technical specifications to conduct packer feasibility testing at Buena Park's Linden Well

2/19/25, R25-2-13: Authorize Agreement with BESST, Inc. for depth-specific flow and water quality survey at Buena Park's Linden well

**Quotation For: OCWD Buena Park Lind Well Packer Oversight -
Primary Test (A)**

Quotation Date:	2-Dec-25
Prepared by:	Miles Koehler, Project Manager and Hydrogeologist
CLIENT INFORMATION	
Client Name:	Dave Mark, Principal Hydrogeologist
Client Organization:	Orange County Water District
Street Address:	18700 Ward Street
City and State:	Fountain Valley, CA, 92708
Phone:	(714) 378-3337
email:	dmark@ocwd.com



BESST INC.
GLOBAL SUBSURFACE
TECHNOLOGIES

Payment Terms: Net 30

Quotation Valid for 90 Days

50 Tiburon, Suite 7 San Rafael, CA 94901

Office: 415.453.2501 / cell: 415.302.7354

LEmmens@besst-inc.com

Item	WELL MODIFICATION SERVICES	Quantity	Unit	Price	Total
TASK 1 - PLANNING					
Planning	Data review, planning and phone calls, logistics	1	Project	\$ 1,000.00	\$ 1,000.00
Work Plan	Detailed description of work to be performed with specifications - ALREADY/TO BE PERFORMED AS PART OF PREVIOUS CONTRACT	0	workplan	\$ 6,300.00	\$ -
	Subtotal #1A				\$ 1,000.00
TASK 2 - MOB - DEMOB AND OTHER TRAVEL COSTS					
Mob / Demob	Mob/Demob For Staff Hydrogeologists: Up to four mob/demobs. Removal, installation, step testing and secondary staff for constant rate test	4	ea.	\$ 1,858.00	\$ 7,432.00
Per Diem Oversight	Per Diem - estimated 3 days for removal, 5 days for installation	8	day(s)	\$ 490.00	\$ 3,920.00
Per Diem Step testing	Per diem - estimated 4 days of step testing	4	day(s)	\$ 490.00	\$ 1,960.00
Per Diem Constant Rate	per Diem - estimated 2 days of constant rate, 2 staff	2	day(s)	\$ 980.00	\$ 1,960.00
	Subtotal #2A				\$ 15,272.00
TASK 3 - OVERSEE CURRENT SYSTEM REMOVAL AND INSTALLATION OF WELL MODIFICATION SYSTEM					
System Removal	Remove existing pump and engineered suction. Measure and inspect system components removed.	1	ea.	\$ 6,300.00	\$ 6,300.00
System Reinstallation	Oversee, measure and inspect pump, packer, and engineered suction installation	1	ea.	\$ 7,875.00	\$ 7,875.00
System Step Testing	Perform initial step tests, monitoring drawdown and pumping rates while OCWD staff collect wellhead chemistry samples. Recommend 4 steps at 8 hours each (4 days) 1 BESST Hydrogeologist - no night work	1	ea.	\$ 6,400.00	\$ 6,400.00
Pump Test	36-Hour constant rate pump test plus 12 hour recovery (48 hrs. total). Monitor flow rate and water level. OCWD to collect well head samples. (Assuming two hydrogeologist, 12-hour shifts overnight)	1	ea.	\$ 7,500.00	\$ 7,500.00
Transducer	Pressure transducer data collection during step test and pump test	1	ea.	\$ 225.00	\$ 225.00
Water Level Meter	Used to measure PWL during testing	1	ea.	\$ 95.00	\$ 95.00
	Subtotal #3A				\$ 28,395.00
TASK 4 - CUSTOM PACKER, INCLUDING NSF 61 CERTIFIED RUBBER					
System Packer	Packer for 16" on 10" SS pipe Max OD <= 15" Rated for pressure up to 800 ft of head 1/4" pass through x2 1/4" inflation port 60" length bladder - NSF certified outer layer	2	ea.	\$ 28,312.50	\$ 56,625.00
BESST Packer Discount	Preferred supplier discount between BESST and Packer Manufacturer	2	-20%	\$ (5,662.50)	\$ (11,325.00)
System Packer	Sales Tax (8.75%) Tax rate in Buena Park California	1	8.75%	\$ 3,963.75	\$ 3,963.75
BESST Markup	15 % administrative markup on base price - before tax	1	15%	\$ 6,795.00	\$ 6,795.00
BESST Inspection	BESST inspects the packers to ensure diameter spec	2	hrs.	\$ 165.00	\$ 330.00
Estimated Freight	Freight shipping to Buena Park, CA	1	ea.	\$ 750.00	\$ 750.00
	Subtotal #4A				\$ 57,138.75
TASK 5 - INSTALLATION REPORT					
Installation Report	Write Installation Report for regulatory approval - includes installation details and step testing results	1	ea.	\$ 8,200.00	\$ 8,200.00
	Subtotal #5A				\$ 8,200.00
TASK 6 - CONTINGENCIES					
Report Comments	Draft report comments by consultant. Meeting with consultant to address comments and revise reports according to comments. Contract directly with water district assumes no additional reporting needed				
	Hydrogeologist	0	hrs.	\$ 165.00	\$ -
	Senior Management	0	hrs.	\$ 190.00	\$ -
	Principal Hydrogeologist, MS PG	0	hrs.	\$ 230.00	\$ -
Contingency Per Diem	Extra per diem costs in case system removal / installation / testing takes longer than anticipated	4	day(s)	\$ 490.00	\$ 1,960.00
Contingency Mobilization	Extra mobilization if needed due to project constraints	2	ea.	\$ 1,858.00	\$ 3,716.00
Contingency Freight	Additional shipping charges if needed for packers or other equipment	1	ea.	\$ 250.00	\$ 250.00
	Subtotal #6A				\$ 5,926.00
TOTAL 1A : BASE TOTAL WITH NO CONTINGENCIES					
					\$ 110,005.75
TOTAL 2A : WITH CONTINGENCIES					
					\$ 115,931.75

Client Purchase Order Number _____ Client Signature _____
Client Name _____ Date _____

**Quotation For: OCWD Buena Park Lind Well Packer Oversight -
Secondary Test (B)**

Quotation Date:	2-Dec-25
Prepared by:	Miles Koehler, Project Manager and Hydrogeologist
CLIENT INFORMATION	
Client Name:	Dave Mark, Principal Hydrogeologist
Client Organization:	Orange County Water District
Street Address:	18700 Ward Street
City and State:	Fountain Valley, CA, 92708
Phone:	(714) 378-3337
email:	dmark@ocwd.com



Payment Terms: Net 30
Quotation Valid for 90 Days
50 Tiburon, Suite 7 San Rafael, CA 94901
Office: 415.453.2501 / cell: 415.302.7354
LEmmens@besst-inc.com

Item	WELL MODIFICATION SERVICES	Quantity	Unit	Price	Total
TASK 1 - PLANNING					
Planning	Data review, planning and phone calls, logistics	1	Project	\$ 1,000.00	\$ 1,000.00
Work Plan	Detailed description of work to be performed with specifications - ALREADY/TO BE PERFORMED AS PART OF PREVIOUS CONTRACT	0	workplan	\$ 6,300.00	\$ -
	Subtotal #1B				\$ 1,000.00
TASK 2 - MOB - DEMOB AND OTHER TRAVEL COSTS					
Mob / Demob	Mob/Demob For Staff Hydrogeologists: Up to four mob/demobs. Removal, installation, step testing and secondary staff for constant rate test	4	ea.	\$ 1,858.00	\$ 7,432.00
Per Diem Oversight	Per Diem - estimated 5 days for removal, 5 days for installation	10	day(s)	\$ 490.00	\$ 4,900.00
Per Diem Step testing	Per diem - estimated 4 days of step testing	4	day(s)	\$ 490.00	\$ 1,960.00
Per Diem Constant Rate	per Diem - estimated 2 days of constant rate, 2 staff	2	day(s)	\$ 980.00	\$ 1,960.00
	Subtotal #2B				\$ 16,252.00
TASK 3 - OVERSEE CURRENT SYSTEM REMOVAL AND INSTALLATION OF WELL MODIFICATION SYSTEM					
System Removal	Remove existing pump and engineered suction. Measure and inspect system components removed.	1	ea.	\$ 6,300.00	\$ 6,300.00
System Reinstallation	Oversee, measure and inspect pump, packer, and engineered suction installation	1	ea.	\$ 7,875.00	\$ 7,875.00
System Step Testing	Perform initial step tests, monitoring drawdown and pumping rates while OCWD staff collect wellhead chemistry samples. Recommend 4 steps at 8 hours each (4 days) 1 BESST Hydrogeologist - no night work	1	ea.	\$ 6,400.00	\$ 6,400.00
Pump Test	36-Hour constant rate pump test plus 12 hour recovery (48 hrs. total). Monitor flow rate and water level. OCWD to collect well head samples. (Assuming two hydrogeologist, 12-hour shifts overnight)	1	ea.	\$ 7,500.00	\$ 7,500.00
Transducer	Pressure transducer data collection during step test and pump test	1	ea.	\$ 225.00	\$ 225.00
Water Level Meter	Used to measure PWL during testing	1	ea.	\$ 95.00	\$ 95.00
	Subtotal #3B				\$ 28,395.00
TASK 4 - CUSTOM PACKER, INCLUDING NSF 61 CERTIFIED RUBBER					
System Packer	Packer for 16" on 10" SS pipe Max OD <= 15" Rated for pressure up to 800 ft of head 1/4" pass through x2 1/4" inflation port 60" length bladder - NSF certified outer layer	0	ea.	\$ 28,312.50	\$ -
BESST Packer Discount	Preferred supplier discount between BESST and Packer Manufacturer	0	-20%	\$ (5,662.50)	\$ -
System Packer	Sales Tax (8.75%) Tax rate in Buena Park California	0	8.75%	\$ -	\$ -
BESST Markup	15 % administrative markup on base price - before tax	0	15%	\$ -	\$ -
BESST Inspection	BESST inspects the packers to ensure diameter spec	0	hrs.	\$165.00	\$ -
Estimated Freight	Freight shipping to Buena Park, CA	0	ea.	\$ 750.00	\$ -
	Subtotal #4B				\$ -
TASK 5 - INSTALLATION REPORT					
Installation Report	Write Installation Report for regulatory approval - includes installation details and step testing results. Amend report to include new packer design and testing results	1	ea.	\$ 6,560.00	\$ 6,560.00
	Subtotal #5B				\$ 6,560.00
TASK 6 - CONTINGENCIES					
Report Comments	Draft report comments by consultant. Meeting with consultant to address comments and revise reports according to comments. Contract directly with water district assumes no additional reporting needed				
	Hydrogeologist	0	hrs.	\$165.00	\$ -
	Senior Management	0	hrs.	\$190.00	\$ -
	Principal Hydrogeologist, MS PG	0	hrs.	\$230.00	\$ -
Contingency Per Diem	Extra per diem costs in case system removal / installation / testing takes longer than anticipated	4	day(s)	\$ 490.00	\$ 1,960.00
Contingency Mobilization	Extra mobilization if needed due to project constraints	2	ea.	\$ 1,858.00	\$ 3,716.00
Contingency Freight	Additional shipping charges if needed for packers or other equipment	0	ea.	\$250.00	\$ -
	Subtotal #6				\$ 5,676.00
TOTAL 1B : BASE TOTAL WITH NO CONTINGENCIES					
					\$ 52,207.00
TOTAL 2B : WITH CONTINGENCIES					
					\$ 57,883.00

Client Purchase Order Number _____ Client Signature _____
 Client Name _____ Date _____

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: A. Hutchinson/L. Esguerra

Budgeted: N/A

Budgeted Amount: N/A

Cost Estimate: N/A

Funding Source: N/A

Program/Line Item No.: N/A

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

Subject: PREPARATION OF ENGINEER'S REPORT FOR LOWER SANTIAGO CREEK RECHARGE PROJECT

SUMMARY

The upper portion of Santiago Creek between Santiago Basins and Hart Park has been used for recharge since 1999, with an average recharge of 2,500 acre-feet per year. Using the lower portion of Santiago Creek between Hart Park and the Santa Ana River can expand OCWD's recharge capacity and reduce losses of stormwater to the ocean. Staff request authorization to review prior studies and prepare an Engineer's Report, which would include further evaluating conveyance options to supply water to the lower reach below Hart Park, updating project costs, and reviewing all other aspects of the potential project.

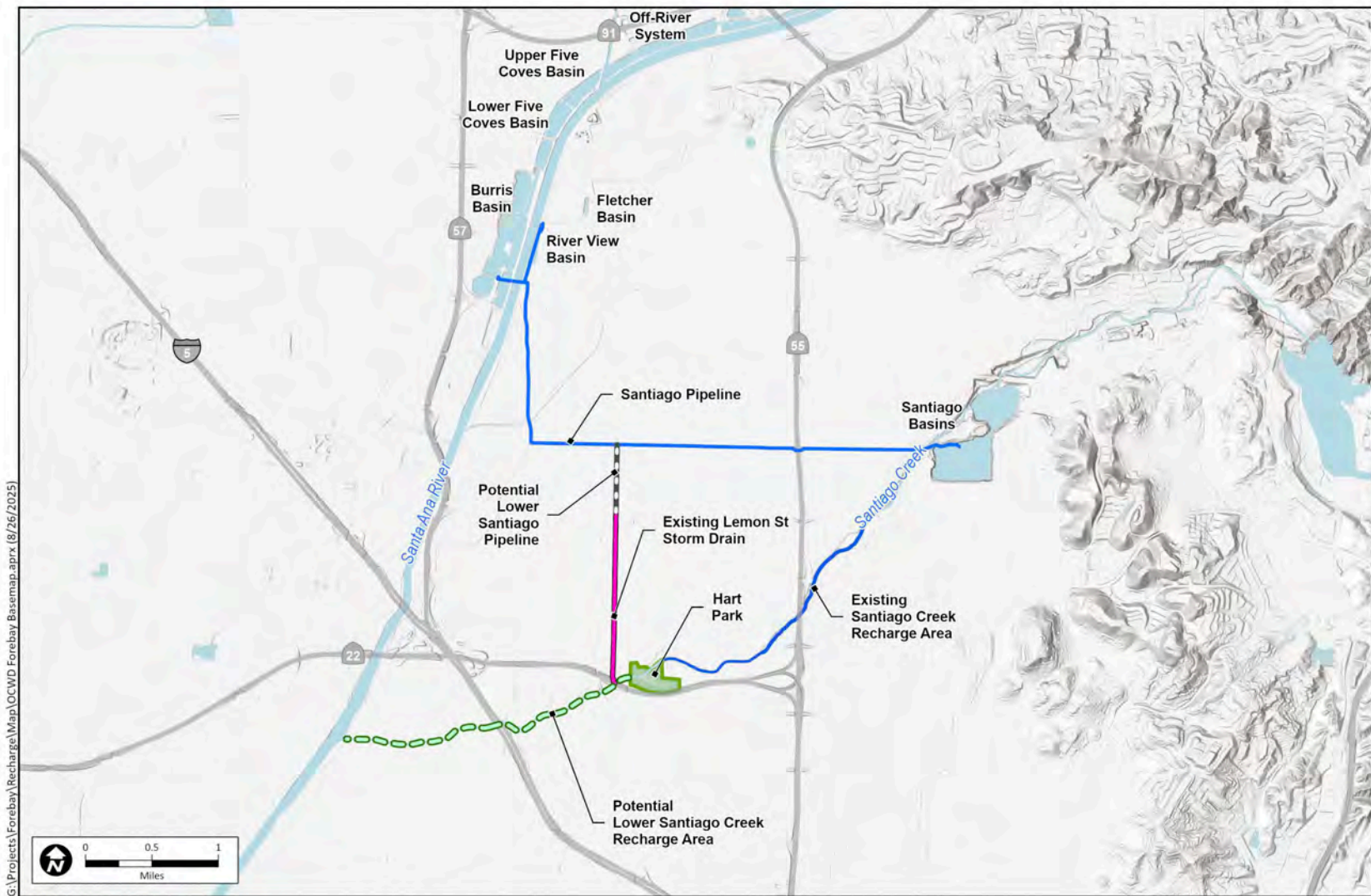
Attachment: Presentation

RECOMMENDATION

Agendize for December 17 Board meeting: Authorize staff to prepare an Engineer's Report for the Lower Santiago Creek Project, including updating project costs and reviewing all aspects of the potential project.

BACKGROUND

Since 1999, an average of 2,500 acre-feet per year has been recharged in the upper reach of Santiago Creek above Hart Park. Figure 1 shows the location of the upper reach that is currently in use and the lower reach that could be used in the future. Recharge in the creek is important because it allows for recharge of the Santa Ana River water, as well as facilitating the draining of the Santiago Basins. Using the lower reach of Santiago Creek would add a recharge facility for all seasons. During the summer and fall months (June–December), more water would be moved out of the Santiago Basins to increase storage for stormwater capture.



G:\Projects\Forebay\Recharge\Map\OCWD Forebay Basemap.aprx (8/26/2025)



- Potential Lower Santiago Creek Recharge Area
- Existing Lemon St. Storm Drain
- Potential Lower Santiago Creek Pipeline (~1,000 ft)

Lower Santiago Creek Project Area

Figure 1

During winter and spring, it would help recharge stormwater from Burris Basin between storms, aiding in draining the conservation pool behind Prado Dam, which means that additional stormwater can be captured at Prado Dam.

By using the lower reach of the creek, OCWD would obtain at least 8 cubic feet per second (cfs) of new recharge capacity, equivalent to approximately 485 acre-feet per month.

Conveyance Options

Staff have collaborated with the City of Orange to assess how water could be supplied to the lower reach of the creek below Hart Park. The parking lot of Hart Park in the City of Orange is located within the creek channel and is the only source of parking for park patrons. In addition, the parking lot and numerous structures in the park are of historical significance.

The City of Orange has expressed concerns with conveying water through the park due to potential safety, environmental, and historic preservation concerns. To address these concerns, staff retained Kleinfelder in 2015 to conduct a Lower Santiago Creek Recharge Feasibility Study. In coordination with the Cities of Orange and Santa Ana (the cities where the Lower Creek is located), Kleinfelder evaluated multiple alternatives including:

- Installing a grated open trench through Hart Park
- Installing a pipeline under or around Hart Park
- Connecting existing storm drains that discharge to lower Santiago Creek to OCWD's Santiago Pipeline

After reviewing the study, staff from the Cities of Orange and Santa Ana preferred an alternative that delivers water to the lower reach of the creek via the Lemon Street storm drain (Figure 1). This would require a tie-in to the Santiago Pipeline on Collins Avenue, which conveys water in two directions depending on whether Santiago Basins are being filled or drained. A 3,000 ft section of pipeline (labeled "Potential Lower Santiago Pipeline" on Figure 1) would be required to connect the Santiago Pipeline to the Lemon Street storm drain, which terminates at Santiago Creek below Hart Park. This alternative also includes a graded open trench through the Santa Ana Lawn Bowling Center parking lot. Santa Ana staff have not objected to modifying the Lawn Bowling Center parking lot for this project.

Staff would like to re-engage with staff from the Cities of Orange and Santa Ana to revisit these alternatives, as well as refine the technical feasibility and costs of one or two preferred alternatives.

A preliminary evaluation of the economics of using the lower reach of the creek for recharge is favorable; however, updated costs for a preferred alternative are needed to finalize the costs and benefits of this project.

Utilizing the lower reach of Santiago Creek appears to be a cost-effective approach to enhancing OCWD's stormwater capture and groundwater recharge capabilities.

Therefore, staff recommends authorization to prepare an Engineer's Report for the Lower Santiago Creek Project, including updating project costs and reviewing all aspects of the potential project.

PRIOR RELEVANT BOARD ACTIONS

5/21/2014, R14-5-67, Authorize issuance of an Agreement to Kleinfelder for an amount not to exceed \$46,750 for the Lower Santiago Creek Recharge Feasibility Study

2/19/2014, M14-25, Authorize issuance of Request for Proposals for Lower Santiago Creek Recharge Feasibility Study.

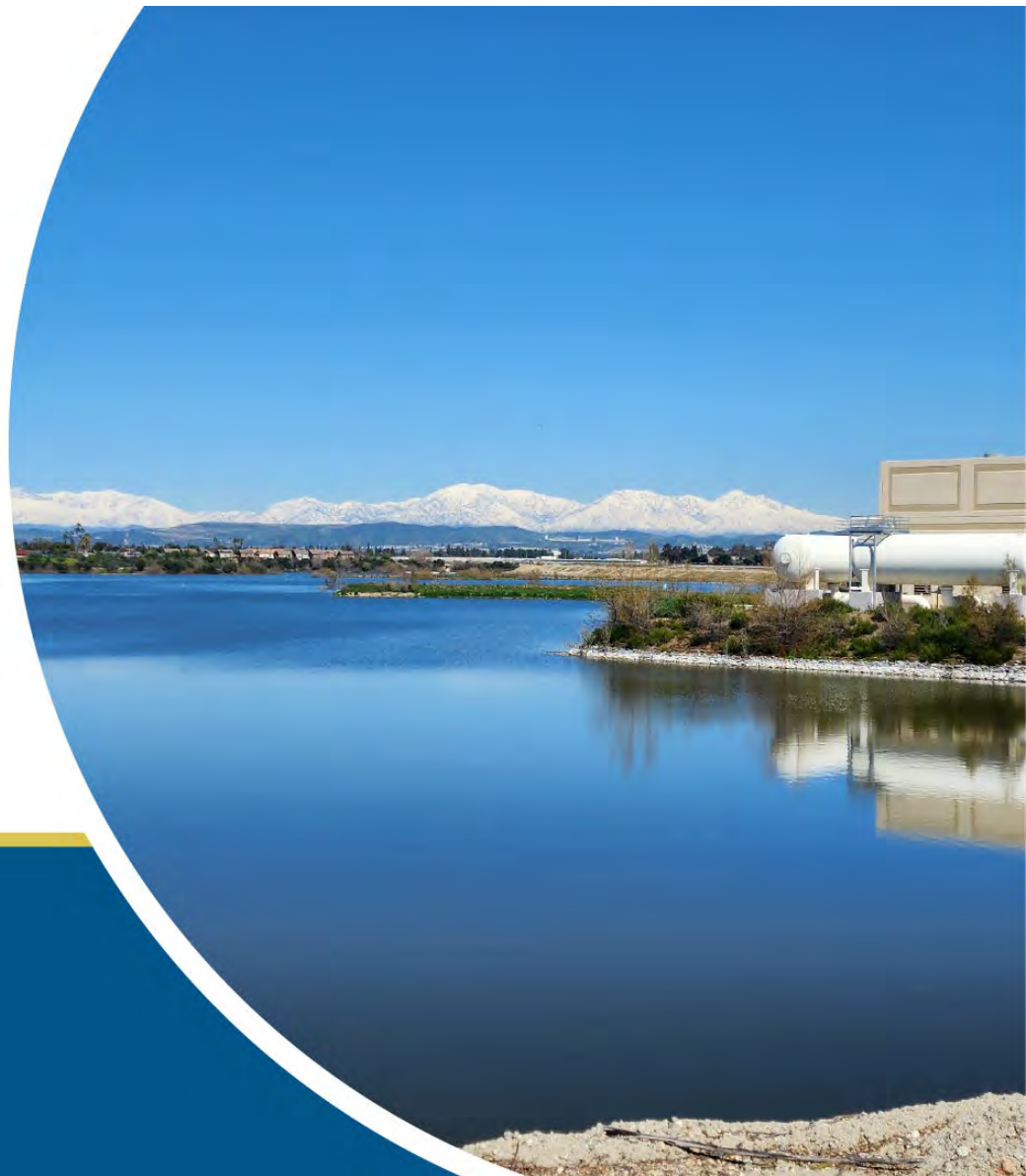
6/3/2012, Informational Item - results of Percolation Testing in Lower Santiago Creek.

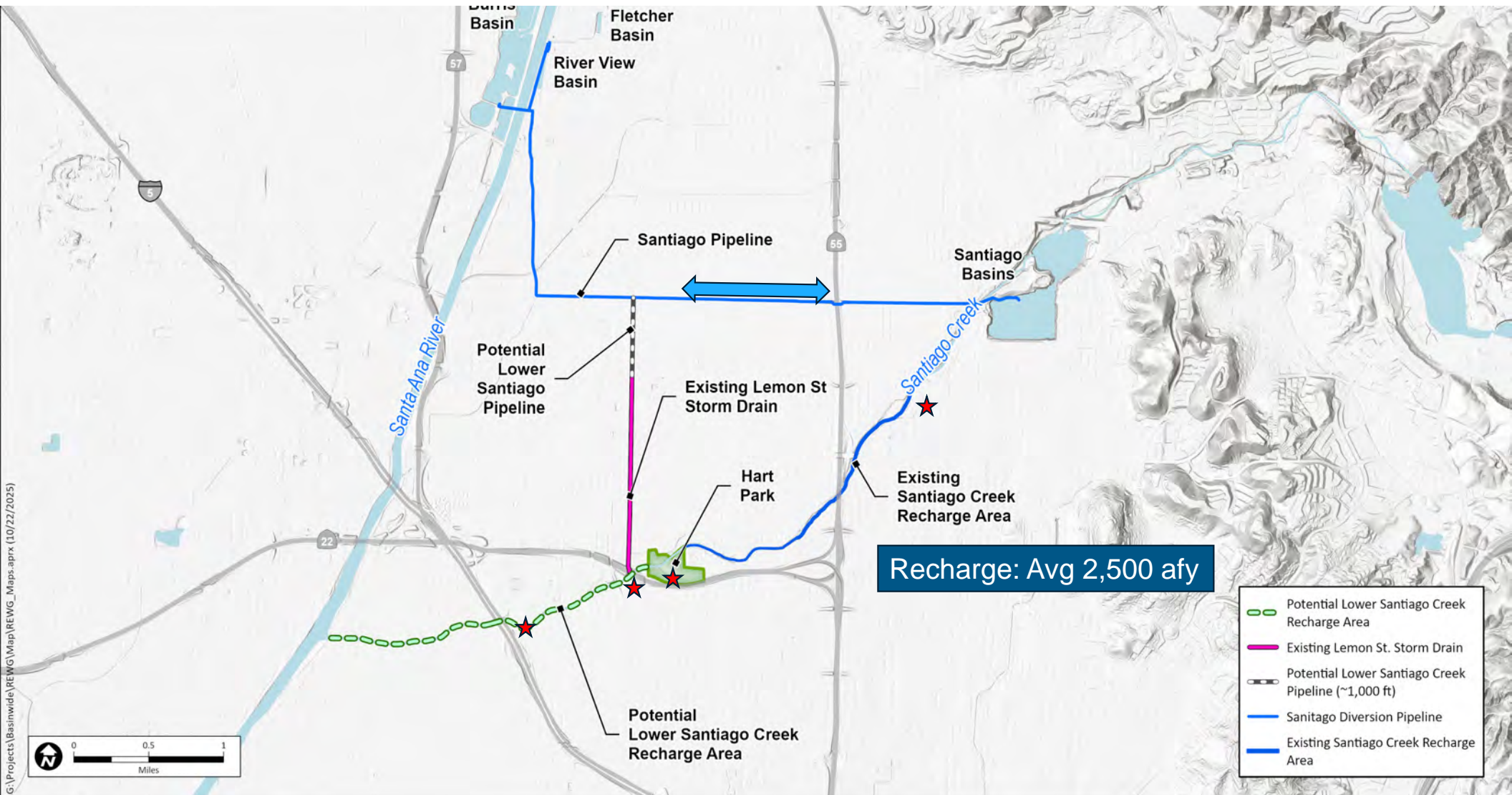


Lower Santiago Creek Recharge Project

Resilience Plan Priority Project No. 13

Water Issues Committee
December 10, 2025



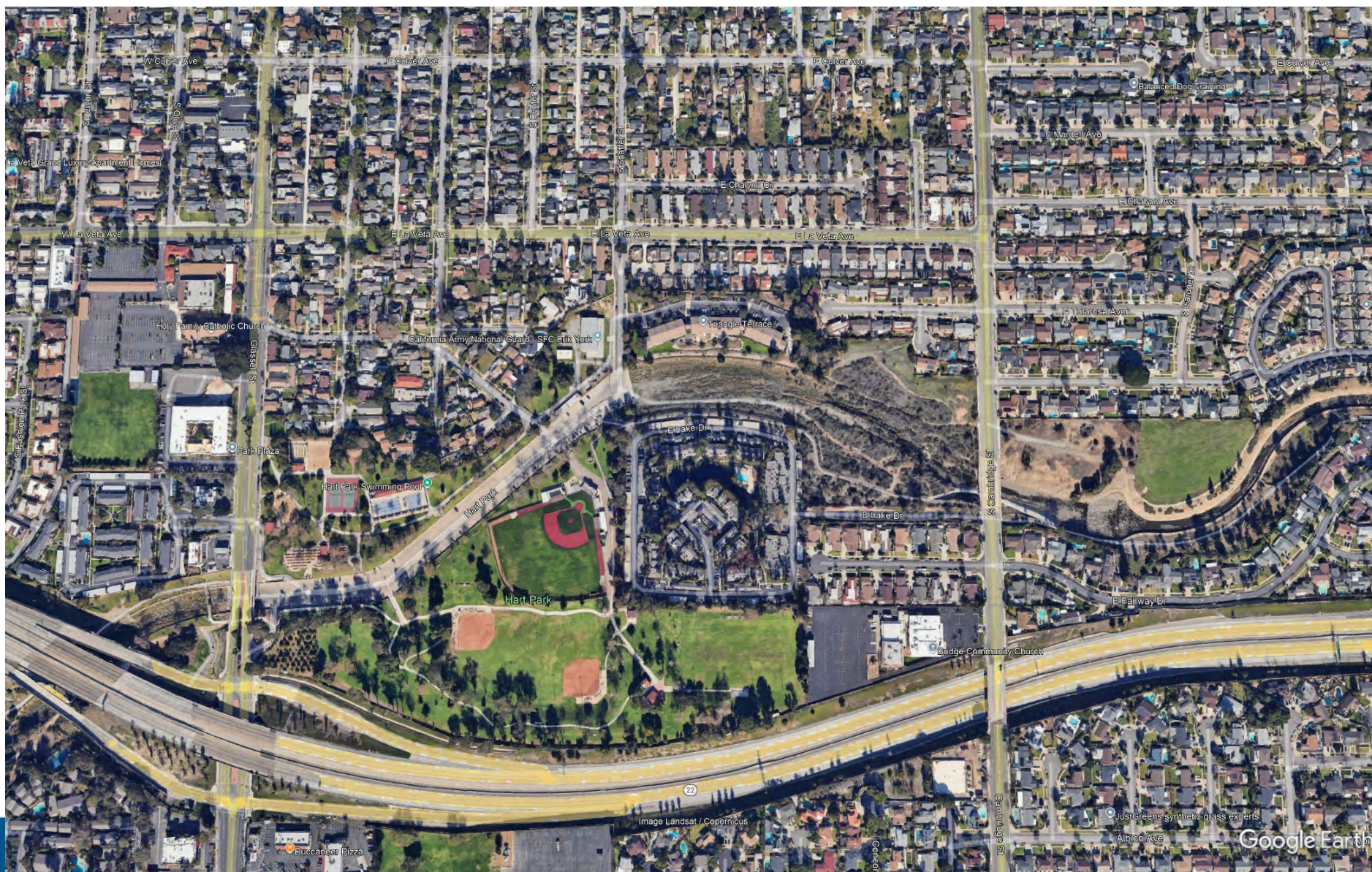


ORANGE COUNTY WATER DISTRICT

Upper Reach of Santiago Creek

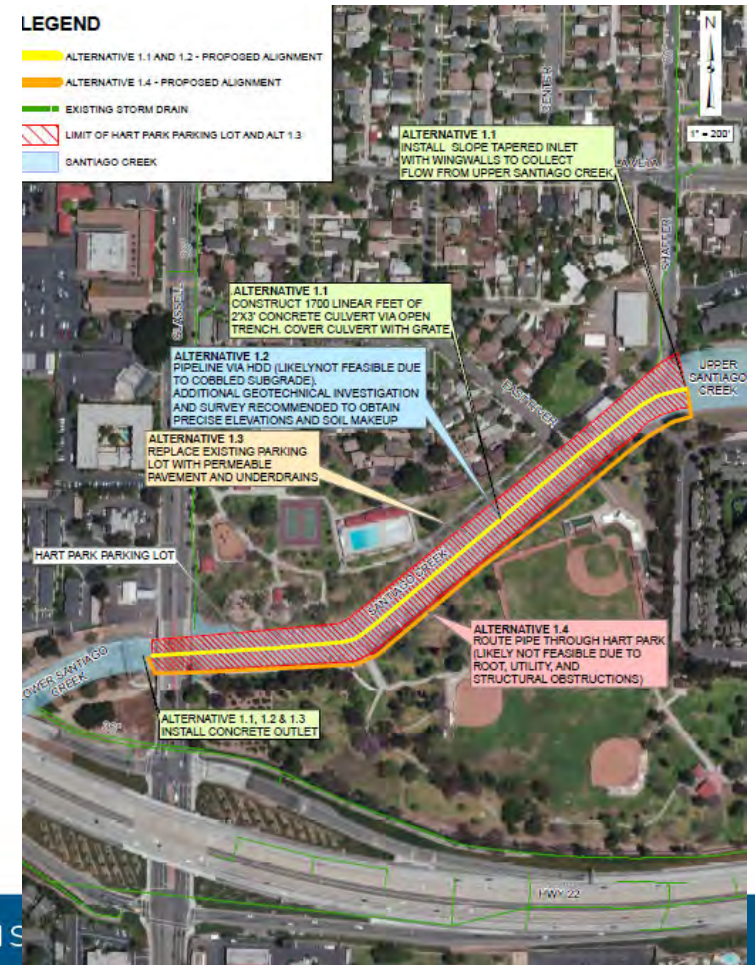
Grijalva Sports Center and Park





2015 Feasibility Study by Kleinfelder

- Evaluated 4 Alternatives through Hart Park
 - All alternatives are not preferred due to the City of Orange's concerns of disturbing the parking lot and park facilities
- Evaluated 3 Alternatives to convey water from Santiago Pipeline on Collins Ave. to outfall locations along Santiago Creek
 - Preferred Alternative: Construct 3,000 linear feet of new pipeline on Lemon St. to connect to storm drain.
 - Existing storm drain discharges into creek south of Hart Park
 - Estimated Cost: \$1.9 Million (2015)

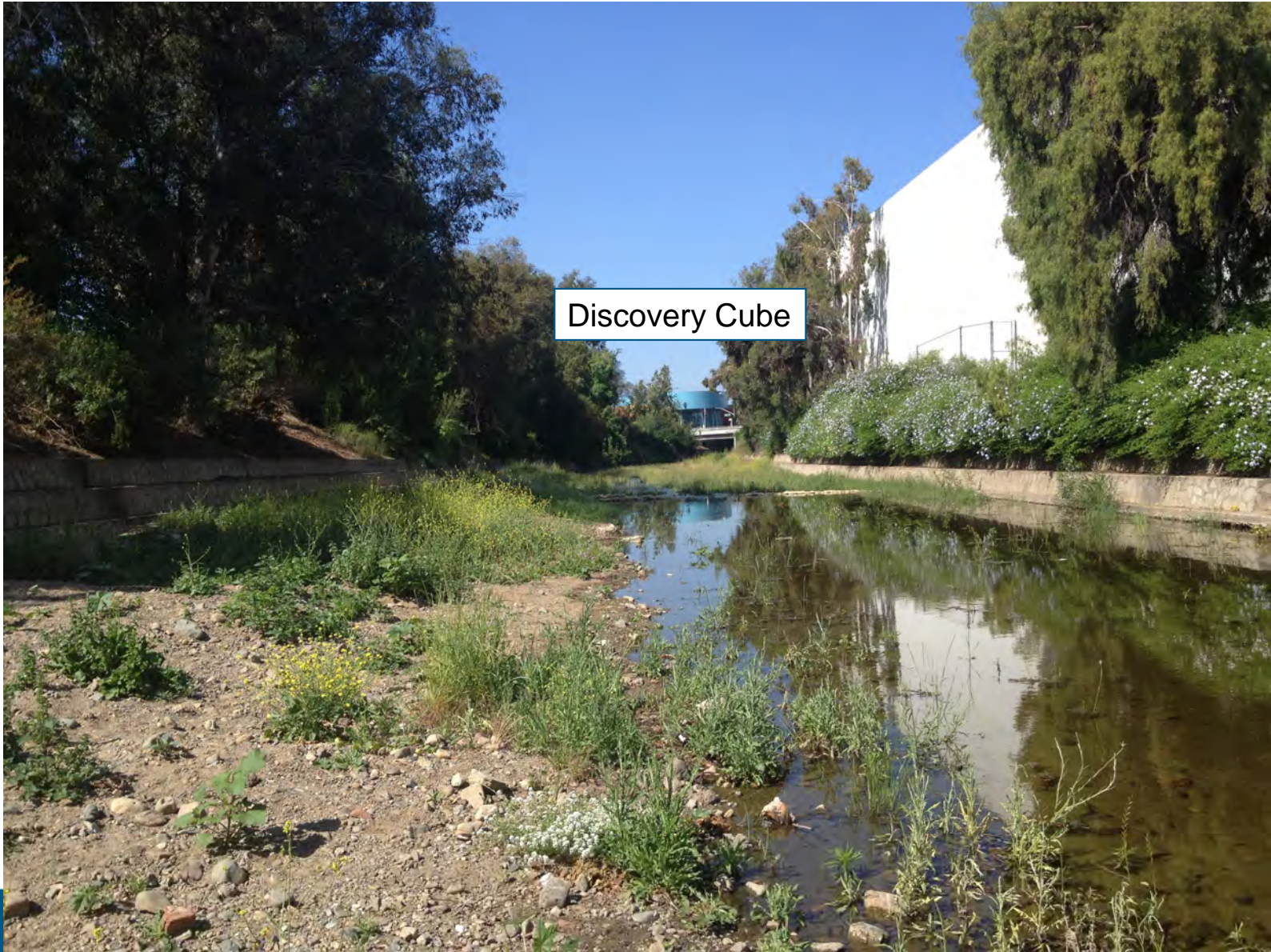




ORANGE COUNTY WATER DISTRICT

The Lemon St. storm drain enters creek at 22 Fwy.





Discovery Cube

Benefits of Project

- Creates a new recharge facility that can be used year-round (except during rain events)
- Facility capacity is estimated to be up to 485 acre-feet per month
- Assists with capturing and recharging SAR water
- Assists with draining the Prado Dam water conservation pool in the winter and draining the Santiago Basins in the summer/fall months



Recommendation

Authorize staff to prepare an Engineer's Report for the Lower Santiago Creek Project, including updating project costs and reviewing all aspects of the potential project.

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: L. Haney

Budgeted: Yes

Budgeted Amount: \$19,500

Cost Estimate: \$19,500

Funding Source: Gen. Fund

Program/Line Item No. 1044.53001

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

**Subject: UCI MASTER OF ENGINEERING CAPSTONE PROJECT: RESEARCHING
SANTA ANA RIVER SEDIMENT TRANSPORT BY RAIL**

SUMMARY

OCWD is partnering with UC Irvine's Master of Engineering program on a 2026 capstone project to evaluate the feasibility of transporting inland sediment to coastal beaches by rail, supporting both Prado Basin management and regional coastal resiliency. Supervisor Katrina Foley has generously matched OCWD's project contribution with an additional \$19,500, further expanding the scope and impact of the study.

Attachments:

- Project Abstract
- Exhibit A OCWD & UCI

RECOMMENDATION

Informational

BACKGROUND/ANALYSIS

Sediment deposition in the Prado Basin has reduced stormwater storage capacity used to recharge the Orange County Groundwater Basin—an essential local supply providing drinking water to 19 cities and retail agencies. Concurrently, coastal communities face chronic erosion and a shortage of affordable sediment for shoreline protection. Creating a regional sediment pathway that benefits both inland storage and coastal resiliency is a major strategic priority for OCWD.

Faculty at UC Irvine have proposed a Master of Engineering (M.Eng) Capstone Project to evaluate a possible long-term solution: transporting trapped sediment from the upper watershed to the coast using rail infrastructure. The project will analyze sediment sources between Seven Oaks Dam and Prado Dam, assess rail-based logistics, and develop conceptual system designs and cost estimates.

To support a realistic feasibility assessment, two advisors from regional rail industries have agreed to participate in the study. These advisors will guide the student team on rail logistics, loading and offloading constraints, spur design considerations, safety requirements, and freight cost structures—ensuring student concepts reflect operational realities and industry standards.

This project aligns directly with OCWD's multi-agency watershed and sediment management priorities, including:

- Increasing operational storage at Prado Basin
- Improving long-term sediment mobility and reducing maintenance costs
- Supporting sustainable beach nourishment
- Evaluating multimodal sediment transport strategies
- Advancing long-term sediment resilience planning

Students will receive weekly direction from OCWD, UCI faculty, and rail advisors, with formal deliverables produced across two academic quarters.

Scope of Work

The student team will evaluate:

- Inland sediment inventories between Seven Oaks Dam and Prado Dam
- Feasibility of rail transport to beaches in Orange and San Diego Counties
- Candidate loading, offloading, and transfer locations
- Necessary rail spur alignments and constraints
- Capital and operating costs of rail logistics
- Multimodal transport comparisons (truck/rail/conveyor-belt)
- Potential sediment delivery rates under various system designs

Rail line advisors will provide technical input to keep rail design, logistics, and cost assumptions realistic and aligned with industry practice.

Deliverables

Quarter 1 (Winter 2026):

1. Sediment source mapping and candidate rail spur locations
2. Summary of rail logistical constraints
3. Preliminary assessment of multimodal transport options

Quarter 2 (Spring 2026):

4. Rail-based transport scenarios and cost structures
5. Projected sediment delivery potential and implications for Prado Basin management

OCWD and Advisor Participation

- Weekly coordination meetings (OCWD, UCI faculty, rail advisors)
- Guidance on watershed management, operational constraints, and sediment characteristics
- Rail logistics input from two industry rail advisors
- A UCI/OCWD Mixer for stakeholder engagement (~50 attendees)
- Review and approval of final deliverables

BENEFITS TO OCWD

The study provides several benefits:

- A technical foundation for future sediment transport feasibility studies
- Identification of realistic rail corridors, infrastructure needs, and logistics pathways
- Cost insights needed for long-term planning and grant pursuits

- Strengthened partnerships with UCI faculty and regional rail providers
- A strategic tool supporting water supply resilience and coastal protection

The project provides high-value analysis at low cost by leveraging student engineering efforts, faculty oversight, and rail industry expertise.

FINANCIAL SUMMARY

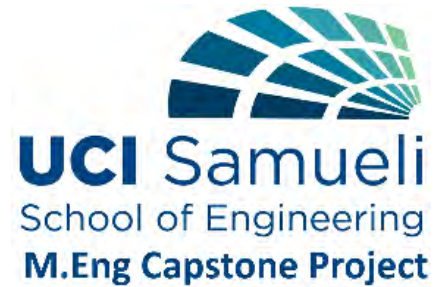
The total cost to OCWD for the capstone project is **\$19,500**, consistent with UCI program requirements:

- **\$15,000** – Coordination, advising, and technical support
- **\$4,500** – UCI/OCWD Symposium event

Funds are available in the FY 2025/26 Planning & Natural Resources professional services budget for this study.

PRIOR RELEVANT BOARD ACTION(S)

None



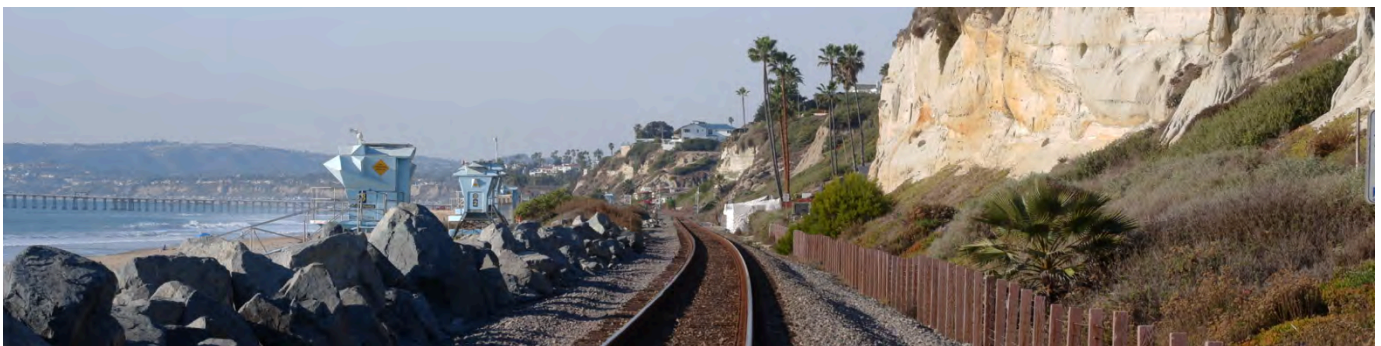
Restoring Santa Ana River Sediment Transport by Rail

Project Duration: 6 months (Winter/Spring 2026)

Project Type: In-person

Project Description:

Land development activities including bridges, culverts and dams have disrupted the natural flow of sediment along the Santa Ana River in parts of Riverside, San Bernardino and Orange counties, causing areas of excessive erosion and sedimentation as well as deficits of sediment delivery to ocean beaches. Sedimentation in the Prado Basin in Riverside County, in particular, has reduced the available space to capture stormwater used to recharge the Orange County Groundwater Basin, which represents the primary source of drinking water for over a million people. Consequently, it would be advantageous from a perspective of sustainable water supplies and sustainable ocean beaches if sediment trapped at inland locations could be transported to the coast. Rail delivery is thought to be a promising transport method, but there are numerous logistical factors that must be addressed for this to be feasible and cost-effective. Hence, this project will require a team to explore the available sources of inland sediment along the Santa Ana River, from Seven Oaks Dam to Prado Dam, and the possibility of rail delivery to ocean beaches in Orange County and San Diego County. Moreover, the student team is tasked with developing rail delivery solutions including loading locations, offloading locations, transfer locations, the necessary rail spurs and an estimate of capital construction costs, operating costs and delivery costs. The overarching goal here is to develop a rail solution that meets the needs of the Orange County Water District for Prado Basin management and the needs of beach communities seeking affordable sediment supplies.



Company:

The Orange County Water District (OCWD) is a groundwater wholesale agency that manages and protects the Orange County Groundwater Basin - a vital resource that supplies roughly 85% of the drinking water for about 2.5 million people across 19 cities and retail water districts in northern and central Orange County.

The organization is driven by a mission to provide a reliable, cost-effective, high-quality water supply in an environmentally responsible manner.

Deliverables:**Quarter I (End of Winter Quarter)**

1. *Location of available sediment supplies along the Santa Ana River and possible loading and unloading locations (rail spurs).*
2. *Summary of logistical constraints impacting rail delivery of sediment to beaches.*
3. *Preliminary assessment of multi-modal transport options (e.g., truck/rail/conveyor-belt) capable of meeting sediment transport needs and numerous logistical constraints*

Quarter II (End of Spring Quarter)

4. *Revised assessment and cost structure (capital costs, operating costs, delivery costs) of multi-modal transport options that work within logistical constraints of the system.*
5. *Projected rates of sediment transport to the coast and potential for improved management of Prado Basin for water supply needs.*

Desired Skills (please customize. Some examples are listed below):

- Mechanical and Aerospace Engineering (MAE): CAD, energy analysis, conveyor-belt systems for sediment transport.
- Electrical Engineering and Computer Science (EECS): Network analysis, power systems.
- Civil and Environmental Engineering (CEE): Sediment budgets, sediment quality, riparian ecology, cost analysis, life cycle analysis, environmental permitting, freight analysis, rail design, cost estimation.

Equipment and Software Requirements:

- *Students will likely work with CAD, GIS and Civil Design software as well as office productivity software. Students will be tasked with preparing posters for presentation and engagement of stakeholders.*
- *Students will need a laptop computer and the ability to travel to off-site meetings.*

Project Mentors:

- Industry Mentor(s): Lisa Haney, Executive Director of Planning and Natural Resources, OCWD. (lhane@uci.edu)
- Company POC for Account Payable: name, title, email address
- UCI Faculty Advisors: Dr. Brett Sanders (bsanders@uci.edu) and Dr. Mike Hyland (hylandm@uci.edu).

Agreements and Company Commitments

- 1- The Scope of Work (SOW) and the Project Abstract cannot change after being revealed to the students at the Capstone Project Reveal Event in November.
- 2- The company agrees to pay \$500 for canceling a project after the kick-off meeting in December.
- 3- The company agrees to dedicate a minimum of one hour a week to meet with the students and support the student team. The weekly meetings can be in-person, remote, or hybrid. In-person meetings at the company site are highly recommended. Also, scheduling the Final Design Review at the company site at the end of the 1st quarter is encouraged. Each quarter is ten weeks in duration.
- 4- The name and logo of the company will be posted on the UCI M.Eng Capstone website (<https://sites.uci.edu/mengprojects>), on student posters, and may be included in promotional activities for the UCI M.Eng program subject to the Company Trademark and Brand Guidelines. The Master of Engineering program has the right to use the photos of the student team working or presenting for the purpose of promoting the program and class. UCI will ensure that the photos and other promotional activities will not have proprietary or confidential information about the company or the project.
- 5- The student team will present the project and prototype in a public showcase event upon the conclusion of the project (June or December). The team's poster and video clips will be posted on the UCI M.Eng Capstone website. The content of the poster and video will be reviewed by the company to allow for removal of any company confidential information before they are publicly posted.
- 6- IP and NDA: The students assigned to the project will sign the company's NDA as well as a Student Participation Agreement.

EXHIBIT A

STATEMENT OF WORK

Land development activities including bridges, culverts and dams have disrupted the natural flow of sediment along the Santa Ana River in parts of Riverside, San Bernardino and Orange counties, causing areas of excessive erosion and sedimentation as well as deficits of sediment delivery to ocean beaches. Sedimentation in the Prado Basin in Riverside County, in particular, has reduced the available space to capture stormwater used to recharge the Orange County Groundwater Basin, which represents the primary source of drinking water for over a million people. Consequently, it would be advantageous from a perspective of sustainable water supplies and sustainable ocean beaches if sediment trapped at inland locations could be transported to the coast. Rail delivery is thought to be a promising transport method, but there are numerous logistical factors that must be addressed for this to be feasible and cost- effective.

Hence, this project will task a UC Irvine Master of Engineering (M.Eng) project team to explore the available sources of inland sediment along the Santa Ana River, from Seven Oaks Dam to Prado Dam, and the possibility of rail delivery to ocean beaches in Orange County and San Diego County. Moreover, the student team will be tasked with developing rail delivery solutions including loading locations, offloading locations, transfer locations, the necessary rail spurs and an estimate of capital construction costs, operating costs and delivery costs.

The overarching goal here is to develop a rail solution that meets the needs of the Orange County Water District (OCWD) for Prado Basin management and the needs of beach communities seeking affordable sediment supplies.

The project will be carried out between January 2026 and May of 2026. It will involve a sustained effort by several M.Eng students who will use this project as their capstone design experience. It will also include advising and direction by two UC Irvine faculty with expertise in environmental engineering (Professor Brett Sanders) and transportation engineering (Professor Mike Hyland), representatives from OCWD whose involvement is critical for student guidance and coordination with other entities, and others technical consultants and/or representatives from local, state and/or federal agencies invited to participate by OCWD.

Specific activities include:

1. M.Eng Project Coordination and Implementation (\$15,000)

We will establish an hourly weekly meeting time for OCWD personnel, UCI faculty advisors, and other participants to receive updates from, and provide guidance to, the M.Eng student team. These meetings will begin in January and run through May and they will shape the activities and

drive the progress of the student team towards the deliverables listed below. Student progress will require additional meetings with OCWD personnel to learn about the Santa Ana River Watershed, the management of the Prado Basin, and the primary constraints affecting management of the Prado Basin and the Santa Ana River. Student progress will also require additional meetings with experts in rail to learn about the factors that control the feasibility of transporting sediment by rail, and the costs of rail transport including both the capital costs of new spurs and the transport costs of shipments. Professor Sanders and Hyland will also be available to help students learn basic concepts related to sediment management and rail freight, respectively.

2. UCI/OCWD Engagement Symposium (\$4,500 to cover refreshments for up to 50 attendees)

We will plan a symposium where students present preliminary concepts, sediment transport scenarios, and rail feasibility considerations to OCWD, agency partners, rail advisors, coastal managers, environmental organizations, UCI faculty, and community stakeholders. The event will engage participants with open discussion about local constraints, operational realities, permitting considerations, and regional perspectives that will refine the project's assumptions and improve the accuracy of its final deliverables. In particular, the event will: (1) allow OCSD and its partners to review preliminary work by the students and provide comments and suggestions for improvements or changes, (2) stimulate conversations among all participants about opportunities and barriers for more cost-effective and multi-benefit management of sediment along the Santa Ana River.

Deliverables:

Quarter I (End of Winter Quarter)

1. Location of available sediment supplies along the Santa Ana River and possible loading and unloading locations (rail spurs).
2. Summary of logistical constraints impacting rail delivery of sediment to beaches.
3. Preliminary assessment of multi-modal transport options (e.g., truck/rail/conveyor-belt) capable of meeting sediment transport needs and numerous logistical constraints

Quarter II (End of Spring Quarter)

4. Future sand delivery scenarios that work within the constraints of rail transport and the availability of source materials. The sand delivery scenarios will include loading locations, offloading locations, transfer locations, the necessary rail spurs and an estimate of capital construction costs, operating costs and delivery costs.

AGENDA ITEM SUBMITTAL

Meeting Date: December 10, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: C. Olsen

Budgeted: N/A

Budgeted Amount: N/A

Cost Estimate: N/A

Funding Source: N/A

Program/Line Item No.: N/A

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

Subject: EMERGENCY WATER SUPPLIES TO SOUTH ORANGE COUNTY UPDATE

SUMMARY

On October 20, 2025, staff from OCWD, City of Santa Ana (City), and Moulton Niguel Water District (MNWD) gave an update to the Groundwater Producers and South Orange County agencies on developments that have occurred since the July 30, 2025, Stakeholders Meeting. The meeting summary is attached and described below.

Attachment: October 20, 2025 Meeting summary

RECOMMENDATION

Informational

DISCUSSION

A meeting with EOCF#2 owners and interested stakeholders occurred on July 30, 2025, to present the draft framework plan and discuss how to proceed with obtaining approval for an emergency interconnection. After presentations were made discussing the existing emergency supply Agreement with Irvine Ranch Water District and South OC agencies, the OCWD, City and MNWD Agreement, and proposed project elements, the meeting was opened up to questions and answers. Several comments were made regarding addressing the institutional matters with a focus on identifying benefits to the basin and Producers and establishing a mechanism for the use of the EOCF#2 pipeline. This topic was also presented at the October WACO meeting to share and discuss the project.

A follow-up meeting with EOCF#2 owners and interested stakeholders occurred on October 20, 2025, to continue the discussion and receive Stakeholder feedback on the project. A communication piece was developed, shared with the group, and attached to this submittal for agencies to help articulate the particulars of the project to their governing bodies. It was reminded that this project would use up to 14 cubic feet per second for up to 30 days for emergency supplies, which is 840 acre-feet in 30 days. The October 20, 2025, meeting minutes, agenda, communication piece, and prior meeting minutes with presentation are attached.

The next steps include a future meeting with the Metropolitan Water District to discuss operational protocols during an emergency. Staff will report back with the minutes from that meeting with any new information as it develops.

PRIOR RELEVANT BOARD ACTIONS

9/10/25, Informational item regarding July 30, 2025 meeting with EOCF#2 owners and interested stakeholders occurred on to present the draft framework plan and discuss how to proceed with obtaining approval for an emergency interconnection.

7/9/25, May 28, 2025 meeting summary, which involved further discussion of City system capacity, infrastructure improvements and the EOCF#2 interconnection related to providing emergency water supplies to south orange county, between OCWD, Municipal Water District of Orange County, City of Santa Ana and Moulton Niguel Water District provided as informational item.

4/16/25, R25-4-62: Authorize execution of Amendment to Agreement with the city of Santa Ana and the Moulton Niguel Water District.

3/16/22, R22-3-30: Authorize execution of agreement with the city of Santa Ana and the Moulton Niguel Water District.

7/21/21, R21-7-109: Approved the policy principles to provide emergency water supplies to SOC.

2/10/21, Informational Item: Provided Tetra Tech report to the Water Issues Committee.

3/20/19, R19-3-31: Hired Tetra Tech to perform two technical studies for the District.

3/20-19, R19-3-32: Hired Westwater to perform two technical studies for the District.

1/16/19, R1-1-10: Authorize execution of Agreement with the Moulton Niguel Water District and issuance of two requests for proposals for review of existing water storage programs and evaluation of groundwater conveyance options.

10/3/18: OCWD MNWD ad-hoc committee created.

8/15/18, M18-104: Directed staff to update the 2007 *Report on Orange County Groundwater Basin Storage and Operational Strategy* to reflect the recommended basin operating changes and to limit any potential future storage agreements to within the 36,000 acre-foot Santa Ana River Conservation and Conjunctive Use Program until the Metropolitan Water District Conjunctive Use Storage Program expires in 2028.

8/2/17, R17-8-107: Broadened the District's Water Resources Policy to allow the consideration of water storage and exchange programs with SOC water agencies.

MEETING SUMMARY

Subject: Emergency Water Supplies to South Orange County – Stakeholders Meeting
Date & Time: October 20, 2025 | 2:00 PM
Location: MWDOC Conference Room 101 (18700 Ward St., Fountain Valley, CA 92708)
Attendees: See attached sign-in sheets and list of Zoom attendees.

1. Staff from Orange County Water District (OCWD), City of Santa Ana (COSA) and Moulton Niguel Water District (MNWD) gave a brief update on developments that have occurred since the July 30th Stakeholders Meeting.
 - 1.1. Chris Olsen (OCWD) indicated that OCWD provided an update on the project including a summary of the July 30th Stakeholders Meeting at the Water Issues Committee Meeting on September 10th.
 - 1.2. Matt Collings (MNWD) noted that staff from OCWD, COSA, and MNWD presented about the project at the October 3rd WACO meeting. Feedback at the meeting was supportive of the project.
 - 1.3. Matt Collings explained that a communication piece was developed (attached to agenda) for agencies to help articulate the particulars of the project to their governing bodies.
2. Attendees were encouraged to provide additional feedback. Remarks were supportive, while continuing to emphasize the need to address institutional matters. The following clarifications and requests were made:
 - 2.1. Clarified that the project will not involve storing water within the OCWD groundwater basin. The project would borrow (exchange) water, whereby MNWD will purchase treated Metropolitan (MET) water for COSA to offset the volume of water pumped and supplied to South Orange County during an emergency.
 - 2.2. The project would convey water to South Orange County during an emergency (as solely determined by MET) where MET is unable to deliver water for a period lasting longer than seven days (does not include drought). COSA will also determine whether they have sufficient available supplies during the emergency.
 - 2.3. The OCWD Emergency Service Program allows up to 50 cfs for 30 days. The IRWD interconnection is Phase I of the Program and was initially developed for up to 30 cfs for 30 days, which has decreased over time. The Program contemplates future phases including use of EOCF#2. This project would use up to 14 cfs for up to 30 days (840 acre-ft over 30 days).
 - 2.4. Define benefits to the basin agencies. John Kennedy (OCWD) indicated this would happen later in the process.
 - 2.5. Develop an operational plan for the project. MNWD is working on the plan and seeking input from MET.
 - 2.6. Confirm that this project (as well as the Phase I project) complies with the OCWD Act.
 - 2.7. Evaluate a potential amendment to the EOCF#2 agreements. IRWD shared a sample framework (attached). MWDOC suggested the amendment focuses on addressing this project and not other potential future uses.
 - 2.8. There was concurrence among the attendees that the project is operationally and technically feasible.
3. Next Steps:
 - 3.1. MNWD, COSA, OCWD, and MWDOC to meet with MET to discuss operational protocols during an emergency.
 - 3.2. OCWD to determine process and timing for reviewing the Emergency Services Program.
 - 3.3. MNWD, COSA, and MWDOC to discuss a potential amendment to the EOCF#2 agreements.

Attachments:

- Agenda with Summary from Stakeholders Meeting on July 30, 2025 and Communication Piece for project
- Sample framework for an amendment to the EOCF#2 agreements provided by IRWD
- Sign-in sheets and list of Zoom attendees from Stakeholders Meeting on October 20, 2025

Link to Recording: <http://bit.ly/4hvGzvi>



MEETING AGENDA

Project: Emergency Water Supplies to South Orange County – Stakeholders Meeting
Date: October 20, 2025
Time: 2:00 PM
Location: Municipal Water District of Orange County
18700 Ward St., Fountain Valley, CA 92708
Conference Room 101 and Zoom link in email

1. Introductions
2. Follow-up from July Stakeholders Meeting
 - 2.1. Communication Piece for Project
3. Report out from WACO Presentation on October 3rd
4. Additional Feedback
5. Next Steps
6. Questions / Open Discussion

Attachments:

1. Meeting Summary from EOCF#2 Stakeholders Meeting held on July 30, 2025
2. Communication Piece for Project

MEETING SUMMARY

Subject: Emergency Water Supplies to South Orange County – Stakeholders Meeting
Date & Time: July 30, 2025 | 10:00 AM
Location: OCWD-MWDOC Boardroom (18700 Ward St., Fountain Valley, CA 92708)
Attendees: See attached sign-in sheets and list of Zoom attendees.

1. Staff from the Orange County Water District (OCWD), City of Santa Ana (COSA), and Moulton Niguel Water District (MNWD) gave a presentation (attached) regarding a new interconnection between COSA and MNWD to be used during emergencies per the terms of the OCWD Emergency Services Program and MET Admin Code 4519.
 - 1.1. Chris Olsen (OCWD) reviewed the history of the OCWD Emergency Services Program, July 2021 policy principles, and agreements between OCWD, COSA, and MNWD related to a new emergency interconnection.
 - 1.2. Matt Collings (MNWD) elaborated on past efforts, including reliability plans and studies prepared by the Municipal Water District of Orange County (MWDOC), and provided an outline of the project objectives.
 - 1.3. Todd Dmytryshyn (MNWD) reviewed the proposed improvements, noting that water quality and hydraulics were evaluated in coordination with OCWD, COSA, MWDOC, and MET and determined to be feasible.
 - 1.4. Cesar Barrera (COSA) highlighted the importance of the project to the City of Santa Ana, noting it represents a significant investment in infrastructure that would be used by the City during normal operating conditions.
 - 1.5. Todd Dmytryshyn reviewed the timeline, highlighting the importance of continuing to advance these efforts considering the anticipated expiration of the agreement for the existing IRWD emergency interconnection.
 - 1.6. Todd Dmytryshyn provided a summary of the Draft Operating Plan Framework (attached), explaining the intent is to comply with the terms of the OCWD Emergency Services Program and MET Admin Code 4519.
2. Following the presentation, attendees were encouraged to provide questions and remarks. Remarks were generally supportive, while emphasizing the need to address institutional matters, including:
 - 2.1. Establish a mechanism for use of the East Orange County Feeder No. 2 (EOCF#2). Charles Busslinger (MWDOC) noted that MET staff has indicated that they are supportive of the project and will look to the EOCF#2 participants.
 - 2.2. Identify opportunities for benefits to the basin agencies.
 - 2.3. Clarify in framework that intent is to operate similar to IRWD interconnection (except during emergencies only), whereby MNWD would purchase MET water for COSA to offset what is pumped from the basin.
 - 2.4. Develop a communication plan to help basin agencies articulate project benefits to their governing bodies.
3. Next Steps:
 - 3.1. Schedule a similar presentation for a future OCWD and/or MWDOC Board Meeting. It was suggested that OCWD/COSA/MNWD pursue presenting the project at a regional meeting, such as WACO.
 - 3.2. OCWD to determine process and timing for reviewing the Emergency Services Program.
 - 3.3. MNWD, COSA, and MWDOC to discuss approach to work through institutional matters regarding EOCF#2.

Attachments:

- Agenda with Draft Operating Plan Framework from Stakeholders Meeting on July 30, 2025
- Sign-in sheets and list of Zoom attendees from Stakeholders Meeting on July 30, 2025
- Presentation slides from Stakeholders Meeting on July 30, 2025

Link to Recording: <http://bit.ly/45x54Uu> | Passcode: aD8V2Bb. (include period at end of passcode)



MEETING AGENDA

Project: Emergency Water Supplies to South Orange County – Stakeholders Meeting
Date: July 30, 2025
Time: 10:00 AM
Location: Orange County Water District (18700 Ward St., Fountain Valley, CA 92708)
and on Zoom at <https://ocwd.zoom.us/j/81530662605>

1. Introductions
2. Proposed Emergency Interconnection at Santa Ana East Station
 - 2.1. Background and Purpose
 - 2.2. Project Components
 - 2.3. Status and Next Steps
3. East Orange County Feeder No. 2 Stakeholder Coordination
 - 3.1. Operating Plan Framework
 - 3.2. Ongoing Updates
4. Questions / Open Discussion

Attachment: Draft Operating Plan Framework for Emergency Deliveries of Water to South Orange County from City of Santa Ana East Station Via East Orange County Feeder No. 2

**OPERATING PLAN FRAMEWORK
FOR EMERGENCY DELIVERIES OF WATER TO SOUTH ORANGE COUNTY FROM
CITY OF SANTA ANA EAST STATION VIA EAST ORANGE COUNTY FEEDER NO. 2**

SECTION 1 Purpose

The City of Santa Ana (COSA), Moulton Niguel Water District, and Orange County Water District (OCWD), collectively the “Establishing Parties”, are cooperating on an emergency interconnection that will supply water to Moulton Niguel Water District (“Requesting Agency”) during an emergency involving the inability of the Metropolitan Water District of Southern California (MET) to supply imported water due to an infrastructure failure or outage resulting from a natural disaster or other catastrophic event (excluding drought-related shortages) for a period expected to be greater than seven days. The emergency interconnection will use the East Orange County Feeder No. 2 (EOCF#2) to deliver water from the Orange County Groundwater Basin, originating from the COSA’s East Station, to the Requesting Agency. This plan is intended to guide operation of the emergency interconnection consistent with MET’s Administrative Code § 4519 and OCWD’s South Orange County Emergency Services Program.

SECTION 2 Conditions During Which the Emergency Interconnection May Be Used
(All of the Following Conditions Must Be Met)

- Loss of Supply: Emergency involving MET’s inability to supply imported water due to an infrastructure failure or outage resulting from a natural disaster or other catastrophic event (excluding drought-related shortages) for a period expected to be greater than seven days. MET’s General Manager shall solely determine when the emergency begins and ends.
- No Alternatives for MET: There are no alternative means for MET to make deliveries to the Requesting Agency through another service connection on the MET system.
- No Alternatives for Requesting Agency: The Requesting Agency has determined that no other feasible alternative methods (e.g. other interconnections, local/regional emergency storage, etc.) are available and adequate to provide water service to their service area for the expected duration of the emergency.

SECTION 3 Approvals Required Prior to Initiation of the Emergency Interconnection

- Metropolitan Water District of Southern California
- City of Santa Ana

SECTION 4 Initiation of the Emergency Interconnection

- Notifications: Requesting Agency, in conjunction with MWDOC, will notify MET, COSA, OCWD, and all downstream member agencies at least 24 hours in advance of initiating the emergency interconnection.
- Santa Ana East Station: COSA will assess and determine availability, and if available, will make the necessary operational adjustments at the Santa Ana East Station to redirect flows into EOCF#2.

- ECOF#2: This plan assumes that, within 24 hours following notifications, flows to turnouts on ECOF#2 between SA-7 and the Coastal Junction will be discontinued and will remain that way throughout operation of the emergency interconnection and until the MET system is returned to its normal operating configuration.
- Joint Transmission Main (JTM): Requesting Agency will coordinate with the Designated Operator of the JTM to maintain positive pressure throughout the system to the Bradt Reservoir.

SECTION 5 Throughout Operation of the Emergency Interconnection

- Communication Protocol: The Parties will continuously coordinate throughout operation of the emergency interconnection.
- COSA reserves the right to change, pause, or discontinue emergency deliveries if other emergencies or water availability issues arise where continuing emergency deliveries as requested would impact water deliveries to COSA customers.
- Water Quality: The Requesting Agency, in conjunction with MWDOC, will provide water quality data to MET upon request. The Requesting Agency will immediately notify MET, MWDOC, and downstream member agencies of any changes in water quality delivered to ECOF#2 during operation of the emergency interconnection.

SECTION 6 Conclusion of the Emergency

- Emergency use of the Facilities shall be concluded when MET determines that the emergency has ended or otherwise directs the Requesting Agency to discontinue operation of the emergency interconnection
- Flushing: The Requesting Agency will cooperate with MET, in conjunction with MWDOC, to flush the system with MET water and return the system to its normal operating configuration as soon as reasonably possible.

SECTION 7 Post-Emergency Actions

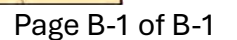
- Reporting: MET and downstream member agencies report any damages claimed to have resulted from operation of the emergency interconnection. The Requesting Agency will pay all costs to repair or otherwise remedy damages resulting from operation of the emergency interconnection.
- Compensation: The Requesting Agency will pay all direct costs and fees incurred by COSA, MET, MWDOC, and OCWD associated with operation of the emergency interconnection. This includes payment for water flushed through MET's system at the conclusion of the operation of the emergency interconnection.

APPENDIX

- A. Primary Contact Information for the Parties
- B. Map of Orange County Water Retailers and Transmission Mains

APPENDIX A – Primary Contact Information for the Parties

Agency	Contact Name	Phone	Email
Establishing Parties			
City of Santa Ana			
Moulton Niguel Water District			
Orange County Water District			
East Orange County Feeder No. 2 Parties			
City of Anaheim			
East Orange County Water District			
City of Huntington Beach			
Irvine Ranch Water District			
Laguna Beach County Water District			
Mesa Water District			
Metropolitan Water District of Southern California			
Municipal Water District of Orange County			
City of Newport Beach			
City of Orange			
City of San Clemente			
City of San Juan Capistrano			
Santa Margarita Water District			
South Coast Water District			



Sign-In Sheet

Subject: Emergency Water Supplies to South Orange County – Stakeholders Meetings

Date/Time: July 30, 2025 | 10:00 a.m.

Location: Orange County Water District (18700 Ward St., Fountain Valley, CA 92708)

Name	Affiliation	Phone	Email
Noelani Leal	Westminster		nleal@westminster-ca.gov
Kirsten Schweller	HB		kirsten.schweller@surfcity-hb.org
John Pochler	HB		
SEAN LOW (LOW)	SEAL BEACH	562-370-3928	slow@sealbeach.ca.gov
Laura Rocha	MNWD		lrocha@mnwd.com
Matt Collings	MNWD		
Rob Woods	"		
TODD DIMITRYSHYN	"		
Joane Lopez	"		
Cleve Lee	"		
Andrew Weiner	Mesa Water		Andrew.W@MesaWater.org
Stacy Taylor	"	714-791-0848	StacyT@MesaWater.org
Charles Busslinger	MWD OC	714-293-5003	CBusslinger@mwdoc.com
MARK TOY	YLWD	714-737-7041	mttoy@ylwd.com
Hard: Chou	Santa Ana		
ARMANDO FERNANDEZ	"	647-326-714-737	
Kevin Hostert	MWD OC		Khostert@mwdoc.com
KEN VECCHIARELLI	GSWC	(310) 256-0424	K.VEC@gswater.com
MIKE MARKUS	FWCE	(714) 349-1677	MNMARKUS@FWCEWATERCD.COM
Rob We	Galena		
MARK SPRAGUE	FV		
Michael Perea	TWID		mperea@twid.ca.gov

Sign-In Sheet

Subject: Emergency Water Supplies to South Orange County – Stakeholders Meetings

Date/Time: July 30, 2025 | 10:00 a.m.

Location: Orange County Water District (18700 Ward St., Fountain Valley, CA 92708)

[illegible]

Emergency Interconnect Zoom Meeting Participants 7/30/25

Chris Olsen
Darla Cirillo
Adrian T
Chau Vu
David Youngblood
Denise's iPhone
Doug Davert
Dustin Burnside
Fallon Franklin (Santa Ana)
Freddie Ojeda
Heather Rhee (Laguna Beach Water)
Katrina Wraight (BB&K)
Keith Van Der Maaten
Klussier
Marina Lindsay
Mike McGee
Philip Bogdanoff (Anaheim)
RGoodall
Rick's iPhone
Sonny Tran
Steffen Catron
Mike Grisso



Emergency Water Supplies to South Orange County

Stakeholders Meeting
July 30, 2025



History of Emergency Service Program

- Agreements were approved in 2006 and 2008 to provide emergency water supplies to South Orange County (SOC) agencies.
- Provide water supplies to SOC agencies via IRWD water system during emergency events.
- Up to 50 cfs for 30 days (3,000 af) – relatively small program
 - MNWD – CSA is for 14 cfs
- Decision to extend or terminate – December 2029

Recent History

- August 2017 – OCWD broadened the District's Water Resources Policy to allow consideration of programs with SOC.
- January 2019 – OCWD entered into an agreement with Moulton Niguel Water District (MNWD) to consider a water program.
- This emergency interconnect water supply was discussed with Producers several times and as a result, in July 2021 – OCWD Board approved policy principles for providing emergency water supplies to SOC water agencies.

July 2021 Policy Principles

- OCWD will explore and look to develop a new program to assist SOC agencies during periods when needed imported water is unavailable.
- OCWD will periodically meet with SOC agencies to determine what their possible emergency water supply needs could be.
- Any proposed new actions to assist SOC will be coordinated with the possible extension of the existing SOC Phase I Emergency Services Agreement.
- The Metropolitan Water District indirectly benefits from OCWD actions to assist SOC during shortages of the imported water system. MWD will be requested to participate in any capital expenses that relieves pressure on its system.

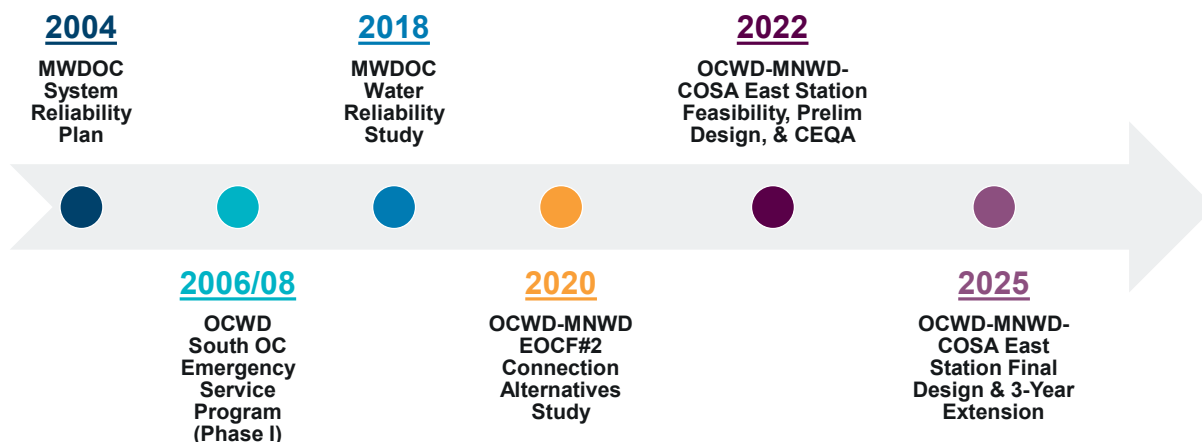
Policy Principles (continued)

- Any program will not adversely impact OCWD's operations.
- OCWD will financially benefit from the program.
- Any program will comply with the OCWD Act.
- OCWD staff will work collectively with MWDOC, the Groundwater Producers and interested SOC agencies to develop any new programs that could be recommended to the OCWD Board.

Agreement with City of Santa Ana & MNWD

- March 2022 – to begin feasibility study
- MNWD funds all work specified in the agreement.
- Water from the City's water system would only be pumped into the EOCF#2 when MWD was unable to deliver water to MNWD.
- New facilities are designed to City and OCWD standards.
- At no time would the delivery of water to MNWD cause or exacerbate a shortage of water to the City's customers.
- MNWD reimburses the City and OCWD for all expenses incurred as a result of this program.
- The agreement does not allow MNWD to store water in the OCWD groundwater basin.
- The City utilizes the new water system improvements during normal operations.
- The program complies with the OCWD Act.
- MNWD prepares the two RFPs necessary to hire an engineering and CEQA consultant and administer the contracts.
- The three parties collaboratively carry out the scope of work for this agreement.
- 3-year extension of this Agreement approved by OCWD Board in April 2025.

Continuation of Previous Efforts



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Project Objectives

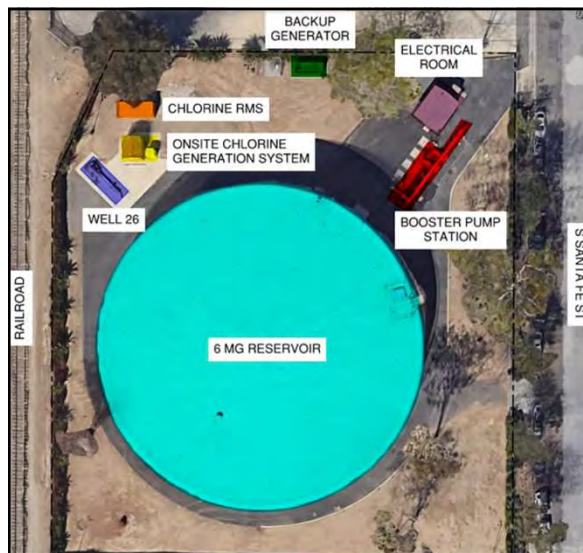
What it would do...

- Construct new facilities to pump and treat groundwater to supply the City of Santa Ana during normal operations.
- Construct new facilities to transfer groundwater during emergencies to South Orange County via East Orange County Feeder No. 2, consistent with MET Admin Code 4519.
- Meet water quality standards and requirements for compatibility with MET-supplied imported water.

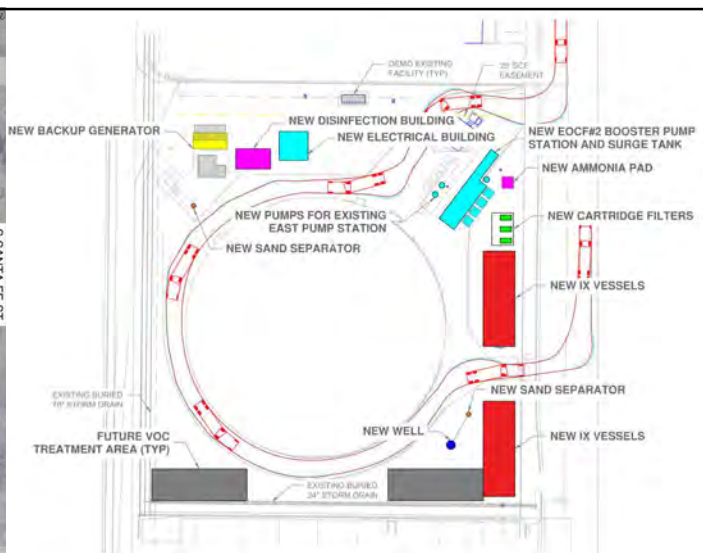
What it wouldn't do...

- Address drought-related water shortages.
- Impede other member agencies' ability to supply water during an emergency.

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Existing Site



Proposed Improvements

Santa Ana East Station



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Proposed Pipeline to EOCF#2



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Timeline of Key Activities

2025				2026				2027				2028				2029			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
				Final Feasibility Assessment Technical Memorandum to MET															
Preliminary Design																			
				Final Design/CEQA															
												Construction							
Expiration of IRWD Emergency Interconnection Agreement																			

Future Activities:

- Ongoing Coordination with EOCF#2 Stakeholders
- Continue Grant Pursuits
- Interagency Construction and Operating Agreement

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Operating Plan Framework

Purpose and Basis

- Establish a mutual understanding amongst EOCF#2 stakeholders
- For an emergency outage due to a MET infrastructure failure lasting longer than 7 days (not for drought and not for storage)
- Consistent with MET Administrative Code 4519 and OCWD South Orange County Emergency Services Program

Key Elements

- Refer to Draft Operating Plan Framework

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Emergency Interconnection: A Lifeline for Orange County

- Overview:** The City of Santa Ana, Orange County Water District and Moulton Niguel Water District are investing in a new emergency water connection to South Orange County.
-
- What It Is:** The Emergency Interconnection Project is a partnership to invest in new critical water infrastructure to convey water to South Orange County residents to ensure safe and reliable water service during major disasters.
- Why It's Needed:** Many communities in South Orange County rely on the Metropolitan Water District of Southern California for nearly 100% of our drinking water. In case of an emergency outage to critical facilities, Metropolitan may be unable to provide water to residents of South Orange County for an extended period impacting residents and businesses throughout the county.
- How It Works:** The Emergency Interconnection Project will construct new facilities to pump and treat groundwater to Metropolitan standards from the City of Santa Ana in coordination with Orange County Water District. When available, the City will convey the water (up to 840 acre-feet over 30 days) through an existing pipeline, East Orange County Feeder No. 2, using existing capacity rights owned by Moulton Niguel Water District. Moulton Niguel will later replace the borrowed water from the City with purchased treated Metropolitan water.
- When It's Used:** This project would convey water to Moulton Niguel customers only during an emergency when Metropolitan is unable to deliver for a period lasting longer than seven days per Metropolitan's administrative code.
- What It Won't Do:** The project won't expand water rights or provide new agencies with access to the Orange County Groundwater Basin. Water won't be used for drought or day-to-day supplies. The project won't have an impact on the basin.



Orange County Water Agencies: Preparing for a Major Emergency

- ✓ **A Lifeline in an Emergency:** This project provides a vital backup water supply to South Orange County during a catastrophic event that disrupts imported water from Metropolitan Water District. It creates an essential interconnection to access existing water supplies during disasters and emergency outages.
- ✓ **Aging Water Infrastructure Remains Vulnerable to Catastrophic Events:** Metropolitan's primary water treatment facility, the Diemer Water Treatment Plant, is vulnerable to seismic events. California's Earthquake Forecast estimates a 60 percent probability of a +6.7-magnitude earthquake within the next 30 years.
- ✓ **Consistent with OCWD Water Policy:** In 2006, Orange County Water District, the Municipal Water District of Orange County, and various water agencies developed the Emergency Services Program which contemplated an interconnection to the Orange County Water District Basin that would convey water during emergencies using the regional distribution system. The existing emergency interconnection with Irvine Ranch Water District was the first project developed from that program.
- ✓ **Recent Disasters Highlight Urgent Need:** The Emergency Interconnection is needed to enhance the resiliency and public safety within Orange County during major disasters. Recent catastrophes throughout the State underscore how essential it is to have resilient water systems that will meet the needs of the public and fire protection systems. This project will provide an additional layer of resiliency for South Orange County. No one can predict the next disaster, which is why it is important to advance this project today.
- ✓ **Ongoing Value to Santa Ana Residents and the County:** The City of Santa Ana will gain water infrastructure that provides ongoing value year-round for its residents. The new infrastructure will include a PFAS treatment system for the new and existing well at the East Station site, funded by Moulton Niguel that will financially benefit OCWD and the other groundwater producers in the basin.
- ✓ **Win-Win for Orange County:** Moulton Niguel is working closely with the City of Santa Ana and Orange County Water District on the design of an interconnection that is consistent with OCWD's and Metropolitan's codes for emergency deliveries. This project will benefit several agencies within Orange County and provides benefit to the region as whole through collaborative water management.

Exhibit



DRAFT

Issues Regarding Use of East Orange County Feeder #2 (EOCF#2) by
Moulton Niguel Water District (MNWD) in Conveying
Groundwater from City of Santa Ana in an Emergency
(October 20, 2025)

It is the understanding of the Groundwater Producers and Capacity Owners in the EOCF#2 that:

1. Metropolitan Water District does not own the EOCF#2. It holds it in trust for the Joint Powers Authority (JPA) Members and Capacity Owners to deliver treated water from Metropolitan's Lower Feeder.
2. Metropolitan operates and maintains the EOCF#2 as an agent of the JPA Members and Capacity Owners.
3. The JPA and capacity assignment agreements do not establish mechanisms for resolution of disputes or introduction of non-Metropolitan supplies of water.

A written Amendment among all the parties to the JPA and capacity assignment agreements would:

- a. Establish a common understanding of the agreements;
- b. Establish different uses of the EOCF#2;
- c. Define what water supplies are allowed and under what circumstances;
- d. Describe requirements for transferors and recipients of water;
- e. Define requirements for allocating capital as well as operations, maintenance and replacement costs;
- f. Establish any compensation for reservation and/or use of the EOCF#2;
- g. Describe any first right of refusal and/or offer requirements;
- h. Establishing liabilities and indemnifications; and
- i. Other.

Next steps in securing use of the EOCF#2 to deliver emergency supplies of groundwater to MNWD should be scheduling meetings among the JPA Members and Capacity Owners to:

- a. Establish a common understanding of the JPA and capacity assignment agreements;
- b. Develop draft terms for an Amendment to the JPA and capacity assignment agreements to facilitate different uses of the EOCF#2.

Sign-In Sheet

Location: Orange County Water District (18700 Ward St., Fountain Valley, CA 92708)

[illegible]

Sign-In Sheet

Subject: Emergency Water Supplies to South Orange County – Stakeholders Meetings

Date/Time: October 20, 2025 | 2:00 p.m.

Location: Orange County Water District (18700 Ward St., Fountain Valley, CA 92708)

[illegible]

102025 Emergency Water Supplies to So OC Meeting Zoom Attendee List

Name (original name)

Alicia Harasty, Orange County Water District

byoung

Cody Nicolae

Dave Rebensdorf

Dennis Cafferty

Dustin Burnside

Eric Smith

Fallon Franklin (Santa Ana)

Fernando Paludi

Freddie Ojeda

Gina Ayala

GM Vilander

heidi chou

Iris Lee

Keith Van Der Maaten

Ken Vecchiarelli

Kevin Hostert

Laura R, Moulton Niguel

Low

Mark Vukojevic, Newport Beach

Melissa Baum-Haley

Michael Perea

Mike Chandler

Mike Grisso

Mike McGee

MWDOC Conference Room

MWDOC Meeting 2

Philip Bogdanoff - Anaheim

Rachel Waite-Harvey

read.ai meeting notes

Sarina Sriboonlue

scatron

Toby Moore - GSWC