

**NOTICE OF REGULAR MEETING
OF THE
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY
ENGINEERING COMMITTEE
January 22, 2026
8:30 a.m.**

Physical Address	Remote Address
34156 Del Obispo Street Dana Point, CA 92629	El Toro Water District Office: 24251 Los Alisos Blvd. Lake Forest, CA 92630

NOTICE IS HEREBY GIVEN that a Regular Meeting of the South Orange County Wastewater Authority (SOCWA) Engineering Committee was called to be held on **January 22, 2026, at 8:30 a.m.** SOCWA staff will be present and conducting the meeting at the SOCWA Administrative Office located at 34156 Del Obispo Street, Dana Point, California.

THE SOCWA MEETING ROOM IS WHEELCHAIR ACCESSIBLE. IF YOU REQUIRE ANY SPECIAL DISABILITY RELATED ACCOMMODATIONS, PLEASE CONTACT THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY SECRETARY'S OFFICE AT (949) 234-5400 AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE SCHEDULED MEETING TO REQUEST SUCH ACCOMMODATIONS. THIS AGENDA CAN BE OBTAINED IN ALTERNATE FORMAT UPON REQUEST TO THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY'S SECRETARY AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE SCHEDULED MEETING. MEMBERS OF THE PUBLIC HAVE THE OPTION TO PARTICIPATE IN AND MAY JOIN THE MEETING REMOTELY VIA VIDEO CONFERENCE FOR VISUAL INFORMATION ONLY (USE ZOOM LINK BELOW) AND BY TELECONFERENCE FOR AUDIO PARTICIPATION (USE PHONE NUMBERS BELOW). THIS IS A PHONE-CALL MEETING AND NOT A WEB-CAST MEETING, SO PLEASE REFER TO AGENDA MATERIALS AS POSTED ON THE WEBSITE AT WWW.SOCWA.COM. ON YOUR REQUEST, EVERY EFFORT WILL BE MADE TO ACCOMMODATE PARTICIPATION. FOR PARTIES PARTICIPATING REMOTELY, PUBLIC COMMENTS WILL BE TAKEN DURING THE MEETING FOR ORAL COMMUNICATION IN ADDITION TO PUBLIC COMMENTS RECEIVED BY PARTIES PARTICIPATING IN PERSON. COMMENTS MAY BE SUBMITTED PRIOR TO THE MEETING VIA EMAIL TO ASSISTANT SECRETARY LYNDA MAY AT LMAY@SOCWA.COM WITH THE SUBJECT LINE "REQUEST TO PROVIDE PUBLIC COMMENT." IN THE EMAIL, PLEASE INCLUDE YOUR NAME, THE ITEM YOU WISH TO SPEAK ABOUT, AND THE TELEPHONE NUMBER YOU WILL BE CALLING FROM SO THAT THE COORDINATOR CAN UN-MUTE YOUR LINE WHEN YOU ARE CALLED UPON TO SPEAK. THOSE MAKING PUBLIC COMMENT REQUESTS REMOTELY VIA TELEPHONE IN REAL-TIME WILL BE ASKED TO PROVIDE YOUR NAME, THE ITEM YOU WISH TO SPEAK ABOUT, AND THE TELEPHONE NUMBER THAT YOU ARE CALLING FROM SO THE COORDINATOR CAN UN-MUTE YOUR LINE WHEN YOU ARE CALLED UPON TO SPEAK. ONCE THE MEETING HAS COMMENCED, THE CHAIR WILL INVITE YOU TO SPEAK AND ASK THE COORDINATOR TO UN-MUTE YOUR LINE AT THE APPROPRIATE TIME.

AGENDA ATTACHMENTS AND OTHER WRITINGS THAT ARE DISCLOSABLE PUBLIC RECORDS DISTRIBUTED TO ALL, OR A MAJORITY OF, THE MEMBERS OF THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY ENGINEERING COMMITTEE IN CONNECTION WITH A MATTER SUBJECT FOR DISCUSSION OR CONSIDERATION AT AN OPEN MEETING OF THE ENGINEERING COMMITTEE ARE AVAILABLE FOR PUBLIC INSPECTION IN THE AUTHORITY ADMINISTRATIVE OFFICE LOCATED AT 34156 DEL OBISPO STREET, DANA POINT, CA ("AUTHORITY OFFICE") OR BY PHONE REQUEST MADE TO THE AUTHORITY OFFICE AT 949-234-5400. IF SUCH WRITINGS ARE DISTRIBUTED TO MEMBERS OF THE ENGINEERING COMMITTEE LESS THAN SEVENTY-TWO (72) HOURS PRIOR TO THE MEETING, THEY WILL BE AVAILABLE IN THE RECEPTION AREA OF THE AUTHORITY OFFICE AT THE SAME TIME AS THEY ARE DISTRIBUTED TO THE ENGINEERING COMMITTEE AND SENT TO ANY REMOTE PARTICIPANTS REQUESTING EMAIL DELIVERY OR POSTED ON SOCWA'S WEBSITE. IF SUCH WRITINGS ARE DISTRIBUTED IMMEDIATELY PRIOR TO, OR DURING, THE MEETING, THEY WILL BE AVAILABLE IN THE MEETING ROOM OR IMMEDIATELY UPON VERBAL REQUEST TO BE DELIVERED VIA EMAIL TO REQUESTING PARTIES PARTICIPATING REMOTELY.

**THE PUBLIC MAY PARTICIPATE REMOTELY BY VIRTUAL MEANS. FOR AUDIO OF MEETING USE
THE CALL IN PHONE NUMBERS BELOW AND FOR VIDEO USE THE ZOOM LINK BELOW.**

Join Zoom Meeting
<https://socwa.zoom.us/>

Meeting ID: 872 9781 2187
Passcode: 090818

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AGENDA

1. Call Meeting to Order
2. Public Comments

THOSE WISHING TO ADDRESS THE ENGINEERING COMMITTEE ON ANY ITEM LISTED ON THE AGENDA WILL BE REQUESTED TO IDENTIFY AT THE OPENING OF THE MEETING AND PRIOR TO THE CLOSE OF THE MEETING. THE AUTHORITY REQUESTS THAT YOU STATE YOUR NAME WHEN MAKING THE REQUEST IN ORDER THAT YOUR NAME MAY BE CALLED TO SPEAK ON THE ITEM OF INTEREST. THE CHAIR OF THE MEETING WILL RECOGNIZE SPEAKERS FOR COMMENT AND GENERAL MEETING DECORUM SHOULD BE OBSERVED IN ORDER THAT SPEAKERS ARE NOT TALKING OVER EACH OTHER DURING THE CALL.

3. Approval of Committee Member Request for Remote Participation (Standing Item)

Recommended Action: Committee Discussion/Direction/Action.

PAGE NO.

4. Approval of Minutes..... 1

- Engineering Committee Minutes of November 13, 2025

Recommended Action: Staff requests that the Engineering Committee approve the subject Minutes as submitted.

5. General Manager’s Report 5

Recommended Action: Information Item.

6. Operations Report

Recommended Action: Information Item.

7. Capital Improvement Construction Projects Report and AQMD Permit Status..... 8

Recommended Action: Information Item

8. JBL Underground Piping and Flare System Upgrades Project Status 22

Recommended Action: Committee Discussion/Direction/Action.

9. CTP Personnel Building Phase 2 Re-Bid Construction Contract 28

Recommended Action: Staff recommends that the Engineering Committee recommend that the PC 15 Board of Directors:

1. Authorize execution of a construction contract with T.E. Roberts in the amount of \$649,848.00.
2. Approve a contract contingency of \$97,500 to address any unforeseen conditions encountered during the work.

10. CTP Storm Drain System Upgrades Construction Contract..... 33

Recommended Action: Staff recommends that the Engineering Committee recommend that the PC 15 Board of Directors:

1. Authorize execution of a construction contract with T.E. Roberts in the amount of \$570,059.00.
2. Approve a contract contingency of \$57,000 to address any unforeseen conditions encountered during the work.

11. ETM Reach B Techite Pipe Replacement Design Contract 36

Recommended Action: Committee Discussion/Direction/Action.

12. CTP Facility Planning Assessment Effort 121

Recommended Action: Committee Discussion/Direction/Action.

13. FY 25-26 Budget Discussion and Draft CIP Ten-Year Plan..... 291

Recommended Action: Committee Discussion/Direction/Action.

14. Engineering Cost Estimate Discussion..... 292

Recommended Action: Committee Discussion/Direction/Action.

15. Cost Allocation Policy..... 293

Recommended Action: Committee Discussion/Direction/Action.

16. FY 26-27 Capacity vs. Flows Budget Discussion..... 366


Recommended Action: Committee Discussion/Direction/Action.

17. Adjournment

I hereby certify that the foregoing Notice was personally emailed or mailed to each member of the SOCWA Engineering Committee at least 72 hours prior to the scheduled time of the Regular Meeting referred to above.

I hereby certify that the foregoing Notice was posted at least 72 hours prior to the time of the above-referenced Engineering Committee meeting at the usual agenda posting location of the South Orange County Wastewater Authority and at www.socwa.com.

Dated this 16th day of January 2026.



Lynda May, Assistant Secretary
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

**MINUTES OF REGULAR MEETING
OF THE
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY**

Engineering Committee

DRAFT

November 13, 2025

The Regular Meeting of the South Orange County Wastewater Authority (SOCWA) Engineering Committee was held on November 13, 2025, at 8:30 a.m. in-person and via teleconferencing from the Administrative Offices located at 34156 Del Obispo Street, Dana Point, California. The following members of the Engineering Committee were present:

MIKE DUNBAR	Emerald Bay Service District
HANNAH FORD	El Toro Water District [Zoom]
ROBERT GRANTHAM	Santa Margarita Water District
MARC SERNA	South Coast Water District

Absent:

DAVE REBENS DORF	City of San Clemente
MARK MCAVOY	City of Laguna Beach

Staff Present:

AMBER BOONE	General Manager
RONI GRANT	Capital Improvement Program (CIP) Manager
JIM BURROR	Deputy GM/Chief Engineer
ANNA SUTHERLAND	Staff Accountant
MATT CLARKE	Chief Technology Officer
LYNDA MAY	Administrative Assistant/Assistant Secretary

Also Present:

MARK TRESTIK	City of Laguna Beach
SANDRA HUANG	South Coast Water District
CHRIS NEWTON	South Coast Water District

1. Call Meeting to Order

Ms. Roni Grant, Capital Improvement Program (CIP) Manager, called the meeting to order at 8:34 a.m.

2. Public Comments

None.

3. Approval of Committee Member Request for Remote Participation (Standing Item)

Ms. Hannah Ford participated via Zoom.

4. JBL Facility Planning Assessment Contract Award [Project Committee 2]

ACTION TAKEN

A motion was made by Mr. Grantham and seconded by Mr. Serna to 1) Authorize execution of a contract with HDR in the amount of \$545,325 for the JBL FPA contract, 2) Approve a contract contingency of \$54,675, to cover the additional scope item, and 3) Approve the 10 percent increase to the contingency to cover the regional flow study.

Motion carried: Aye 2, Nay 0, Abstained 0, Absent 0
 Mr. Grantham Aye
 Ms. Serna Aye

5. JBL Old Effluent Pump Station Storage and Staging Area Construction Contract [Project Committee 2]

An open discussion ensued regarding the needs for space, with an emphasis on safety compliance and ability to expedite future projects.

ACTION TAKEN

A motion was made by Mr. Serna and seconded by Mr. Grantham to 1) approve an increase of \$600,000 to the project budget, resulting in a revised total project budget of \$850,000, 2) authorize execution of a contract with Pacific Hydrotech in the amount of \$791,700 for the JBL Old Effluent Pump Storage and Staging Area project. And 3) approve a construction contingency of \$39,585 to address any unforeseen conditions encountered during the work.

Motion carried: Aye 2, Nay 0, Abstained 0, Absent 0
 Mr. Grantham Aye
 Mr. Serna Aye

6. Contract Award for Coastal Treatment Plant West Primary and Secondary Scum Skimming System Construction [Project Committee 15]

ACTION TAKEN

A motion was made by Mr. Dunbar and seconded by Mr. Serna to 1) approve an increase of \$500,000 to the project budget, resulting in a revised total project budget of \$1.75 million, 2) Authorize execution of a contract with Filanc in the amount of \$784,000, and 3) approve a construction contingency of \$35,040 to address any unforeseen conditions encountered during the work.

Motion carried: Aye 2, Nay 0, Abstained 0, Absent 1
 Mr. Dunbar Aye
 Mr. Serna Aye
 Mr. McAvoy Absent

7. Contract Award for Coastal Treatment Plant Personnel Building Phase 2 Upgrades [Project Committee 15]

An open discussion ensued regarding the legality of rejecting the public bids and negotiating with a contractor directly. An agreement was made to review this with the legal team. Mr. Serna suggested pushing the project to early 2026 due to the low number of bids, and to pull in more contractors with outreach and packaging the project with future Capital Improvement Projects at CTP.

This agenda item was tabled upon discussion.

8. SOCWA Laboratory Upgrades Feasibility Study Update

An open discussion ensued on the need for a centralized, regional laboratory to support advanced water analysis and infrastructure projects. Ms. Amber Boone reminded the committee that the lease with MNWD's lab₂ still has around 9 years left in regards to the

planning timeline. Mr. Grantham mentioned a potential building location in Mission Viejo. Ms. Ford commented on the possibility this plan may not benefit ETWD and would like a cost structure reflecting this.

This was an information item; no action was taken.

9. Approval of Minutes

- Engineering Committee Minutes of September 11, 2025.

ACTION TAKEN

A motion was made by Mr. Grantham and seconded by Mr. Dunbar to approve the Engineering Committee Minutes for September 11, 2025.

Motion carried:	Aye 4, Nay 0, Abstained 0, Absent 2
Mr. McAvoy	Absent
Ms. Ford	Aye
Mr. Dunbar	Aye
Mr. Grantham	Aye
Mr. Serna	Aye
Mr. Rebensdorf	Absent

10. General Manager's Status Report

Ms. Amber Boone reported that the PC15 Water Research Proposal was rejected. She also announced the next board meeting will be at the Ocean Institute.

An open discussion ensued on the release of the scope of work for the Coastal Treatment Plant FPA, with a presentation scheduled for the next week. Mr. Dunbar inquired on the timing of the Regional Flow Study in regards to CTP Master Plan Upgrades. Timelines to the FPA and Flow Study were discussed and expedited.

This was an information item; no action was taken.

11. Operations Report

Mr. Jim Burror, Deputy GM/Chief Engineer, reported on the upcoming storm due to have substantial rainfall. Ms. Amber Boone congratulated Mr. Burror on completing the MIT Executive Program for AI and Machine Learning. She also briefed on the progress of his internal projects utilizing these skills, including a new product on environmental hazards.

This was an information item; no action was taken.

12. Capital Improvement Construction Projects Progress and Change Order Report (November)
[Project Committees 2 and 15]

Ms. Roni Grant updated the Engineering Committee on the status of the following CIP projects:

- JBL Electrical Upgrades - Pre-purchasing activities for the Motor Control Center (MCC) and Plant 1 Generator are currently underway. Construction is anticipated to be completed by December 2026, contingent upon the issuance of the AQMD permit to construct for the generator.

- JBL Old Effluent Pump Station and Energy Building Upgrades – Construction is currently in progress. Construction is anticipated to be completed by July 2026.
- JBL Plant 2 Headworks Rehabilitation – Construction is currently in progress. Construction is anticipated to be completed by March 2026.
- JBL Old Effluent Pump Station Storage and Staging – The bids are currently under review. Construction is anticipated to be completed by March 2026.
- CTP Aeration Deck Grating Replacement – Construction is near completion. The contractor is working on punch list items. Construction is anticipated to be completed by December 2025.
- CTP West Primary and Secondary Scum Skimming System – The bids are currently under review. Construction is anticipated to be completed by July 2026.
- CTP Personnel Building Phase 2 Reconstruction – The bids are currently under review. Construction is anticipated to be completed by July 2026.
- CTP Grit Tanks Coating Upgrades - Construction is in progress. Construction is anticipated to be completed by December 2025.

This was an information item; no action was taken.

13. Adjournment

There being no further business, Ms. Grant adjourned the meeting at 9:08 a.m.

I HEREBY CERTIFY that the foregoing Minutes are a true and accurate copy of the Minutes of the Regular Meeting of the South Orange County Wastewater Authority Engineering Committee of November 13, 2025, and approved by the Engineering Committee and received and filed by the Board of Directors of the South Orange County Wastewater Authority.

Lynda May, Assistant Secretary
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

Agenda Item

5

Legal Counsel Review: No

Meeting Date: January 22, 2026

TO: Engineering Committee
FROM: Amber Boone, General Manager
SUBJECT: General Manager's Report

Master Schedule for CTP and JBL Master Planning Efforts

SOCWA has started three (3) separate efforts as part of the overall master planning effort. The following is a master schedule for the three efforts, which includes workshops and Board of Director meetings.

EVENTS	PROJECT	DATE
Issue RFP	JBL FPA	August 15, 2025
Mandatory Pre-Proposal Meeting	JBL FPA	September 11, 2025
Deadline for Questions and Supplemental Information	JBL FPA	September 25, 2025
Proposal Submission Deadline	JBL FPA	October 7, 2025
Interviews	JBL FPA	October 22, 2025
Issue RFP	CTP FPA	November 7, 2025
Mandatory Pre-Proposal Meeting	CTP FPA	November 20, 2025
Issue RFP	CTP Regional Flow Study	November 20, 2025
Deadline for Questions and Supplemental Information	CTP FPA	December 11, 2025
Contract Award	JBL FPA	December 16, 2025
Mandatory Pre-Proposal Meeting	CTP Regional Flow Study	December 18, 2025
Deadline for Questions and Supplemental Information	CTP Regional Flow Study	January 8, 2026
Kick-Off Meeting	JBL FPA	January 14, 2026
Task 1 - Project Management (start)	JBL FPA	January 14, 2026
Proposal Submission Deadline	CTP FPA	January 15, 2026
Interviews	CTP FPA	January 22, 2026
Workshop 1	JBL FPA	January 27, 2026
Proposal Submission Deadline	CTP Regional Flow Study	January 29, 2026
SOCWA Board Meeting		February 5, 2026
Interviews	CTP Regional Flow Study	February 9-12, 2026

EVENTS	PROJECT	DATE
Contract Award	CTP FPA	February 12, 2026
Kick-Off Meeting	CTP FPA	February 26, 2026
Contract Award	CTP Regional Flow Study	February 26, 2026
SOCWA Board Meeting		March 5, 2026
Kick-Off Meeting	CTP Regional Flow Study	March 12, 2026
Workshop 2	JBL FPA	March 17, 2026
Project Element 1 Due	CTP Regional Flow Study	March 26, 2026
Task 2 - Existing Facility Evaluation	JBL FPA	March 31, 2026
SOCWA Board Meeting		April 2, 2026
Project Element 2 Due	CTP Regional Flow Study	April 16, 2026
Workshop 3	JBL FPA	April 23, 2026
Task 4 - Effluent Utilization Evaluation	JBL FPA	April 30, 2026
Task 1 - Project Management (start)	CTP FPA	April 30, 2026
Task 2 - Existing Facility Evaluation	CTP FPA	April 30, 2026
Project Element 3 Due	CTP Regional Flow Study	May 7, 2026
SOCWA Board Meeting		May 14, 2026
Project Element 4 Due	CTP Regional Flow Study	May 21, 2026
SOCWA Board Meeting		June 4, 2026
Project Element 5 Due: 2 weeks	CTP Regional Flow Study	June 4, 2026
Task 3 - Wastewater Treatment Alternatives	JBL FPA	June 30, 2026
Task 4 - Effluent Utilization Evaluation	CTP FPA	June 30, 2026
Final Report Due - Tentative	CTP Regional Flow Study	July 1, 2026
SOCWA Board Meeting		July 2, 2026
Task 3 - Wastewater Treatment Alternatives	CTP FPA	July 31, 2026
SOCWA Board Meeting		August 13, 2026
Task 6 - Facility Planning & Assessment, Admin Draft Report	JBL FPA	August 15, 2026
Task 5 - Develop Project Alternatives	JBL FPA	August 31, 2026
Task 6 - Facility Planning & Assessment - Draft Report	JBL FPA	August 31, 2026
SOCWA Board Meeting		September 3, 2026
Task 6 - Facility Planning & Assessment - Final Draft Report	JBL FPA	September 30, 2026
SOCWA Board Meeting		October 1, 2026

EVENTS	PROJECT	DATE
Task 6 - Facility Planning & Assessment, Admin Draft Report	CTP FPA	October 15, 2026
Task 5 - Develop Project Alternatives	CTP FPA	October 31, 2026
Task 6 - Facility Planning & Assessment - Draft Report	CTP FPA	October 31, 2026
SOCWA Board Meeting		November 5, 2026
Task 6 - Facility Planning & Assessment - Final Draft Report	CTP FPA	November 30, 2026

Please note that Workshop 4 for the JBL FPA is tentatively scheduled for May 20th-21st or 27th-28th and Workshop 5 is June 23rd-25th.

Recommended Action: Information Item.

Agenda Item

7

Engineering Committee Meeting

Meeting Date: January 22, 2026

TO: Engineering Committee

FROM: Roni Grant, Capital Improvement Program Manager

SUBJECT: Capital Improvement Construction Projects Progress and Change Order Report (January) [Project Committees 2 and 15]

Overview

This agenda item provides a status update on active construction projects, including any associated change orders. Updated Capital Improvement Program (CIP) reports are attached for reference.

Project Updates

JBL Electrical Upgrades

Pre-purchasing activities for the Motor Control Center (MCC) and Plant 1 Generator are currently underway. Construction is anticipated to be completed by December 2026, contingent upon the issuance of the AQMD permit to construct for the generator.

JBL Effluent Pump Station and Energy Building Upgrades

Construction is currently in progress. Construction is anticipated to be completed by July 2026. There are three change orders totaling \$3,399.20 associated with this project, bringing the total revised contract amount to \$3,097,299.20.

JBL Plant 2 Headworks Rehabilitation

Construction is currently in progress. Construction is anticipated to be completed by July 2026.

JBL Old Effluent Pump Station Storage and Staging

Construction is currently in progress. Construction is anticipated to be completed by July 2026.

CTP Aeration Deck Grating Replacement

Construction was completed by the end of 2025.

CTP West Primary and Secondary Scum Skimming System

Construction is currently in progress. Construction is anticipated to be completed by July 2026.

CTP Personnel Building Phase 2 Reconstruction

The revised bid is currently under review. Construction is anticipated to be completed by July 2026.

CTP Grit Tanks Coating Upgrades

The first phase of the construction has been completed. Phase 2 will be combined with the Foul Air System Upgrades project.

CTP Storm Drain Improvements

The bids are currently under review. Construction is anticipated to be completed by July 2026.

SCAQMD Permit Status Updates for Upcoming CIP Projects

JBL Plant 1 Generator (A/N 654624)				
Application Date	Communication Dates from SCAQMD	Information requested from SCAQMD	Information provided to SCAQMD	Response Dates from SOCWA
08/01/24	9/11/24	CG18 gas engine technical data	Provided technical data	9/25/24
	10/8/24	Serial number and model year	Serial number and model year not available, confirmed flapper type rain cap	10/9/24
	10/17/24	Maintenance and testing requirements	Confirmed requirements	10/18/24
	1/15/25	Confirmed receipt of serial number and model year	Provided serial number and model year	1/13/25
	4/25/25	Requested to confirm EPA family code	Confirmed EPA family code and provided EPA certificate	4/25/25
JBL Flare System (A/N 657267)				
Application Date	Communication Dates from SCAQMD	Information requested from SCAQMD	Information provided to SCAQMD	Response Dates from SOCWA
12/13/24	1/8/25	Requested additional fee	Paid online	1/21/25
	1/24/25	Requested voucher or receipt from the online payment	Provided voucher payment and receipt number	1/24/25
	4/1/25 and 4/18/25	Requested clarification on facility ownership	Clarified the facility ownership	4/23/25
	5/14/25	Additional information needed on the flare Varec 244E unit	Provided additional information	5/19/25
	5/21/25	Requested specifications on the flare retention time and temperature	Provided additional information	5/22/25
	8/7/25	Additional questions regarding the existing flare and proposed flare system	Responses provided	8/14/25

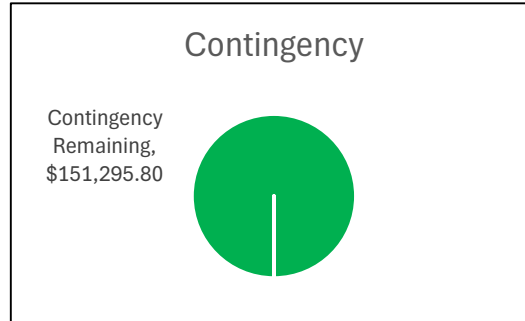
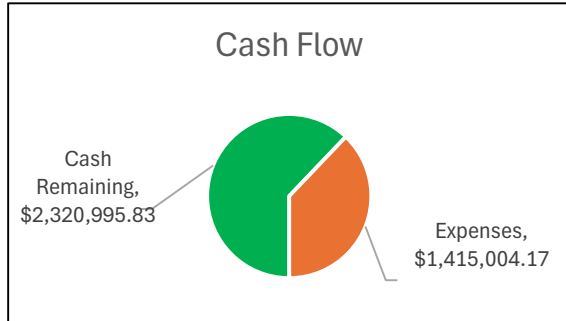
CTP Odor Scrubber System (A/N 656320)				
Application Date	Communication Dates from SCAQMD	Information requested from SCAQMD	Information provided to SCAQMD	Response Dates from SOCWA
10/2/24	11/8/24	Additional information needed	Design intent clarified	11/19/24
	7/15/25	Additional information needed	Additional information provided	7/18/25

Recommended Action: Information only.

Project Financial Status

Project Committee	2
Project Name	Effluent Pump Station and Energy Building Upgrades
Project Description	Replacement of effluent valves and piping; installation of monorail, roof, safety upgrades and seismic retrofit in the Energy Building

Data Last Updated January 15, 2026
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Cash Flow

Collected	\$ 3,736,000.00
Expenses	\$ 1,415,004.17

Project Completion

Schedule	40%
Budget	37.87%

Construction Contracts

Company	PO No.	Original	Change Orders	Amendments	Total	Costs to Date
Pacific Hydrotech	21280	\$ 3,093,900.00	\$ 3,399.20		\$ 3,097,299.20	\$ 1,332,108.11
Carollo Engineers	20453	\$ 119,316.00			\$ 119,316.00	\$ 48,530.40
Project Partners	21283	\$ 12,500.00			\$ 12,500.00	
SOCWA Staff Time	32226L/32225S/3216					\$ 34,365.66
		\$ 3,225,716.00	\$ 3,399.20	\$ -	\$ 3,229,115.20	\$ 1,415,004.17

Construction Contingency

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids/Solids/Common	32226L/32225S/3216	\$ 154,695.00	\$ 3,399.20	\$ 151,295.80	2.2%
		\$ 154,695.00	\$ 3,399.20	\$ 151,295.80	2.2%

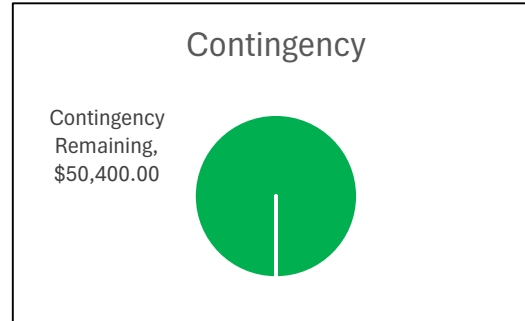
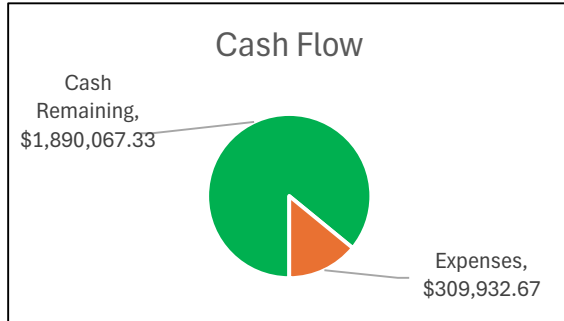
Change Order No.	Vendor Name	Project ID	Description	Status Date	Days	Amount
1	Pacific Hydrotech	32225S	Energy Building Guardrail mounting plate anchor conflicts	12/11/2025	0	\$ 31,955.35
2	Pacific Hydrotech	32226L	Effluent Pump Station Manifold Tee Addition	12/23/2025	0	\$ 9,432.35
3	Pacific Hydrotech	32226L	Effluent Pump Station Line Stop Deduct	12/23/2025	0	\$ -37,988.50
						\$ 3,399.20

Project Financial Status

Project Committee	2
Project Name	Plant 2 Headworks Rehabilitation - 32243L
Project Description	Plant 2 Headworks building roof replacement, channel concrete repair and cover replacement, and electrical modification

Data Last Updated

January 15, 2026



Cash Flow

Collected	\$ 2,200,000.00
Expenses	\$ 309,932.67

Project Completion

Schedule	20%
Budget	14.07%

Construction Contracts

Company	PO No.	Original	Change Orders	Amendments	Total	Costs to Date
Pacific Hydrotech		\$ 2,149,600.00			\$ 2,149,600.00	\$ 277,289.41
Dudek Engineers	20250	\$ 47,858.00			\$ 47,858.00	\$ 8,017.50
Project Partners	21283	\$ 5,000.00			\$ 5,000.00	
SOCWA Staff Time	32243L					\$ 24,625.76
		\$ 2,202,458.00	\$ -	\$ -	\$ 2,202,458.00	\$ 309,932.67

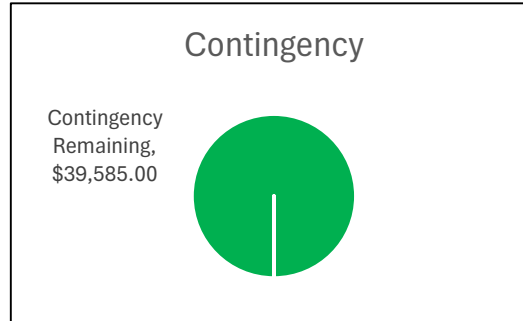
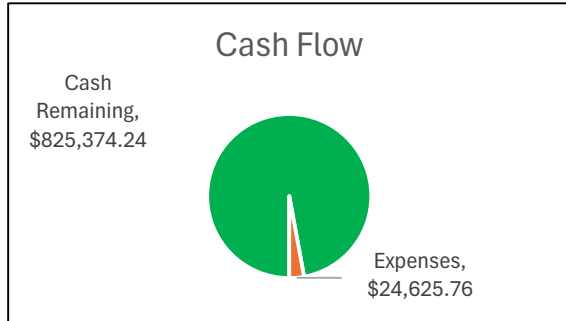
Construction Contingency

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	32243L	\$ 50,400.00		\$ 50,400.00	0.0%
		\$ 50,400.00	\$ -	\$ 50,400.00	0.0%

Project Financial Status

Project Committee	2
Project Name	Effluent Pump Station Stroage and Staging Area (32241L)
Project Description	Demolition of the existing Effluent Pump Station and Repurpose into parking and storage area

Data Last Updated January 15, 2026
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Cash Flow

Collected	\$ 850,000.00
Expenses	\$ 24,625.76

Project Completion

Schedule	20%
Budget	3.01%

Construction Contracts

Company	PO No.	Original	Change Orders	Amendments	Total	Costs to Date
Pacific Hydrotech		\$ 791,700.00			\$ 791,700.00	
Z&K/Ardurra	21446	\$ 26,640.00			\$ 26,640.00	
SOCWA Staff Time	32241L					\$ 24,625.76
		\$ 818,340.00	\$ -	\$ -	\$ 818,340.00	\$ 24,625.76

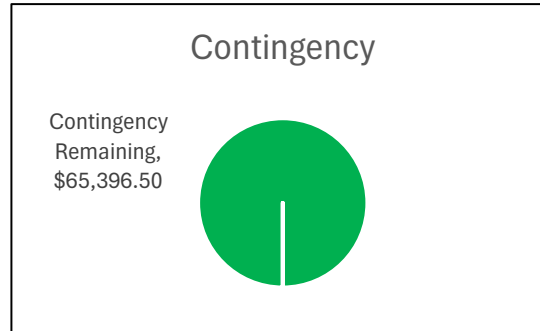
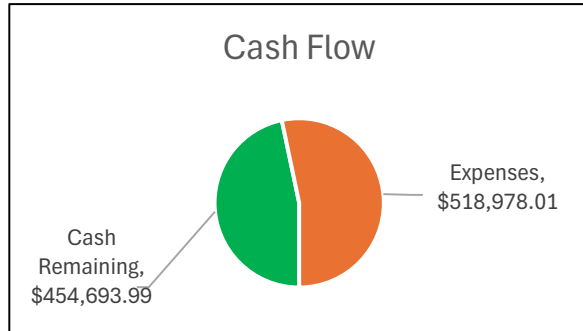
Construction Contingency

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	32241L	\$ 39,585.00		\$ 39,585.00	0.0%
		\$ 39,585.00	\$ -	\$ 39,585.00	0.0%

Project Financial Status

Project Committee	2
Project Name	Electrical System Upgrades - 3252
Project Description	Electrical System upgrades including MCC and Plant 1 Generator

Data Last Updated
January 15, 2026



Cash Flow

Collected	\$ 973,672.00
Expenses	\$ 518,978.01

Project Completion

Schedule	40%
Budget	63%

Construction Contracts

Company	PO No.	Original	Change Orders	Amendments	Total	Costs to Date
Quinn Power	20975	\$ 414,940.00			\$ 414,940.00	\$ 264,999.15
Pacific Parts	20561	\$ 239,025.00			\$ 239,025.00	\$ 56,331.22
Hazen	14331	\$ 164,350.00			\$ 164,350.00	\$ 147,154.49
SOCWA Staff Time	3252					\$ 50,493.15
		\$ 818,315.00	\$ -	\$ -	\$ 818,315.00	\$ 518,978.01

Construction Contingency

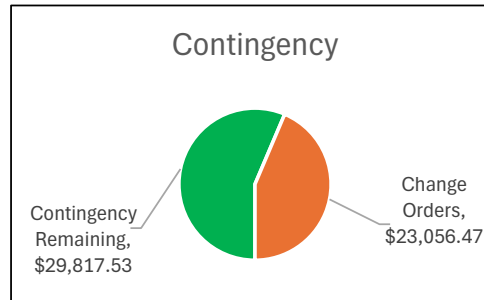
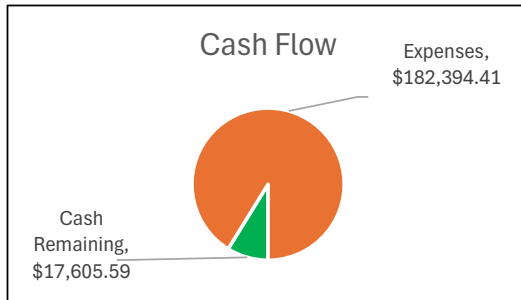
Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	3252	\$ 65,396.50		\$ 65,396.50	0.0%
		\$ 65,396.50	\$ -	\$ 65,396.50	0.0%

Project Financial Status

Project Committee	15
Project Name	Grating Replacement on Aeration/Secondary Deck - 35245L
Project Description	Replacement of grating on west aeration/secondary deck

Data Last Updated

January 15, 2026



Cash Flow

Collected	\$ 200,000.00
Expenses	\$ 182,394.41

Project Completion

Schedule	95%
Budget	91%

Construction Contracts

Company	PO No.	Original	Change Orders	Amendments	Total	Costs to Date
SS Mechanical	20588	\$ 147,126.00	\$ 23,056.47		\$ 170,182.47	\$ 161,673.35
Project Partners	20877	\$ 25,000.00			\$ 25,000.00	\$ 9,759.00
Steve Andrews	20332	\$ 2,818.00			\$ 2,818.00	\$ 483.00
SOCWA Staff Time	35245L					\$ 10,479.06
		\$ 174,944.00	\$ 23,056.47	\$ -	\$ 198,000.47	\$ 182,394.41

Construction Contingency

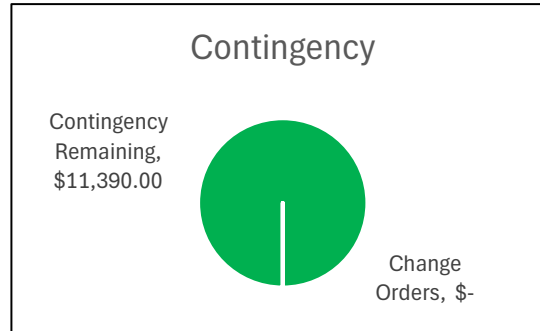
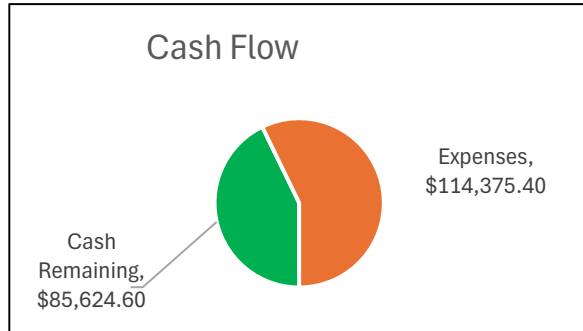
Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	35245L	\$ 52,874.00	\$ 23,056.47	\$ 29,817.53	43.6%
		\$ 52,874.00	\$ 23,056.47	\$ 29,817.53	43.6%

Change Order No.	Vendor Name	Project ID	Description	Status Date	Days	Amount
1	SS Mechanical	35245L	316L SST angle in lieu of 304L SST angle at the Step-Feed Channel	1/8/2025	94	\$ 2,235.25
2	SS Mechanical	35245L	Change Secondary effluent grating from 1-inch to 1.5"	1/31/2025	89	\$ 8,639.53
3	SS Mechanical	35245L	Removal and Replacement of Rebar without proper edge clearances	7/9/2025	90	\$ 12,181.69
						\$ 23,056.47

Project Financial Status

Project Committee	15
Project Name	Grit Tanks Coating Upgrades (35242L)
Project Description	Coating of grit tanks

Data Last Updated
January 15, 2026



Cash Flow

Collected	\$ 200,000.00
Expenses	\$ 114,375.40

Project Completion

Schedule	50%
Budget	57%

Construction Contracts

Company	PO No.	Original	Change Orders	Amendments	Total	Costs to Date
Murphy Coating	21425	\$ 113,894.00			\$ 113,894.00	\$ 113,984.00
SOCWA Staff Time	35228L					\$ 391.40
		\$ 113,894.00	\$ -	\$ -	\$ 113,894.00	\$ 114,375.40

Construction Contingency

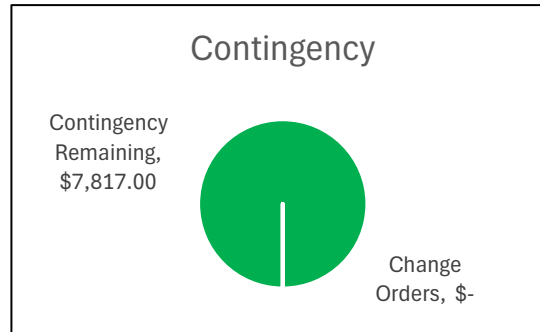
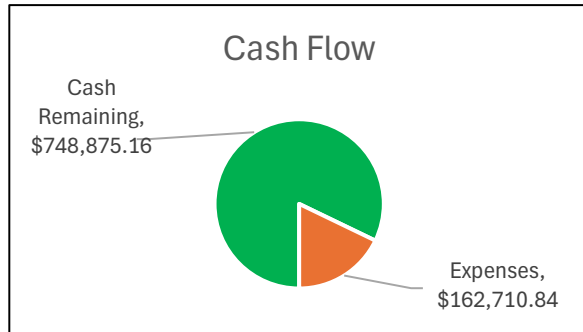
Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	35242L	\$ 11,390.00		\$ 11,390.00	0.0%
		\$ 11,390.00	\$ -	\$ 11,390.00	0.0%

Change Order No.	Vendor Name	Project ID	Description	Status Date	Days	Amount
1	Filanc	35228L	Contract Extension	4/4/2024	273	\$ -
2	Filanc	35228L	Solids removal in basins	1/25/2025	60	\$ 25,725.84

Project Financial Status

Project Committee	15
Project Name	Personnel Building Reconstruction - 3525
Project Description	Personnel building reconstruction including fixtures, lightings, ceiling, tiles and minor electrical

Data Last Updated
January 15, 2026



Cash Flow

Collected	\$ 911,586.00
Expenses	\$ 162,710.84

Project Completion

Schedule	100%
Budget	18%

Construction Contracts

Company	PO No.	Original	Change Orders	Amendments	Total	Costs to Date
T.E. Roberts	20930	\$ 78,165.00			\$ 78,165.00	\$ 78,165.00
Project Partners	20877	\$ 35,000.00			\$ 35,000.00	\$ 26,633.50
ProjectLine	19827	\$ 31,150.00				\$ 30,266.50
SOCWA Staff Time	3525					\$ 27,645.84
		\$ 144,315.00	\$ -	\$ -	\$ 113,165.00	\$ 162,710.84

Construction Contingency

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	3525	\$ 7,817.00		\$ 7,817.00	0.0%
		\$ 7,817.00	\$ -	\$ 7,817.00	0.0%

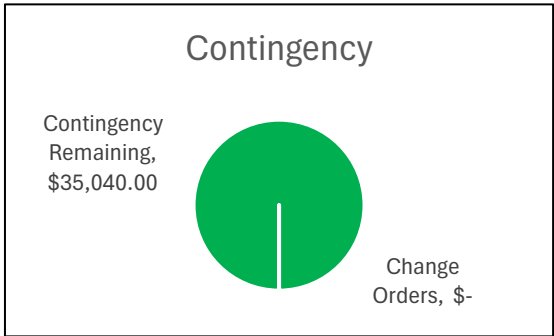
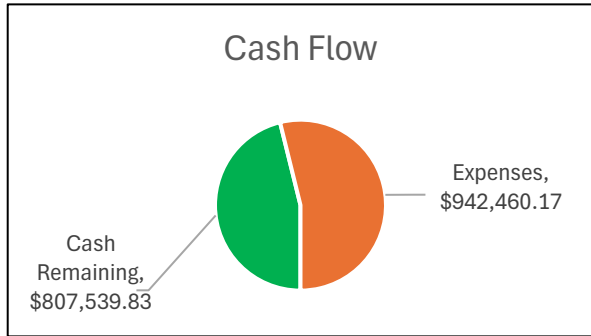
Change Order No.	Vendor Name	Project ID	Description	Status Date	Days	Amount
						\$ -

Project Financial Status

Project Committee	15
Project Name	West Primary and Secondary Sludge Skimming System - 35246L/35239L
Project Description	Replacement of west primary and secondary sludge skimming system

Data Last Updated

January 15, 2026



Cash Flow

Collected	\$ 1,750,000.00
Expenses	\$ 942,460.17

Project Completion

Schedule	50%
Budget	54%

Construction Contracts

Company	PO No.	Original	Change Orders	Amendments	Total	Costs to Date
Filanc		\$ 784,000.00			\$ 784,000.00	
Brentwood	20496	\$ 930,960.00			\$ 930,960.00	\$ 930,960.00
Z&K/Ardurra	21446	\$ 39,860.00			\$ 39,860.00	
SOCWA Staff Time	35246L/35239L					\$ 11,500.17
		\$ 970,820.00	\$ -	\$ -	\$ 1,754,820.00	\$ 942,460.17

Construction Contingency

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	35246L/35239L	\$ 35,040.00	\$ -	\$ 35,040.00	0.0%
		\$ 35,040.00	\$ -	\$ 35,040.00	0.0%

Change Order No.	Vendor Name	Project ID	Description	Status Date	Days	Amount

Agenda Item

8

Engineering Committee Meeting

Meeting Date: January 22, 2026

TO: Engineering Committee
FROM: Roni Grant, Capital Improvement Program Manager
SUBJECT: JBL Flare and Underground Piping Project [Project Committee 2]

Overview

The SOCWA Project Committee 2 Board of Directors awarded a design contract to MKN & Associates on April 3, 2025 in the amount of \$441,129 for the final design of the J. B. Latham Treatment Plant (JBLTP) Flare System and Underground Piping Replacement Project. The scope of the project includes the following:

- Replace existing flare with new flare and piping at a different location within the plant
- Replace hot water piping between digesters
- Replace digester gas piping between digesters, flare, and connection to the co-generation system
- Install pipe bridging structure to accommodate piping relocation in this project and potential future relocations.

A determination was made to break the project into two separate phases to accommodate the forthcoming master planning efforts at the JBLTP. The initial phase focuses on piping relocation; the second phase addresses the replacement and the relocation of the flare.

MKN has reached several milestones in the project. This presentation is intended to update the Engineering Committee on project status while identifying the potential need to modify the project budgets.

Background

The existing digester gas and hot water loop piping serving the digesters is highly corroded and requires replacement. The buried portions of these pipelines run through an area that is congested with other process piping. Excavating in this area would be difficult, and leaks in buried piping can be difficult to locate and repair. Locating the new utilities above-ground could reduce construction costs, operational impacts, future maintenance costs and improve reliability.

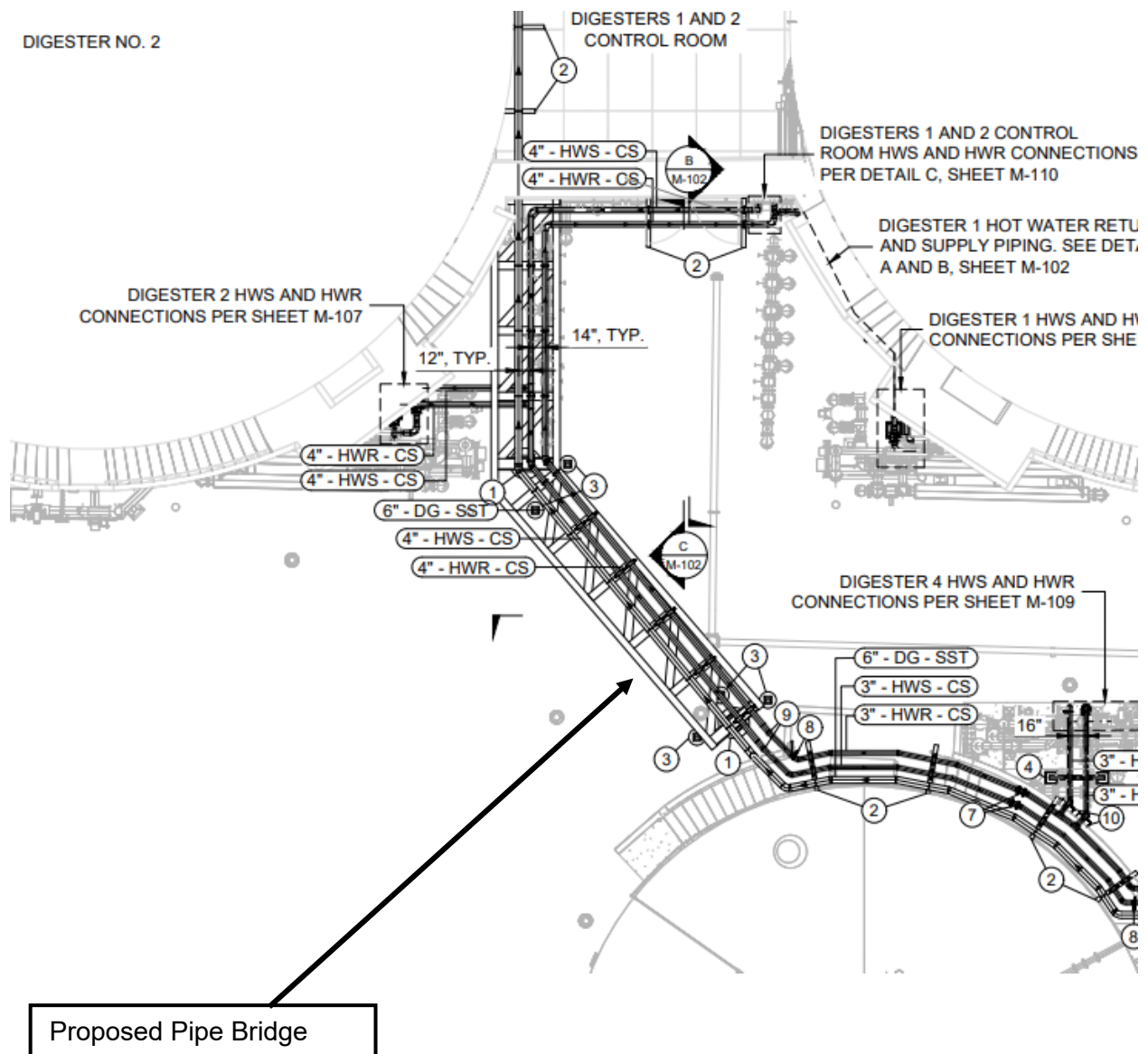
The current flare system has been in operation since 1971 and is nearing the end of its useful life. SCAQMD has previously advised SOCWA that the existing flare does not meet the requirements of Rule 1118.1 because (in the view of SCAQMD) it exceeded the annual capacity thresholds set forth in the rule during two consecutive years. SOCWA has submitted a permit application for the replacement of the flare while developing the design for a replacement.

Pipe Relocation Design

MKN submitted the 50% design documents for the Underground Piping Relocation Progress in late November of 2025. The project went through a detailed routing evaluation and review with Operations staff. The central feature of the project is a pipe bridge that will cross the road between Digesters 1/2 and Digesters 3/4. The location of this bridge is as shown in Figure 1. The installation of the bridge piers is complicated by the congestion of underground piping. Potholing in one location was inconclusive due to the presence of sand slurry.

Submittal of a bid ready documents is expected by the end of February, 2026. The current construction cost estimate is presented in the budget discussion below.

Table 1 – Pipe Bridge Location



Gas Flare Replacment and Relocation Design

MKN submitted the Conceptual Design Memo for the Gas Flare Replacement in December, 2025. Project development included a rigorous discussion about the location of the new flare. Feasible sites are limited due to the lack of space at the site in addition to the many limiting code requirements. The location of this bridge is as shown in Figure 1. The installation of the bridge piers is complicated by the congestion of underground piping. Potholing in one location was inconclusive due to the presence of sand slurry.

Table 2 – Gas Flare Relocation Site



SOCWA staff would like to slow submission of the final design of the flare to allow progress on the master planning for the site. MKN currently estimates 5 – 6 months to prepare final design of the flare replacement. The current construction cost estimate is presented in the budget discussion below.

Related Projects

SOCWA staff is developing cost estimates for two related projects to the piping relocation and flare replacement projects.

- Heat Exchanger/Recirculation Pump Replacement for Digester No.3: The Package 'B' project at JBLTP included the replacement for the heat exchanger and the recirculation pump for Digester No.4. This work was done for a single digester to determine the effectiveness of the new equipment. The past several years have shown the new equipment to be very effective in aiding staff to maintain the digester temperature. Heating of Digester No.3 has become more difficult in recent years. It is believed that replacing the equipment for this digester would yield similar benefits.

- Motor Control Center (MCC) “D” Replacement: MCC “D” is located in close proximity to the proposed flare location. MKN believes that the flare may be installed with the necessary separation from the MCC. However, removal of the MCC might provide a little more flexibility in setting the final flare location. MCC “D” has largely been stripped of its supported functions over the past ten years. The unit only currently powers polymer mixers and feed pumps.

These projects will be present to the Engineering Committee for further discussion.

Budget

The estimate of probable cost for the Digester Piping Relocation was developed at the 50% design level by MKN. This estimate is presented in Table 1. SOCWA broke down the cost estimate into different cost centers to determine the contributing factors. This evaluation indicates that the cost is relatively balanced between digester gas piping, hot water circulation piping and the pipe bridge.

Table 1 – Estimage of Probable Construction Cost

No.	Item	Contingency (%)	Digester Gas	Hot Water	Pipe Bridge and Common	Total
1	Mobilization and Demobilization (5%)		\$ 9,360	\$ 14,635	\$ 12,220	\$ 36,215
2	Digester Gas Piping (Inc. Fittings)		\$ 148,100			\$ 148,100
3	Hot Water Piping (Inc. Fittings)			\$ 205,100		\$ 205,100
4	Pipe Supports		\$ 2,000	\$ 18,000	\$ 50,031	\$ 70,031
4a	Pipe Bridge				\$ 148,369	\$ 148,369
5	Valves and Appurtenances		\$ 7,000	\$ 29,600		\$ 36,600
6	Other Equipment (Removable Bollards)		\$ 3,600		\$ 6,000	\$ 9,600
7	Site Work		\$ 26,500	\$ 40,000	\$ 40,000	\$ 106,500
	Subtotal (Basis For Contingency)		\$ 187,200	\$ 292,700	\$ 244,400	\$ 724,300

Subtotal		\$ 196,560	\$ 307,335	\$ 256,620	\$ 760,515
Contingency (Completeness of Design)	5	\$ 9,828	\$ 15,367	\$ 12,831	\$ 38,026
Contingency (Unexpected Field Conditions)	5	\$ 9,828	\$ 15,367	\$ 12,831	\$ 38,026
Contingency (Bidding Market)	10	\$ 19,656	\$ 30,734	\$ 25,662	\$ 76,052
TOTAL		\$ 235,872	\$ 368,802	\$ 307,944	\$ 912,618

A comparison of the estimated construction cost with the available budget is presented in Table 2. This table indicates that the overall project cost is approximately 40% over the current budget.

Table 2 – Comparison of Estimated Construction Cost with Budget

	32232S Flare System and Buried Digester Pipe Replacement	32234S JBL Heat Exchanger #4 Pipe Replacement	32263S Buried Digester Piping Reconstruction	Total Piping Modifications	32231S Gas Flare Replacement
Budget	\$125,000	\$75,000	\$806,490	\$1,006,490	\$1,537,790
Study and Design	\$77,464	\$48,773	\$160,665	\$286,902	\$198,340
Opinion of Probable Cost (Base) Nov. '25			\$760,500	\$760,500	\$1,340,000
Opinion of Probable Cost (20% Contingency) Nov. '25			\$152,100	\$152,100	\$402,000
Opinion of Probable Cost (Total) Nov. '25			\$912,600	\$912,600	\$1,742,000
Construction Management (20% of Const.)			\$182,520	\$182,520	\$348,400
SOCWA Contingency				\$0	

Total Estimated Cost	\$77,464	\$48,773	\$1,255,785	\$1,382,022	\$2,288,740
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Table 2 also shows a comparison of the estimated construction cost for the flare project with the related budget line item. This is apt to be less accurate as detailed design has not begun. However, the current estimate is showing construction cost as approximately 50% over the existing budget.

Recommended Action: Committee Discussion/Direction/Action.

Agenda Item

9

Engineering Committee Meeting

Meeting Date: January 22, 2026

TO: Engineering Committee

FROM: Roni Young Grant, Capital Improvement Program Manager

SUBJECT: Contract Award for Coastal Treatment Plant Personnel Building Phase 2 Upgrades [Project Committee 15]

Overview

The existing Coastal Treatment Plant (CTP) Personnel Building has deteriorated and is in need of rehabilitation. The results of the third attempt to secure bids/proposals for building upgrades were presented at the November 13, 2025 Engineering Committee Meeting. Staff recommended additional negotiant with the apparent low bidder T. E. Roberts. This agenda presents the results of the negotiation along with recommendations.

Background

The Personnel Building was originally constructed in the late 1960's as the Control Building for the Coastal Treatment Plant. The building included laboratory and chlorination facilities. The building is a single-story wood and brick frame building set on a concrete slab foundation. The building was modified to its current form during a plant expansion project in the late 1980's. The proposed project is largely based on a condition assessment completed by V&A Consulting Engineers in 2019. Phase 1 of the project entailed the installation of new underground sewer piping and was completed in 2024.

Project Scope

The Phase 2 upgrades include the following items as bid in October, 2025:

- Backfill and repair of concrete floors slabs associated with Phase 1 sewer improvements
- Rehabilitation of concrete flooring in Workshop and Utility Rooms
- Demolition and reconstruction of walls in Restrooms and Shower Rooms
- Replacement of interior doors, frames and associated appurtenances
- Replacement of plumbing fixtures
- Demolition and improvements of the floor, ceiling and lighting system
- Electrical system improvements
- Sewer and vent system demolition and improvements
- Cold and hot water system demolition and improvements
- Power and lighting system improvements.

Bidding and Negotiation

SOCWA originally attempted to procure bids for the Phase 2 Upgrades in April, 2025, via the PlanetBids platform. No bids were received through this effort. SOCWA subsequently attempted to get quotes from two contractors familiar with the project site: T.E. Roberts, who successfully completed Phase 1 of the project, and S.S. Mechanical, a general contractor that had also been performing work at the Coastal Plant. T. E. Roberts submitted a quote of \$497,908.00. S.S. Mechanical declined to submit a quote due to their workload.

SOCWA again sought bids for the Coastal Treatment Plant Phase 2 – Reconstruction in the fall of 2025. Bidding documents were transmitted to ten general contractors on August 28, 2025. The invited group included seven general building contractors that had been recommended by Engineering Committee representatives. Two bids were received on October 23, 2025 as presented in Table 1. Salient LLC (Bruce King Services) was unable to obtain a bid bond. T.E. Roberts submitted the only fully responsive bid.

The November, 2025 bid by T. E. Roberts was \$253,528 higher than the earlier proposal received from Roberts. This difference was in part due to increases in the project scope. After presentation to the Engineering Committee in November, 2025, SOCWA staff and T.E. Roberts management performed a detailed review of the bid. It was determined that the following items would be removed from scope of work:

- Replacement of interior doors
- Resealing of the Workshop and Utility Room concrete floors
- Removal, sandblasting, and reinstallation of lockers.

In addition, it was proposed that the two allowances included in the contract were redundant with the SOCWA procedure of setting aside a contingency the award of the construction contract.

A revised proposal was received on January 9, 2026. The values in the revised proposal are presented in Table 1. The revised proposal cost is lower than the October bid by slightly over \$100,000.

Table 1- Summary of Bids and Revised Proposal

Item No.	Description	Bids Received October 2025		Proposal Received January 2026
		Salient LLC	TE Roberts	TE Roberts
1	Mobilization/Demobilization	\$102,538	\$33,469	\$31,327
2	Demolition and disposal per the plan	\$36,000	\$52,022	\$48,692
3	Replacement of plumbing fixtures	\$126,000	\$50,000	\$46,800
4	Replacement of floor, wall tiling, and baseboard	\$52,500	\$99,912	\$93,517
5	Replacement of vinyl flooring and molding	\$7,588	\$10,600	\$9,922
6	Rehabilitation of concrete flooring in Workshop and Utility Room	\$9,975	\$7,422	\$0
7	Backfill and repair of concrete floor slabs	\$8,800	\$75,473	\$73,637
8	Demolition and reconstruction of walls in Restrooms and Shower Rooms	\$52,925	\$53,172	\$49,618
9	Replacement of interior doors	\$16,000	\$17,960	\$0
10	Refurbishment of bench and lockers and replacement of partitions	\$8,000	\$91,017	\$70,584
11	Reconstruction of suspended ceiling	\$15,500.5	\$12,278	\$11,492
12	Replacement of lighting and power supply systems	\$111,767	\$78,463	\$73,411
13	Modification of the sewer and vent system	\$16,000	\$62,500	\$58,500
14	Modification of the cold and hot water systems	\$11,000	\$63,750	\$59,670
15	All other items necessary to complete the work		\$23,409	\$22,678
16	Repair of structural deficiencies	\$5,000	\$5,000	\$0
17	Modifications of ventilation system	\$15,000	\$15,000	\$0
	Total Bid	\$594,594	\$751,447	\$649,848

Cost Allocation

The cost allocation associated with awarding the construction contract based on the January 2026 proposal is presented in Table 2.

Table 2 – Cost Allocation by Member Agency

Agency	PC 15 Liquids (L)
City of Laguna Beach	\$352,867.46
Emerald Bay Service District	\$19,495.44
South Coast Water District	\$277,485.10
Total	\$649,848.00

Budget

The budget for the CTP Personnel Building is \$911,586. The budget impact for award of the construction contract will involve the related expenses as shown in Table 3. The Phase 1 expense is \$96,390 up to date.

Table 3 – Budget Impacts of Construction Cost Award

Cost Item	Percentage of Construction Contract	Cost
Construction Contract		\$649,848.00
Construction Contingency	15%	\$97,500.00
Construction Services	10%	\$65,000.00
Total		\$812,348.00

Recommended Action

Staff recommends that the Engineering Committee recommend that the PC 15 Board of Directors:

1. Authorize execution of a construction contract with T.E. Roberts in the amount of \$649,848.00.
2. Approve a contract contingency of \$97,500 to address any unforeseen conditions encountered during the work.

Attachment: TE Roberts Re-Bid



17771 Mitchell North
Irvine, CA 92614
Phone (714) 669-0072 | Fax(714)200-0241
estimating@teroberts.com

REBID REBID

DATE

January 9, 2026

TO:

South Orange County Wastewater Authority
Attention: Roni Young Grant
34156 Del Obispo Street
Dana Point, CA 92629

JOB DESCRIPTION:

Coastal Treatment Plant (CTP) Personnel Building Phase 2
Reconstruction Rebid - REBID

JOB LOCATION:

Coastal Treatment Plant -
28303 Alicia Parkway, Laguna Niguel, CA 92677

ITEM	DESCRIPTION	QTY	UNIT	BID UNIT	TOTAL
1	Mobilization and demobilization (SNE 5%)	1	LS	\$ 31,327.00	\$31,327.00
2	Demolition and disposal	1	LS	\$ 48,692.00	\$48,692.00
3	Replacement of plumbing fixtures	1	LS	\$ 46,800.00	\$46,800.00
4	Replacement of floor, wall tiling, and baseboard	1	LS	\$ 93,517.00	\$93,517.00
5	Replacement of vinyl flooring and moulding	1	LS	\$ 9,922.00	\$9,922.00
6	Rehabilitation of concrete flooring in Workshop and Utility Room	1	LS	\$ -	\$0.00
7	Backfill and repair of concrete floor slabs	1	LS	\$ 73,637.00	\$73,637.00
8	Demolition and reconstruction of walls in Restrooms and Shower Rooms	1	LS	\$ 49,618.00	\$49,618.00
9	Replacement of interior doors	1	LS	\$ -	\$0.00
10	Refurbishment of bench and lockers and replacement of partitions	1	LS	\$ 70,584.00	\$70,584.00
11	Reconstruction of suspended ceiling	1	LS	\$ 11,492.00	\$11,492.00
12	Replacement of lighting and power supply systems	1	LS	\$ 73,441.00	\$73,441.00
13	Modification of the sewer and vent system	1	LS	\$ 58,500.00	\$58,500.00
14	Modification of the cold and hot water systems	1	LS	\$ 59,670.00	\$59,670.00
15	All other items necessary to complete the work, that are not described in Bid Items 1 through 14	1	LS	\$ 22,678.00	\$22,678.00
16	Repair of structural deficiencies as identified by the Owner for the Not to Exceed Price of	1	LS	\$ -	\$0.00
17	Modifications of ventilation system as identified by the Owner for the Not to Exceed Price of	1	LS	\$ -	\$0.00
TOTAL					\$649,878.00

Note:

Exclusions (if selected below, it indicates that it is not included in the price stated above):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Permits, bonds, inspection fees, connection fees, assessment fees, engineering fees, all other fees | <input type="checkbox"/> Demolition of existing onsite improvements unless specified in our bid proposal |
| <input checked="" type="checkbox"/> Engineering, staking and compaction testing | <input checked="" type="checkbox"/> Erosion control and SWPPP |
| <input checked="" type="checkbox"/> Construction water and meter (minimum 2" service line required) | <input checked="" type="checkbox"/> Tunnelling of existing utilities not shown on plans |
| <input checked="" type="checkbox"/> Traffic control plan, striping or raised pavement markers | <input checked="" type="checkbox"/> Damage to message boards not caused by T.E. |
| <input checked="" type="checkbox"/> Rock, hardpan, excessively hard ground excavation, or screening of backfill | <input checked="" type="checkbox"/> Raised pavement markers |
| <input checked="" type="checkbox"/> Imported backfill and drying of trench excavated material that has over optimum moisture content | <input checked="" type="checkbox"/> Removal of temporary striping |
| <input checked="" type="checkbox"/> Dewatering of any groundwater | <input checked="" type="checkbox"/> Any costs associated with railroad working |
| <input checked="" type="checkbox"/> Door scope | <input checked="" type="checkbox"/> Removal, sandblasting, and reinstallation of lockers |
| <input checked="" type="checkbox"/> Floor Sealer | <input checked="" type="checkbox"/> Allowances |

Adryan Gutierrez, Estimator

T.E. Roberts, Inc.

Accepted By:

Agenda Item

10

Engineering Committee Meeting

Meeting Date: January 22, 2026

TO: Engineering Committee
FROM: Roni Grant, Capital Improvement Program Manager
SUBJECT: CTP Storm Drainage Modifications [Project Committee 15]

Overview

The existing configuration of the Coastal Treatment Plant (CTP) remains largely the same since the expansion of the plant and the construction of the tertiary treatment system in the 1980's. A large storm water channel passes through the center of the treatment plant ultimately discharging to Aliso Creek. This channel is intended to carry flows from the tributary area uphill from the CTP. There are series of smaller drainage channels that allow diversion of surface flows within the treatment plant back into the plant's main treatment process. However, there remain a number of plant areas where storm flows can still discharge into Aliso Creek.

The management of storm flows from surfaces within the CTP are addressed in the Industrial General Permit issued by the State of California Regional Water Quality Control Board. This Permit seeks to eliminate storm flows carrying various pollutants from discharging into Aliso Creek. SOCWA retained the engineering firm Tetra Tech to design modifications to the CTP storm drainage system to provide compliance with the Industrial General Permit.

The Tetra Tech design includes modifications to drain channels and installation of new catch basins and drainage pipe. A weir structure will be added to the main storm channel to capture dry weather flows which will then diverted to the main plant process stream through a sump pump system. These modifications are largely located in the southern area of the treatment. Limited storm drainage modifications in the northern area of the treatment will included in the bid package for the Drainage Pump Station Phase I Improvements which is expect to be issued in the summer of 2026.

Bids

On November 18, 2025, SOCWA issued a formal solicitation for bids by way of the PlanetBids platform. Qualified contractors were invited to participate in the procurement process for the construction of the storm water modifications. Bid submissions were due by January 8, 2026. SOCWA received four bids as summarized in Table 1. The complete bids can be made available upon request.

Table 1 – Summary of Bids

Item No.	Description	T.E. Roberts	Filanc	Pacific Hydrotech	S.S. Mechanical
1	Mobilization /Demobilization	\$30,066	\$65,000	\$245,500	\$37,000
2	Trapezoidal Channel Improvements	\$18,570	\$128,000	\$113,000	\$25,835
3	Stop Log Structure	\$265,926	\$507,000	\$279,100	\$258,765
4	Sump Pump and Piping	\$11,183	\$15,000	\$8,100	\$17,425
5	South Site Drainage Improvements	\$39,430	\$14,000	\$28,400	\$38,150
6	Electrical Improvements	\$36,216	\$73,000	\$30,600	\$27,410
7	Vehicle Storage Bldg Area Improvements	\$109,223	\$282,000	\$282,900	\$167,590
8	Plant Entrance Drainage Improvements	\$28,077	\$100,000	\$29,300	\$59,970
9	Roadway Drainage Improvements	\$30,868	\$131,000	\$66,400	\$81,075
10	All Other Work	\$500	\$41,000	\$100	\$27,900
	Total Bid	\$570,059	\$1,356,000	\$1,083,400	\$741,120
Subcontractors					
	Electrical	JBM Electrical	Hydrotech Electric	Southern Contracting	Southern Contracting
	Concrete	CMB Structures Inc.		Southwest Ditch	
	Demolition		Graham Crackers Demo		
	Paving		Hardy & Harper	Wheeler Paving	Beach Paving
	Rebar		Amber Steel		

There is a significant disparity in the amount of the four bids. Of note the area of the largest disparity among the three lowest bids are in the items related to the Vehicle Storage Area, the Plant Entrance Area and Roadway Corridor. Each of these areas involves removal and replacement of the asphalt road surfaces. The apparent lower bidder T.E. Roberts is self performing this work; the other bidders are using subcontractors.

The apparent low bid amount of \$570,059 by T.E. Roberts is approximately 25% higher than the Engineer’s Estimate of Probable Cost of \$450,000. The Estimate of Probable Cost was prepared by TetraTech in the spring 2025.

Cost Allocation

A summary of the cost allocation by member agency are in Table 2.

Table 2 –Cost Allocation by Member Agency

Agency	PC 15 Liquids (L)
City of Laguna Beach	\$309,542.04
Emerald Bay Service District	\$17,101.77
South Coast Water District	\$243,415.19
Total	\$570,059.00

Budget

The budget for the CTP Storm Drainage Improvements was included as part of the \$4,200,000 line item budget for the Drainage Pump Station Rehabilitation (3522AL) for Fiscal Year 2025/26. The budget impact for award of the construction contract will involve the related expenses as shown in Table 3.

Table 3 – Budget Impacts of Construction Cost Award

Cost Item	Percentage of Construction Contract	Cost
Construction Contract		\$570,059.00
Construction Contingency	10%	\$57,000.00
Construction Services	10%	\$57,000.00
Total		\$684,059.00

Recommended Action

Staff recommends that the Engineering Committee recommend that the PC 15 Board of Directors:

1. Authorize execution of a construction contract with T.E. Roberts in the amount of \$570,059.00.
2. Approve a contract contingency of \$57,000 to address any unforeseen conditions encountered during the work.

Agenda Item

11

Engineering Committee Meeting

Meeting Date: January 22, 2026

TO: Engineering Committee

FROM: Roni Grant, Capital Improvement Program Manager

SUBJECT: Effluent Transmission Main Reach B Techite Pipe Replacement Final Design
[Project Committee 21]

Overview

The Effluent Transmission Main (ETM) Reaches A, B, and C were originally constructed with Techite, a brand of glass fiber reinforced polymer mortar pipe (RPMP) manufactured between 1967 and 1984. Techite has a history of structural failures across California and nationwide, leading to multiple lawsuits and eventual discontinuation of its manufacture. Pressurized segments of the ETM have already experienced failures requiring emergency repairs, underscoring the need of replacement.

Although all three reaches contain Techite pipe, this project focuses on Reach B, which is pressurized and presents the highest risk of sudden failure. Reach A, owned and operated by IRWD, is being addressed separately by IRWD, while Reach C is a gravity main and poses less immediate risk. As part of this project, SOCWA intends to include the installation of a new isolation valve at the Reach A and Reach B connection to facilitate IRWD's future Reach A rehabilitation work and minimize operational impacts to ETWD during any future Reach A shutdowns.

The final design project elements include the following:

- Project Management
- Replace Hot Water Piping between digesters.
- Replace Digester Gas Piping between digesters and flare.
- Piping structures to accommodate proposed (this project) and future piping needs.

Proposals

SOCWA solicited proposals through PlanetBids on October 13, 2025. Eight firms were contacted during this process:

- BKF Engineers
- CivilTech
- CDM Smith
- Dudek
- HDR Engineering

- JIG Consultants
- MKN & Associates
- West Yost

Two proposals were received from BKF/CivilTech and MKN. The proposals and associated fees are attached here. Staff reached out to the firms who did not propose. The timeline did not work for those firms.

A summary of proposals and SOCWA's staff ratings are in Table 1.

Table 1 – Summary of Proposals

Firm	BKF/CivilTech	MKN
Project Manager	Nancy Baker	Kevin Saleh
BKF/CivilTech Total Labor Hours	2,250*	729*
Total Fee	\$656,240	\$275,068

*Subconsultants hours were not included in the total labor hours.

The proposals were distributed to the evaluation committee (PC 21 Engineering Committee and SOCWA staff) on January 14, 2026.

Budget

The ETM Reach B/C Techite Replacement (31222B-000) has a project budget of \$657,000.

Recommended Action: Discussion/Direction/Action.

Attachments:

BKF Proposal and Fee
MKN Proposal and Fee



South Orange County Wastewater Authority

PROPOSAL
EFFLUENT TRANSMISSION MAIN REACH B
TECHITE PIPE REPLACEMENT FINAL DESIGN

JANUARY 14, 2026



IDENTIFICATION OF RESPONDER



January 14, 2026

Roni Young Grant
Capital Improvement Program Manager
South Orange County Wastewater Authority
34156 Del Obispo Street, Dana Point, CA 92629

Subject: Proposal for Effluent Transmission Main Reach B Techite Pipe Replacement Final Design Project

Dear Ms. Grant,

BKF Engineers (BKF) welcomes the opportunity to submit our proposal for the **Effluent Transmission Main (ETM) Reach B Techite Pipe Replacement – Final Design** for the **South Orange County Wastewater Authority (SOCWA)**. BKF has thoroughly reviewed the RFP scope, related reports, drawings, and photos, and developed the following proposal for SOCWA's consideration. **BKF** and **Civiltec** have partnered on this pursuit, forming a dynamic team with the technical expertise and regional experience needed to meet the Project requirements and deliver best value to SOCWA and El Toro Water District (ETWD) who owns and operates the ETM Reach B. As **Project Manager**, **Nancy Baker, PE**, will lead design and production for this contract, bringing more than 30 years of Southern California experience to ensure precise, thorough, and constructible documents; **Shem Hawes, PE**, Civiltec, will serve as **Deputy Project Manager**, coordinating day to day interfaces and constructability reviews to keep the effort on schedule and within budget.

BKF—a full service consulting engineering California corporation—has provided civil engineering and surveying services statewide for **over 110 years**, while Civiltec adds specialized delivery in the **design and construction of water and wastewater pipelines** for public agencies across Southern California. Operations for this contract will be based in **BKF's Newport Beach office**, supported by BKF's **18 West Coast offices** and **490+ professionals**, and Civiltec's **regional staff and resources**. If selected, the BKF/Civiltec team will execute the assignment with the key individuals identified herein and complete the work **on schedule and within budget**. Thank you for the opportunity to propose on this important project; we look forward to collaborating with SOCWA and ETWD staff to provide engineering services and deliver reliable infrastructure solutions that meet SOCWA's needs. For questions regarding our qualifications or approach, please contact **Nancy Baker** at (949) 526-8484.

Sincerely,

BKF ENGINEERS

Handwritten signature of Roger Chung in black ink.

Roger Chung, PE, QSD/P, CFM, ENV SP

Principal-in-Charge

Handwritten signature of Nancy Baker in black ink.

Nancy Baker, PE

Project Manager

BKF Information

Statement of Affirmation

BKF affirms this proposal shall remain valid for at least 120 calendar days from the RFP deadline.

Full Legal Name of Firm

BKF Engineers

Type of Corporation

C-Corporation

Headquarters Office Location

2100 Franklin Street,
Suite 4C
Oakland, CA 94612

Local Office Location

4675 MacArthur Court,
Suite 400
Newport Beach, CA 92660

Contact Information

Principal-in-Charge
Roger Chung, PE, QSD/P,
CFM, ENV SP
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RChung@bkf.com

Project Manager
Nancy Baker, PE
Newport Beach Office
949.526.8484
NancyBaker@bkf.com

PROJECT UNDERSTANDING AND APPROACH TO THE WORK

PROJECT UNDERSTANDING

BKF and Civiltec (Team) understand that SOCWA wants to replace the Effluent Transmission Main (ETM) Reach B pipeline from the El Toro Water District (ETWD) Water Reclamation Plant (WRP) through the Laguna Woods Golf Course via open-cut construction and determine the optimal alignment for the future construction of Reach B with the public rights-of-way of El Toro Road and Moulton Parkway. The Team has reviewed all the studies, plans, and reference materials provided and has a thorough understanding of the ETM Reach B Techite Pipe Replacement Final Design (Project) that will allow us to effectively deliver an appropriate long-term solution for owners and rate payers alike.

AGENCY OVERVIEW

The South Orange County Wastewater Authority (SOCWA) is a Joint Powers Authority responsible for providing wastewater treatment, effluent and biosolids disposal, and water recycling at regional facilities in the southern part of Orange County, California. SOCWA was formed in 2001 by six (6) member agencies including the City of Laguna Beach, the City of San Clemente, El Toro Water District, Emerald Bay Service District, Santa Margarita Water District, and South Coast Water District. SOCWA facilitates and manages the collection, transmission, treatment and disposal of wastewater for more than 500,000 homes and businesses across South Orange County. The ETM Reach B is owned and operated by ETWD and accepts direct discharges from the ETWD WRP. As such, SOCWA is managing this solicitation of proposals for ETWD.

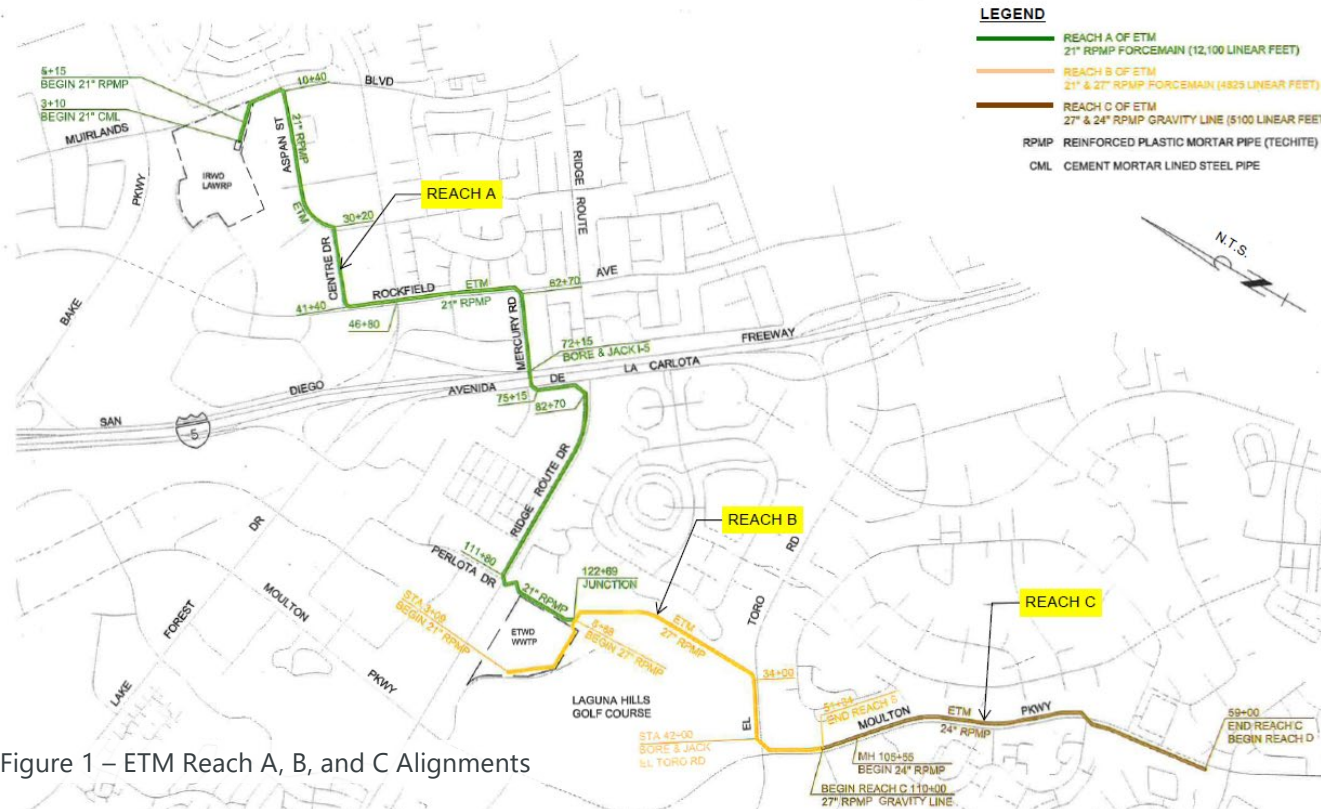
SUMMARY OF THE ETM

The ETM conveys up to 15 million gallons per day (mgd) of treated wastewater for ocean disposal and serves more than 127,000 customers in the Irvine Ranch Water District (IRWD) and ETWD service area. The ETM conveys treated secondary effluent from the IRWD Los Alisos Water Recycling Plant (LAWRP) to the Aliso Creek Ocean Outfall (ACOO) in South Laguna Beach. Both facilities are managed under SOCWA Joint Powers Agreement. The ETM is comprised of five (5) reaches, A through E and the ACOO. Reaches A, B, and C were originally constructed with Techite, a brand of glass fiber reinforced polymer mortar pipe (RPMP) manufactured between 1967 and 1984. Techite has a history of structural failures nationwide, leading to multiple lawsuits and eventual discontinuation of its manufacture. Pressurized segments of the ETM have already experienced failures requiring emergency repairs, underscoring the need of replacement. Figure 1 shows the alignment of Reaches A, B, and C. Although all three reaches contain Techite pipe, this Project focuses on ETM Reach B, which is pressurized and presents the highest risk of sudden failure. Reach A, owned and operated by IRWD, is being addressed separately by IRWD, while Reach C is a gravity main and poses less immediate risk.



PROJECT UNDERSTANDING AND APPROACH TO THE WORK

PROJECT OVERVIEW



The Reach B alignment begins at the ETWD Pump Station located at the ETWD WRP and passes through both the Laguna Woods Golf Course and El Toro Road and Moulton Parkway public rights-of-way. Several studies have been prepared to evaluate rehabilitation and replacement options for Reach B and considered trenchless and rehabilitation alternatives; however, open-cut replacement has been identified as the most feasible and cost-effective option through the golf course.

For the segment of Reach B within public rights-of-way along El Toro Road and Moulton Parkway, the preferred alignment and method of construction remains under evaluation. This Project will prepare an alternatives analysis to assess available utility corridors and determine the most appropriate construction approach. Final design of this segment of Reach B is not included as part of this Project.

The Project includes preparation of a Conceptual Design Report that establishes the pipeline alignment within the golf course and includes the recommended alignment within El Toro Road and Moulton Parkway. Final design documents will be prepared for construction of the pipeline within the golf course. The final design includes installation of a new isolation valve where Reach A connects to Reach B to facilitate IRWD's future Reach A rehabilitation work. Based on discussions BKF had with both ETWD and IRWD, this valve will be a direct buried isolation valve and does not require a motor actuator or telemetry. The design services will include the associated project management, survey, geotechnical, easement acquisition, and bid phase services necessary to complete the Project as outlined in the Scope of Work section of this proposal.

PROJECT OBJECTIVES

BKF and Civiltec bring complementary, proven water and civil engineering horsepower to deliver the optimal approach: maintain continuous ETM operation through smart sequencing and temporary bypass strategies; minimize impacts to Laguna Woods Golf Course with targeted open cut trenching, maintenance window work, and cart path logistics; and determine the best alignment and construction method within El Toro Road and Moulton Parkway via a data driven alternatives analysis. This combined expertise translates into clear solutions, reduced risk, and a compelling plan to successfully deliver the Project.

PROJECT UNDERSTANDING AND APPROACH TO THE WORK

PROJECT APPROACH

Strong Project Management Will Lead to Effective Outcomes

The foundation of any successful project is an effective project manager. Nancy Baker, PE will serve as Project Manager, leveraging three decades of experience delivering public infrastructure in Orange County for clients including Irvine Ranch Water District (IRWD), City of Newport Beach, City of Anaheim, Santa Margarita Water District (SMWD), Metropolitan Water District of Southern California (MWD), Long Beach Water Department (LBWD), and Yorba Linda Water District (YLWD). To strengthen delivery, Shem Hawes, PE of Civiltec will serve as Deputy Project Manager, bringing hands on leadership from similar municipal and utility clients across South Orange County and a deep understanding of field logistics, stakeholder coordination, and constructability.

Nancy's management approach combines clear communication and deep technical knowledge to ensure tailored solutions that fit the Project needs, while Shem augments day to day coordination—especially for alignment studies, traffic control planning, and golf course operations interfaces. The team will conduct bi-weekly progress meetings to track milestones, resolve outstanding items, and proactively review budget and schedule risks. By leveraging BKF and Civiltec's combined 150 years of technical design experience for quality control reviews before every submittal—and Civiltec's constructability reviews—the team will consistently deliver accurate, clear, and implementable documents. We have prepared a Project Schedule in MS Project included as Appendix A.

Together, Nancy's technical network in domestic and reclaimed water pipeline materials and technologies and Shem's field tested delivery methods create an effective, collaborative pairing that will keep the ETM operating, minimize impacts, and deliver the project on time and within budget while meeting SOCWA/ETWD objectives.

ALTERNATIVES ANALYSIS

Here's how our Team will structure data-driven alternatives analyses to meet the Project objectives and address key issues:

Define Key Constraints and Objectives

- Maintain ETM operation: Identify flow requirements and allowable shutdown windows.
- Minimize golf course impacts: Map sensitive areas (greens, fairways, cart paths) and operational schedules.
- Optimize alignment and construction method: Evaluate El Toro Road and Moulton Parkway for traffic, utilities, and permitting.

Collect and Integrate Data

- GIS and Survey Data: Existing utilities, ROW limits, topography.
- Traffic Studies: Lane closure impacts, detour feasibility.
- Geotechnical Reports: Soil conditions for trenching, pipe material selection.
- Stakeholder Inputs: Golf course management, city traffic engineers, SOCWA/ETWD requirements.

DEVELOP ALTERNATIVES

- Alignment Options:
 - » El Toro Road – identify the optimal corridor for the alignment
 - » Moulton Parkway - identify the optimal corridor for the alignment
- Construction Methods:
 - » Open-cut trenching
 - » Trenchless (microtunneling, HDD) for critical crossings within public right-of-way
- Staging Strategies:
 - » Off-site pipe storage vs on-site staging
 - » Night work vs phased daytime work

EVALUATE USING WEIGHTED CRITERIA

- Cost: Material, labor, traffic control.
- Schedule: Duration and sequencing.

PROJECT UNDERSTANDING AND APPROACH TO THE WORK

- Risk: Utility conflicts, environmental constraints.
- Impact: Golf course disruption, traffic delays.
- Safety: Worker and public safety considerations.

RECOMMEND OPTIMAL APPROACH

- Use a scoring matrix to rank alternatives based on weighted criteria.
- Present visual comparisons (maps, charts) for clarity.
- Include risk mitigation strategies for top-ranked option.

This approach ensures decisions are **transparent, defensible, and optimized for cost, schedule, and stakeholder satisfaction.**

DATA REQUIRED FROM SOCWA

- Any hydraulic analyses done for ETM Reach A and B.
- Pump curves and/or pump tests for ETWD Effluent Pump Station.
- All available utility record drawings for utilities within the golf course.
- Overview of golf course maintenance activities and schedule.

KEY ISSUES

The Project's key issues include:

- **Pipeline Alignment within Laguna Woods Golf Course:** Develop an alignment that minimizes disruption to golf course operations and preserves site functionality through strategic routing and construction sequencing.
- **Pipeline Alignment within El Toro Road and Moulton Parkway:** Identify the most feasible alignment options within these major corridors, balancing traffic impacts, utility conflicts, and permitting requirements.
- **Pipeline Material Selection:** Evaluate and recommend durable, cost-effective materials that meet ETWD standards and ensure long-term performance under site-specific conditions.
- **Disposition of Existing Reach B Pipeline:** Determine the most appropriate approach for the existing pipeline—whether abandonment in place, removal, or re-purposing—based on environmental, operational, and cost considerations.

This integrated approach will combine technical rigor, stakeholder coordination, and innovative construction strategies to achieve IRWD's goals for reliability, efficiency, and minimal disruption.

KEY ISSUE #1 – PIPELINE ALIGNMENT WITHIN EL TORO ROAD AND MOULTON PARKWAY

Pipeline alignment should consider how traffic lanes will be impacted by construction to alleviate issues with commuter and pedestrian traffic and associated costs due to elaborate temporary traffic control measures. We will consider impacting only one lane of traffic, if possible. Alignments that require excessive fittings and complicated connections will be avoided to reduce construction costs. The presence of existing utilities will also dictate the pipeline alignment. Placing the main with the least impact to existing utilities will be investigated for the design alignment. Any relocations of utilities by outside utility agencies will be determined during design and coordinated. Alternate alignments shall be presented for consideration. The 27" diameter pipeline is under pressure and preference to install restrained or flanged fittings and joints will be prioritized to minimize the use of large thrust blocks and avoid incursions with other nearby utilities and infrastructure. Based on preliminary research of surface improvements and features there are water, sewer, storm drain, street lighting and street signals present within El Toro Road and Moulton Parkway. The rendering of the street conditions in Figure 2 shows the presence of storm drain catch basins (Blue Dots), fire hydrants (Green Dots), streetlights or street signals (Dark Green Dots), manholes or survey control monuments (Yellow Dots). These surface elements indicate the presence of underground utilities and will direct strategies for the ultimate final alignment. The as-builts of the pipeline are also a useful tool and suggest that the existing utilities within the street rights of way are documented. Additional survey and potholing work will be performed by the Team to verify horizontal and vertical alignments of existing infrastructure.

PROJECT UNDERSTANDING AND APPROACH TO THE WORK



Figure 2 – Utility Landscape in El Toro Road and Moulton Parkway

Instances may occur where the new proposed effluent main cannot meet separation requirements from potable pipelines as mandated by the Division of Drinking Water (DDW) per the California Code of Regulations Title 22, Chapter 16, Section 64572. In cases where the non-potable main has no alternative but to be placed within Zones A, B, C or D as depicted in Figure 3 and 4, a waiver may be required from the DDW during the design phase.

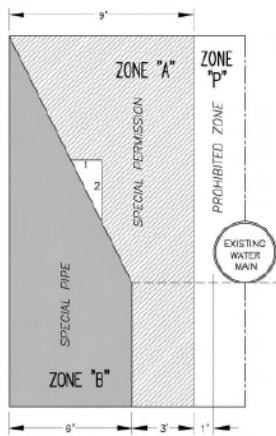


Figure 3 - Case 2 New Non-potable Water Main Parallel Construction

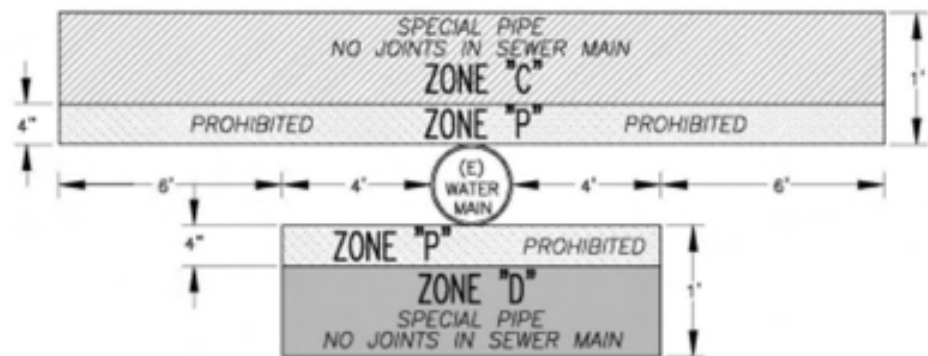


Figure 4 - Case 2 New Non-potable Water Main Perpendicular Construction

KEY ISSUE #2 –PIPELINE ALIGNMENT WITHIN LAGUNA WOODS GOLF CLUB

Our approach to the golf course alignment will build on lessons learned from similar projects, such as Civiltec's work with the County of Los Angeles at Marshall Canyon Golf Course, where efficient routing within established easements where possible and innovative surface restoration techniques minimized operational impacts. For this project, we will evaluate two potential pipeline alignments through Laguna Woods Golf Course, as shown in Figure 5. These alignments include the originally preferred "Pink Alignment" and a direct alignment option, where the pipeline does not follow golf cart paths, assessing each against key criteria: easement acquisition requirements, construction cost, impacts to golf course operations, and repair/rejuvenation needs. These evaluations will be integrated into the project schedule to ensure alignment decisions are finalized early, enabling timely design progression and procurement. By leveraging stakeholder collaboration, proven restoration methods, and schedule-driven decision-making, our team will deliver a solution that accelerates construction, minimizes disruption, and maintains full golf course functionality throughout the project.

PROJECT UNDERSTANDING AND APPROACH TO THE WORK



KEY ISSUE #3 – DISPOSITION OF EXISTING REACH B PIPELINE

Our approach to the disposition of the existing Reach B pipeline recognizes its higher-risk material but also its potential value as a redundant backup line given the lower operating pressures (~45–70 psi). To determine its suitability for long-term service, we will implement a phased evaluation strategy aligned with the project schedule: (1) install manholes and access ports at strategic locations for future inspection; (2) conduct closed-circuit television (CCTV) inspections as the initial assessment; (3) harvest pipe samples for laboratory analysis to determine remaining useful life; and (4) apply in-situ inspection technologies to characterize structural integrity. Preserving the existing pipeline as a secondary conveyance provides operational resilience and minimizes service disruptions in the event of a failure. Civiltec’s experience with SGVMWD and the City of La Verne demonstrates that early investigation and data-driven recommendations optimize remaining life and prioritize critical upgrades. These tasks will be sequenced in the schedule to ensure evaluation begins immediately after commissioning of the new pipeline, maintaining budget control and supporting SOCWA’s long-term reliability goals.

KEY ISSUE #4 – PIPELINE DIAMETER AND MATERIAL SELECTION

Selecting the appropriate pipeline diameter and material is critical to balancing cost, constructibility, and long-term performance. We have developed a Pipeline Material Comparison Matrix, included as Appendix B, to support material and diameter selection for Reach B (~27" pressure pipeline, ~10 MGD, ~40–100 psi operating range). It aligns with constructibility in Laguna Woods Golf Course versus El Toro Road/Moulton Parkway and highlights schedule/budget impacts. With Reach B currently operating at ~45 to 75 psi and requiring approximately 10 MGD of flow, our team will evaluate hydraulic impacts of modifying the diameter using existing pump curves and system modeling early in the design phase to avoid schedule delays. Material selection will consider the criterion presented in the Pipeline Material Comparison Matrix, and includes site-specific conditions, including the consistently wet environment within the golf course, favoring non-metallic options such as FRP or PVC for corrosion resistance, while DIP or steel may be suitable for roadway segments. Joint type will also be a key factor—restrained mechanical joints can reduce staging requirements and minimize golf course disruption compared to fused joints. These evaluations will be integrated into the project schedule to finalize material and diameter decisions before procurement, ensuring cost control and timely delivery. Our experience with similar projects enables us to apply innovative solutions and proven methodologies to achieve SOCWA’s operational and constructibility goals.

PROJECT UNDERSTANDING AND APPROACH TO THE WORK

SCOPE OF SERVICES

SOCWA's RFP included a Scope of Services, which appears to cover all project design components. To conserve space and conform to SOCWA's page limit, we chose not to repeat the Scope of Services herein. BKF accepts the Scope of Services, with the following exceptions, additions, and clarifications.



TASK 10 - PROFESSIONAL LAND SURVEYING SERVICES

Boundary Survey: A current boundary survey will be conducted of the subject property(s) APN(S): 616-021-036, 616-021-016, & 616-021-003. See Figure 6 on the following page for parcel map for the boundary survey. The survey will be based on a current preliminary title report and support documents. Existing survey monuments will be located and compared against the record documents to confirm the property limits. In addition, existing easements referenced in said title report will be plotted in relation to the boundary, as applicable.

Record of Survey: Based on initial research, it does not appear that the property has been mapped in its current configuration on any previously recorded subdivision map, official map, or record of survey filed with the County. Therefore, in accordance with Section 8762 of the State of California Business and Professions Code (The Land Surveyor's Act) it is anticipated that a Record of Survey will be required. The Record of Survey will be prepared and filed with the County and will serve as an added benefit in memorializing the boundary survey as a matter of public record. No new monuments are budgeted in this effort as it is anticipated that sufficient monuments exist to control this site for boundary purposes

Aerial Topography: Current aerial topography and existing planimetrics data will be obtained for the site. The photography will be flown for use at a scale of 1" = 20', with contours compiled at 1-foot intervals. Spot elevations and existing site features identifiable from photography will also be compiled. To provide sufficient coverage for design, the aerial limits will extend to cover proposed aerial limits included in Figure 7 on the following page. This line item includes the field work to set horizontal and vertical control required for the aerial effort, which will be based on an assumed horizontal basis, and available local agency vertical datum. A color digital ortho-photo will be prepared from the photography. The ortho-photo will be a rectified image to closely match the compiled topography, providing the capability to prepare accurate, color exhibits on subsequent efforts.

Supplemental Topography: As a supplement to the aerial effort, conventional ground survey will be used to spot verify the aerial topography and obtain additional detail in key areas. The supplemental data will be used in conjunction with the aerial mapping to create a single topographic map that will be used as the basis for design.

Deliverables will include:

- A digital CAD file containing the resulting data
- Digital TIFF image(s) of ortho-photography along with corresponding geo-referenced World files to allow for seamless integration of the photo into the compiled topography and other drawings
- Excludes fees for County Recorder

PROJECT UNDERSTANDING AND APPROACH TO THE WORK

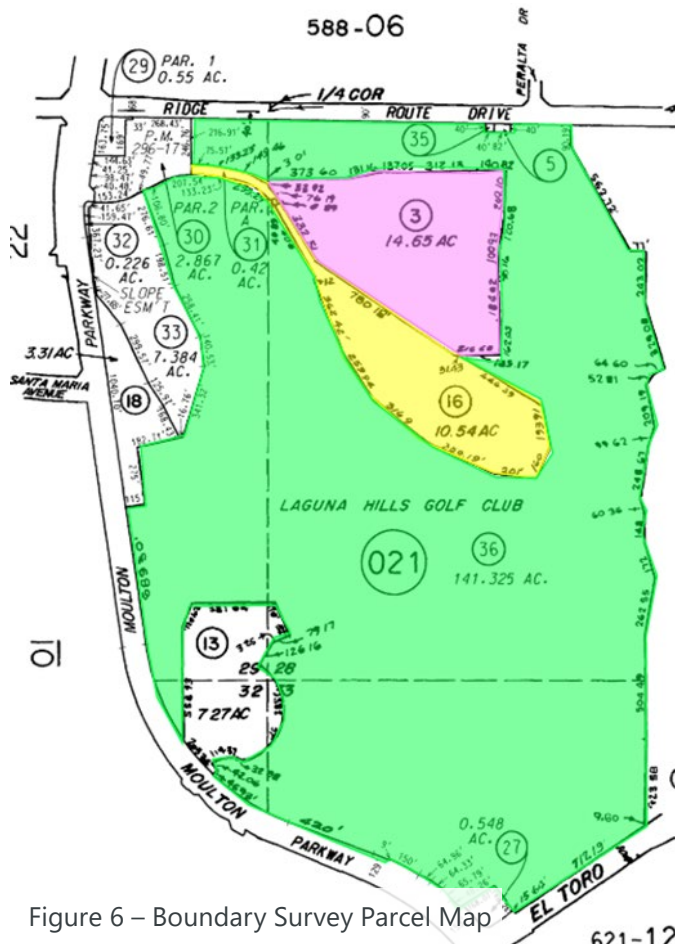


Figure 6 – Boundary Survey Parcel Map



Figure 7 – Aerial Survey Limits

OPTIONAL TASK A – POTHOLING SERVICES DURING DESIGN

In the event subsurface investigation to locate critical utility crossing and the existing Reach B pipeline alignment is required during the design period, BKF has partnered with T2 Utility Engineers (T2UE) as a subcontractor to excavate up to ten (10) potholes up to 13-ft deep, using air-vacuum methods along the proposed project alignment on an as-needed-basis. Work includes permitting, turf/pavement restoration as required, and traffic control, as required. The final quantity may vary based on field conditions and design requirements. Task includes survey, if required, to determine pothole locations.

OPTIONAL TASK B -STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

The total disturbed area is not anticipated to exceed an acre in size. However, we have included a task to prepare a SWPPP if required. As a part of this task, a qualified Storm Water Pollution Prevention Plan Developer (QSD) will prepare a SWPPP for the project to address stormwater concerns during construction activities. The preparation of the SWPPP will include a risk assessment of construction activities and the downstream receiving waters to establish the project's Risk Level. The SWPPP will include a narrative describing proposed construction BMPs and their effectiveness in meeting the Statewide General Construction Permit requirements. The SWPPP will include a site plan that will depict the recommended construction BMPs intended to manage the stormwater that enters and exits the site during construction. This task also provides for the filing and processing of the Notice of Intent (NOI) for the Project with the RWQCB through the State Water Resources Control Board's Storm Water Multiple Application and Report Tracking System (SMARTS). This task excludes SWPPP implementation and Notice of Termination (NOT) services, which we assume will be performed by the contractor and/or the District.

EXPERIENCE AND TECHNICAL COMPETENCE

BKF Engineers

Build Trust – Deliver Results

Since 1915, BKF Engineers has established itself as a trusted leader in delivering innovative and sustainable water solutions across the western United States. Our team provides end-to-end solutions: from master planning and modeling, to detailed design, and support throughout the construction process.

Our expertise extends across municipal, industrial, and private sector projects, addressing the full water cycle—from sourcing and treatment to distribution, collection, and discharge. We integrate advanced hydrologic and hydraulic modeling, sustainable water management strategies, and cutting-edge surveying technologies to enhance project efficiency, resilience, and long-term performance.

BKF offers a broad range of water resources services, including:

- **Water:** Planning and design of potable water distribution, storage, pumping stations, and treatment facilities.
- **Wastewater:** Collection system design and rehabilitation, treatment facility improvements, and regulatory compliance support.
- **Stormwater:** Hydrology and hydraulic modeling, flood control infrastructure, low-impact development (LID), and green stormwater management.
- **Resiliency & Sustainability:** Climate adaptation planning, recycled water systems, and sustainable drainage strategies.

Leveraging our extensive portfolio of successful water, wastewater, recycled water, and stormwater infrastructure projects, we have built a reputation for meeting complex regulatory requirements while addressing the unique needs of each community. BKF is committed to delivering innovative, cost-effective, and sustainable water resource solutions that safeguard public health, protect natural ecosystems, and support long-term community growth.



490+
Employees

Founded in
1915

18
Regional
Offices

175
Professional
Engineers &
Surveyors

2300+
Water
Resources
Projects

1000+
Projects in
Orange County

OFFICE LOCATIONS

Newport Beach	Sacramento
Riverside	Salinas
Fresno	San Diego
Modesto	San Francisco
Oakland	San Jose
Pleasanton	San Luis Obispo
Portland	San Rafael
Redwood City	Santa Rosa
Roseville	Walnut Creek

SERVICES

- Water Storage Tanks and Reservoirs
- Potable / Recycled Water Pipelines
- Wastewater Pipelines / Force Mains / Interceptor
- Pump and Lift Stations
- Storm Drains / Master Plan of Drainage
- Green Stormwater Infrastructure
- Sea Level Rise Resiliency
- Levee Design and Certification
- Large Trash Capture Devices
- Outfall Repairs / Rehabilitation
- Flood Control Facilities
- Creek and Stream Improvements and Restorations
- FEMA Floodplain Map Revisions
- Low-Impact Development (LID)
- SWPPP QSP/QSD

EXPERIENCE AND TECHNICAL COMPETENCE

AMP URGENT REPAIR, METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA*

Irvine/Lake Forest/Mission Viejo, CA



DATES

2023-2024

REFERENCE

Metropolitan Water District
Denise Allen, PE
dnallen@mwdh20.com
310.467.2051

**Project performed with previous firm*

Nancy Baker was the Project Manager for the urgent repair of the Allen McColloch Pipeline (AMP) Prestressed Concrete Cylinder Pipeline (PCCP). The AMP ranges in diameters from 78-inch to 54-inch. The repairs were crucial to ensure the continued operation of the AMP PCCP, which serves multiple service connections for SMWD, IRWD, ETWD, and MNWD. The scope included installation of 14,700 linear feet of steel liner. Due to the condition of the AMP, the project had to be designed, pipe fabricated, a contractor hired, permits obtained, and the pipeline shutdown and repaired in just twelve months. A paper on the project will be published and presented at the 2025 ASCE/UESI Pipeline Conference in August of 2025 in Tampa, FL.

Challenges • Design, fabricate, and install 14,700 linear feet of steel liner in PCCP pipe with diameters ranging from 78-in to 54-in within a 5-month shutdown period for the AMP.

Final Result • The project was successfully completed due to extensive coordination between the client, pipe manufacturer, and design team requiring daily meetings with all stakeholders.

EMID LIFT STATION 59 EFFLUENT LINE IMPROVEMENTS Foster City, CA



DATES

2021-Ongoing

REFERENCE

Estero Municipal Improvement District
Francine Magno
650.286.3270
fmagno@fostercity.org

BKF is supporting Estero Municipal Improvement District (EMID) on utility infrastructure projects that included Lift Station 59 Effluent Line Improvements, relocation of Lift Station 28, and rehabilitation of Lift Station 27. Lift Station 59 pumps all wastewater collected by Foster City via a 21" effluent force main to the Wastewater Treatment Plant (WWTP) in San Mateo. BKF prepared construction documents and provided construction support to, 1) replace existing ultrasonic effluent flow meter with a ABBB electromagnetic flow meter to enhance the accuracy and the dependability of the flow readings going to the San Mateo WWTP. 2) install a 20" Steel/HDPE permanent emergency bypass system to provide operational flexibility and redundancy, 3) replace existing 24" ball valve on the discharge force main, 4) installation of 24" knife gate valve on the steel manifold to allow for isolation to prevent system shutdowns during repairs, 5) bypass vault with 22" and 24" knife valves. Lift Station 27 and 28 improvements are required to meet new demand and to improve reliability and efficiency. BKF performed life-cycle cost-benefit analyses to evaluate replacement versus rehabilitation alternatives and prepare construction documents. Project upgrades increased pumping capacity, and included mechanical, electrical/SCADA, and force main improvements.

Challenges • Due to COVID related supply-chain issues, there was a long lead time to procure some of the mechanical components required for the project. The supply-chain issues also increased the overall cost of the project significantly. Project is located close to shoreline with shallow ground water and Bay Mud which required extensive shoring and dewatering.

Final Result • To minimize project cost, BKF worked with City staff to modify the liquidated damages clause to reduce contractor markup on long lead items. BKF also proposed bidding the project during off-peak construction period, extending the duration of project, and allowing allow contractor to use City's existing above ground bypass system and equipment. To minimize shoring/dewatering costs, BKF revised the design to reduce the depth of permanent bypass pipe and use of restrained joints to eliminate thrust block.

EXPERIENCE AND TECHNICAL COMPETENCE

INTERCEPTOR FORCE TRUNK REHABILITATION PROJECT

Mountain View, CA



DATES

2020-2022

REFERENCE

City of Mountain View
Ariel Morales
650.903.6042
ariel.morales
@mountainview.gov

The City of Mountain View is rehabilitating the severely deteriorated interceptor force trunk main that runs from the Shoreline Sewer Pump Station through a driving range/golf course to the Palo Alto Wastewater Treatment Plant. The project rehabilitated 1,083 feet of the 42-inch interceptor force trunk main, replaced the existing flanged outlet manhole adjacent to the pump station, and constructed an additional downstream manhole adjacent to Michael's Restaurant. Most of the rehabilitation used cured-in-place pipe (CIPP), with a short section that rehabilitated with reinforced mortar or replaced with high density polyethylene (HDPE) pipe. The project also included the installation of an additional manhole and rehabilitation of the flanged manhole outlet. Due to continuous sewage flow, a sewer by-pass system is required to re-route the sewage around the construction area to facilitate rehabilitation. BKF took a unique approach to temporary sewer bypass sewer which eliminated installation of a 1,000-foot bypass pipe above ground through the active golf course area and Permanente Creek. The design includes using the existing 39-inch incoming sewer trunk mains to serve as part of the bypass system. BKF designed detail bypass system during design phase to avoid change order during construction. This included coordinating with pump vendors to design bypass pump sizing for 15 MGD peak flow, identifying location and footprint of bypass pumps and manifold, and identifying suction and discharge piping size and alignment through sensitive habitat area.

Challenges • Design of temporary sewer bypass system to meet PWWF of 25 MGD over Permanente Creek and through sensitive habitat areas required preparation of IS/MND and the implementation of mitigation measures including selecting bypass alignment, noise reduction and double containment.

Final Result • By coordinating closely with City operations, environmental agencies and the Golf course, we were able to reduce the cost significantly by utilizing existing system to supplement as a temporary bypass.

SUBCONSULTANT PROJECT - MARSHALL CANYON PUMP STATION AND POTABLE WATER MAIN

La Verne, CA



DATES

2011-2013

REFERENCE

City of La Verne
Dan Keesey
Public Works Director (Retired)
(909) 240-5950
dwkeesey@gmail.com

Civiltec designed the improvements for the Marshall Canyon Pump Station and waterline projects. The project included over 12,050 linear feet of 6-inch to 12-inch diameter ductile iron pipe (DIP) and a new primary pump station that conveys potable water from a connection with La Verne to the Los Angeles County-owned water system. The pump station supports operation of the County's Marshall Canyon Golf Course, Probation Camps, Fire Camps and parks recreation facilities. The pump station is equipped with three vertical turbine pumps each having a dynamic output of upwards of 700 gallons per minute (gpm) each against a discharge pressure approaching 300 pressure per square inch (psi). Civiltec developed the analysis and approach to ensure the system could convey high flows and connect with the County's irrigation system which is currently being served by a recycled water system. Connection of the new facilities to existing recycle water facilities was designed and approved by the County Department of Public Health.

Challenges • Design of the project required close coordination with LA County Parks and Recreation staff in order to maintain operation of the Marshall Canyon Golf Course. The new pump station required a small footprint to allow the existing pump station to remain operational during construction. In addition the golf course required that player access and fairways remained open with minimal disruption.

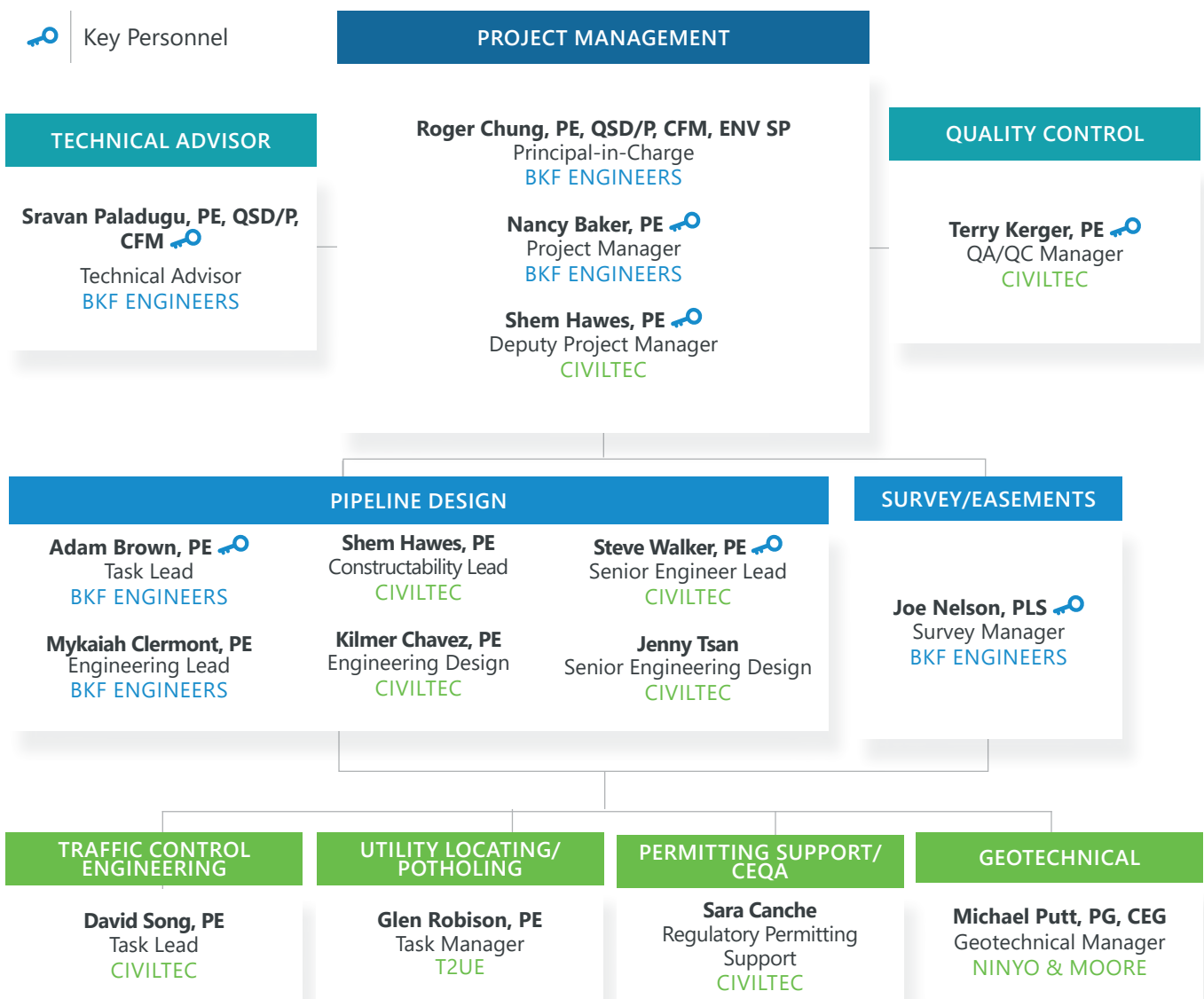
Final Result • Civiltec implemented the pipeline alignment through the golf course fairways and boundary areas to avoid tee boxes and golfing greens and to maintain golf course operations. The contract documents provided incentives to the contractor(s) to meet installation schedules. Civiltec worked closely with the County and City of La Verne to ensure water supply was maintained.

KEY PERSONNEL AND SUB-CONSULTANTS

ORGANIZATIONAL CHART

With over 150 combined years of experience, BKF and Civiltec (Team) have partnered on this pursuit, forming a dynamic team with the technical expertise and regional experience needed to meet the Project requirements and deliver best value to SOCWA and El Toro Water District (ETWD) who owns and operates the ETM Reach B. This team has assigned professional engineers to specific roles based on the professionals' expertise. We are organized for a quick response to address your needs and are able to meet tight schedules. If needed, BKF and Civiltec have the resources to provide additional experienced personnel, office support, and/or field staff. With a combined staff of over 540+, including over 175 licensed civil engineers and 24 licensed land surveyors from which to draw resources, we are able to schedule multiple tasks simultaneously to respond to project needs quickly. Bios are presented for all team members on the following pages and resumes for key personnel are included as Appendix C.

South Orange County Water Authority



KEY PERSONNEL AND SUB-CONSULTANTS

CIVIL ENGINEERING SUPPORT

CIVILTEC



Civiltec is a full-service civil engineering firm with a team of more than 60 professionals, including 15 registered civil engineers, a registered electrical engineer, four registered land surveyors, two certified floodplain managers, and eight engineers-in-training. Our staff also includes experienced project managers, designers, CADD technicians, surveyors, and administrative professionals who support projects from planning through construction.

Operating from six offices in California and Arizona, Monrovia (headquarters), Fullerton, and Upland, CA, and Peoria, Phoenix, and Prescott, AZ, Civiltec delivers comprehensive reports, plans, specifications, and estimates. Our collaborative approach emphasizes early coordination and proactive problem-solving to minimize construction risks, avoid delays, and deliver efficient, constructible solutions for our clients.

CCTV, UTILITY LOCATING & POTHOLING

T2ue



T2 Utility Engineers (T2ue) provides a full range of Utility Engineering services, including Subsurface Utility Engineering (SUE), advanced geophysics, test holes/potholing, surveying, and utility coordination to support infrastructure projects in the United States and Canada. T2ue staff have experience and expertise managing projects of all sizes, from small development jobs to large-scale billion dollar infrastructure projects for public and private clients. They have

30+ offices and over 300 employees across North America. They retain a vast array of geophysical and designating equipment and one of the largest fleets of SUE vehicles on the west coast. T2ue staff utilizes the CI/ASCE 38-22 Standard for collecting and depicting the existing utilities to build the highest quality utility map that includes an iterative field investigation. The ASCE 38-22 was developed to mitigate risk associated with the existing utilities, which leads to their technicians typically finding 40% to 60% more utilities than documented on records and allows our team to build a complete and accurate utility base map to aid in the design process and reduce negative impacts during construction.

GEOTECHNICAL ENGINEERING

Ninyo & Moore



A SOCOTEC COMPANY

Ninyo & Moore, a multidisciplinary firm established in 1986, provides geotechnical engineering, geology, materials testing, inspection, and environmental consulting services to clients in the governmental (federal, state, and local) and commercial sectors. Over the past 38 years, Ninyo & Moore has grown to over 600 dedicated professionals with long-term, demonstrated

experience in geotechnical, environmental, materials testing, and inspection services on public infrastructure projects. Ninyo & Moore's staff of professionals includes experienced and registered geotechnical engineers, civil engineers, environmental engineers, engineering geologists, hydrogeologists, environmental scientists, certified technicians, field inspectors, and hazardous waste and regulatory compliance specialists. Their firm has successfully completed work on hundreds of water and wastewater treatment plants, trunk sewers, lift and pump stations, storm drains, sewers, pipelines, and reservoir projects throughout California. Some of their clients include South Coast Water District, Irvine Ranch Water District, Orange County Sanitation District, Los Angeles Department of Water and Power, and other local government agencies.



PROJECT MANAGER SPOTLIGHT

NANCY BAKER, PE

Project Manager

Nancy has more than 30 years of experience in the water industry and civil engineering. She has extensive knowledge in project management and the planning and design of water and wastewater facilities including pipelines, pumping facilities, pressure reducing stations, domestic water well equipping, and water and wastewater treatment facilities. Nancy's pipeline experience includes over 150 miles of new pipeline design and rehabilitations projects for water mains and recycled water mains ranging in diameter from 6- to 48-inches.

As project manager, Nancy will serve as the main point of contact for SOCWA, verify project requirements, timelines, and deliverables, and develop a tailored approach specific to the Project's needs. Nancy will also monitor schedules, manage the project budget, and implement the overall project strategy to ensure successful execution.

30 PE
YEARS OF CIVIL ENGINEER
EXPERIENCE **67448**

AVAILABILITY 40%

NOTEWORTHY STATS



EXPERIENCED LEADER

Has led more than 100+ water projects in Southern California.



LOCAL PRESENCE

Located in our Newport Beach Office, less than 25 miles from the project site.



PIPELINE GURU

Over 200 miles of water pipeline designed within southern California.

SELECT PROJECT EXPERIENCE

Allen-McColloch Pipeline Urgent Repair On-Call, Metropolitan Water District of Southern California, Irvine/Lake Forest/Mission Viejo, CA*

Role: Project Manager. The project included engineering design and construction services for the urgent repair of the Allen McColloch Pipeline (AMP) Prestressed Concrete Cylinder Pipeline (PCCP). The AMP ranges in diameters from 78-inch to 54-inch. The repairs were crucial to ensure the continued operation of the AMP PCCP, which serves multiple service connections for Irvine Ranch Water District, El Toro Water District, and Moulton Niguel Water District. The project scope included several CFRP repairs, installation of 14,700 linear feet of steel liner, and preparation of three contract packages. Due to the condition of the AMP, the project had to be designed, pipe fabricated, a contractor hired, permits obtained, and the pipeline shutdown and repaired in just five months. The three contract packages were delivered on time and the project was constructed as scheduled. The project scope included engineering design, bidding support, and engineering services during construction. A paper on the project was published and presented at the 2025 ASCE/UESI Pipeline Conference in August of 2025 in Tampa FL. Nancy was responsible for overall project management for engineering design, creating contract documents, permitting, and assistance during the bidding and construction.

Rienda (Planning Area 3) Sewage Lift Station – Phase 1, Santa Margarita Water District, San Clemente, CA*

Role: Project Manager/Engineer responsible for engineering design and construction support services for the Rienda Sewage Lift Station (RLS) to serve Rancho Mission Viejo's (RMV) Rienda development. The Rienda development is expected to be constructed over a 12-year period and includes approximately 8,100 residential units and multiple commercial areas. The RLS will be constructed in three (3) phases using a combination of permanent and temporary facilities for "modular construction" to meet service needs as the development grows. The project included design of the first two (2) phases and preparation of construction plans to include civil, mechanical, structural, architectural, electrical and instrumentation design required for the installation of Phase 1 facilities. Phase 1 design includes cast-in-place concrete lift station/emergency storage basin with two (2) 75 HP submersible pumps, a 15 HP cutter pump, water quality basin, odor control system, surge protection

STATEMENT OF QUALIFICATIONS PROJECT MANAGER SPOTLIGHT

EDUCATION

B.S., Civil Engineering, California State University, Long Beach

LICENSES

Professional Civil Engineer, CA No. 67448

Professional Civil Engineer, AZ No. 41550

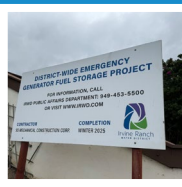
REFERENCES



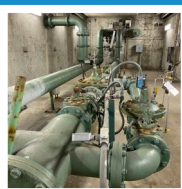
Metropolitan Water District of Southern California
Denise Allen, PE
310.467.2051
dnallen@mwdh2o.com
Allen-McColloch
Pipeline Urgent Repair



Santa Margarita Water District
Jaime Aguilar, PE
949.465.6981
AguilarJ@smwd.com
Rienda Lift Station
Phase 1 and 2



Irvine Ranch Water District
Harry Cho, PE
949.453.5675
cho@IRWD.com
District-Wide Emergency Generator Diesel Fuel Enhancement and Generator Replacement Project



City of Anaheim PUD Water
Lisa O'Connell, PE
714.765.4311
loconnell@anaheim.net
Miscellaneous Vaults and Pressure Reducing Stations
Capital Improvement

NANCY BAKER (CONTINUED)

Project Manager

system, flowmeter vault, diversion valve vault, cathodic protection, sewer mains, force mains, and masonry block building to house the electric equipment. The Phase 1 facilities were designed to minimize construction impacts during the installation of the future Phase 2 and Phase 3 facilities.

Coto de Caza Sewage Lift Station and Emergency Storage Basin (ESB), Santa Margarita Water District, Santa Margarita, CA*

Role: Project Manager/Design Lead. Project included preparation of a preliminary design study, final design, contract bid documents, and engineering services during construction for the construction of an ESB at the existing Coto de Caza Lift Station. The 45-foot x 38-foot x 25-foot deep cast-in-place reinforced concrete basin with three (3) chambers is designed to contain sewer overflows from the lift station during emergency events. The ESB was constructed onsite of the lift station in a footprint approximate 50-foot x 50-foot in area. Project includes coordination of an existing SDG&E power supply line relocation, site improvements to allow tanker truck access to the ESB, including relocation of entrance gate and site walls/fences, design of overflow and drain pipelines. The ESB is designed to contain three hours of the lift station's average daily flow within three interior chambers. The sewage is transferred amongst the chambers by two 10 HP submersible pumps and a series of sluice gates. The project included preparation of construction plans to include civil, mechanical, structural, electrical, and instrumentation improvements. Nancy was responsible for project management, preparation of a preliminary design study, final design, contract bid documents, and engineering services during construction.

San Joaquin Marsh Improvements, Irvine Ranch Water District (IRWD), Irvine, CA*

Role: Project Engineer responsible for preparing preliminary design report, final design bid documents and engineering services during construction for flow control, flow metering, flow treatment, pumping and electrical facilities improvements within the San Joaquin Marsh Wildlife Sanctuary (Marsh), a 300-acre wetland area operated by the Irvine Ranch Water District (IRWD). The Marsh is a multiple cell water quality treatment wetland system. The Marsh covers approximately 45 acres of open water and 11 acres of wetland vegetation. The Marsh receives water from San Diego Creek Channel (SDCC) via the San Diego Creek Pump Station (SDC PS) that contains two submersible non-clog pumps capable of pumping 3,200 gpm. Using these pump(s), water is diverted from SDCC and moved through the Marsh system before being discharged back into the creek by the San Juan Marsh pump station (SJM PS). Nancy provided design improvements at the SDC PS that included replacement of both pumps, installation of VFD motors, replacement of MCC and wet well level transmitters. Improvements at the SJM PS included piping modifications for installation of a mechanical strainer and magnetic type flow meter. Additional improvements within the Marsh include installation of flow monitoring (both gravity and pressure) at six locations and pressure and flow control valves to provide control of the water throughout the pond system.

**Project performed with previous firm*

KEY PERSONNEL AND SUB-CONSULTANTS

KEY TEAM MEMBER ROLES & RESPONSIBILITIES

SELECT SIMILAR PROJECTS

	<p>ROGER CHUNG, PE, QSD/P, CFM, ENV SP Principal-in-Charge BKF Engineers Roger has more than 26 years of civil engineering experience with expertise in hydrology, hydraulics, and ecological restoration for wetland and marsh environments. His work includes the preparation of drainage studies, drainage master plans and the preparation of design plans, specifications, and cost estimates for water supply and floodplain management.</p>	<ul style="list-style-type: none"> - Laguna Beach Citywide Storm Drain Rehabilitation and Lining Project - Temple Hills Drive Storm Drain Improvement Project - Anita Street Storm Drain Improvement Project
	<p>NANCY BAKER, PE Project Manager BKF Engineers Nancy has more than 30 years of experience in the water industry and civil engineering. She has extensive knowledge in project management and the planning and design of water and wastewater facilities. Nancy's pipeline experience includes over 150 miles of new pipeline design and rehabilitations projects for water mains and recycled water mains ranging in diameter from 6- to 48-inches.</p>	<ul style="list-style-type: none"> - AMP Urgent Repair, Metropolitan Water District of Southern California (MWDSC) - Orchard Hills Development Plan Review, Irvine Ranch Water District - Planning Areas 1 & 2 Development Improvements, Irvine Ranch Water District
	<p>SHEM HAWES, PE Deputy Project Manager & Constructability Lead CIVILTEC Shem has 23+ years of water and wastewater engineering experience, serving as a project manager and senior engineer on hundreds of projects. His expertise includes pipeline planning, design, and replacement; pump stations; reservoirs; treatment facilities; and hydraulic modeling.</p>	<ul style="list-style-type: none"> - Grand Avenue Pipeline Replacement, Valencia Heights Water Company - I-10 Fwy Crossing Pipeline Replacement Project, Valencia Heights Water Company
	<p>SRAVAN PALADUGU, PE, QSD/P, CFM Technical Advisor BKF Engineers Sravan is a water resources engineer with 22 years of experience. He has successfully completed numerous Capital Improvement Projects with construction budgets ranging from \$300K to \$22M.</p>	<ul style="list-style-type: none"> - DSRSD Wineberry and Canterbury Water Line Replacement - Interceptor Force Trunk Main Rehabilitation - ACWD Alvarado Niles Pipeline Seismic Retrofit
	<p>TERRY KERGER, PE QA/QC Manager CIVILTEC Terry has 55+ years of experience, focused on planning and design of water infrastructure, including transmission mains, pump stations, reservoirs, treatment facilities, and hydraulic modeling.</p>	<ul style="list-style-type: none"> - Phases 1-5 Water Improvement Projects, Valley County Water District - West Garden Grove Supplemental Transmission Main Project, City of Garden Grove
	<p>ADAM BROWN, PE Pipeline Design Task Lead BKF Engineers Adam is a seasoned civil engineer with over 18 years of experience planning and designing municipal water, wastewater, stormwater, and recycled water infrastructure. He will be overseeing the preparations of plans and specifications, providing technical guidance, approving design decisions, and managing the design team overall.</p>	<ul style="list-style-type: none"> - 72-inch Trunk Main Rehabilitation, Oro Loma Sanitary District - 24th/K Combined Sewer Storage Improvement Projects - Carmichael Water District San Juan Water Line Project
	<p>JOE NELSON, PLS Survey Manager BKF Engineers Joe is a highly skilled Professional Land Surveyor with 13 years of experience delivering precise and reliable surveying services across diverse project types.</p>	<ul style="list-style-type: none"> - Anaheim Public Utility District APUD GSA#5, FY 23/24, Harbor Substation Line Extension Project - City of San Clemente Reservoir Legal & Plat Preparation

KEY PERSONNEL AND SUB-CONSULTANTS

ADDITIONAL TEAM MEMBER ROLES & RESPONSIBILITIES

SELECT SIMILAR PROJECTS

	<p>KILMER CHAVEZ, PE Engineering Design CIVILTEC Kilmer has 5 years of engineering experience with expertise in sewer pipeline design, hydraulic and pump calculations, stormwater LID systems, and PS&E development, supported by strong proficiency in AutoCAD, Civil 3D, HydroCalcs, and Enercal.</p>	<ul style="list-style-type: none"> - California American Water Interconnection System, Amarillo Mutual Water Company - Well 1 Permanent Storage Tank and Booster Pumps, Amarillo Mutual Water
	<p>STEVE WALKER, PE Senior Engineering Lead CIVILTEC Steven has 25+ years of water and wastewater experience, specializing in pipeline design, pumping, storage, and treatment systems. His background includes hydraulic modeling, construction oversight, and system startup.</p>	<ul style="list-style-type: none"> - Grand Avenue Pipeline Replacement, Valencia Heights Water Company - Glendora Pipeline Condition Assessment Segment 1, San Gabriel Valley Municipal Water District
	<p>JENNY TSAN Senior Engineering Design CIVILTEC Jenny has 25+ years of experience, focused on the design of water pipelines, reservoirs, pump stations, wells, and treatment facilities, with extensive experience using Civil 3D for utility and infrastructure planning.</p>	<ul style="list-style-type: none"> - San Bernardino Road Pipeline Replacement, Covina Irrigating Company - Alondra and Pioneer Boulevards Pipeline Replacement, City of Norwalk
	<p>MYKAIHAH CLERMONT, PE Engineering Lead BKF Engineers Mykaiah provides technical support with experience spanning potable transmission and distribution water main design and permitting, recycled water main design, and sewer systems.</p>	<ul style="list-style-type: none"> - Richmond Keller Beach Sanitary Sewer - Laguna Creek Restoration Preliminary Engineering & Environmental Planning
	<p>DAVID SONG, PE Traffic Control Engineering CIVILTEC David has 21+ years of experience focused on potable water infrastructure design and project management. His background includes hydraulic modeling, PS&E, permitting, and delivery of over 400,000 linear feet of water pipelines, pump stations, and wells.</p>	<ul style="list-style-type: none"> - San Bernardino Road Pipeline Replacement, Covina Irrigating Company - Alondra and Pioneer Boulevards Pipeline Replacement, City of Norwalk
	<p>GLEN ROBISON, PE Utility Locating/Potholing T2UE Glen has over 20 years of civil engineering, due diligence, design and project management experience. His expertise is in Subsurface Utility Engineering (SUE), land development, site design, water quality management plans, storm drain and drainage, water and sewer facilities, and much more.</p>	<ul style="list-style-type: none"> - LA County Sanitation, Joint Water Pollution Control Plant Effluent Outfall Tunnel - Project No. 2-49, OC Sanitation - Doheny Village Connectivity
	<p>SARA CANCHE Regulatory Permitting Support CIVILTEC Sara has 48+ years of experience supporting engineering projects through permitting, plan processing, and planning coordination. Her expertise includes utility research, exhibit preparation, and securing agency approvals to support planning, design, and construction efforts.</p>	<ul style="list-style-type: none"> - San Bernardino Road Pipeline Replacement, Covina Irrigating Company - Alondra and Pioneer Boulevards Pipeline Replacement, City of Norwalk
	<p>MICHAEL PUTT, PG, CEG Geotechnical Manager Ninyo & Moore Michael is a Principal Geologist with 30 years of experience specializing in providing engineering geology consultation in Southern California. He has extensive experience on a variety of project types.</p>	<ul style="list-style-type: none"> - Irvine Ranch Water District, Lake Forest Woods Sewer Improvements - Irvine Ranch Water District, IDF and Signal Peak Radio Towers

Per the RFP, all pricing information has been submitted in a separate document.

CONFLICTS OF INTEREST

BKF confirms that neither its participation nor the participation of its employees, agents or subcontractors in the proposed contract constitutes a conflict of interest or a potential conflict of interest pursuant to California Government Code Sections 1090 et seq., the Political Reform Act, and other applicable laws.

CERTIFICATIONS

- BKF certifies that it is not aware of any actual or potential conflict of interest that exists or may arise by executing the contract or performing the work that is the subject of RFP ENG-25-07.
- BKF certifies that it is willing and able to obtain all insurance required by the form contract included as Attachment C.
- BKF certifies that it has conducted a reasonable and diligent inquiry concerning the minimum and/or prevailing wages required to be paid in connection with the performance of the work that is the subject of RFP ENG-25-07 and certifies that the proposed pricing includes funds sufficient to allow respondent to comply with all applicable local, state, and federal laws or regulations governing the labor or services to be provided.
- BKF acknowledges and agrees with all terms and conditions stated in RFP ENG-25-07.
- BKF certifies that all information provided in connection with its proposal is true, complete, and correct.

ATTACHMENT B
NON-COLLUSION AFFIDAVIT


The undersigned declares:

I am the PIC of BKF, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

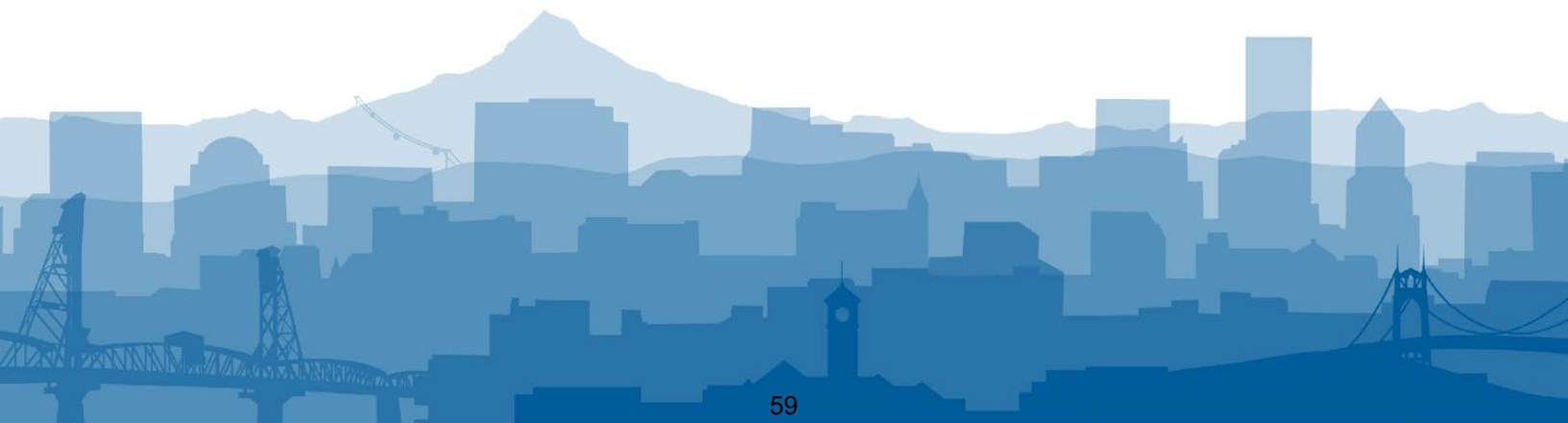
Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

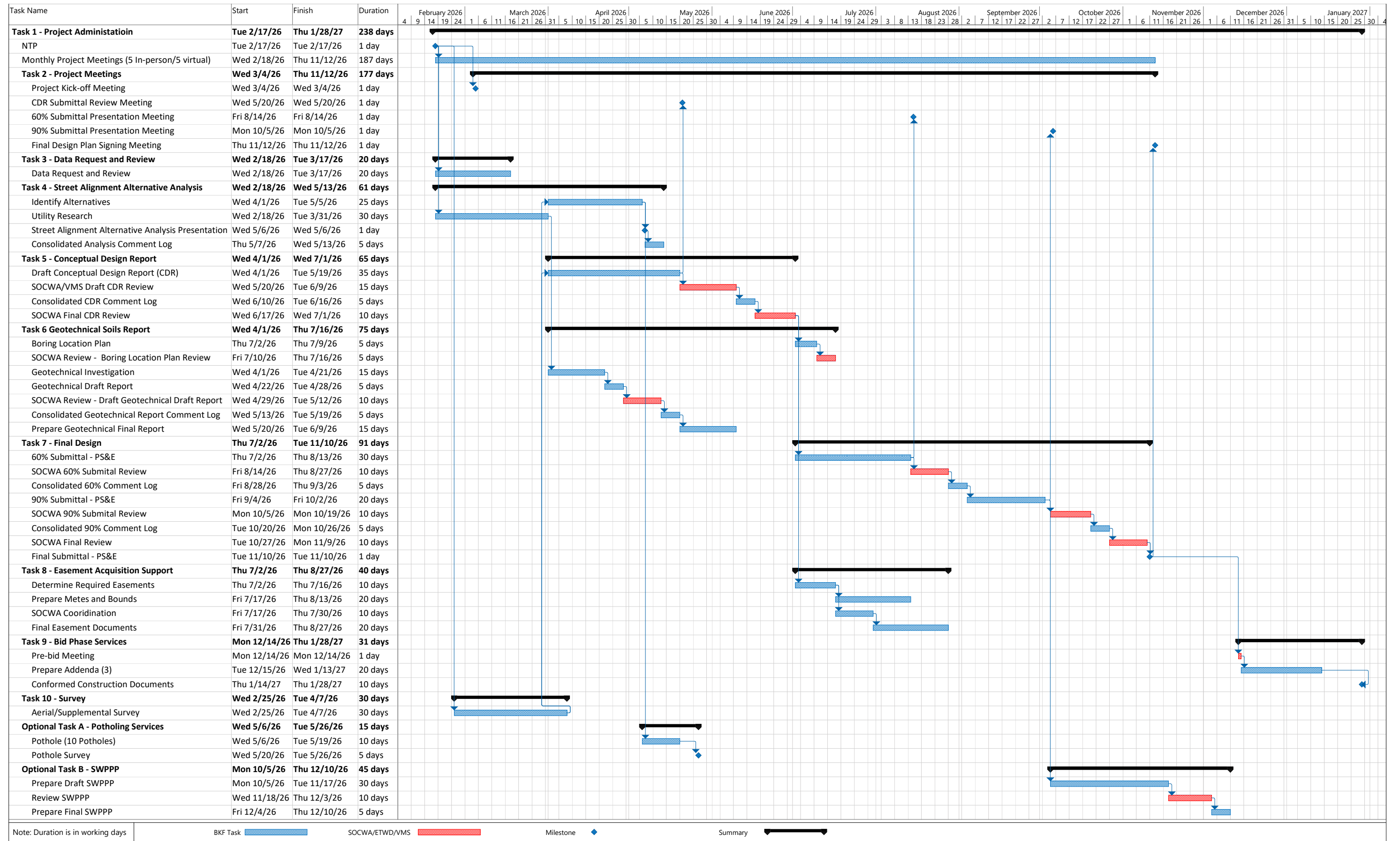
I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on 1/14/26 [date], at Newport beach [city], CA [state].

Signature: 
Title: Principal-in-Charge

APPENDIX A

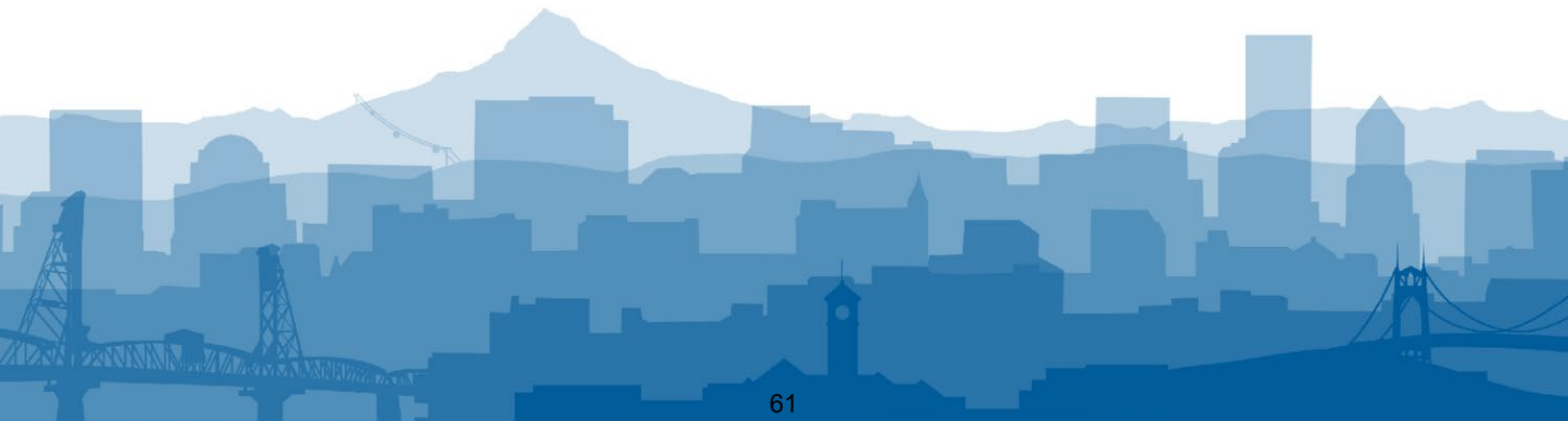
PROJECT SCHEDULE





APPENDIX B

PIPELINE MATERIAL COMPARISON MATRIX (REACH B)

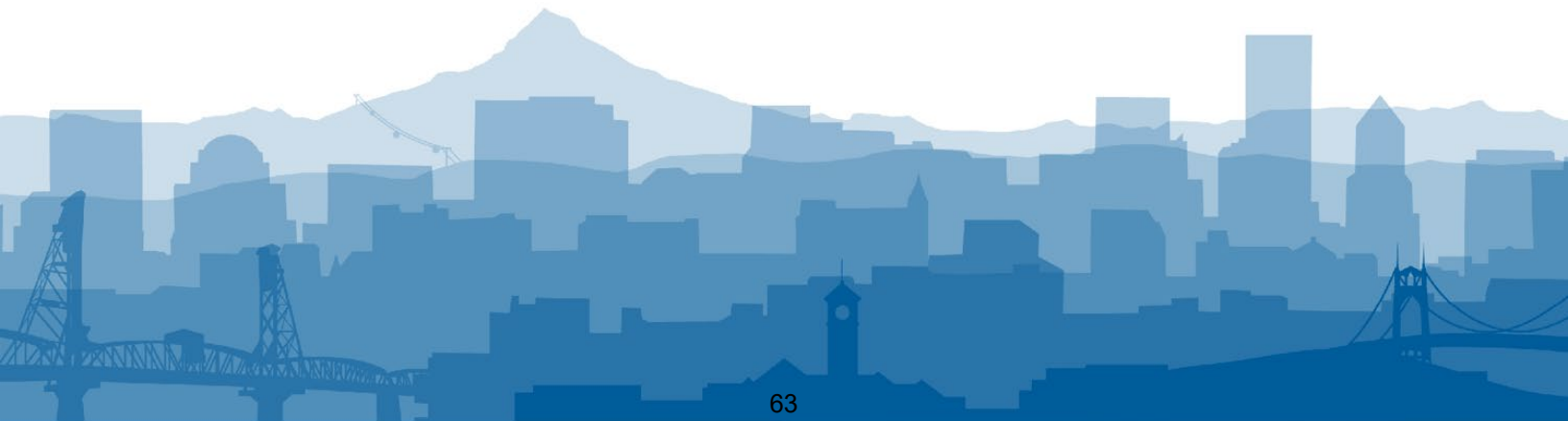


APPENDIX B - PIPELINE MATERIAL COMPARISON MATRIX (REACH B)

Criterion	PVC (C905, DR41 ~100 psi)	HDPE (DR21 ~100 psi)	FRP (PN 100)	DIP (Class 200)	Steel (C200 / per design)
Nominal OD / ID (approx.)	25.8" / 24.5" (at 24" nominal)	30" / 27" (at 27" OD for DR21)	27" / 24.8"	25.8" / 24" (24" nominal)	As designed
Typical Pressure Capability	100 psi (DR41) — higher classes available	100 psi (DR21) — higher via lower DR	100 psi (PN 100) — higher available	200 psi typical	Per design (commonly 150–250+ psi)
Joint Type	Restrained bell/spigot	Butt-fused (continuous)	FRP coupling	Restrained bell/spigot	Welded (field or shop), or restrained mech. couplings
Segment Length (typ.)	20 ft	40 ft sticks (fused to long strings)	Up to 40 ft	20 ft	40–50 ft
Weight (lb/ft, approx.)	~34	~57	~50	80–95*	~80**
Corrosion Resistance	Excellent (non-metallic)	Excellent (non-metallic)	Excellent (non-metallic)	Good with linings; external corrosion risk	Requires coatings/cathodic protection; excellent with proper protection
Bending / Curvature	Limited; fittings for angles	Good; can follow gentle curves with radius	Moderate; factory elbows/couplings	Limited; fittings for deflections	Limited; fittings/elbows for curvature
Constructability – Golf Course	High: small staging, quick restrained joints; minimal surface disruption	Moderate: fused strings require larger staging; heat fusion areas; longer set-ups	High: modular segments; smaller staging than HDPE; couplings manageable	Moderate: heavier, smaller segments; more equipment traffic	Moderate: welding operations, safety buffers; heavier segments
Constructability – Roadways (El Toro / Moulton)	Moderate: many joints; traffic control manageable	Moderate: long pulls may complicate traffic staging	Moderate–High: fewer lifts than PVC; coupling installation	High: proven in ROW; restrained joints; robust for traffic loads	High: robust; customizable; traffic control for welding/fabrication
Installation Speed	Fast in short, repetitive segments	Fast once fused strings are prepared; slower setup for fusion	Fast in modular runs; efficient couplings	Moderate; more lifts, but predictable	Moderate; welding and QC add time
Staging Footprint	Small (short sticks, restrained joints)	Larger (fusion, long strings)	Small–Moderate	Moderate	Moderate–Large (welding zones)
Long-Term O&M	Easy; non-metallic; gasket monitoring	Easy; fusion joints; temperature considerations	Easy; inspect couplings; UV/handling care	Moderate; monitor exterior corrosion/CP where needed	Moderate; monitor coatings/CP; inspect welds
Material Availability for ~27"	24" standard; upsize evaluation needed	27" feasible	27" feasible	24" standard; upsizing evaluation	Custom/engineered
Cost (relative)	Low–Moderate	Low–Moderate	Moderate	Moderate–High	High (depends on design/fabrication)
Environmental / Site Conditions	Excellent in wet soils	Excellent in wet soils	Excellent in wet soils	Requires corrosion mitigation in wet soils	Requires corrosion mitigation in wet soils
Best-Fit Summary	Golf course (restricted staging, quick build) and some roadway stretches	Curvilinear routes; where fewer fittings desired; if staging is available	Golf course modular install; corrosion-resistant; balanced staging	Roadway segments with high structural demand	Roadway segments needing tailored design/strength

APPENDIX C

KEY PERSONNEL RESUMES



APPENDIX C - KEY STAFF RESUMES



NANCY BAKER, PE

PROJECT MANAGER

Nancy has more than 30 years of experience in the water industry and civil engineering. She has extensive knowledge and experience in project management and the planning and design of water and wastewater facilities including pipelines, pumping facilities, pressure reducing stations, domestic water well equipping, and water and wastewater treatment facilities. Nancy's pipeline experience includes over 150 miles of new pipeline design and rehabilitations projects for water mains and recycled water mains ranging in diameter from 6- to 48-inches.

EDUCATION

B.S., Civil Engineering,
California State University,
Long Beach

REGISTRATION

Professional Civil
Engineer, CA No. 67448

Professional Civil
Engineer, AZ No. 41550

AFFILIATIONS

Orange County Water
Association

American Water Works
Association

TOTAL YEARS EXPERIENCE

30 years

SELECT PROJECT EXPERIENCE

Allen-McColloch Pipeline Urgent Repair, Metropolitan Water District of Southern California, Irvine/Lake Forest/Mission Viejo, CA*

Nancy served as Project Manager for the engineering design and construction services for the urgent repair of the Allen McColloch Pipeline (AMP) Prestressed Concrete Cylinder Pipeline (PCCP), which ranges from 78-inch to 54-inch in diameter and serves Irvine Ranch Water District, El Toro Water District, and Moulton Niguel Water District. The scope included several CFRP repairs, installation of 14,700 linear feet of steel liner, and preparation of three contract packages. Due to the pipeline's condition, design, pipe fabrication, contractor selection, permitting, and shutdown for repairs were completed within twelve months. Nancy managed overall project delivery, including engineering design, contract documents, permitting, and support during bidding and construction. All three contract packages were delivered on time and constructed as scheduled. A paper on this project will be published and presented at the 2025 ASCE/UESI Pipeline Conference in Tampa, FL.

Water Transmission Main Valve Replacements Phase 2, City of Newport Beach, Newport Beach, CA*

Nancy served as Project Manager and Design Lead for Phase 2 of the Water Transmission Main Valve Replacements project. The City's transmission mains, built in the 1960s, had deteriorated valves located in below-grade vaults. The project involved replacing 19 transmission main valves ranging from 12 to 30 inches in diameter throughout the City, including busy arterial roads such as Jamboree Road and Pacific Coast Highway. Additional work included relocating the Alta Vista Pressure Reducing Station, replacing two 36-inch butterfly valves at the 16th Street Pump Station, multiple valves on the Zone III pump station discharge header at Big Canyon Reservoir, and large valves in the Flow Control Building. Nancy was responsible for preparing construction plans and contract documents for all scopes of work.

BNSF Railway Waterline Crossing Relocation, Yorba Linda Water District, Yorba Linda, CA*

Nancy served as Project Manager/Design Lead for the installation of a new 18-inch waterline that crosses beneath BNSF right-of-way within a 26-inch steel casing. BNSF had an ongoing project to modify the railroad tracks in the vicinity of the District's waterlines and requested the District to relocate the impacted waterlines according to the terms and conditions of the license agreement. Services included evaluation of two alternative alignments. Nancy was responsible for project management, engineering design, preparation of contract documents, bidding support, and construction support services.

**Project performed with previous firm*

APPENDIX C - KEY STAFF RESUMES



EDUCATION

BS, Civil and Environmental Engineering, University of Utah

REGISTRATION

Professional Civil Engineer CA No. 69578

TOTAL YEARS EXPERIENCE

23 years, 18 years with Civiltec



SHEM HAWES, PE

CIVILTEC - DEPUTY PROJECT MANAGER & CONSTRUCTABILITY LEAD

Shem has 23+ years of water and wastewater engineering experience, including more than 18 years with Civiltec, where he has led hundreds of planning, design, and analytical projects as a project manager and senior engineer. His expertise spans the full lifecycle of water infrastructure, including the planning, design, and construction management of pipelines, booster pump stations, reservoirs, and treatment facilities, as well as hydraulic modeling and system evaluation for both water distribution and sewer collection systems. He has developed mass balance and hydraulic models for treatment plant operations, prepared design reports and master plans, overseen permitting efforts, and supported environmental review documentation for pipeline and facility projects. Throughout his tenure, he has worked closely with clients, business partners, and agency stakeholders to deliver practical, reliable solutions for water, wastewater, and public works improvements, including numerous pipeline replacement and rehabilitation efforts.

SELECT PROJECT EXPERIENCE

Grand Avenue Pipeline Replacement, West Covina, CA

Designed and construction managed a 12-inch HDPE pipeline installed through private residential properties in West Covina. The project replaced an aging steel main using pipe bursting trenchless construction to minimize excavation and surface impacts. Oversaw engineering coordination for surveying, easement preparation, and staging pit layout, ensuring constructability within confined easements. Led multi-disciplinary design reviews and QA/QC to confirm hydraulic performance and compliance with agency standards.

I-10 Fwy Crossing Pipeline Replacement Project, West Covina, CA

Design of a new 12" distribution main in West Covina, California. extending under the I-10 freeway in an existing 24-inch casing. The new pipeline extends from the southern edge of the CalTrans right-of-way near Garvey Avenue and Horseshoe Circle to reconnect into the existing piping network in the area. The prior existing 6-inch steel pipeline in Garvey Avenue extends north a few hundred feet east of Horseshoe Circle was abandoned and disconnected from the network at both locations. A portion of the existing 6-inch main north of the I-10 right-of-way was also abandoned and replaced.

Reservoir 9 Pipeline Replacement, San Bernardino County, CA

Capital improvement pipeline replacement project for the deteriorating existing lines damaged by tree roots and age located between 25th Street and Reservoir No. 9. Sections of pipeline required alignment in the existing right-of-way and newly acquired right-of-way within existing undeveloped San Bernardino County property. Coordinated with homeowners to minimize impact to residential areas.



TERRY KERGER, PE

QA/QC MANAGER

Terry has 55+ years (21+ with Civiltec) of experience in planning, project management, design, and construction of civil engineering projects. His experience includes flow computations for master plans, hydraulic calculations, more than 50 miles of water transmission mains (ranging from 6- to 30-inches), flow control facilities, pump stations, reservoirs, wells, treatment plants, sewerage, water containment, investigations of wellhead water treatment and well water blending, hydraulic modeling, capital improvement programs, telemetry system design, feasibility studies for purchase of adjacent mutual water systems, including system appraisal, financial options, and identifying system upgrades, flood control facilities, bikeway, roadway design, structure design, grading plans, water master plans, and agency plan check programs. Other project contributions include mapping and flow computations for master plans, hydraulic calculations for transmission lines, and metering facilities. Terry conducted computerized hydraulic network analysis using Fluid Analysis and Simulation Technique (FAAST) for several clients including Rowland Water District and the cities of Manhattan Beach, Thousand Oaks, Camarillo, Ontario, and Beverly Hills. He has been a key eye for quality on 11+ water master plans and 17+ system models.

EDUCATION

BS, Mechanical Engineering,
California State University, Los Angeles

REGISTRATION

Professional Civil Engineer CA No. 34896

TOTAL YEARS EXPERIENCE

55 years

SELECT PROJECT EXPERIENCE

Lincoln, Washington, Telephone and Monte Vista Avenues Water Main Replacements, Chino, CA

Design of this project included approximately 8,656 linear feet of 8- to 12-inch poly-vinyl chloride pipeline replacement including fire hydrants, domestic services, and abandonments. The project was located on Lincoln Avenue from Monte Vista Avenue to 7th Street and Russell Avenue to Monte Vista Avenue; Washington Avenue from 3rd Street to Telephone Avenue; Telephone Avenue from Riverside Drive to Walnut Avenue; and Monte Vista Avenue from Riverside Drive to Walnut Avenue.

West Garden Grove Supplemental Transmission Main Project, Garden Grove, CA

This project included design and full construction management of approximately 24,000 linear feet of 16-inch pipeline within street right-of-way of Garden Grove, Stanton, and Caltrans. The project also included installation of approximately 5,000 feet of 4-inch to 10-inch distribution pipeline replacement, approximately 3,000 feet of 15-inch to 24-inch vitrified clay pipe sewer replacement, jack and bore under existing railroad crossings, span an existing flood channel, service connections, water meters, fire hydrants, street improvements and complete traffic control design.

Phases 1-5 Water Improvement Projects, Valley County Water District, CA

Projects included design and construction administration for numerous capital improvement water main replacement projects. Designed approximately 16,500 linear feet of 8-inch and 12-inch ductile iron pipeline replacement including service connections, fire hydrants and street improvements over 5 phases.





STEVE WALKER, PE

QA/QC MANAGER

Steven has 25+ years (5+ with Civiltec) of experience in all aspects of planning, design and construction oversight of municipal water and wastewater systems. His experience includes treatment, conveyance, pumping and storage systems. His planning experience includes computerized hydraulic modeling and construction cost estimates of present and future system needs. Steven has experience in the design and construction inspection services of water and wastewater treatment, pumping, and conveyance systems. He has a broad depth of understanding of pipeline design requirements and challenges.

SELECT PROJECT EXPERIENCE

Grand Avenue Pipeline Replacement

Designed and construction managed a 12-inch HDPE pipeline installed through private residential properties in West Covina. The project replaced an aging steel main using pipe bursting trenchless construction to minimize excavation and surface impacts. Oversaw engineering coordination for surveying, easement preparation, and staging pit layout, ensuring constructability within confined easements. Led multi-disciplinary design reviews and QA/QC to confirm hydraulic performance and compliance with agency standards.

Glendora Pipeline Condition Assessment Segment 1

Assessments of the condition of the Devil Canyon-Azusa Pipeline Project. Specifically, the effort for Segment 1, a 30-inch diameter pipeline approximately 34,490 feet in length. The pipeline was constructed in 1974. The area of concern is approximately 20,990 feet in length and is described in additional detail herein. Segment 1 is aligned from east to west across the City of Glendora. The pre described pipelines are located primarily within public right-of-way and improved, paved streets with a section of the pipeline within an easement between the cul-de-sacs of Vladimir Street and Lemon Street where the pipeline crosses the Dalton Wash. The pipes are cement mortar lined and coated. All steel cylinder is listed in this Segment as 0.1345-inch thick, which is equivalent to 10 gages. The mortar lining is $\frac{3}{4}$ -inch, and the coating is 1-inch.

Devil Canyon-Azusa Pipeline Inspection and Evaluation Segment 1

Project to assess conditions of the Devil Canyon-Azusa Pipeline Project (DCAP). Analysis included Segment 1 of DCAP, approximately 20,990 feet of a 30-inch diameter pipeline aligned from east to west across the City of Glendora. Analysis concluded that the Pipeline Inspection and Condition Analysis Corporation (PICA) had the best system for verifying the useful life of the bar wrapped concrete cylinder pipe. Use of the PICA system required two new points of connection and three access manholes along the Segment 1 pipe alignment. Designed the three locations requiring these access manholes and provided bidding support to secure contractors to provide permitting, traffic control and coordination during the inspection work.

EDUCATION

BS, Environmental Engineering,
University of Florida

REGISTRATION

Professional Civil Engineer CA No. 86693

Professional Civil Engineer AZ No. 82004

Professional Civil Engineer FL No. 64693

TOTAL YEARS EXPERIENCE

25 years, 5 years with Civiltec



APPENDIX C - KEY STAFF RESUMES



SRAVAN PALADUGU, PE, CFM, QSD/P

TECHNICAL ADVISOR

Sravan is a water resources engineer and is experienced in all aspects of a project from planning to design and construction. He has worked on handful of large pipeline projects from project inception to construction. He has also authored several technical studies and is responsible for preparing plans, specifications and estimates for several lift/pump station projects, water, sewer and storm pipeline projects. He has successfully completed numerous Capital Improvement Projects with construction budgets ranging from \$300K to \$22M, and has a thorough understanding of all project aspects including site and utility constraints, environmental impacts, traffic control, easements, constructibility analyses, and public outreach.

EDUCATION

M.S., Civil Engineering,
University of Utah,
Salt Lake City

B.E., Civil Engineering,
Osmania University,
India

REGISTRATION

Professional Civil Engineer, CA No. 74343

Qualified SWPPP Developer and Practitioner, No. 00993

Certified Floodplain Manager (CFM)

YEARS OF EXPERIENCE

21 years, 12 with firm



SELECT PROJECT EXPERIENCE

Interceptor Force Trunk Main Rehabilitation, Mountain View, CA

Sravan was the Principal-in-Charge for the civil engineering for rehabilitation of 1,083 feet of 42-inch RCP and 20 feet of 42-inch Welded Steel Pipe (WSP). Alternatives evaluated included slip-lining with HDPE or PVC, CIPP, Spiral-Wound Liner, and Fiber-Reinforced Mortar. The team designed a temporary sewer bypass system to meet PWWF of 25 MGD, and designed a replacement of existing WSP flanged manhole and installation of 30-foot deep new manhole. BKF also prepared an Initial Study (IS) to meet the requirements of the California Environmental Quality Act (CEQA), coordinated with the Shoreline Golf Links and Michaels at Shoreline Restaurant for any access disruptions, and prepared bid documents and mitigation and monitoring measures for nesting birds, burrowing owl and cultural resources.

DSRSD Wineberry and Canterbury Water Line Replacement, Dublin, CA

Sravan was the Principal-in-Charge for the replacement of 12,000 feet of aging asbestos cement pipe (ACP) water mains in the Wineberry and Canterbury neighborhoods.

Wineberry Area:

Project consisted of 8-inch asbestos cement water mains installed in the 1980s. The mains were at the end of their useful lives, prone to leaks and water service repairs. BKF provided the installation of approximately 5,000 feet of 8-inch diameter PVC pipeline, services, and appurtenances.

Canterbury Area:

Project consisted of replacement of approximately 7,000 feet of existing 4-inch, 6-inch, and 8-inch ACP mains. Replacement included appurtenances such as valves, hydrants, and services.

ACWD Alvarado Niles Pipeline Seismic Retrofit, Alameda County, CA

Part of ACWD's \$10M/year Main Renewal and Seismic Upgrade Program, 3.5 miles along Smith Street and Alvarado Niles Road.



ADAM BROWN, PE

PIPELINE DESIGN TASK LEAD

Adam is a seasoned civil engineer with over 18 years of experience specializing in hydrology, hydraulics, and structural analysis. As a Regional Lead, he brings deep technical knowledge and leadership to the development of drainage studies, master plans, and the design of water supply and flood control infrastructure. He has worked on sewer and water pipeline replacements and rehabilitation, utility improvements, lift station upgrades, and much more. His expertise spans the full project lifecycle—from planning through design documentation—delivering resilient and cost-effective solutions tailored to regional needs.

EDUCATION

B.S., Civil Engineering,
California Polytechnic
State University, San
Luis Obispo

REGISTRATION

Professional Civil
Engineer, CA
No. 76779

TOTAL YEARS EXPERIENCE

18 years, 1 with BKF

SELECT PROJECT EXPERIENCE

72-inch Trunk Main Rehabilitation, Oro Loma Sanitary District, San Leandro, CA

Mr. Brown served as the Design Lead for the rehabilitation of approximately 450 linear feet of 72-inch diameter reinforced concrete pipe leading to the Oro Loma Wastewater Treatment plant. The pipe was the last segment of pipe in the District's collection system and located entirely on the treatment plant site. Because the pipe proved to be in relatively good condition, it was decided to use ASCE's Manual of Practice 145 (MOP 145) to economize the liner thickness to be as cost-effective as possible. The project design included consideration of alternatives (UV CIPP and spray-on geopolymer), accommodation for plant operations, bypass flows, and installation requirements. The project also included the rehabilitation of a concrete juncture at the upstream end of the pipeline segment being rehabilitated.

24th/K Combined Sewer Storage Improvement Projects, City of Sacramento, Sacramento, CA

Mr. Brown served as Project Manager and Lead Pipeline Designer for the installation of two combined sewer storage projects within the City's combined sewer system (CSS) in midtown Sacramento. The projects are part of the City's Long Term Control Plan (LTCP) to reduce flooding of the City's system and involved using 120-inch diameter RCP to store up to approximately 1.5 MG of off-line CSS storage at each location. Both projects underwent an alternative analysis to optimize the location of the storage facilities, position the weir junction structures, locate the connection points, locate a pump station at each site, and analyze the site for impacts to residents, businesses, and existing utilities. Project considerations included pipeline material selection, analyzing construction methods, performing constructability reviews, assisting with public outreach, processing an EIR addendum, performing geotechnical field work, and performing existing utility locating/potholing/mapping.



APPENDIX C - KEY STAFF RESUMES



JOE NELSON, PLS

SURVEY MANAGER

Joe is a highly skilled Professional Land Surveyor with 13 years of experience delivering precise and reliable surveying services across diverse project types. His project experience spans infrastructure, streetscape and roadway, residential developments, waterways, on-call surveying, and more. Throughout his career, Joe has played a crucial role in supporting infrastructure improvements, land development, and environmental initiatives. He excels in utilizing advanced surveying technology to ensure accuracy in boundary determinations, topographic mapping, and construction layout. His commitment to precision and efficiency has made him a trusted professional in both public and private sector projects.

EDUCATION

Survey/Mapping Sciences, Santiago Canyon College, Orange, California, 2014

REGISTRATION

Professional Land Surveyor CA No. 9432

AFFILIATIONS

Member, California Land Surveyors Association (CLSA)

TOTAL YEARS EXPERIENCE

14 years, <1 with BKF



SELECT PROJECT EXPERIENCE

Desert Knolls Wash Phase III Flood Control Improvement Project, San Bernardino, CA

Land surveying services for approximately 2,590 linear feet of channel improvements. Scope included deepening and widening the Desert Knolls Wash, constructing a multi-cell reinforced concrete box culvert (RCB), grade control structures, access ramps, and associated flood control features.

Cable Creek Basin (Upper) Project, San Bernardino, CA

Project involves constructing an approximately 864 acre-feet basin to support flood control efforts in the region. Joe provided land surveying services comprising of an existing right-of-way and base map, a record of survey, an aerial topographic survey, supplemental ground topographic survey, and right of way research.

Employee Housing Flood Mitigation Plan and CLOMR Acquisition, Catalina Island, CA

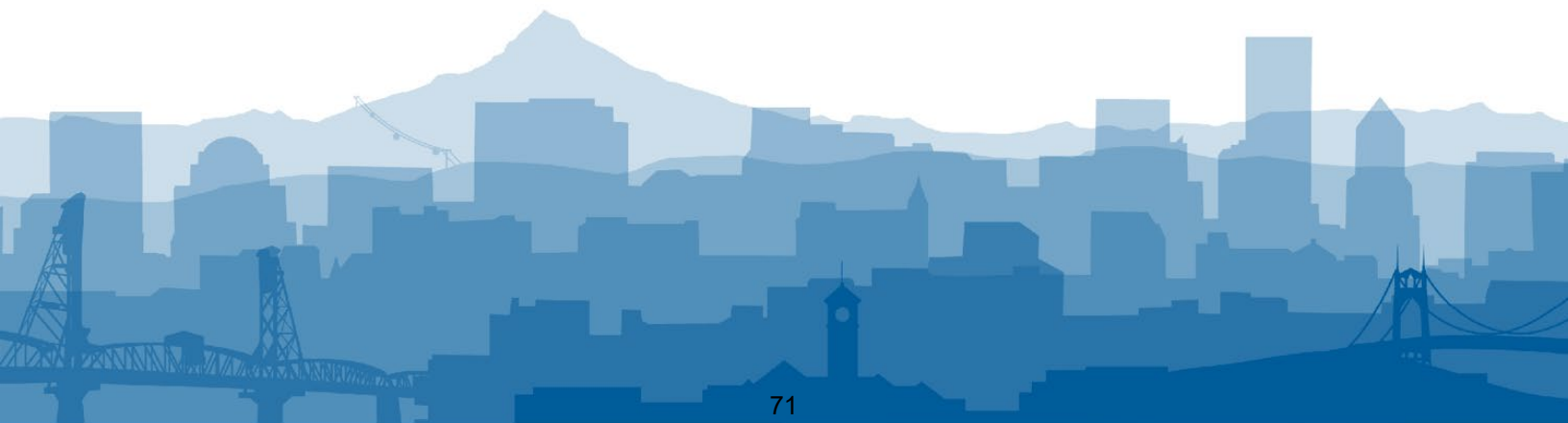
Joe was responsible for preparing survey and mapping of the residential area located downstream of the Catalina Island Golf Course to supplement existing mapping of upstream areas. Mapping helped to prepare an existing condition hydraulic model of Avalon Canyon from the existing upstream floodplain limits and continuing downstream to the Pacific Ocean.

Los Angeles River Bridge Project, Burbank, CA

Joe was the Project Manager for the Los Angeles River Bridge Project, overseeing the development of a 0.13-mile bicycle and pedestrian facility connecting Burbank to Los Angeles across the Los Angeles River. Key elements included Class III bike lanes on Bob Hope Drive, a prefabricated bridge with a Class I bike path to Forest Lawn Drive, and an optional 12-inch recycled water pipeline linking Burbank's Water Reclamation Plant to LADWP's Advanced Water Purification Facility.

APPENDIX D

ADDENDA



SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

ADDENDUM No. 1

TO: REQUEST FOR PROPOSAL

FOR ETM REACH B TECHITE PIPE REPLACEMENT

THE PROPOSER SHALL EXECUTE THE CERTIFICATION AT THE END OF THE ADDENDUM AND SHALL ATTACH THE ADDENDUM TO THE PROPOSAL (NOT TO BE INCLUDED AS PART OF THE PAGE COUNT).

1. The pre-proposal meeting is MANDATORY.
2. See the attachment for supplemental information related to the coordination meeting with the Laguna Woods Golf Course.

DATED: 10/14/2025

Roni Young Grant

Roni Grant
CIP Manager

BIDDER'S CERTIFICATION

I acknowledge receipt of the foregoing Addendum No. 1 and accept all conditions contained herein.

DATED: 1/14/26

BIDDER: BKF Engineers *Roger Chung*
BY: Roger Chung, Principal-in-Charge

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

ADDENDUM No. 2

TO: REQUEST FOR PROPOSAL

FOR ETM REACH B TECHITE PIPE REPLACEMENT

THE PROPOSER SHALL EXECUTE THE CERTIFICATION AT THE END OF THE ADDENDUM AND SHALL ATTACH THE ADDENDUM TO THE PROPOSAL (NOT TO BE INCLUDED AS PART OF THE PAGE COUNT).

1. See the attachment for the Pro-Proposal Meeting sign-in sheet.
2. See the attachments for the Reach A as-built plan, ETM ArcGIS Maps, and ETWD Pumping Station as-built plan.
3. The proposal page limit is 20 pages, not including the cover or attachments.

DATED: 10/ 29/2025

Roni Young Grant

Roni Grant
CIP Manager

BIDDER'S CERTIFICATION

I acknowledge receipt of the foregoing Addendum No. 2 and accept all conditions contained herein.

DATED: 1/14/26

BIDDER: BKF Engineers *Roger Chung*
BY: Roger Chung, Principal-in-Charge

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

ADDENDUM No. 3

TO: REQUEST FOR PROPOSAL

FOR ETM REACH B TECHITE PIPE REPLACEMENT

THE PROPOSER SHALL EXECUTE THE CERTIFICATION AT THE END OF THE ADDENDUM AND SHALL ATTACH THE ADDENDUM TO THE PROPOSAL (NOT TO BE INCLUDED AS PART OF THE PAGE COUNT).

1. The question cutoff date has been revised to January 6, 2026 at 2 pm.
2. The proposal due date has been revised to January 14, 2026 at 2 pm.

DATED: 12/22/2025

Roni Young Grant

Roni Grant
CIP Manager

BIDDER'S CERTIFICATION

I acknowledge receipt of the foregoing Addendum No. 3 and accept all conditions contained herein.

DATED: 1/14/26 _____

BIDDER: BKF Engineers *Roger Chung*
BY: Roger Chung, Principal-in-Charge _____



CONTACT
NANCY BAKER
(949) 526-8484
NBAKER@BKF.COM

BKF Engineers
4675 MacArthur Court, Suite 400
Newport Beach, CA 92660
www.bkf.com





South Orange County Wastewater Authority

COST PROPOSAL
EFFLUENT TRANSMISSION MAIN REACH B
TECHITE PIPE REPLACEMENT FINAL DESIGN

JANUARY 14, 2026



COST PROPOSAL

TASK NO.	TASK DESCRIPTION	BKF ENGINEERS HOURS												Total BKF Hours	BKF Fee	SUBCONSULTANTS										Sub-Consultants Total with 10% Markup	Total Labor	ODC/Reimbursables	Total Fee			
		Principal-In-Charge Roger Chung	Project Manager Nancy Baker	Pipeline Design Task Lead Adam Brown	Technical Advisor Srawan Paladugu	Project Engineer Mykalah Clermont	Survey Associate David Jungman	Survey Manager Joe Nelson	Survey Project Manager Varies	Senior Project Surveyor Varies	Party Chief Varies	Chain Person Varies	Project Surveyor Varies			Project Assistant Melissa Johnson	CIVILTEC HOURS							Total Civiltec Hours	Civiltec Fee					Geotechnical Ninyo and Moore	Potholing TZue	Aerial Survey Aerotech
																	Deputy Project Manager Shem Hawes, PE	Project QA/QC Manager Terry Keger, PE	Constructability Lead Shem Hawes	Senior Engineering Lead Steven Walker, PE	Senior Engineering Design Jenny Tsan	Engineering Design Kimer Chavez, PE	Traffic Control Engineering David Song, PE									
Hourly Rate	\$333	\$292	\$287	\$292	\$215	\$301	\$264	\$287	\$245	\$245	\$158	\$215	\$119	Hours	\$	\$300	\$245	\$300	\$285	\$220	\$235	\$285	\$150	Hours	\$	LS	LS	LS	\$	\$	\$	
Task 1	Project Administration																															
1.A	Monthly status report	1	18										12	31	\$ 7,017											\$ -				\$ -	\$ 7,017	\$ 7,017
1.B	Monthly invoice		12										12	24	\$ 4,932											\$ -				\$ -	\$ 4,932	\$ 4,932
	Task 1 Project Administration Subtotal:	1	30	0	0	0	0	0	0	0	0	0	24	55	\$ 11,949	0	0	0	0	0	0	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ 11,949	\$ -	\$ 11,949
Task 2	Progress Meetings																															
2.A	Kick-Off Meeting	1	4	4									2	13	\$ 3,317											\$ 3,542	\$ 6,859	\$ 100	\$ 6,959			
2.B	Monthly Progress Meetings (5 In-person/5 Virtual)		20	10									10	46	\$ 11,190	10				10	10	2	2	2	\$ 10,329	\$ 21,519	\$ 500	\$ 22,019				
2.C	Submittal Review Meetings (3 In-person)		6	4									10	24	\$ 4,950	6	4			6	6	2			\$ 7,117	\$ 12,067	\$ 300	\$ 12,367				
2.D	Agenda and Minutes (13 Meetings)		24	2									10	42	\$ 10,062	2				6	3				\$ 2,063	\$ 12,125	\$ -	\$ 12,125				
	Task 2 Progress Meetings Subtotal:	1	54	20	0	18	0	0	0	0	0	0	32	125	\$ 29,519	22	4	0	22	14	11	4	2	79	\$ 20,955	\$ -	\$ -	\$ -	\$ 23,051	\$ 52,570	\$ 900	\$ 53,470
Task 3	Data Request and Review																															
3.A	Review background documents	1	2	4									8	15	\$ 3,785	2				4					\$ 2,948	\$ 6,733		\$ 6,733				
3.B	Develop data request log		1										4	5	\$ 1,152	2				2	2				\$ 1,771	\$ 2,923		\$ 2,923				
	Task 3 Data Request and Review Subtotal:	1	3	4	0	12	0	0	0	0	0	0	0	20	\$ 4,937	4	0	0	6	2	4	0	0	16	\$ 4,290	\$ -	\$ -	\$ -	\$ 4,719	\$ 9,656	\$ -	\$ 9,656
Task 4	Street Alignment Alternatives Analysis (El Toro Rd/Moulton Pkwy)																															
4.A	Identify alternatives	1	2											3	\$ 917		4	6	8	16						\$ 9,438	\$ 10,355		\$ 10,355			
4.B	Utility research		1											1	\$ 292	1		1	2			4				\$ 6,281	\$ 6,573		\$ 6,573			
4.C	Traffic Control		1											1	\$ 292	1	2				24	16				\$ 12,089	\$ 12,381		\$ 12,381			
4.D	CEQA triggers		1											1	\$ 292	1					20			10		\$ 7,150	\$ 7,442		\$ 7,442			
4.E	AAACE Class 4 Cost Estimates		1											1	\$ 292	6			16			4				\$ 8,030	\$ 8,322		\$ 8,322			
4.F	Presentation		4											4	\$ 1,168	4	2		12		24					\$ 13,145	\$ 14,313	\$ 100	\$ 14,413			
	Task 4 Street Alignment Alternatives Analysis (El Toro Rd/Moulton Pkwy) Subtotal:	1	10	0	0	0	0	0	0	0	0	0	0	11	\$ 3,253	13	8	7	38	16	76	16	42	216	\$ 51,030	\$ -	\$ -	\$ -	\$ 56,133	\$ 59,386	\$ 100	\$ 59,486
Task 5	Conceptual Design Report																															
5.A	Layout & constructability	1	8	24									24	57	\$ 14,717		4	8								\$ 3,718	\$ 18,435	\$ 500	\$ 18,935			
5.B	Permitting summary		1											1	\$ 292									4		\$ 660	\$ 952		\$ 952			
5.C	Isolation valve		1	4										5	\$ 1,440											\$ -	\$ 1,440		\$ 1,440			
5.D	Easements		1	4									16	27	\$ 6,170		4									\$ 1,078	\$ 7,248		\$ 7,248			
5.E	Risk analysis		4	12	4	4								24	\$ 6,640			4	2							\$ 1,947	\$ 8,587		\$ 8,587			
5.F	Existing Techite Pipe Disposition Study		4											4	\$ 1,168		2		16			24				\$ 11,759	\$ 12,927		\$ 12,927			
5.G	Access plan		1	2									8	11	\$ 2,586		2	6								\$ 2,519	\$ 5,105		\$ 5,105			
5.H	Pre-purchasing Recommendations		1	4										5	\$ 1,440											\$ -	\$ 1,440		\$ 1,440			
5.I	AAACE Class 3 Cost Estimate		1											1	\$ 292	8			12			4				\$ 7,436	\$ 7,728		\$ 7,728			
5.J	Construction Schedule		8											8	\$ 2,336			4								\$ 1,320	\$ 3,656		\$ 3,656			
5.K	Draft Conceptual Design Report		4	40	4	30								78	\$ 20,266		4		8							\$ 3,586	\$ 23,852		\$ 23,852			
5.L	Consolidated Comment Log with SOCWA Comments and BKF Responses		8											8	\$ 2,336											\$ -	\$ 2,336		\$ 2,336			
5.K	Final Conceptual Design Report		4	16	2	12								34	\$ 8,924		4		8							\$ 3,586	\$ 12,510		\$ 12,510			
	Task 5 Conceptual Design Report Subtotal:	1	46	106	10	84	0	0	0	0	0	0	16	263	\$ 68,607	8	20	22	46	0	28	0	4	128	\$ 34,190	\$ -	\$ -	\$ -	\$ 37,609	\$ 106,216	\$ 500	\$ 106,716
Task 6	Comprehensive Geotechnical Soils Report																															
6.A	Site Investigations (4 boreholes)	1	1	2										4	\$ 1,199											\$ -	\$ 6,281		\$ 6,909	\$ 8,108		\$ 8,108
6.B	Boring Plan		1	4										5	\$ 1,440											\$ -	\$ 6,281		\$ 6,909	\$ 8,349		\$ 8,349
6.C	Draft & Final report		1											1	\$ 292		2									\$ 490	\$ 6,281		\$ 7,448	\$ 7,740		\$ 7,740
6.D	Consolidated Comment Log with SOCWA Comments and BKF Responses		1										2	3	\$ 722											\$ -	\$ 6,281		\$ 6,909	\$ 7,631		\$ 7,631
	Task 6 Comprehensive Geotechnical Soils Report Subtotal:	1	4	6	0	2	0	0	0	0	0	0	0	13	\$ 3,653	0	2	0	0	0	0	0	0	2	\$ 490	\$ 25,125	\$ -	\$ -	\$ 28,177	\$ 31,830	\$ -	\$ 31,830
Task 7A	60% Final Design Submittal (17 sheets)																															
7.A.1	60% Plan Preparation	1	10	67									116	194	\$ 47,422		4							40		\$ 11,418	\$ 58,840	\$ 500	\$ 59,340			
7.A.2	60% Specifications		6	33									59	98	\$ 23,908		2									\$ 539	\$ 24,447		\$ 24,447			
7.A.3	60% Cost Estimate		1											1	\$ 292	4	2		6			4				\$ 4,994	\$ 5,286		\$ 5,286			
7.A.4	Construction Schedule, Sequencing Plan, and Access Plan		1	4										5	\$ 1,440		2	12	8							\$ 8,327	\$ 9,767		\$ 9,767			
7.A.5	Consolidated Comment Log with SOCWA Comments and BKF Responses		8											8	\$ 2,336											\$ -	\$ 2,336		\$ 2,336			
7.A.6	Pre-purchasing Documents		1	24									8	33	\$ 8,900		2									\$ 539	\$ 9,439		\$ 9,439			
	Task 7A 60% Final Design Submittal (17 sheets) Subtotal:	1	27	128	0	183	0	0	0	0	0	0	0	339	\$ 84,298	8	12	12	14	0	40	4	0	90	\$ 23,470	\$ -	\$ -	\$ -	\$ 25,817	\$ 110,115	\$ 500	\$ 110,615

COST PROPOSAL

TASK NO.	TASK DESCRIPTION	BKF ENGINEERS HOURS												Total BKF Hours	BKF Fee	SUBCONSULTANTS										Sub-Consultants Total with 10% Markup	Total Labor	ODC/Reimbursables	Total Fee					
		Principal-In-Charge Roger Chung	Project Manager Nancy Baker	Pipeline Design Task Lead Adam Brown	Technical Advisor Strawn Paladugu	Project Engineer Mykiah Clermont	Survey Associate David Jungman	Survey Manager Joe Nelson	Survey Project Manager Varies	Senior Project Surveyor Varies	Party Chief Varies	Chain Person Varies	Project Surveyor Varies			Project Assistant Melissa Johnson	CIVILTEC HOURS						Total Civiltec Hours	Civiltec Fee	Geotechnical Ninyo and Moore					Potholing T2ue	Aerial Survey Aerotech			
																	Deputy Project Manager Shem Hawes, PE	Project QA/QC Manager Terry Kerger, PE	Constructability Lead Shem Hawes	Senior Engineering Lead Steven Walker, PE	Senior Engineering Design Jenny Tsan	Engineering Design Klimer Chavez, PE										Traffic Control Engineering David Song, PE	Regulatory Permitting/CEQA Sara Canche	Hours
Hourly Rate	\$333	\$292	\$287	\$292	\$215	\$301	\$264	\$287	\$245	\$245	\$158	\$215	\$119	Hours	\$	\$300	\$245	\$300	\$285	\$220	\$235	\$285	\$150	Hours	\$	LS	LS	LS	\$	\$	\$			
Task 8 Easement Acquisition Support																																		
8.A	Identify Easements	1	4	4		4								13	\$ 3,509			8							8	\$ 2,400					\$ 2,640	\$ 6,149	\$ 6,149	
8.B	Legal Descriptions & Plats (4 documents)		2	2		12	1	8	2	16				43	\$ 10,645											\$ -					\$ -	\$ 10,645	\$ 10,645	
8.C	Coordinate with SOCWA's Legal Counsel and Property Owners		8	8	2	8								26	\$ 6,936											\$ -					\$ -	\$ 6,936	\$ 6,936	
8.D	Revise Easements Documents		4	4				4		8				20	\$ 5,332											\$ -					\$ -	\$ 5,332	\$ 5,332	
8.E	Finalize and Submit Final Easement Documents		4	4				4		6				18	\$ 4,842											\$ -					\$ -	\$ 4,842	\$ 4,842	
Task 8 Easement Acquisition Support Subtotal:		1	22	22	2	24	1	16	2	30	0	0	0	120	\$ 31,264	0	0	8	0	0	0	0	0	0	8	\$ 2,400	\$ -	\$ -	\$ -	\$ 2,640	\$ 33,904	\$ -	\$ 33,904	
Task 9 Bid Support																																		
9.A	Attend Pre-bid Meeting and Site Walk	1	4			4								9	\$ 2,361	4									4	\$ 1,200					\$ 1,320	\$ 3,681	\$ 200	\$ 3,881
9.B	Bid Clarifications (10 RFI's)		4	6		8								18	\$ 4,610											\$ -					\$ -	\$ 4,610	\$ 4,610	
9.C	Bid Addenda (3)		2	6		6								14	\$ 3,596											\$ -					\$ -	\$ 3,596	\$ 3,596	
9.D	Conformed Bid Documents		1	4		6								21	\$ 4,880		4									\$ 980					\$ 1,078	\$ 5,958	\$ 5,958	
Task 9 Bid Support Subtotal:		1	11	16	0	34	0	0	0	0	0	0	0	62	\$ 15,447	4	4	0	0	0	0	0	0	4	\$ 2,180	\$ -	\$ -	\$ -	\$ 2,398	\$ 17,845	\$ 200	\$ 18,045		
Task 10 Surveying Services																																		
10.A	Boundary Survey	1	1				3	24	13		32	32	40	146	\$ 33,091											\$ -					\$ -	\$ 33,091	\$ 33,091	
10.B	Record of Survey		1				2	24	6				40	\$ 17,552											\$ -					\$ -	\$ 17,552	\$ 17,552		
10.C	Aerial Topography		1				1	6	3		8	8	8	\$ 7,982											\$ -			\$ 7,200	\$ 7,920	\$ 15,902	\$ 15,902			
10.D	Supplemental Ground Survey		1				2	6	7		24	24	16	\$ 17,599											\$ -					\$ -	\$ 17,599	\$ 17,599		
10.E	Topographic Review and Site Walk		4				4						8	\$ 2,372	4				4						\$ 3,280					\$ 3,608	\$ 5,980	\$ 300	\$ 6,280	
Task 10 Surveying Services Subtotal:		1	8	0	0	0	12	60	29	0	64	64	104	342	\$ 78,596	4	0	0	4	0	4	0	0	0	\$ 3,280	\$ -	\$ -	\$ 7,200	\$ 11,528	\$ 90,124	\$ 300	\$ 90,424		
Total Fee Without Optional Tasks		12	247	367	12	436	13	76	31	30	64	64	120	56	1528	\$ 377,173	75	65	61	150	32	182	28	48	625	\$ 164,465	\$ 25,125	\$ -	\$ 7,200	\$ 216,469	\$ 593,642	\$ 3,200	\$ 596,842	
Optional Task																																		
Task A	Pothole Investigation (10 Potholes)	1	4	6		8	1	2	3		10	10	8	53	\$ 12,383	1	2								3	\$ 790			\$ 32,265		\$ 36,361	\$ 48,744	\$ 48,744	
Task B	SWPPP		1										1	\$ 292		2								40	\$ 10,210					\$ 10,362	\$ 10,654	\$ 10,654		
Optional Task Subtotal:		1	5	6	0	8	1	2	3	0	10	10	8	54	\$ 12,675	1	4	0	0	0	0	0	0	43	\$ 11,000	\$ -	\$ 32,265	\$ -	\$ 46,723	\$ 59,398	\$ -	\$ 59,398		
Total Fee With Optional Task		13	252	373	12	444	14	78	34	30	74	74	128	56	1582	\$ 389,848	76	69	61	150	32	220	28	48	668	\$ 175,465	\$ 25,125	\$ 32,265	\$ 7,200	\$ 263,192	\$ 653,040	\$ 3,200	\$ 656,240	



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NBAKER@BKF.COM

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Newport Beach, CA 92660
www.bkf.com





JANUARY 14, 2026 AT 2:00PM

PROPOSAL FOR

EFFLUENT TRANSMISSION MAIN REACH B TECHITE PIPE REPLACEMENT FINAL DESIGN ENG-25-07

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY
ATTN: RONI YOUNG GRANT, CAPITAL IMPROVEMENT PROGRAM MANAGER
34156 DEL OBISPO STREET, DANA POINT, CA 92629



January 14, 2026

South Orange County Wastewater Authority
Attn: Roni Young Grant
Capital Improvement Program Manager
34156 Del Obispo Street
Dana Point, CA 92629

**Subject: Proposal for RFP ENG-25-07 – Effluent Transmission Main Reach B
Techite Pipe Replacement Final Design**

Dear Ms. Young Grant,

We at MKN & Associates, LLP (MKN), an Ardurra Group, Inc. (Ardurra) company are excited about the opportunity to submit our proposal for final design services for the Effluent Transmission Main (ETM) Reach B Techite Pipe Replacement (RFP ENG-25-07) to South Orange County Wastewater Authority (SOCWA). We understand the ETM is a critical regional asset conveying up to 15 MGD and serving more than 127,000 customers across the Irvine Ranch Water District (IRWD) and El Toro Water District (ETWD) service areas. Maintaining continuous ETM operation is essential, and this project is a key step toward improving reliability and reducing the risk of sudden failure.

MKN's team understands the urgency and complexity of Reach B, including the presence of Techite (RPMP) pipe, the history of emergency repairs, and the need to deliver bid-ready documents that minimize construction risk. We also understand the project's split context and scope: Reach B traverses the Laguna Woods Golf Course (private property) and the public right-of-way near or within El Toro Road and Moulton Parkway. SOCWA's intent is to advance final design and bid documents for the golf course segment, while advancing the street segment through alternatives analysis and conceptual review.

Our approach emphasizes proactive stakeholder coordination, field verification, and constructability-focused design. We will align early with SOCWA, IRWD, and ETWD operations and develop a clear sequencing strategy that supports continuous conveyance. We will also coordinate closely with Laguna Woods Golf Course management and relevant permitting agencies to confirm access, staging, restoration, and approval requirements.

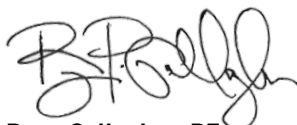
We also understand SOCWA's plan to add a new isolation valve at the Reach A/Reach B connection to support IRWD's future Reach A work and minimize impacts to ETWD during shutdowns. MKN will integrate this element into the overall design and bid package with a focus on reliability and operability.

As MKN transitions into Ardurra, SOCWA will benefit from expanded bench strength and specialized technical resources, while retaining the same local, responsive team that our clients count on. We will leverage Ardurra's broader design and QA/QC capabilities to accelerate production, improve constructability, and provide deeper support for permitting, traffic control coordination, and complex phasing without sacrificing responsiveness.

If you have any questions, please contact me directly at **714.213.9758** or **rgallagher@mknassociates.us**.

Sincerely,

MKN & Associates, LLP



Ryan Gallagher, PE


Principal-in-Charge





Kevin Saleh, PE

Project Manager

81



AN  ARDURRA COMPANY



POINT OF CONTACT
Ryan Gallagher, PE
Principal-in-Charge
rgallagher@mknassociates.us
714.213.9758

1 IDENTIFICATION OF RESPONDER

MKN's Client-Centric Origins

MKN & Associates, LLP (MKN) is a consulting engineering firm originally founded in 2012. Since then, we've grown to more than 85 professional engineers, planners, construction managers/inspectors, and support staff across eight offices throughout California. In November 2025, MKN proudly joined Ardurra Group, Inc. (Ardurra), a nationally recognized firm providing engineering services since 1929. This allows MKN to maintain our core principles and continue delivering the same high level of quality and responsiveness our clients expect, while expanding our capabilities and resources to better serve public agencies' evolving needs.

Now with more than 2,000 employees nationwide, including 250 in California, we bring deep expertise in complex engineering and design services. Ardurra is ranked #75 on Engineering News-Record's (ENR's) Top 500 Design Firms list and is consistently among the top 20 firms in ENR's Water Sourcebook rankings for water and wastewater services.

Water Is Our Focus

MKN is deeply committed to water in all its forms, focusing exclusively on delivering professional services for water, wastewater, and recycled water projects. Our firm's expertise encompasses the full range of well and pump station projects, from planning and condition assessment to design, rehabilitation, and inspection. MKN's staff members are recognized leaders in industry organizations, actively contributing to the advancement of standards and best practices through research, presentations, and participation in professional forums. We continually innovate our engineering methods and deliverables to better serve our clients. With principals who have decades of experience in management and leadership roles at top engineering firms, MKN brings a proven track record and technical depth to every project, ensuring high-quality outcomes that align with the scope of work outlined in the RFP.

Legal Name:

MKN & Associates, LLP

Address/Local Office:

16310 Bake Parkway, Irvine, CA 92618

Parent Company:

Ardurra Group, Inc.

Principal Place of Business:

1000 NW 57th Ct., Suite 800, Miami, FL 33126



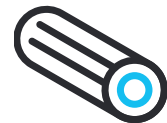
**40+ Wellhead
Treatment Projects**



**80+ Total
Well Projects**



**90+ Water/Wastewater
Treatment Projects**



**400+ Miles of
Pipeline**

MKN Is Committed to Orange County

MKN is local to Orange County and committed to a long-term relationship with SOCWA.

MKN's staff have been working in Orange County for more than two decades and are committed to the local water industry. Our team has delivered successful projects for many of SOCWA's neighboring agencies. These include South Coast Water District, Irvine Ranch Water District, East Orange County Water District, City of Newport Beach, Yorba Linda Water District, City of Anaheim, Trabuco Canyon Water District, and Emerald Bay Service District.

MKN and Ardurra - A New Chapter

After more than a decade of delivering practical, innovative, and cost-efficient solutions across California, MKN's partnership with Ardurra allows us to continue that mission with even greater impact. By combining MKN's technical capabilities and strong municipal relationships with Ardurra's existing Western US water practice, we'll be able to serve our clients and the community in new and meaningful ways.

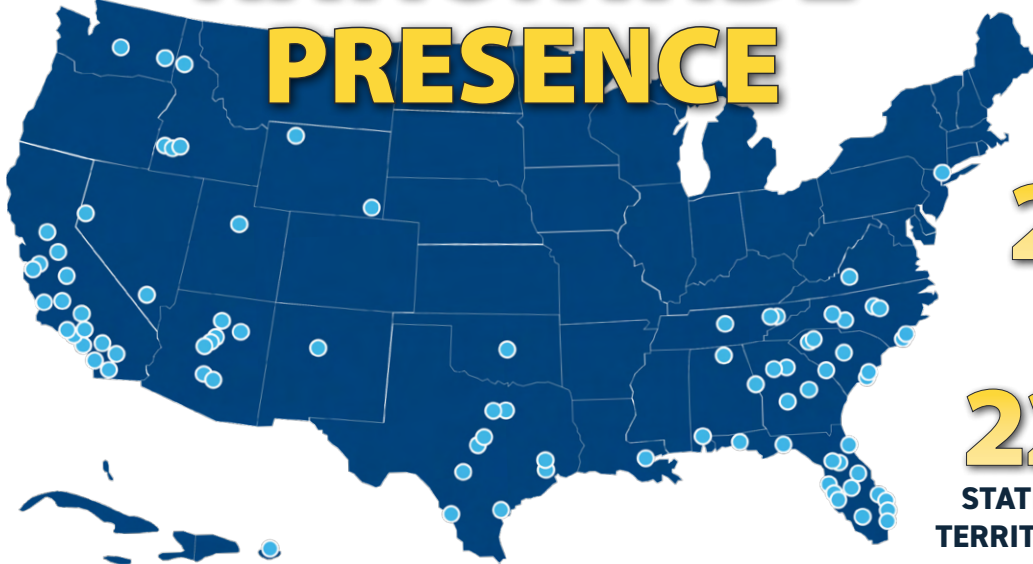
250+

CALIFORNIA
EMPLOYEES ACROSS

14

OFFICES

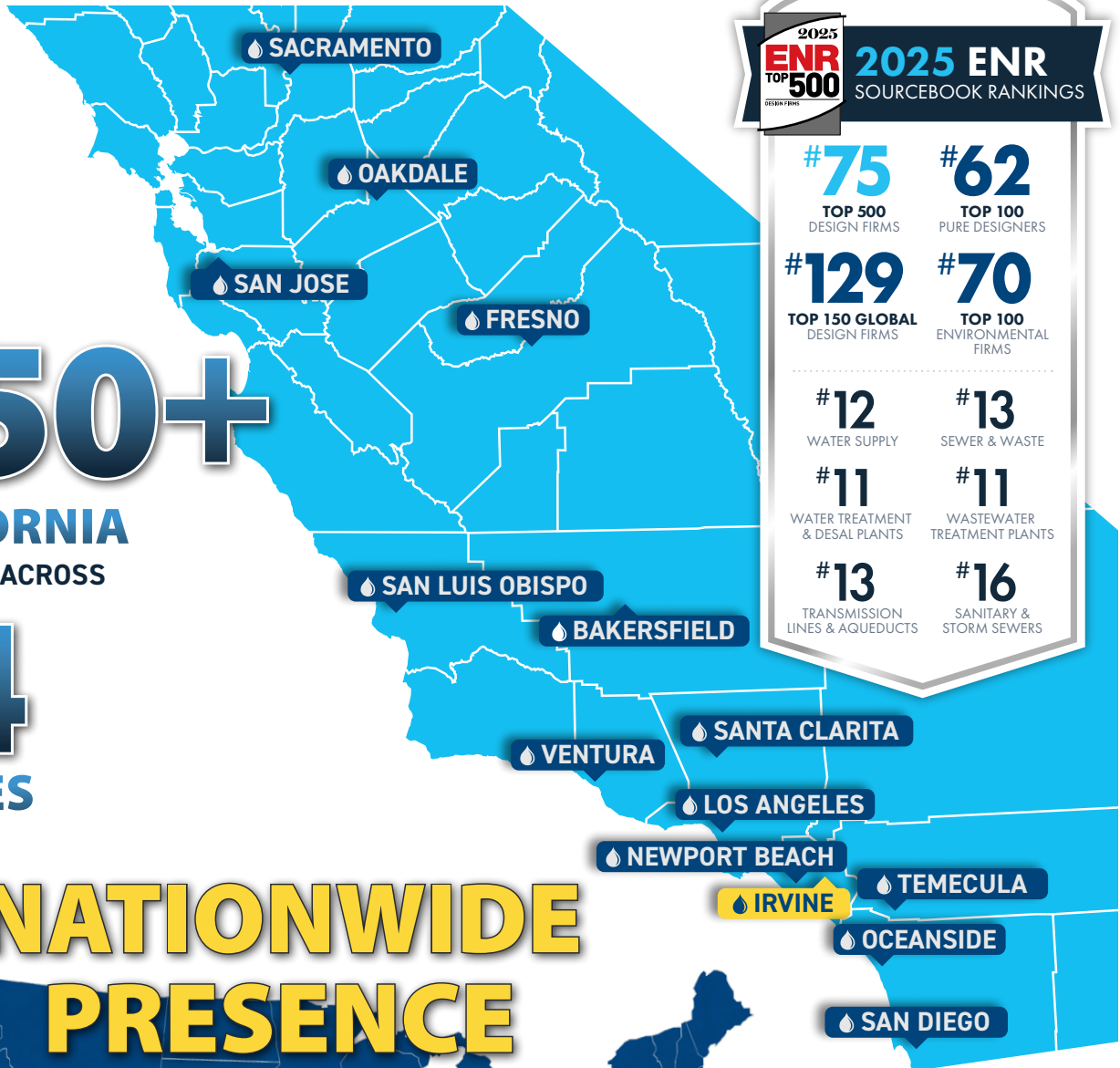
NATIONWIDE PRESENCE



2025 ENR TOP 500 DESIGN FIRMS

2025 ENR SOURCEBOOK RANKINGS

#75 TOP 500 DESIGN FIRMS	#62 TOP 100 PURE DESIGNERS
#129 TOP 150 GLOBAL DESIGN FIRMS	#70 TOP 100 ENVIRONMENTAL FIRMS
#12 WATER SUPPLY	#13 SEWER & WASTE
#11 WATER TREATMENT & DESAL PLANTS	#11 WASTEWATER TREATMENT PLANTS
#13 TRANSMISSION LINES & AQUEDUCTS	#16 SANITARY & STORM SEWERS



2000+

EMPLOYEES

22

STATES & TERRITORIES

100+

OFFICES

2 PROJECT UNDERSTANDING AND APPROACH TO THE WORK

Project Understanding

SOCWA's Effluent Transmission Main (ETM) is a vital regional asset that conveys up to 15 MGD of treated effluent for ocean disposal and serves over 127,000 customers within the IRWD and ETWD service areas. Continuous ETM operation is critical. While IRWD can redirect discharge between May and October and ETWD can temporarily store flows for up to seven days in the summer, the ETM must remain operational outside of those periods.

The existing Reach B pipeline includes Techite (RPMP) and represents the pressurized segment with the highest risk of sudden failure. Past failures and emergency repairs reinforce the need for replacement. Prior assessments also concluded that Reach B is more vulnerable than Reach C, and that plans should be made for its replacement.

Reach B traverses two distinct environments: (1) Laguna Woods Golf Course (private property) and (2) public right-of-way near or within El Toro Road and Moulton Parkway. The exact transition point will be confirmed during this project. Open-cut replacement has been identified as the most practical and cost-effective approach through the golf course, and SOCWA will advance final design and bid documents for the golf course segment. For the street segment, SOCWA will conduct an alternatives analysis and conceptual review during this effort; the final design for the street segment is not included.

SOCWA also plans to add a new isolation valve at the Reach A/Reach B connection to support IRWD's future Reach A rehabilitation and minimize impacts to ETWD during Reach A shutdowns.

This project will require proactive coordination across SOCWA/IRWD/ETWD operations, Laguna Woods Golf Course management, and roadway and utility agencies within the El Toro Road and Moulton Parkway corridor. Early alignment on operational constraints, access limitations, and permitting/approval requirements will be essential to maintaining ETM reliability and delivering bid-ready documents.

Alignment Study – Golf Course Circulation and Corridor Feasibility

Based on SOCWA's input and site observations, MKN has identified two alignment considerations that will be addressed early to reduce operational impacts and improve constructability. First, the "tricky junction" area identified by SOCWA is a critical circulation node because all three golf course zones rely on this junction; therefore, keeping this junction open during construction is an important constraint. MKN has identified an alternative alignment that avoids crossing the tricky junction and will evaluate and confirm this alternative during early alignment verification. If a crossing at the tricky junction becomes unavoidable, MKN will incorporate sequencing and temporary access measures into the bid documents to keep the junction open throughout construction.

Second, where the alignment parallels the paved golf cart path, MKN considers routing the pipeline on the grass side immediately behind the curb more feasible than routing on the opposite side within dense bushes/trees. This preference reduces vegetation/tree impacts and restoration risk and typically improves trenching access and constructability. These alignment selections will be confirmed through field verification (including targeted potholing/utility checks as needed) and coordinated with golf course stakeholders, and then carried forward into the Conceptual Design Report and the final golf course bid package. Further details on the alternative alignments can be found in Task IV – Golf Course and Street Alignment Alternatives Analysis.

The project will be executed with the guiding principles in the following table:

PROJECT GUIDING PRINCIPLES	
Guiding Principle	How It Will Be Applied to This Project
Maintain ETM Reliability During Construction	Plan around IRWD diversion and ETWD storage constraints; minimize outage durations and clearly define tie-in windows.
Design for Constructability	Incorporate access, staging, sequencing, tie-ins, and restoration requirements into the design to reduce construction change orders.
Verify Existing Conditions Early	Confirm key as-built features; define field verification and potholing needs early to reduce risk and uncertainty.
Deliver Bid-Ready Clarity	Provide clear, coordinated plans and specifications that support accurate bidding and safe construction (independent of formal CAD standards).
Plan the Return-to-Service from Day One	Develop an in-service plan aligning tie-ins, bypass/diversion needs, and outage windows with SOCWA/IRWD/ETWD operations.
Confirm Performance Before Acceptance	Include pressure/leak testing, verification of valves/appurtenances, and any required flushing/cleaning appropriate for an effluent force main.
Support Long-Term Operations	Provide O&M info for new valves/appurtenances (including Reach A/B isolation valve), recommended exercising/inspection, and restoration/access notes for maintenance.
Document the Final Configuration	Prepare record drawings reflecting final alignment/tie-ins and a concise "what changed" summary to support future rehab and maintenance.

Project Approach

MKN has reviewed the RFP in detail, performed site visits to each location, and reviewed the supplemental information provided by SOCWA to develop an approach to meet the project goals. MKN has identified several key issues for the project and developed approaches to address each, as listed below.

In parallel with design, MKN will develop a permitting and approvals roadmap (e.g., traffic control/encroachment permits, golf course coordination/agreements, SWPPP considerations, and utility coordination requirements), including anticipated lead times and responsibilities. This roadmap will be included in the Conceptual Design Report and updated through final design for the golf course segment.

Key Project Considerations:

1. Maintain Continuous ETM Operations

Continuous ETM operation requires construction sequencing and site access controls that minimize disruption to golf course circulation and maintenance activities. Based on SOCWA input, the "tricky junction" area is a critical circulation node because all three golf course zones rely on this junction; therefore, this junction should remain open and unobstructed during construction. To support this operational requirement, MKN has identified an alternative alignment that avoids crossing the tricky junction and will prioritize this alternative during early alignment verification to reduce operational impacts and simplify construction sequencing. If a crossing at the tricky junction becomes unavoidable, MKN will incorporate explicit phasing, temporary access, and traffic control measures in the bid documents to keep the junction open throughout construction.

In addition, where the alignment parallels the paved cart path, MKN considers routing the pipeline on the grass side immediately behind the curb to be more feasible than routing on the opposite side within dense bushes/trees. This preference reduces vegetation and tree impacts (and associated restoration risk), improves trenching access and constructability, and helps maintain safer, more consistent circulation along the cart path during construction. These alignment selections will be confirmed through field verification (including targeted potholing/utility checks as needed) and coordinated with SOCWA and golf course stakeholders, then carried forward into the Conceptual Design Report and the final golf course bid package.

2. Traffic Control and Public Access

Work in and near the El Toro Road and Moulton Parkway corridor will require a traffic-first approach due to high daily volumes, closely spaced driveways/intersections, and limited flexibility for lane reductions during peak periods. During the street-segment alternatives analysis, we will evaluate each alignment for traffic control feasibility (lane closure requirements, construction phasing, and restoration limits) and identify where the work could be completed under short-duration off-peak or nighttime closures versus longer-term partial closures. Tie-in locations will be evaluated as part of traffic feasibility, since tie-ins typically require the largest excavations and staging areas (including bypass equipment) and often govern lane closure duration and whether off-peak/night work is needed. We will coordinate early with the appropriate jurisdictional agencies (City/County, if applicable) and plan for contingency traffic measures if unknown underground conditions or utility conflicts require adjustments to excavation limits or shifting the work zone footprint. To reduce construction risk and change orders, the selected alternative will include a traffic control concept that addresses:

1. Maintaining emergency access,
2. Driveway and pedestrian access management,
3. Construction staging/laydown locations that avoid travel lanes where feasible,
4. Pavement replacement limits and surface restoration requirements, and
5. Clear sequencing tied to tie-in windows and bypass/diversion operations.

The goal is to select an alignment and delivery approach that is not only technically feasible, but also traffic-feasible, minimizing community impacts while preserving contractor productivity and schedule certainty.

3. Unknown Underground Conditions and Utility Conflicts

Unknown underground conditions are a common driver of change orders and schedule impacts on pipeline projects—particularly within public right-of-way where utilities may not match record drawings. To address this risk, MKN will begin with comprehensive utility research (available record drawings, utility owner coordination, and field reconnaissance) and will identify “high-risk” locations early, including potential conflicts at crossings, near intersections, and at proposed tie-in points. We will recommend targeted

potholing/utility verification during design to confirm utility sizes, depths, and horizontal offsets prior to finalizing alignment and trench section details. This information will be incorporated into the selected street alternative (conceptual level) and into the final golf course bid package, along with clear bid schedule items/allowances and contingency notes where verification is not feasible. This approach reduces uncertainty for bidders, supports realistic traffic control planning, and helps SOCWA avoid change orders resulting from unexpected utility conflicts.

4. Develop Bid-Ready Documents to Reduce Change Orders

It will be important to develop comprehensive construction documents so contractors can prepare accurate bids and SOCWA can minimize change orders during construction. MKN will incorporate a focused constructability and biddability review into each design milestone to ensure temporary works and sequencing are clearly defined and measurable in the bid schedule (rather than left to interpretation). Key items that will be evaluated during design and clearly identified in the plans/specifications and bid schedule include:

1. Temporary isolation measures (including line stops if warranted),
2. Shutdown plans/schematics and tie-in sequencing,
3. Bypass/diversion equipment requirements and connection points,
4. Dewatering requirements and disposal assumptions,
5. Pavement restoration limits and thickness (where applicable),
6. Slurry backfill locations/limits (as required), and
7. Restoration requirements for golf course features and irrigation.

By defining these requirements up front, SOCWA reduces bid ambiguity and lowers the likelihood of construction claims and change orders. Where appropriate, temporary works and closeout/turnover requirements will be included as separate, measurable pay items (e.g., bypass/diversion setup and monitoring, temporary isolation/line stops if required, dewatering, traffic control, and restoration), further reducing bid ambiguity and change-order exposure.

5. Golf Course Access, Staging, and Restoration

Construction within Laguna Woods Golf Course will require early and ongoing coordination to protect course operations and ensure complete restoration. MKN will develop an access

and restoration approach during conceptual design and carry it into the bid documents, including designated access routes, staging/laydown areas, limits of disturbance, equipment limitations (as needed), and requirements for protecting and restoring turf and course features. Special attention will be given to irrigation system impacts—temporary removal/reinstallation, protection of lines and appurtenances, and restoration/testing before turnover, so the course can be returned to pre-construction condition with minimal operational disruption.

6. Return-to-Service Planning, Testing, and Operational Turnover

Returning the ETM to service safely and efficiently is a critical success factor and will be treated as a defined design deliverable, not a construction afterthought. MKN will develop a return-to-service plan that aligns with outage

windows, temporary isolation methods, and bypass/diversion operations. The bid documents will clearly define the required testing and acceptance steps appropriate for an effluent force main (e.g., pressure/leak testing approach, verification of valves and appurtenances, and any required flushing/cleaning steps), as well as turnover documentation. This return-to-service approach will be coordinated early with SOCWA/IRWD/ETWD operations to confirm outage windows, startup constraints, and operational hold points, and it will be carried forward from the Conceptual Design Report into the final bid documents. For long-term operations, MKN will provide clear O&M support information for new valves/appurtenances (including the Reach A/B isolation valve), recommended exercising/inspection practices, and record drawings reflecting final alignment and tie-ins with a concise “what changed” summary to support future maintenance and rehabilitation planning.

Scope of Work

The following Scope of Work is based on our extensive pipeline design experience and the requested scope provided in SOCWA's RFP. We have provided a detailed scope of work as part of our proposal to expedite the process from selection to issuance of the notice to proceed. In addition to meeting technical requirements, this project will require proactive coordination with SOCWA/IRWD/ETWD operations, Laguna Woods Golf Course management, and roadway and utility agencies within the El Toro Road / Moulton Parkway corridor. MKN will focus on developing comprehensive construction documents that support accurate contractor bids, minimize change orders, and maintain continuous ETM operations.

Task I | Project Management

Overall project management, including supervision of in-house staff, planning and monitoring of the contract budget and schedule, and coordination with SOCWA's and MKN's project team, will be conducted by the MKN Project Manager. The Project Manager will communicate and coordinate as needed with SOCWA staff to provide updates, follow up on action items, and manage the project on budget and on schedule. The Project Manager will prepare and submit a concise monthly status report with the monthly invoice statement that includes a summary of work progress/items completed for all work tasks, as well as an estimate of actual percent complete based on progress compared to the percent complete based on budget expended. MKN will provide senior technical review and implement our quality assurance and quality control (QA/QC) measures throughout the project. Each submittal will be accompanied by a written statement from the principal-in-charge of the project confirming that the submitted documents have been checked.

MKN will maintain an action/decision log and a risk register to document key decisions (e.g., tie-in windows, temporary isolation approach, bypass requirements) and track resolution throughout design. Draft and final construction documents will also be reviewed by senior staff with construction management experience to confirm constructability and bidability, and to reduce change-order exposure.

The design phase is assumed to be eight (8) months.

DELIVERABLES:

- Monthly status reports (8)
- Monthly invoices (8)

Task II | Progress Meetings

For budgeting purposes, MKN assumes eight (8) monthly progress meetings during the design phase, with approximately half conducted virtually. If additional meetings are requested, they can be provided as additional services. MKN will administer and lead the following meetings at a minimum for this project:

1. Kick Off Meeting – 1-hour, In-person meeting
2. Progress Meetings – Monthly virtual coordination meetings
3. 60% Design Review Meeting – 1-hour, In-person meeting
4. 90% Design Review Meeting – 1-hour, In-person meeting

MKN will submit meeting agendas at least one business day in advance of the meeting and provide meeting minutes within five days of the meeting date. At each meeting, MKN will present and discuss an updated project schedule, project milestones, and planned activities.

Key agenda items will include schedule constraints associated with diversion/storage windows, traffic control coordination, utility coordination, potholing status, and return-to-service planning, all of which must be reflected in the bid documents.

DELIVERABLES:

- Meeting agenda
- Meeting minutes and action/decision log

Task III | Data Request and Review

MKN will review the data provided by SOCWA as part of SOCWA's RFP; these documents include:

- 2017 ETM Reach B & C (Techite Pipe) Replacement Memo Update Memorandum by Tetra Tech, Inc.
- 2008 Assessment of the Physical Integrity of the Techite Reaches of the Aliso Creek Land Outfall by CH2M Hill
- 2003 AWMA ETM (Reaches A, B & C) Rehabilitation Study by Tetra Tech, Inc.
- 1978 Construction Plans for the Aliso Creek Effluent Transmission Main Reach B-C by Boyle Engineering Corporation
- 1979 ETM Easement Reach B-C

Since the ETM as-built drawings are of uncertain quality, MKN will perform field measurements as needed to verify key as-built information. Areas where dimensions cannot be verified (e.g., buried facilities) will be addressed by directing the contractor to perform potholing at key locations.

MKN will identify critical verification locations (tie-ins, valves/appurtenances, and crossings) and prepare a field verification and potholing plan to confirm the location of buried features before finalizing the design. Findings will be incorporated into the CDR and bid documents and used to refine shutdown sequencing, temporary isolation needs, and bypass

requirements. Additionally, MKN will prepare and submit a data request form for any additional information needed from SOCWA.

DELIVERABLES:

- Data request log

Task IV | Golf Course and Street Alignment Alternatives Analysis

During field reconnaissance and coordination discussions, MKN identified a "tricky junction" location where SOCWA indicated the alignment would need to cross; however, maintaining this junction "open" is operationally important because all three golf course zones rely on this connection. As part of the alignment evaluation, MKN will develop and screen an alternative alignment that avoids crossing the tricky junction, with the goal of reducing operational risk and minimizing impacts to golf course irrigation/operations while maintaining constructability, as shown in Exhibit 1 on the following page.

In addition, based on site observations, MKN considers the corridor on the left side of the roadway—behind the curb within the grass area—more feasible than the opposite side, which is constrained by bushes/trees and could require more clearing, restoration, and permitting coordination as shown in Exhibit 2 on the following page. Accordingly, each street alignment alternative will explicitly evaluate: (1) side-of-road feasibility, (2) vegetation/tree impacts and potential permit triggers, (3) constructability and access/staging, and (4) restoration complexity and risk.

MKN will determine viable alternatives for replacing the portion of Reach B located adjacent to/within El Toro Road and Moulton Parkway. MKN will conduct extensive utility research on the feasibility of the alignment. Each alternative will include a developed alignment, an overview of its benefits and drawbacks, an analysis of the risks, and a constructability review. MKN will identify potential CEQA/permit triggers for each alternative (tree impacts, traffic closures, utility relocations). MKN will prepare AACE Class 4 capital and operational cost estimates for each alternative as part of a cost evaluation. These cost estimates will include total project costs for design and construction. Estimates will include the costs for connecting to the existing piping and (if required) bypass pumping. During one of the monthly progress meetings, MKN will review the alternatives with SOCWA to identify one for implementation.



Exhibit 1 – Alternative Alignment to avoid “tricky junction”

During this alternatives analysis, MKN will evaluate each alignment for traffic control feasibility and tie-in constructability, including the space required for staged excavations and bypass/diversion equipment. MKN will coordinate early with the appropriate roadway jurisdiction(s) and utility owners, and will develop contingency traffic concepts in case field verification identifies conflicts that require shifts in the work zone footprint or lane closure limits.

DELIVERABLES:

- PowerPoint presentation of Street Alignment ETM Techite Replacement alternatives analysis, including AACE Class 4 cost estimates

Task V | Conceptual Design

MKN will prepare a draft Conceptual Design Report (CDR) that establishes the alignment through the Laguna Woods Golf Course and the recommended street alignment alternative. The CDR will provide the following:

- A. Layout and Constructability:** Detailed pipeline layout with constructability analysis addressing equipment requirements, contractor staging and laydown areas, construction access



Exhibit 2 – Alternative Alignment in Golf Course to Avoid Trees and Shrubs

routes, haul routes, staging areas, traffic control needs, night work considerations, bypass pumping requirements, tie-in locations, and restoration of golf course features (greens, tees, irrigation).

B. Permitting: Identification and summary of required permits and approvals, including lead agencies, expected permit timelines, and potential schedule constraints.

C. Isolation Valve: Evaluate and incorporate the installation of a new isolation valve at Reach A connection to Reach B. The purpose of the valve is to facilitate IRWD's future Reach A rehabilitation project and reduce operational impacts on ETWD during any Reach A shutdowns. The CDR will assess the optimal location, configuration, and constructability of the valve installation, identify tie-in requirements, and include the valve in the project's layout, cost estimate, and construction sequencing plan.

D. Return-to-Service and Temporary Works: Development of a shutdown/return-to-service approach aligned with SOCWA/IRWD/ETWD operations, including identification of temporary isolation (e.g., line stops where warranted), bypass/diversion needs, testing/acceptance steps, and turnover documentation requirements, which will be carried into the bid documents.

E. Easements: Identification of new permanent and temporary easements required for construction, including preliminary mapping.

F. Risk Analysis: Development of a risk matrix evaluating schedule, cost, and constructability risks, with likelihood and consequence scoring and recommended mitigation measures.

G. Existing Pipeline Disposition: Recommendations for the disposition of the existing Techite pipeline, evaluating whether it should be maintained in place for future rehabilitation as a parallel pipeline or permanently abandoned in place (including fill/plug methods, as applicable). The evaluation shall consider constructability, cost, long-term reliability, operational flexibility, and regulatory requirements, and shall include coordination with ETWD/IRWD staff.

H. Access Plan: Preparation of a detailed Access Plan for construction activities within the Laguna Woods Golf Course. The plan will identify contractor access routes from designated parking and staging areas to work zones, including limits of disturbance, construction traffic pathways, haul routes, anticipated equipment sizes and weights,

temporary crossings, and restoration requirements. The Access Plan will be coordinated with SOCWA and Golf Course staff and ultimately included as part of the bid documents.

I. Pre-Purchasing Recommendations: Evaluation of whether pre-purchasing of long-lead materials or equipment (e.g., valves, pipe, specialty fittings) is warranted and recommendations on timing.

J. Cost Estimate: Preparation of an AACE Class 3 cost estimate, separated by Golf Course and Moulton Parkway/El Toro Road alignments. The estimate shall include total project costs for design and construction, broken down into line items for construction, restoration, permitting, traffic control, contingencies, and engineering.

K. Schedule: A preliminary project schedule including permitting, design, bidding, and construction phases.

MKN will submit a draft CDR for SOCWA review and comment. During a monthly progress meeting, MKN will review SOCWA's consolidated comments. A final CDR will then be prepared, incorporating all comments. The final report will be signed and stamped by a California-registered professional civil engineer.

DELIVERABLES:

- Fully searchable electronic PDF file of the draft report
- Consolidated comment log with responses
- Fully searchable electronic PDF file of the final report

Task VI | Comprehensive Geotechnical Soils Report

MKN's subconsultant, Converse Consultants (Converse), will conduct site investigations and prepare a comprehensive geotechnical soils report addressing (at a minimum) geotechnical information required by code and as necessary to construct the golf course alignment. Prior to site investigations, MKN will submit a plan of proposed boring locations for SOCWA review and comment. MKN will allow adequate time for SOCWA to coordinate with Golf Course staff as necessary to enable this geotechnical work to take place. MKN's subconsultant will be responsible for any necessary permits associated with conducting onsite investigations. SOCWA will review and comment on the draft geotechnical report, and MKN will respond to SOCWA's comments in a consolidated log and incorporate them into a final geotechnical report.

DELIVERABLES:

- Proposed boring location plan
- Draft geotechnical report
- Consolidated comment log with all review comments and MKN responses
- Final geotechnical report

Task VII | Plans and Specifications

MKN will prepare technical specifications, drawings, and typical details for the construction of the project elements identified in CDR for the golf course alignment only. SOCWA will provide the front-end documents, which MKN will review and provide edits in tracked changes. If pre-purchasing is recommended, the cost to develop pre-purchase packages will be included in this task. MKN will electronically submit the following design submittals to SOCWA through e-mail at the following completion levels:

- 60% Design
- 90% Design
- Final signed Bid Documents

MKN will prepare technical specifications for all components of the project. In the bid documents, MKN will include temporary removal and installation of irrigation piping during construction, and restoration of the golf course irrigation and grass after construction, as necessary. If the construction impacts more than an acre, MKN will prepare a draft Storm Water Pollution Prevention Program (SWPPP) for construction. After the 60% and 90% design submittals, SOCWA will provide comments to be incorporated into the subsequent design submittal.

To support accurate contractor bids and reduce change orders, MKN will clearly identify temporary works and construction requirements in the drawings, specifications, and bid schedule, including (as applicable): line stop locations, shutdown plan/schematic (valve locations and phases), bypass/diversion equipment and connection points, dewatering requirements, contaminated soil handling/removal requirements, pavement restoration limits and thickness, and slurry backfill requirements.

MKN's subconsultant, Calvada Surveying, Inc. (Calvada), will conduct field surveying and produce topographic maps that will be used as a base plan for the proposed improvements. The topographic map will include all street right-of-way, property lines, and existing easement boundaries in the

project area on the base map. MKN will recommend the width and length of the field survey to capture the topographic features needed to complete the design. Our surveyor will obtain appropriate permits as required to perform the field survey.

Below is a summary of design submittals:

A. 60% Design: Based on the CDR recommendations, MKN will develop the bid documents to the 60% level and provide a construction cost estimate using manufacturer information and recent bid tabs. MKN will also submit the construction sequencing plan, updated Access Plan, schedule, and a consolidated comment log.

DELIVERABLES:

- 60% drawings and specifications
- 60% cost estimate
- Construction schedule, sequencing plan, and Access Plan
- Consolidated comment log with all review comments and MKN responses

B. 90% Design: After incorporating SOCWA's 60% comments and advancing detailed design, MKN will prepare the bid documents to the 90% level, including finalized site investigations, layout, detailed drawings/specs, and QA/QC reviews. MKN will provide an updated 90% cost estimate, schedule, sequencing plan, and Access Plan, along with a consolidated comment log.

DELIVERABLES:

- 90% drawings and specifications
- 90% cost estimate
- Updated construction schedule, sequencing plan, and Access Plan
- Consolidated comment log with all review comments and MKN responses

C. Final Design: Following SOCWA's 100% review, MKN will finalize the bid documents to 100% completion, including PE-stamped drawings. MKN will update calculations or the cost estimate if needed and provide all final deliverables.

DELIVERABLES:

- Final drawings and specifications (PDF and native CAD)
- Final cost estimate, construction schedule, Access Plan, and sequencing plan (if updated)
- Consolidated comment log with all review comments and MKN responses

The following is a list of anticipated design drawings:

Sheet No.	Drawing No.	Title
1	G-001	Title Sheet
2	G-002	Drawing Index, Abbreviations, Location and Index Maps, Legend, and Symbols
3	G-003	Construction, Water, and Surveying Notes
4	G-004	Site Access Plan
5	CD-100	Demolition Plan
6	C-101	Plan and Profile - I
7	C-102	Plan and Profile -II
8	C-103	Plan and Profile- III
9	C-104	Plan and Profile - IV
10	C-501	Details I
11	C-502	Details II
12-13	TC-1 – TC-2	Traffic Control Plans

Task VIII | Easement Acquisition Support

MKN's subconsultant, Calvada, will identify and prepare legal descriptions and plats for all new permanent and temporary construction easements required for the Project. The scope will include:

- A.** Reviewing the final pipeline alignment to determine required easement areas.
- B.** Preparing metes-and-bounds legal descriptions and exhibits stamped by a licensed land surveyor in California.
- C.** Coordinating with SOCWA's legal counsel and property owners to address easement boundaries, widths, and access.
- D.** Revising documents in response to SOCWA or property owner comments.
- E.** Delivering final signed and sealed easement documents suitable for recording.

DELIVERABLES:

- Draft legal descriptions and plats (PDF and editable CAD files)
- Final signed/sealed legal descriptions and plats

Task IX | Bidding

MKN will support SOCWA during project bidding by attending the mandatory pre-bid meeting and reviewing and responding to questions from the prospective Contractors. MKN will respond to bidder questions by preparing written responses and, as needed, revised drawings to address them during bidding. MKN assumes that three (3) addenda will be prepared in response to Contractor questions. MKN will prepare and submit a set of conformed drawings and specifications that incorporate the edits made through addenda during the bid phase.

MKN will also prepare up to three (3) addenda (as needed) and will provide a conformed set of drawings and specifications that incorporate addenda changes at the conclusion of bidding.

DELIVERABLES:

- Mandatory pre-bid meeting attendance
- Written responses to bidder questions and as-needed drawing revisions
- Conformed drawings and specifications

Task X | Pothole Investigation

MKN's subconsultant, Boudreau Utility Locating (Boudreau), will complete potholes as needed to determine utility conflicts, e.g., proximity of crossings with existing water, sewer, storm drain, and dry utilities, with the proposed alignments of the replacement pipelines or to determine the locations and depths of existing mains at proposed points of connection. MKN has anticipated a total of 20 pothole excavations. This work shall include obtaining permits and implementing all necessary traffic control measures for the pothole excavations, applying hot-patch asphalt repair, and surveying the pothole locations. If additional potholes are needed, they will be invoiced at the proposed unit price.

Pothole locations will be prioritized at proposed tie-in points, critical crossings, and locations with high potential for utility conflicts. Results will be documented and incorporated into the alignment refinement, traffic control concepts, and bid documents to reduce uncertainty and exposure to change orders.

DELIVERABLES:

- Pothole Report (PDF)

Assumptions and Exclusions

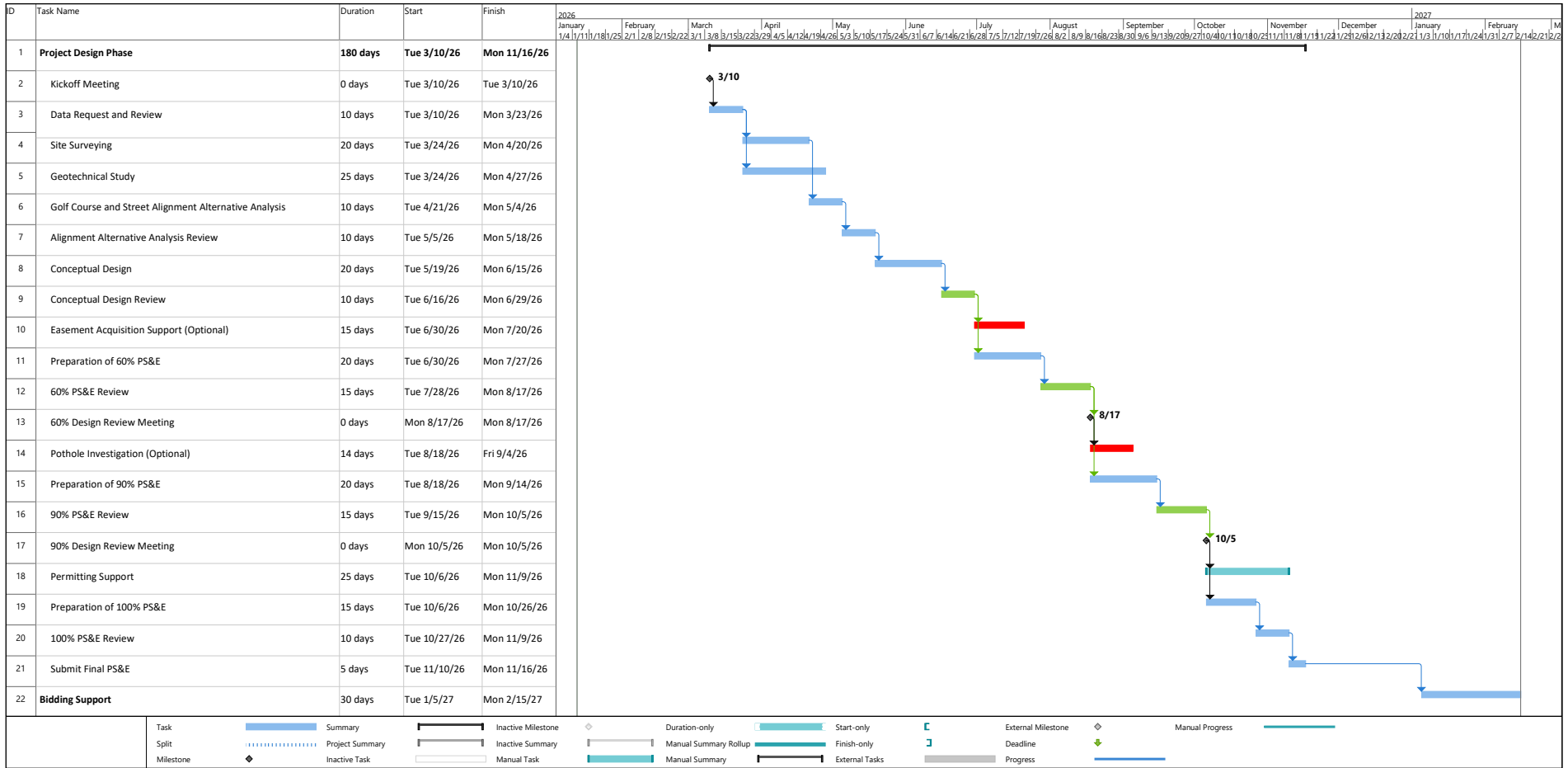
ASSUMPTIONS:

SOCWA (and/or the appropriate stakeholders) will provide timely site access, coordinate owner permissions (e.g., Laguna Woods Golf Course), and provide available record documents and operational constraint information needed to support the alternatives analysis, Conceptual Design Report, and final design. Agency permit fees, utility owner fees, and third-party review/inspection fees (if any) are assumed to be paid by SOCWA.

EXCLUSIONS:

Unless specifically authorized by SOCWA through an amendment, the following services are not included: preparation of CEQA environmental documents (e.g., IS/MND/EIR); preparation of final traffic control plans beyond the conceptual traffic approach developed to support alternatives selection and bidability; construction management/resident engineering services; and post-bid construction support beyond the bidding support tasks described above. MKN will provide technical information and coordination support, if requested, through an authorized amendment.

Estimated Project Schedule



3 EXPERIENCE AND TECHNICAL COMPETENCE

Experience with Similar Projects

The following represent a sample of MKN's direct project experience where the services provided were the same or similar in nature to the services requested in the RFP:

SCWD Pipeline Replacements

OWNER

South Coast Water District

CLIENT CONTACT

Taryn Kjolsing, PE
Engineering Manager

31592 West Street
Laguna Beach, CA 92651

tkjolsing@scwd.org
949.541.1327

South Coast Water District selected MKN to serve as one of five firms on the District's multi-year on-call contract. MKN has been executing projects under both this contract and other stand-alone contracts. Projects include:

- **Via California Pipeline Rehabilitation.** An emergency project that included replacement of an existing 10-inch AC pipeline and lining of the 16-inch casing for a failed pipe crossing the 5 Freeway. **(Jan. 2020 - Sep. 2020)**
- **Coastal Recycled Water Pipeline Expansion.** Design services for approximately 5,500 feet of 8-inch recycled water pipeline, and a new pressure reducing station within the City of Dana Point. **(Jan. 2024 - Aug. 2025)**
- **Laguna Cliffs Marriott Pipeline.** Design services for a 12-inch water main approximately 1,500 feet in length located in Dana Point in the vicinity of the Laguna Cliffs Marriott. **(Jan. 2022 - Aug. 2025)**

IRWD Pipeline Replacements

OWNER

Irvine Ranch Water District

CLIENT CONTACT

Belisario Rios, PE
Engineering Manager

15600 Sand Canyon Avenue
Irvine, CA 92612

rios@irwd.com
949.453.5394

Since 2022, as a pre-qualified approved vendor, MKN has been selected for multiple design projects for Irvine Ranch Water District. The following projects have been completed:

- **Serrano Creek Pipeline.** MKN provided alternatives analysis, hydraulic modeling, and final design for approximately 1,200 feet of new 8-inch recycled water pipeline to replace an existing pipe within a creek. **(Nov. 2022 - Sep. 2023)**
- **Park Plaza Pipeline.** MKN provided an expedited design for a new pipeline to replace approximately 1,100 feet of existing 6- and 8-inch AC pipeline that had reached the end of its useful life and was experiencing leaks. **(July 2024 - Dec. 2025)**
- **Technology and Ada Recycled Water Pipeline Replacement.** (Ongoing) MKN is providing design services for the replacement of approximately 4,600 LF of existing 6-inch ACP recycled water pipe and replacement of 22 services that have reached the end of their useful life and are experiencing leaks. **(Oct. 2024 - Aug. 2025)**

MKN Experience - Pipelines

MKN's key staff have delivered **over 400 miles of pipeline**, covering every aspect of pipeline development including conceptual planning, hydraulic modeling, alternatives analysis, condition assessment, detailed design, and construction management. Our design experience includes the full range of pipeline materials and trenchless construction methods, including pipe bursting, horizontal directional drilling, and jack-and-bore.

Client	Project Name	Diameter (inches)	Material	Length (LF)
Water Replenishment District	Brine Pipeline	16	HDPE	2,000
Water Replenishment District	GRIP Conveyance Alternatives Analysis	42	Steel	25,000
Water Replenishment District	208th Street Pipelines	14, 24, 36	HDPE	2,400
West Basin MWD	Palos Verdes Pipeline	10, 12	PVC	16,000
South Coast Water District	Via California Replacement	10	PVC	500
United Water CD	Alternatives Analysis	16	PVC	20,000
Ventura County	Potable Pipeline Project	12	PVC	20,000
Las Virgenes MWD	Westlake Reservoir	30, 36	Steel	2,200
Antelope Valley/East Kern WA	95th Street East PS/Turnout	20	Steel	500
Kern County Water Agency	Northwest Feeder PS & Pipeline	42	Steel	21,120
Lakeside Union SD	LUSD Connection to Bakersfield	16	PVC	15,500
Monterey County WRA	Salinas River Diversion Facility	20, 30	WSP, DIP	10,560
Nipomo CSD	Joshua Road Booster Pump Station	24	PVC	27,000
Nipomo CSD	Frontage Rd Trunk Sewer Replacement	24	PVC	4,200
Nipomo CSD	Branch St Water Improvements	8	PVC	2,100
Nipomo CSD	Supplemental Water Project	12, 18, 24	DIP, HDPE	27,000
North of the River MWD	Highland Park Improvement	8, 12	PVC	27,000
Santa Maria	WWTP Influent Piping Improvements	42, 48	PE	600
Antelope Valley/East Kern WA	South Feeder Parallel Pipeline	24, 36, 48	Steel	34,320
Arvin CSD	Arvin RW Disposal Pipeline	18	PVC	18,480
California Rail Builders	North Kern WSD Canal 9-26	42	Conc/HDPE	400
Casitas MWD	Pipeline Loading Evaluation	33	Steel	NA
Casitas MWD	West Ojai Pipeline Project	8	PVC	5,600
Cayucos Sanitary District	Sewer Pipeline Improvements	8	PVC	3,500
Cayucos Sanitary District	Toro Creek Bridge Pipeline Rehab	8	PVC	100
City of Arroyo Grande	Fair Oaks Waterline Replacement Project	8	PVC	2,025
City of Grover Beach	CDBG Waterline Replacement	8	PVC	2,400
City of Grover Beach	CDBG Waterline Replacement	6, 8	PVC	5,500
City of Guadalupe	Tognazzini Well Intertie	8	PVC	600
SLO County Food Control	Nacimiento Water Pipeline	18-36	PVC, DIP	264,000
City of San Luis Obispo	Highland Waterline Replacement	24	DIP	165
East Niles CSD	Morning and 178 Intertie	20	Steel	1,320
East Niles CSD	Brentwood Sewer Extension	8	VCP,PVC,HDPE	1,000
East Niles CSD	Pioneer Pipeline Project	12	PVC	1,400
East Niles CSD	Redbank Rd Pipeline Project	8, 14	PVC	6,800
East Niles CSD	Pesante Sewer Replacement	8	VCP	500
East Niles CSD	Water Master Plan	12-36	NA	67,500
East Niles CSD	Morning Dr Transmission Pipe	20	Steel	5,500
East Niles CSD	Well 20 Flushing Pipeline Project	12	PVC	1,500
Fresno Met Flood CD	Various Flood Control Projects	18-48	RCP/CIP	21,120
City of Fresno	Friant-Kern Canal Pipeline	60	WSP	26,400
City of Fresno	Regional Transmission Mains	16-48	WSP, DIP	68,640
Valley Children's Hospital	VCH Rio Mesa Well & Pipeline	12	PVC	1,800
Gunner Ranch	Wastewater Improvements	27, 30	PVC	21,120
City of Modesto	Ninth Street Storm Drain Replacement	24-96	RCP/CIP	52,800
ND State Water Commission	Southwest Pipeline Project and PS	24, 30	Steel	448,800
ND State Water Commission	Devils Lake Emergency Outlet	30, 54	Steel, HDPE	3,500

4

KEY PERSONNEL AND SUBCONSULTANTS



PRINCIPAL-IN-CHARGE

Ryan Gallagher, PE

PROJECT MANAGER

Kevin Saleh, PE

QA/QC MANAGER

Dennis Phinney, PE

MKN PROJECT TEAM

LEAD PIPELINE DESIGN

Parasto Azami, PE

PIPELINE DESIGN

Judy Beik, PE

ASSISTANT ENGINEER

Saisanjith Kakkireni

BIDDING SUPPORT

Parasto Azami, PE

Judy Beik, PE

TRAFFIC CONTROL

James Miller, PE

PERMITTING SUPPORT

Sabrina Ryan

SUBCONSULTANTS

GEOTECHNICAL

Converse Consultants

POTHOLING

Boudreau Utility Locating

SURVEYING

Calvada Surveying, Inc.



Ryan Gallagher, PE

Principal-in-Charge

15% Availability

Over his 19-year career, Ryan Gallagher has completed over 130 projects with 30+ public agencies in Southern California, serving as the Project Manager for the majority. The estimated construction value of the projects that have been planned, designed, and/or constructed exceeds \$300M. Projects include planning through design for water, wastewater, and recycled-water conveyance, pumping, storage, and treatment. Ryan specializes in complex multi-agency water supply programs, alternative delivery, program management, master planning, and contract negotiations.

YEARS EXPERIENCE

19

EDUCATION

BS, Civil Engineering, California Polytechnic State University, San Luis Obispo, CA

LICENSES & REGISTRATIONS

Professional Civil Engineer, CA No. 74805



Kevin Saleh, PE

Project Manager

35% Availability

Kevin Saleh is a Principal Engineer specializing in municipal water and wastewater infrastructure. He leads capital projects from planning through design, translating operational needs, agency standards, and risk into constructible, permit-ready solutions that support smooth bidding and construction. Kevin is known for proactive problem-solving, clear communication with stakeholders, and building aligned multi-disciplinary teams to deliver reliable outcomes for public agencies.

YEARS EXPERIENCE

31

EDUCATION

BS, Civil Engineering, University of Tabriz, Iran
Computer Programming/System Analysis, Seneca Polytechnic, Toronto, Canada

Project Management (PM) Certificate, Cornell University, Ithaca, NY

LICENSES & REGISTRATIONS

Professional Civil Engineer, CA No. 90535

**EDUCATION**

MS, Civil Engineering, Rensselaer Polytechnic Institute, Troy, NY
 MBA, Pepperdine University, Malibu, CA
 BS, Civil Engineering, Rensselaer Polytechnic Institute, Troy, NY

LICENSES & REGISTRATIONS

Professional Civil Engineer, CA No. 30778
 Professional Mechanical Engineer, CA No. 21533

Dennis Phinney, PE

QA/QC Manager

10% Availability

Dennis Phinney's 46 years of consulting experience in water and wastewater engineering include the design of over 100 pumping facilities, two of which were awarded Southern California APWA "Project of the Year." He has also designed pipelines, wells, chemical feed facilities, reservoirs, and water and wastewater treatment facilities in service throughout California and Arizona.

**EDUCATION**

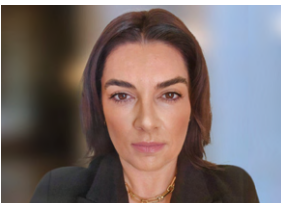
BS, Environmental Engineering, University of California, Irvine, CA

LICENSES & REGISTRATIONS

Professional Civil Engineer, CA No. 96365
 Pipeline Assessment Certified (PACP), NASSCO No. P0051766-122024

Judy Beik, PEPipeline Design/
Bidding Support*70% Availability*

Judy Beik is an accomplished project engineer with a five-year background in water and wastewater planning, engineering design, and construction management. She has a strong track record in designing sewer lift stations, pipelines, and has expertise in crafting detailed design documents, including plans, specs, and cost estimates.

**EDUCATION**

BS, Civil Engineering, California State University, Long Beach, CA

Sabrina Ryan

Permitting Support

80% Availability

Sabrina Ryan's experience in civil engineering spans planning, design, and construction project management of water resources. She has extensive experience with sewage collection systems, reclamation facilities, and various water infrastructure projects.

**EDUCATION**

MS, Civil Engineering, University of California, Irvine, CA
 BS, Mechanical Engineering, University of Tabriz, Iran

LICENSES & REGISTRATIONS

Professional Civil Engineer, CA No. 91468
 Project Management Certification, UCI DCE

Parasto Azami, PELead Pipeline Design/
Bidding Support*60% Availability*

Parasto Azami brings over 10 years of experience in water and wastewater engineering design, with a strong focus on pipeline design. Her expertise includes water conveyance systems, gravity sewers, force mains, pump stations, and the rehabilitation and condition assessment of infrastructure.

**EDUCATION**

BS, Mechanical Engineering, University of California, Davis, CA

LICENSES & REGISTRATIONS

OSHA 30, No. 26-607613017

Saisanjith Kakkireni

Assistant Engineer

50% Availability

Saisanjith Kakkireni is an Assistant Engineer who obtained a bachelor of science in Mechanical Engineering from the University of California, Davis. He has worked on water and wastewater projects ranging from water pipelines and sewer lift stations to water resource planning.

**EDUCATION**

BS, Civil Engineering, San Diego State University, San Diego, CA

LICENSES & REGISTRATIONS

Professional Civil Engineer, CA No. 82522

James Miller, PE

Traffic Control

25% Availability

James Miller has over 20 years of experience in traffic engineering and transportation design, with a focus on complex roadway, streetscape, and multimodal projects requiring detailed traffic control and staging strategies. He has led traffic engineering efforts for cities and counties across California, preparing plans for temporary traffic control, detours, signing and striping, traffic signals, and multimodal safety improvements.

5 PRICING

As requested in the RFP, costs and fees have been submitted in a separate file.

6 CONFLICTS OF INTEREST

MKN & Associates, LLP does **not** have any conflicts of interest or potential conflicts of interest pursuant to California Government Code Sections 1090 *et seq.*, the Political Reform Act, and other applicable laws.

7 NON-COLLUSION AFFIDAVIT

ATTACHMENT B NON-COLLUSION AFFIDAVIT

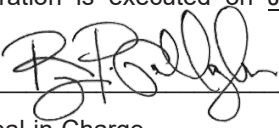
The undersigned declares:

I am the Principal-in-Charge of MKN & Associates, LLP, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on January 14, 2026, at Irvine, CA.

Signature: 
Title: Principal-in-Charge

8 CERTIFICATIONS

MKN & Associates, LLP certifies that it is not aware of any actual or potential conflict of interest that exists or may arise by executing the contract or performing the work that is the subject of this RFP.

MKN & Associates, LLP certifies that it is willing and able to obtain all insurance required by the form contract included as Attachment C.

MKN & Associates, LLP certifies that it has conducted a reasonable and diligent inquiry concerning the minimum and/or prevailing wages required to be paid in connection with the performance of the work that is the subject of this RFP and certifies that the proposed pricing includes funds sufficient to allow it to comply with all applicable local, state, and federal laws or regulations governing the labor or services to be provided.

MKN & Associates, LLP acknowledges and agrees with all terms and conditions stated in the RFP.

MKN & Associates, LLP certifies that all information provided in connection with its proposal is true, complete, and correct.



Ryan Gallagher, PE

Principal-in-Charge

A APPENDIX A RESUMES

Resumes for key staff members are included in the following pages.



RYAN GALLAGHER, PE

PRINCIPAL-IN-CHARGE

EDUCATION

- BS, Civil Engineering, California Polytechnic State University, San Luis Obispo, CA

LICENSES & REGISTRATIONS

- Professional Civil Engineer, CA No. 74805

PROFESSIONAL ASSOCIATIONS

- American Public Works Association (APWA), Ventura County Chapter (President 2014)
- American Society of Civil Engineers (ASCE), Santa Barbara-Ventura Branch (Younger Member Forum President 2012)
- Association of Water Agencies of Ventura County (AWAVC) (Board of Directors 2010–2016, President 2013)
- Orange County Sanitation District (OC San) (Board of Directors 2021–Present, Vice Chair 2022–2024, Board Chairman 2024–2025)
- Orange County Water Association (OCWA) (President 2020 and 2021)
- Tustin City Council (2020–2028, Mayor Pro Tem 2024)

YEARS OF EXPERIENCE

- 6 with MKN
- 19 Total

Over his 19-year career, Ryan Gallagher has completed over 130 projects with 30+ public agencies in Southern California, serving as the Project Manager for the majority. The estimated construction value of the projects that have been planned, designed and/or constructed exceeds \$300M. Projects include planning through design for water, wastewater, and recycled-water conveyance, pumping, storage, and treatment. Ryan specializes in complex multi-agency water supply programs, alternative delivery, program management, master planning, and contract negotiations.

Serrano Creek Raw Water Pipeline Replacement | Irvine Ranch Water District, Lake Forest, CA

Project Manager. The project involved the design of approximately 2,000 feet of new 8-inch recycled water pipeline (PVC) to replace failed pipeline within Serrano Creek. Challenges included alignment selection within utility corridor, navigating existing easements, meeting an expedited delivery schedule and crossing below existing HOA block wall.

Marriott Pipeline | South Coast Water District, Dana Point, CA

Project Manager. The project involved the design of approximately 1,500 feet of new 12-inch water main in the vicinity of the Laguna Cliffs Marriott in the City of Dana Point.

Zone 3 to 2 Pipeline | East Orange County Water District, Orange, CA

Project Manager. The project involved the design of approximately 3,000 feet of new 12-inch potable water pipeline (PVC) to modify zone operation. Challenges included navigating traffic impacts associated with narrow roads within the hillside community.

Via California Pipeline Replacement | South Coast Water District, Dana Point, CA

Project Manager. The project involved the replacement of 500 feet of pipe following failure of the pipeline. The 10-inch pipeline is located within a 16-inch casing in a freeway overpass. The replacement design included evaluation of various materials, including fusible PVC and Certa-Lok PVC. The final design included a cured-in-place liner for the casing and new Certa-Lok PVC to replace the failed carrier pipe. The design was expedited to ensure the pipe could be returned to service quickly.

Avenida Presidio Pipeline | South Coast Water District, Dana Point, CA

Principal-in-Charge. The project designed 100 feet of 12-, 18-, and 30-inch welded steel potable pipeline within the intersection of Avenida Presidio and La Esperanza in the City of San Clemente.

Brae Glen Pipeline | East Orange County Water District, Orange, CA

Principal-in-Charge. The project involved the design of approximately 500 feet of new 8-inch potable water pipeline (PVC) to replace aging infrastructure. Project challenges included construction phasing to maintain system operation and acquisition of pipeline easements to facilitate future access.

Cortland Pipeline and Pressure Reducing Valve | City of Newport Beach, CA

Project Manager. This project involved the design of a proposed developer-driven infrastructure modification. Project elements included abandonment of existing easement pipeline and PRV, and installation of a new 8-inch potable water pipeline (PVC) and PRV station. The efforts included hydraulic analysis prior to design development.

Regional Desalter Conveyance Design | Water Replenishment District of Southern California (WRD), Torrance, CA

Principal-in-Charge. The project involved developing an expedited alternatives analysis and design of four pipelines for WRD's future Regional Brackish Water Reclamation Facility. Efforts included evaluation of six alternative alignments, including both trenchless and open cut approaches, and final design. The project includes ~2,400 linear feet of pipeline, including a 14-inch HDPE brine line, two 24-inch HDPE product water lines, and a 34-inch HDPE source water line.

GRIP Program Conveyance Alternatives Analysis | Water Replenishment District of Southern California, Lakewood, CA

Project Manager. The project involved an Alternatives Analysis and Preliminary Design of 5-mile, 42-inch recycled-water conveyance pipeline. The project includes an economic analysis comparing two alternative alignments, 30 percent design drawings, and Preliminary Design Report. The investigation addresses multiple trenchless crossings, utility coordination, hydraulics, traffic impacts, corrosion, residential/commercial impacts, geotechnical issues, and constructability. The estimated construction cost of the pipeline is \$30M.

HDPE Brine Pipeline | Water Replenishment District of Southern California, Pico Rivera, CA

Principal-in-Charge. The project included approximately 2,000-foot, 16-inch-diameter, high-density polyethylene (HDPE) pipeline in the City of Pico Rivera. The pressurized pipeline conveyed brine from the Groundwater Reliability Improvement Project (GRIP) Advanced Water Treatment Facility (AWTF) to a 63-inch trunk sewer owned and operated by the Sanitation Districts of Los Angeles County. The work included both preliminary and final design. In addition, the preliminary design included evaluation of a turnout structure along a 66-inch reinforced-concrete pipe conveying tertiary effluent from the San Jose Creek Water Reclamation Plant. The objective of the turnout was to deliver influent water to the GRIP AWTF.

Hollywood Beach Pipeline Replacement | Channel Islands Beach Community Services District, Ventura County, CA

Project Manager. This project evaluated alternatives for replacing existing 8-inch AC pipeline located within private easements. The analysis included material testing of the AC pipe to determine useful remaining life, alternatives development for rehabilitation and replacement and recommendations. Provided final design services for the recommended solution which included abandonment of the easement pipeline and construction of approximately 800 feet of 6 and 8-inch PVC potable distribution pipelines for a total cost of \$400k. The project also required outreach and reconnection for approximately 10 residential customers.

Roosevelt Pipeline | Channel Islands Beach Community Services District, Oxnard, CA

Principal-in-Charge. The project abandoned an existing AC potable pipeline located within residential easements and installed approximately 1,500 feet of 8-inch PVC pipeline to reconnect the distribution system. The effort required outreach and reconnection for approximately 25 residential and commercial customers.

Force Main Rehabilitation | Channel Islands Beach Community Services District, Oxnard, CA

Project Manager. Provided construction management services related to cured-in-place lining for approximately 10,300 linear feet of 8-inch and 12-inch wastewater force main piping.



KEVIN SALEH, PE

PROJECT MANAGER

EDUCATION

- BS, Civil Engineering, University of Tabriz, Iran
- Computer Programming/System Analysis, Seneca Polytechnic, Toronto, Canada
- Project Management (PM) Certificate, Cornell University, Ithaca, NY

LICENSES & REGISTRATIONS

- Professional Civil Engineer, CA No. 90535
- Professional Civil Engineer, MD No. 36759

PROFESSIONAL ASSOCIATIONS

- American Membrane Technology Association (AMTA)
- Water Environment Federation (WEF)

YEARS OF EXPERIENCE

- 2 with MKN
- 31 Total

Kevin Saleh is a Principal Engineer specializing in municipal water and wastewater infrastructure. He leads capital projects from planning through design, translating operational needs, agency standards, and risk into constructible, permit-ready solutions that support smooth bidding and construction. Kevin is known for proactive problem-solving, clear communication with stakeholders, and building aligned multi-disciplinary teams to deliver reliable outcomes for public agencies. Kevin has extensive experience delivering municipal water and wastewater capital projects from planning through design. Skilled at converting operational constraints, standards, and risk into constructible, permit-ready designs that reduce project surprises and support efficient construction. Recognized for strong client communication, team leadership, and consistent quality across multi-disciplinary deliverables.

Coastal Recycled Water Expansion Program, Phase 4 | South Coast Water District, Dana Point, CA

QA/QC Engineer. Quality Control (QC) Reviewer for design deliverables supporting SCWD's Coastal Recycled Water Expansion Program, Phase 4. The project involved extending recycled water distribution infrastructure to improve water supply reliability and reduce potable demand in coastal service areas. Responsibilities included senior-level technical review of plans, specifications, and cost estimates to ensure compliance with SCWD standards, constructability, and regulatory requirements. Provided QA/QC oversight during key design milestones, verifying technical accuracy and identifying opportunities to optimize constructability and cost-effectiveness while maintaining schedule commitments.

Laguna Cliffs Marriott Pipe Relocation | South Coast Water District, Dana Point, CA

QA/QC Engineer. Quality Control (QC) Reviewer for the relocation of approximately 300 LF of 8-inch PVC water pipeline in Lantern Bay Park, part of the Laguna Cliffs Marriott Pipe Abandonment Project. Provided senior-level technical oversight to ensure compliance with SCWD standards, constructability, and coordination with existing utilities and site constraints. Responsibilities included review of background materials, utility research, and construction drawings at the 90% and final design stages, ensuring that design deliverables met district requirements for reliability, cost-effectiveness, and ease of implementation. Contributed to project success by identifying potential risks early and providing design refinements that enhanced constructability and minimized schedule impacts.

Technology Drive & Ada Recycled Water Pipeline Replacement | Irvine Ranch Water District, Irvine, CA

QA/QC Engineer. QA/QC Engineer for the replacement of aging recycled water pipelines along Technology Drive and Ada in IRWD's service area. The project involved replacing

and upsizing deteriorated PVC pipelines to improve hydraulic capacity, system reliability, and long-term asset performance. Responsibilities included senior-level technical review of design plans, specifications, and constructability considerations to ensure compliance with IRWD standards and regulatory requirements. Provided quality oversight during key design milestones, verifying technical accuracy and identifying opportunities to enhance cost-effectiveness and ease of construction while maintaining schedule and budget commitments.

Eastern Wells and Pipeline | City of San Juan Capistrano, CA

Project Engineer. Kevin was responsible for the pipeline design, construction inspection, and support of the project, which included two raw water wells and 9,000 feet of 16-inch AWWA C905 collection pipeline between the wells and the City's Groundwater Recovery Plant. This project also included the construction of the pipeline in the bike path under the I-5 Bridge crossing over San Juan Creek. Caltrans permit engineer required that the 16-inch carrier pipe be constructed inside a 24-inch steel casing pipe. He was responsible for the engineering, design, and construction support of two replacement groundwater wells. The wells were both drilled in a shallow aquifer (15 to 100-ft BGS) using an adapted auger method to reduce the need for drilling fluids and increase production. Both wells utilize 75-HP electric motors to produce up to 700gpm of raw groundwater. The well facilities each include 22ft x 18ft slump stone well houses, Variable Frequency Drives, 8-inch Ductile Iron discharge lines, 4-inch PVC pump-to-waste lines, and concrete pump-to-waste cisterns.

Wilmington Avenue Area Main Replacement | Golden State Water Company, Los Angeles County, CA

Senior Project Engineer. Responsible for the design of replacement of existing aging 4-inch and 6-inch cast iron water main with 8-inch PVC C-900 on 130th Street from Wilmington Avenue to Mona Blvd. (approximately 3,800 ft). The project also includes the replacement of 1-inch and 2-inch services and meters and the abandonment of existing water mains in this reach.

Hawthorne Boulevard Water Main Replacement (from Lomita Blvd. to PCH) and Crenshaw Water Main Replacement (from Artesia Blvd to 181st Street) | City of Torrance, CA

Project Manager. Responsible for the design of 7,000-foot of 12-inch and 16-inch D.I. pipes. The project consisted of the installation of new water mains, valves, fire hydrants, service lines, meters, and the abandonment of existing water mains.

Riverview Neighborhood Water Main Improvements | City of Santa Ana, CA

Project Manager. Responsible for preparation of plans, specs, and construction cost estimate of approximately 7,000 LF of 8-inch and 12-inch potable water main replacement.

UCI Recycled Water Line | Irvine Ranch Water District, Irvine, CA

Project Engineer. Responsible for design, preparation of contract documents, and engineering services during construction for a new metering vault and approximately 5,700 LF of 16-inch and 12-inch pipeline in California Ave from University Drive to Theory Lane and on Academy Way and Palteson Drive from California Avenue to the Cooling Towers. of 16-inch and 12-inch recycled water pipeline for UCI cooling towers.

South Gardena Recycled Water Pipeline | West Basin Water District, Gardena, CA

Project Engineer. Responsible for preparation of Preliminary Design Report and design of approximately 5,000 linear feet of 8-inch and 6-inch PVC C900 pipeline.

Lincoln Avenue Pipeline Replacement between La Plaza and State College Boulevard | City of Anaheim, CA

Project Manager. Responsible for the design of approximately 3,000 linear feet of 12-inch ductile iron pipe and abandonment of existing 8-inch and 6-inch cast iron pipes. the project included connection to existing mains, abandonment of approximately 1,300 LF of existing 6-inch CIP water main in Lincoln Avenue between Evergreen Street and State College Blvd., abandonment of approximately 1,650 LF of existing 8-inch CIP water main in Lincoln Avenue between La Plaza and Evelyn Drive, and replacement of existing fire hydrants, water service lines and meters. In addition, two looped 8-inch connections to a new townhome development located on Lorch and Evergreen Streets were designed.



DENNIS PHINNEY, PE

QA/QC MANAGER

EDUCATION

- MS, Civil Engineering, Rensselaer Polytechnic Institute, Troy, NY
- MBA, Pepperdine University, Malibu, CA
- BS, Civil Engineering, Rensselaer Polytechnic Institute, Troy, NY

LICENSES & REGISTRATIONS

- Professional Civil Engineer, CA No. 30778
- Professional Mechanical Engineer, CA No. 21533
- Professional Civil Engineer, AZ No. 15704

PROFESSIONAL ASSOCIATIONS

- American Water Works Association (AWWA) (Life Member)

YEARS OF EXPERIENCE

- 1 with MKN
- 46 Total

Dennis Phinney's 46 years consulting experience in water and wastewater engineering includes design of over 100 pumping facilities, two of which were awarded Southern California APWA "Project of the Year." He has also designed pipelines, wells, chemical feed facilities, reservoirs, and water and wastewater treatment facilities in service throughout California and Arizona.

He has prepared water and wastewater master plans for service areas aggregating over 1 million residents, has authored standard specifications adopted by water agencies throughout California, and was responsible for preparing the sections added to the "Greenbook" Standard Specifications for Public Works Construction in 2015 to address water and wastewater pipelines and appurtenances.

Philadelphia Street Recycled Water Pipeline Study | City of Ontario, CA

Project Engineer. Dennis prepared a study of alternative alignments, hydraulics, and life-cycle costs for 30-inch recycled water main in Ontario, California. The study included an evaluation of alternative materials and hangers for an in-plant bridge crossing suspending 24- or 30-inch PVC or steel pipe.

Bake Parkway Recycled Water Pipeline | Irvine Ranch Water District, Irvine, CA

Project Engineer. Dennis prepared a preliminary design report, plans, and specifications for approximately 3,400 linear feet of 12-inch-diameter PVC pipe, 730 linear feet of 10-inch steel pipe in a Caltrans bridge, 5,000 linear feet of 24-inch steel pipe, connections, a pressure reducing station, and permitting with Caltrans and two cities.

Planning Area 6, Zone 4 and Zone C Reservoirs and Zone 4/6 and Zone C/D Booster Pump Stations | Irvine Ranch Water District, Irvine, CA

Project Engineer. Dennis prepared a preliminary design report, plans, and specifications for 3.5-MG domestic water and 2.2-MG recycled water partially buried prestressed concrete tanks, domestic water and recycled water pump stations with four 125-hp and one 50-hp variable frequency drive pumps each, a reservoir management system, grading and site improvements, an access road, 1,000 linear feet of 20-inch domestic water pipeline, 1,000 linear feet of 24-inch recycled water pipeline, 1,000 linear feet of a 24-inch storm drain, site piping, drains, and vaults.

Feasibility Study for Anaheim Lake, Warner Basin Pipeline | Orange County Water District, Fountain Valley, CA

Project Engineer. The purpose of the project was to transfer an additional 100-cfs of captured runoff from the Santa Ana River Lakes Warner Basin to Anaheim Lake, Miller Basin, and Kraemer Basin. Dennis prepared a study with extensive economic analysis of

alternative pumping configurations, pipeline alignments, relining alternatives, and pipeline sizes for a large-diameter water line and low-head, high-volume pumps. Pipeline alternatives included new large-diameter steel pipe or tunneling as well as rehabilitation of existing pipes to increase capacity. Pump station alternatives included vertical mixed flow or propeller pumps as well as inclined shaft pumps on basin banks. Dennis recommended that facilities include four 250-hp pumps and a mile of 48-inch steel pipeline.

Trabuco Road and Jeffrey Road Transmission Lines | Irvine Ranch Water District, Irvine, CA

Project Engineer. This project involved the design of 3 miles of 42-inch and 24-inch steel water pipeline along urban arterials.

North Scottsdale Reclaimed Water Distribution System | City of Scottsdale, AZ

Project Engineer. Dennis was responsible for the design and engineering during construction and prepared an operation and maintenance manual for \$14M of public works improvements to construct a complete water system delivering 20 million gallons per day of raw water and reclaimed water to 14 golf courses in Scottsdale, Arizona. The reserve capacity was provided to allow expansion to serve six future golf courses. A provision was also made to allow the eventual supplementation of raw water with reclaimed wastewater. The finished system included five pressure zones with all piping, pumping, storage, treatment and telemetry needed to operate a finished water system. The system included the following: 15 miles of 12-inch through 36-inch pipeline, five reclaimed water pump stations ranging in capacity from 5 MGD to 21 MGD, bar screens for Central Arizona Project Aqueduct water, filters and chlorination facilities, an 8-million-gallon storage pond, 65,000-gallon steel reservoir, golf course metering and control valve stations, a telemetry and control system for five interconnected pump stations, an 8-million-gallon reinforced concrete storage reservoir, and a 65,000-gallon steel reservoir.

El Dorado Park Reclaimed Water Reuse Project | City of Long Beach, CA

Project Engineer. The project involved the design of a regional reclaimed water reuse pump station with a capacity of 8500 gpm, plus 5 miles of 20-inch reclaimed water pipeline. The project delivers reclaimed water to city and county parks.

Sunnymead Feeder, Eastern Municipal Water District | City of Perris, CA

Project Engineer. The project involved the design of 5 miles of 54-inch steel water pipeline.

Central Arizona Project (CAP) Water Transmission Pipeline and Reservoir | City of Scottsdale, AZ

Project Engineer. The project involved the design of 3 miles of 24-inch water transmission pipeline and a 2.5-million-gallon steel reservoir to serve CAP water to Northeast Scottsdale.

Beachwood Sewage Lift Station and Force Main Rehabilitation Study | City of Burbank, CA

Project Engineer. Dennis prepared an engineering study to determine the plan for rehabilitation of the Beachwood Sewage Lift Station serving the south half of the City of Burbank, along with deteriorating cement-lined steel force mains and the nearby Mariposa Lift Station.

La Palma Reservoir and Pump Station | City of Anaheim, CA

Project Engineer. This project involved the preparation of a feasibility study, a preliminary design report, plans, and specifications for the reconstruction of a 4-MG Hypalon-lined and aluminum roof La Palma Reservoir, a new La Palma Pump Station including two 250-hp and two 125-hp pumps, standby power, a remodeled restroom and chemical analyzer building, slip-lining of existing 12-inch cast iron pipe with new 10-inch HDPE pipe, and an inspection of extensive pervious pavement and Water Quality Management Plan stormwater-capture facilities on-site.



PARASTO AZAMI, PE

LEAD PIPELINE DESIGN/BIDDING SUPPORT

EDUCATION

- MS, Civil Engineering, University of California, Irvine, CA
- BS, Mechanical Engineering, University of Tabriz, Iran

LICENSES & REGISTRATIONS

- Professional Civil Engineer, CA No. 91468
- Project Management Certification, UCI DCE

PROFESSIONAL ASSOCIATIONS

- American Society of Civil Engineers (ASCE)
- Association of Women in Water, Energy & Environment (AWWEE)
- Orange County Water Association (OCWA)
- University of California, Irvine (UCI) Civil and Environmental Engineering (CEE) Affiliates (Program Committee Chair)
- Women in Water, Orange County Chapter

YEARS OF EXPERIENCE

- 5 with MKN
- 13 Total

Parasto Azami brings over 10 years of experience in water and wastewater engineering design, with a strong focus on pipeline design. Her expertise includes water conveyance systems, gravity sewers, force mains, pump stations, and the rehabilitation and condition assessment of infrastructure. She has successfully led numerous complex, large-scale pipeline projects, delivering reliable and sustainable solutions. Parasto's deep understanding of engineering challenges and commitment to excellence ensures optimal outcomes for her clients and stakeholders.

Serrano Creek Raw Waterline Replacement | Irvine Ranch Water District, Irvine, CA

Design Lead. The project replaced an existing 8-inch diameter asbestos cement raw water pipe in the vicinity of Serrano Creek Trail in City of Lake Forest with over 100 feet of trenchless/ tunneling pipe under the community wall. Task included identifying optimum alignment, coordinating with utility and jurisdiction agencies, preparing plans, specifications, cost estimates and construction schedules.

Technology Drive and Ada Recycled Water Pipeline Replacement | Irvine Ranch Water District, Irvine, CA

Design Lead and Project Manager. The project replaced over 5,000 linear feet of existing 6-inch diameter asbestos cement recycled water pipe in Technology Dr and Ada. Tasks included identifying optimum alignment, coordinating with City of Irvine, County of Orange and Caltrans for design, work hours and traffic control, preparing plans, specifications, cost estimates and construction schedules.

Park Plaza Recycled Waterline Replacement | Irvine Ranch Water District, Irvine, CA

Design Lead and Project Manager. The project replaced an existing 6-inch and 8-inch diameter asbestos cement recycled water pipe in Park Plaza. Tasks included identifying optimum alignment, coordinating with Irvine Company for work hours and traffic control, preparing plans, specifications, cost estimates and construction schedules.

Laguna Cliffs Marriott Pipeline | South Coast Water District, Dana Point, CA

Project Manager and Design Lead. The project involved the design of new 12-inch water main via open trench and trenchless installation in the vicinity of the Laguna Cliffs Marriott in the City of Dana Point. Key responsibilities included coordination with the resort for work hours and site access to minimize impact on the resort's guests.

Circular Panorama Pipeline Replacement | East Orange County Water District, Orange, CA

Project Engineer. The project involved preliminary and final design of 4,000 feet of new 12-inch waterlines and three pressure reducing facilities. Major tasks included alternative analysis, utilities research, coordination with County for Traffic and pavement replacement requirements.

Coastal Recycled Water Expansion Program Phase 4 Project | South Coast Water District, Dana Point, CA

Project Manager & Design Lead. The project involved design of 5,500 LF of new 8-inch PVC recycled water pipe as well as a new pressure reducing station along Ritz Carlton Dr, Selva Road and Pacific Coast HWY in the City of Dana Point. Key responsibilities include coordinating with the City of Dana Point and Caltrans for traffic control and work hours and conducting an alternatives analysis to determine the pipeline alignment with minimal impact on community access. (Ongoing)

Hollywood Beach and Roosevelt Waterline Replacement | Channel Islands Beach Community Services District, Channel Islands Harbor, CA

Project Manager and Design Lead. The project replaced an existing potable water line located within private easements and transferred customer services to new pipeline. Tasks included preliminary/final design and permitting support.

Emergency Water Interconnects & Pressure Reducing Station | City of Thousand Oaks, CA

Design Engineer. The project involved final design for two emergency potable water interconnects between the City of Thousand Oaks and American Water and two reducing facilities. The interconnects include control valves, pressure relief valve, drain connections, meter, below grade vaults and associated appurtenances. As part of the project, evaluated multiple locations and alignments, coordinated with both agencies to obtain design requirements, and coordinated with surveying and potholing subconsultants.

Morena Pump Station and Conveyance System (Pure Water) | City of San Diego, CA

Design Engineer. The project involved the design of over 11 miles of 48-inch Force main and 30-inch Brine line to convey sewer from Morena pump station to North City Pure Water Facility and producing 15 MGD of purified drinking water. Major tasks included hydraulic analysis, steel pipe calculations (AWWA M-11), construction plans and specifications, and pressure reducing facility (PRV).

Orange Knoll PRV and Brae Glen Pipeline | East Orange County Water District (EOCWD), North Tustin, CA

Project Manager and Design Lead. Design of new pressure reducing facility and new water line to abandon existing pipe in easement. Project included site visit, preliminary and final design, specifications, stakeholder coordination and community outreach.

Otay 2nd Pipeline | City of San Diego, CA

Project Engineer. The project involved the design of 2 miles of new 48-inch water line and a pressure reducing facility. Designed PRV, conducted hydraulic calculations and steel pipe welding size, coordinated with vendors to obtain PRV sizing and requirements.

Recycled Water Conveyance Pipeline | Pleasant Valley County Water District, Ventura County, CA

Design Lead. The project involved preliminary and final design of 8,000 feet of 18-inch pipeline in Ventura County. The effort included HDD installation underneath of red-line channel, environmental permitting, and coordinating with jurisdiction agencies.

Regional Desalter Conveyance Design | Water Replenishment District of Southern California, Torrance, CA

Project Engineer. The project provided an expedited alternatives analysis and design of 2,500 linear feet of pipelines for WRD's future Regional Brackish Water Reclamation Facility. The project included the evaluation of six alternative alignments, including both trenchless and open cut approaches, and final design. The project includes the preliminary and final design of a 14-inch HDPE brine line, two 24-inch HDPE product water lines, and a 34-inch HDPE source water line.

Well 19 Flushing Pipeline Project | East Niles Community Services District, Bakersfield, CA

Design Lead. The project involved cured-in-place (CIPP) rehabilitation of 20-inch drain line. Major tasks include reviewing CCTV, preparing plans and details, specifications, and cost estimate. Construction phase tasks included reviewing bid documents, submittals, and RFIs.



JUDY BEIK, PE

PIPELINE DESIGN/BIDDING SUPPORT

EDUCATION

- BS, Environmental Engineering, University of California, Irvine, CA

LICENSES & REGISTRATIONS

- Professional Civil Engineer, CA No. 96365
- Pipeline Assessment Certified (PACP), NASSCO No. P0051766-122024

PROFESSIONAL ASSOCIATIONS

- American Society of Civil Engineers (ASCE), Orange County Branch (Environmental & Water Resources Institute (EWRI) Young Member Forum (YMF) Liaison)

YEARS OF EXPERIENCE

- 2 with MKN
- 6 Total

Judy Beik is an accomplished project engineer with a five-year background in water and wastewater planning, engineering design, and construction management. She excels in hydraulic modeling, planning document preparation, and technical report writing. Judy has a strong track record in designing sewer lift stations, pipelines, and has expertise in crafting detailed design documents, including plans, specs, and cost estimates. She's adept at managing project costs, reviewing construction requests, and leading construction progress meetings. With excellent communication skills, Judy effectively engages with diverse stakeholders to ensure project success.

3-64A Orange Western Trunk Sewer Project | Orange County Sanitation District, Anaheim, Cypress, and Buena Park, CA

Assistant Engineer. Orange County Sanitation District (OC San) has identified several aging sewer infrastructures that it contracted to have rehabilitated to maintain sewer services to its customers throughout Orange County. The Orange Avenue/Western Avenue trunk sewer pipeline rehabilitation project consisted of line cleaning, re-lining 2 miles with Cast-In-Place Polyethylene Pipe (CIPP), sewer bypass pumping, and 35 total manhole rehabilitation and replacement on its existing trunk sewer going through the Cities of Anaheim, Buena Park, and Cypress. The project included replacement of existing sanitary sewer laterals and public outreach with affected business owners and residents in the project area.

Cow Camp Road Bridge Over Gobernadora Creek Project | Santa Margarita Water District, Rancho Mission Viejo, CA

Assistant Engineer. Santa Margarita Water District is constructing new utility pipelines as part of the construction of the nearly five-mile-long roadway called Cow Camp Road, which included a bridge over Gobernadora Canyon and San Juan Creek between Planning Area 2 (PA-2) and PA-3. The project serves as the backbone infrastructure for the Rancho Mission Viejo Development that will eventually include more than 14,000 homes and five million square feet of retail and commercial space. The project included the construction of a 30-inch recycled water pipeline; a 20-inch potable water pipeline; and a 16-inch sewer force main structurally supported by the bridge to serve the proposed community nearby.

Magic Mountain Pipeline Phase 6A | Santa Clarita Valley Water Agency, Santa Clarita, CA

Assistant Engineer. Santa Clarita Valley Water Agency constructed a 42-inch drinking water transmission main as part of its capital improvement program. The pipeline was needed to connect the existing Magic Mountain Pipeline to the future Magic Mountain Reservoir in the Mission Village development. The project was designed in phases, and Phase 6A consisted of approximately 3,300 linear feet of 42-inch pipe including three concrete valve vaults and two precast manway structures.

Hinton Way and Saint Jude Easement Pipeline Replacement | East Orange County Water District, Tustin, CA

Project Engineer. MKN provided engineering design and will provide future construction support services for the East Orange County Water District (EOCWD) as part of the pipeline abandonment and meter relocation project in the Crawford Canyon Road and St. Jude area. The project scope includes abandoning in place existing 4-inch, 6-inch, and 8-inch water lines located within an easement; relocating approximately 10 existing customer meters and associated service laterals to new locations; and designing a new 8-inch PVC water main, approximately 200 feet in length, to connect with the existing 8-inch pipeline along Crawford Canyon Road.

Circula Panorama Pipeline Conversion (Zone 3 to 2) and Replacement | East Orange County Water District, Tustin, CA

Project Engineer. The project involved preliminary and final design of 4,000 feet of new 12-inch waterlines and three pressure-reducing facilities. Major tasks included alternative analysis, utilities research, and coordination with County for Traffic and pavement replacement requirements.

Saddlecrest Reservoir Pipeline Modification | Trabuco Canyon Water District, Trabuco Canyon, CA

Project Engineer. This project involves the modification of the existing potable water inlet and outlet pipeline system serving the Saddlecrest Reservoir. Currently, the reservoir is connected by a single 12-inch inlet/outlet pipeline that links the 1504 pressure zone to the 1604 pressure zone booster pump station. While the intended operation is for water from the 1504 zone to fill the reservoir before being drawn by the booster pump station for distribution to the 1604 zone, current system hydraulics and valve configurations allow water to bypass the reservoir entirely. As a result, water flows directly from the 1504 zone to the 1604 pump station without utilizing the reservoir's storage capacity. The proposed design will separate the inlet and outlet piping, ensuring that water properly cycles through the Saddlecrest Reservoir, improving operational efficiency and system reliability.

New Well Pipelines | City of Newport Beach, Fountain Valley, CA

Project Engineer. The City of Newport Beach is planning to drill two new wells in a property located along Bushard Street, approximately 500 feet north of Talbert Avenue. The City intends to design and construct the required pipelines for the proposed wells ahead of time. The proposed project includes approximately 2,000 feet of 20" PVC discharge pipe and approximately 1,000 feet of 12" PVC pump-to-waste line. The Well discharge line will connect to the City's existing well collection pipeline, running parallel to Talbert Channel along its westerly access road. The pump-to-waste line is proposed to be connected to the existing storm drain system in Talbert Avenue.

VenturaWaterPure Ocean Outfall Pipeline | City of Ventura, CA

Assistant Engineer. The City of Ventura is constructing a 24-inch diameter HDPE ocean outfall pipeline to discharge concentrate generated by the future Advanced Water Purification Facility (AWPF). The ocean outfall pipeline construction consists of both an onshore and offshore portion, which includes open-cut and horizontal directional drilling (HDD) installation methods. Two segments of the outfall pipeline will be drilled under water, one being encased in 42-inch HDPE under the Ventura Harbor from the Port District's boat storage to Marina Park and the other starting from Marina Park outward 4,000 linear feet in the ocean floor. The outfall in the Pacific ocean consists of three under-water segments (HDD segment, seafloor segment, and diffuser segment) with the deepest water depth being approximately 50 feet. The diffuser segment included 8 risers with 4 check valves attached to diffuse the AWPF concentrate into the ocean environment. The seafloor segment includes several concrete ballast weights and additional rock backfill to anchor the segment to the sea floor. The outfall project consists of two additional pipeline abandonment and replacement projects of an existing 12-inch sewer force main and 6-inch recycled water line under the Ventura Harbor. A new 10-inch dual sewer force main and an encased 4-inch recycled water pipeline will be installed inside the 42-inch HDD casing of the ocean outfall in the Ventura Harbor segment, approximately 30 feet below the harbor seafloor. The project includes recurring community outreach and public meetings with the Ventura Marina Mobil Home Park Home-Owner Association and the Pierpont Bay Community Council.



SAISANJITH KAKKIRENI

ASSISTANT ENGINEER

EDUCATION

- BS, Mechanical Engineering, University of California, Davis, CA

LICENSES & REGISTRATIONS

- OSHA 30, No. 26-607613017

PROFESSIONAL ASSOCIATIONS

- Orange County Water Association (OCWA) (2025–Present)

YEARS OF EXPERIENCE

- 1 with MKN
- 1 Total

Saisanjith Kakkireni is experienced in water and wastewater infrastructure projects throughout California. His project expertise includes GIS mapping, water resource planning, pipeline systems, and sewer lift station. He has a strong background in utility research, infrastructure assessment, and technical documentation for municipal clients. He is adept at leveraging advanced tools including Trimble Da2 and ArcGIS Pro to deliver accurate mapping solutions and infrastructure analyses.

6-Inch Recycled Water Pipeline Replacement | Irvine Ranch Water District, Irvine, CA

Assistant Engineer. This project consists of replacing the 6-inch Recycled Water Pipeline on Technology Dr and Ada in Irvine. Responsibilities included: conducting utility research to identify locations of existing utilities within the project area for as-built maps and pinpointing possible pothole locations.

Pipe Replacement East Irvine Terrace and Balboa Peninsula | City of Newport Beach, CA

Assistant Engineer. This project consisted of replacing the aging waterlines in East Irvine Terrace and Newport Beach with newer waterlines. Responsibilities included: conducting utility research to identify locations of existing utilities within the project area.

Trenchless Pipe Rehabilitation | City of Newport Beach, CA

Assistant Engineer. This project consisted of identifying potential pipes that may burst in residential or hard to reach areas within the City of Newport Beach and writing technical memorandums discussing potential pipeline rehabilitation methodologies. Responsibilities included: identifying potential pipes that may burst using the Newport Beach GIS tool.

Beaumont Heights Lift Station | Michael Baker International, Beaumont, CA

Assistant Engineer. New lift station construction for the City of Beaumont. Responsibilities included: conducting utility research to identify locations of existing utilities within the project area and researching potential davit cranes for use in the sewer lift station.

Newport Beach New Wells Pipeline | City of Newport Beach, Fountain Valley, CA

Assistant Engineer. Design of approximately 2,000 feet of 20" PVC discharge pipe and approximately 1,000 feet of 12" PVC pump-to-waste line.. Coordinated utility research, updated logs, and back checked utilities against current basemaps.

Laguna Beach Shady Lane Pipeline Replacement | Laguna Beach County Water District, Laguna Beach, CA

Assistant Engineer. Replacement of approximately 430 linear feet of 6-inch AC pipeline replacement along Shady Lane between Shady Place and Ann's Lane. Conducted all utility research for project.



JAMES MILLER, PE

TRAFFIC CONTROL

EDUCATION

- BS, Civil Engineering, San Diego State University, San Diego, CA

LICENSES & REGISTRATIONS

- Professional Civil Engineer, CA No. 82522
AZ No. 81946
FL No. 92430
GA No. 049981
ID No. 20496
NC No. 054874
NV No. 030121
OR No. 107376
WA No. 22008824

PROFESSIONAL ASSOCIATIONS

- American Society of Civil Engineers (ASCE), Associate Member, Order of the Engineer
- American Public Works Association (APWA), Awards Chair (2013–2019)
- Adjunct Professor, Civil Engineering, San Diego State University (2014)
- Aztec Mentoring Program, San Diego State University (2013–Present)

YEARS OF EXPERIENCE

- <1 with Ardurra
- 20 Total

James Miller has over 20 years of experience in traffic engineering and transportation design, with a focus on complex roadway, streetscape, and multimodal projects requiring detailed traffic control and staging strategies. He has led traffic engineering efforts for cities and counties across California, preparing plans for temporary traffic control, detours, signing and striping, traffic signals, and multimodal safety improvements. His work includes managing traffic operations analyses, developing construction phasing approaches, coordinating with utilities and adjacent agencies, and designing traffic signal modifications and intelligent transportation system elements. James's experience preparing TCPs for widening projects, bridge construction, multimodal corridors, and constrained urban streets enables him to anticipate conflicts, maintain access for all modes, and develop safe, constructible solutions. His strong technical background and practical design insight make him a highly qualified traffic control subject matter expert for projects requiring safe staging and continuous pedestrian, bicycle, and vehicular operations.

Pipeline 4 Relining | San Diego County Water Authority, San Diego, CA

Traffic Engineering Manager. Mr. Miller managed the design of long-duration traffic control design plans and provided construction support for the relining of 3 miles of 69-inch-diameter water delivery pipes. Signing and striping design plans were required for this four-month project and were necessary for the 25-foot-by-60-foot excavated areas that needed to remain open within the roadway simultaneously. Both directions of traffic along Jackson Drive were shifted from one side of the road to the other to divert vehicles and bicycles around each of the five large excavated areas. Mr. Miller coordinated extensively with the SDCWA, contractor, and City of San Diego to complete the project under budget and months ahead of schedule.

Acrisure Arena Off-Site Improvements | County of Riverside, Palm Desert, CA

Traffic Engineering Manager. Mr. Miller provided two new traffic signals, one at the main project driveway to the arena along Varner Avenue and the second at the intersection of Varner Road and Berkey Drive/Westbound I-10 on-ramp. In addition, Mr. Miller provided signage and striping plans, temporary traffic control plans and lighting plans for the project. Mr. Miller prepared the plans in accordance with the latest versions of Riverside County Standards and Caltrans Standard Plans and Specifications, and California MUTCD.

Picacho Road Bridge over Yuma Main Canal | County of Imperial, CA

Traffic Engineering Manager. Mr. Miller is responsible for providing traffic planning and engineering services to the County of Imperial for a new bridge over the Yuma Main Canal. A traffic study and vehicle miles traveled (VMT) assessment is proposed to assess the detour route for CEQA conformance. Final traffic control and detour plans will be prepared and permitted to reroute traffic around the proposed bridge construction.

Dogwood Bridge over Central Main Canal | County of Imperial, CA

Traffic Engineering Manager. Mr. Miller was responsible for providing traffic engineering services for the project. The County of Imperial retained Mr. Miller to provide a complete set of plans, specifications, and estimates for the bridge replacement and the associated approach roadway modifications. Mr. Miller completed the construction documents by implementing a 2-span precast slab structure for an accelerated construction and to accommodate a future raising of the deck profile by 2 feet if the settlement continues at the estimated rate of 1 inch per year.

Bradley Road Bridge Design | City of Menifee, CA

Traffic Engineering Manager. Mr. Miller was responsible for providing traffic engineering services for the project to improve Bradley Road between Rio Vista Drive and Potomac Drive within the City of Menifee. This improvement consisted of providing an all-weather crossing at Salt Creek in lieu of the existing two-pipe culvert. Such improvements were necessary for the surrounding communities that were stranded after a five-year storm event, as the roadway gets completely flooded and becomes impassable.

Murrieta Road Bridge over Salt Creek | City of Menifee, CA

Traffic Engineering Manager. Mr. Miller was responsible for providing traffic engineering services for the Murrieta Road Bridge over Salt Creek project. The project will increase traffic capacity traveling north/south along Murrieta Road connecting to Valley Boulevard and improve drainage, as this area frequently experiences flooding during heavy rain. The project is located along Murrieta Road between Park City Avenue and Camino Del Sol Norte and consists of the construction of roadway (widening) and a bridge spanning the length of Salt Creek, approximately 470 feet. The bridge will consist of a 4-lane span with pedestrian sidewalks and a signalized trail crossing. This project will investigate the horizontal and vertical alignment to meet 100-year flood limits.

Phelan Road in the Phelan Area | County of San Bernardino, Phelan, CA

Traffic Engineering Manager. Mr. Miller is responsible for providing traffic engineering services for the design of Phelan Road, Phelan Area. The project includes pavement rehabilitation and reconstruction on Phelan Road, from State Route 138 east to Los Banos Avenue, new or replacement of existing ADA ramps at 19 locations, and traffic signal installation at Clovis Road in the Phelan area. Mr. Miller is providing utility coordination; preparation of legal descriptions and plats; preparation of traffic signing and striping plans and a pedestrian traffic plan; traffic signal modification plans for any ramp locations necessary to provide ADA compliance; environmental services support, including preparation of plans, reports and/or applications for a Stormwater Pollution Prevention Plan; and advertising, bidding and construction support.

Menifee Road and Fire Station No. 76 Entrance Traffic Signal Project | City of Menifee, CA

Traffic Engineering Manager. Mr. Miller is responsible for providing traffic engineering services for the Menifee Road and Fire Station No. 76 Entrance Traffic Signal Project. The project includes installing a new 3-way traffic signal at the intersection of Menifee Road and Fire Station No.76 to provide safety to the fire responders of Station 76 as they exit the fire station to respond to emergencies. Our scope of services includes preparation of civil design plans for ADA curb ramps, curb gutter, sidewalk, spandrels, and signing and striping plans, in addition to traffic signal design plans, including traffic signal poles, signal heads, detection, conduits, preemption devices, battery backup systems, signal interconnect through conduits to adjacent traffic signals, controller assembly, traffic signal hard-wired interconnection to City TMC, and service point locations.

As-Needed Traffic Control | City of San Diego, CA

Senior Transportation Engineer. Mr. Miller served as Senior Transportation Engineer for the design of traffic control design and detour plans in support of construction related activities associated with replacing water and sewer pipe in City and state rights-of-way.



SABRINA RYAN

PERMITTING SUPPORT

EDUCATION

- BS, Civil Engineering, California State University, Long Beach, CA

YEARS OF EXPERIENCE

- 1 with MKN
- 18 Total

Sabrina Ryan's experience in civil engineering spans planning, design, and construction project management of water resources. She has extensive experience with sewage collection systems, reclamation facilities, and various water infrastructure projects, including pumping stations, storage facilities, and treatment plants. Her expertise covers a wide range of projects, from sewer lift stations and pipelines to recycled water systems and stormwater management.

Clark Well | Santa Clarita Valley Water District (SCVWD), Santa Clarita, CA

Project Engineer. Provided property investigation research for proposed project site, contacting real estate agents for confirmation of proposed site square footage, and involved in creating a proposed project site map for proposal to the District.

Abdale-Smyth Waterline | Santa Clarita Valley Water District (SCVWD), Santa Clarita, CA

Project Engineer. Supported developing specifications and providing new design plans to include three additional residential streets for waterline improvements, asphalt repairs, and traffic repairs for agency review and approval.

Regional Desalter | Water Replenishment District (WRD), Torrance, CA

Project Engineer. Assisted with New Brine technical memo and responsible for gathering project documents and formatting new Permitting Plan for agency approval for construction.

Walnut Pump Station Project | City of Fountain Valley, CA

Project Engineer. Responsible for locating, collecting documents, and researching the Walnut Lift Station project site in preparation for the preliminary design plans and specifications. Performed design plan changes for RFIs and Conformed Contract Documents per Bid Addendums. Construction submittal verification and approvals for engineering design plan checks and changes.

Linda Vista Pump Station Phase 2 | City of Anaheim, CA

Project Engineer. Responsible for project research, design plans, specifications, field inspections, public works and building department permitting, and QA/QC during construction of the project. Performed design plan changes without design plans from photos, PDF's from consultants, and Google Maps/Earth for RFI's and Conformed Contract Documents per Bid Addendums.

Talbert Channel Project | City of Fountain Valley, CA

Project Engineer. Responsible for Project County permit, special provisions, right of entry and use agreement, and insurance coordination and approval. Adjust Traffic Control Plans and performed part-time Construction Management services during construction.

Lift Station No. 2 | South Coast Water District (SCWD), Laguna Beach, CA

Project Engineer. Responsible for the design and field inspection for a new submersible sewer lift station, which replaced a 1953 wet well-dry well lift station located just north of Aliso Creek. The work consisted of site inspections, utility relocations, pump calculations for five pumps, ductile iron forcemain to the SOCWA treatment plant, a new sliderail submersible pump station, an emergency diesel generator with a sub-base fuel tank (24-hour storage run time), and the design of a new retaining wall section with a drain box. The pump station included a wet well with one pump, one diesel pump, and three 15 HP, 1,500 gpm sliderail submersible pumps, a valve vault with a flow meter, and an emergency generator.

Lift Station No. 1 and No. 7 | City of El Segundo, CA

Project Engineer. Responsible for the development of a plans, survey and site inspections to eliminate the City's Lift Station No. 7 and upgrade the City's Pump Station No. 1. The work included modifications to the City's 18-inch gravity sewer system to divert flows to Pump Station No. 1; installation of two new 15 hp, 1,000 gpm, screw centrifugal dry well pumps; replacement of valves and piping; added a 40,000 gallon emergency storage tank; new electrical system and controls; 800 LF of 10-inch forcemain, SCADA integration; and a 1,100 gpm diesel driven emergency pump.

Well 7 Equipping Project | Western Municipal Water District (WMWD), Riverside, CA

Project Engineer. Assisted with design plan with comments from agency for 60% and 90% design submittal back to the agency. Assisted with bid schedule and specifications per agency standards.

Water Well PFAS Treatment and Waterline Replacement | Victory Mutual Water Company, Victorville, CA

Project Engineer. Responsible for engineering design, calculations, and preparation of plans and specifications in accordance with local agency requirements and engineering design standards. Gathered basic engineering data for design. Collected and analyzed data to identify discrepancies in results. Performed work within budget and schedule. Independently performed all the tasks necessary to complete preliminary engineering design plans.

Oso-Trabuco Sewer Structural Reinforcement for the Railroad Expansion Project | Moulton Niguel Water District (MNWD), Mission Viejo, CA

Project Engineer. The project involved the Bypass Pumping System Site Layout, Manhole 41A Sewer Flume Metering Structure and Well design; photographic report of the temporary bypass running along the side of the railroad tracks; specifications; and field inspections in preparation for the Railroad widening project. The project included CIPP lining of an existing 39-inch VCP sewer in the railroad right-of-way; temporary pumps being installed adjacent to an existing meter vault and pumped through a 12-inch HDPE pipe; temporary bypass mostly running parallel to the existing 29-inch sewer; and the support of SCRRA, City of San Juan Capistrano, and Saddleback Church Capistrano Campus.

Well 13 Chlorine Containment, Water Main Replacement Sunset Beach, and Central Park Booster Pump Station | City of Huntington Beach, CA

Project Engineer. Work included the following: re-build specifications; download, mail, email plans and specifications to utilities and contractors; create and input new addendums and sections into specification; update all contractors (email and log) with new addendums; post, schedule and reserve project bid opening day; download prospective bidders for bid sum results; prepare RCA for PGPY; scan and save all bid proposals; log and return all calls and emails; email/fax bid results to contractors; and conduct reference checks.

Alta Vista Lift Station and Pipeline Project | City of Redondo Beach, CA

Project Engineer. Provided project plans, specifications, and field inspections. The existing slide rail submersible pump station currently handles flows from the Community Center restrooms and kitchen sink. Entrance to the Lift Station wet well is through an aluminum hatch to a circular concrete structure lined with a fiberglass shell, between the community center and the tennis courts. In coordination with the City for the Phase 1 project for additional sewer pipeline to alleviate sewage overflows, Phase 2 of the proposed project work involves a network of sewer pipelines, manholes, forcemain and new pump station. The new pump station replaced the Ball Field Pump Station and the Community Center Pump Station, directing flows north to existing sewer in Camino Real from the Alta Vista Park.

B APPENDIX B B SIGNED ADDENDA

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

ADDENDUM No. 1

TO: REQUEST FOR PROPOSAL

FOR ETM REACH B TECHITE PIPE REPLACEMENT

THE PROPOSER SHALL EXECUTE THE CERTIFICATION AT THE END OF THE ADDENDUM AND SHALL ATTACH THE ADDENDUM TO THE PROPOSAL (NOT TO BE INCLUDED AS PART OF THE PAGE COUNT).

1. The pre-proposal meeting is MANDATORY.
2. See the attachment for supplemental information related to the coordination meeting with the Laguna Woods Golf Course.

DATED: 10/14/2025

Roni Young Grant

Roni Grant
CIP Manager

BIDDER'S CERTIFICATION

I acknowledge receipt of the foregoing Addendum No. 1 and accept all conditions contained herein.

DATED: 1/14/2026

BIDDER: MKN & Associates, LLP

BY: *[Signature]*

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

ADDENDUM No. 2

TO: REQUEST FOR PROPOSAL

FOR ETM REACH B TECHITE PIPE REPLACEMENT

THE PROPOSER SHALL EXECUTE THE CERTIFICATION AT THE END OF THE ADDENDUM AND SHALL ATTACH THE ADDENDUM TO THE PROPOSAL (NOT TO BE INCLUDED AS PART OF THE PAGE COUNT).

1. See the attachment for the Pro-Proposal Meeting sign-in sheet.
2. See the attachments for the Reach A as-built plan, ETM ArcGIS Maps, and ETWD Pumping Station as-built plan.
3. The proposal page limit is 20 pages, not including the cover or attachments.

DATED: 10/ 29/2025

Roni Young Grant

Roni Grant
CIP Manager

BIDDER'S CERTIFICATION

I acknowledge receipt of the foregoing Addendum No. 2 and accept all conditions contained herein.

DATED: 1/14/2026

BIDDER: MKN & Associates, LLP

BY: *[Signature]*

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

ADDENDUM No. 3

TO: REQUEST FOR PROPOSAL

FOR ETM REACH B TECHITE PIPE REPLACEMENT

THE PROPOSER SHALL EXECUTE THE CERTIFICATION AT THE END OF THE ADDENDUM AND SHALL ATTACH THE ADDENDUM TO THE PROPOSAL (NOT TO BE INCLUDED AS PART OF THE PAGE COUNT).

1. The question cutoff date has been revised to January 6, 2026 at 2 pm.
2. The proposal due date has been revised to January 14, 2026 at 2 pm.

DATED: 12/22/2025

Roni Young Grant

Roni Grant
CIP Manager

BIDDER'S CERTIFICATION

I acknowledge receipt of the foregoing Addendum No. 3 and accept all conditions contained herein.

DATED: 1/14/2026 _____

BIDDER: MKN & Associates, LLP _____

BY: *[Signature]* _____

Bakersfield

1800 21st Street, Suite C
Bakersfield, CA 93301

Fresno

8405 North Fresno Street, Suite 120
Fresno, CA 93720

Irvine

16310 Bake Parkway
Irvine, CA 92618

Oceanside

301 Mission Avenue, Suite 202
Oceanside, CA 92054

San Jose

100 Century Center Court, Suite 670
San Jose, CA 95112

San Luis Obispo

354 Pacific Street
San Luis Obispo, CA 93401

Santa Clarita

25101 The Old Road, Suite 115
Santa Clarita, CA 91381

Ventura

121 North Fir Street, Suite G
Ventura, CA 93001



AN  ARDURRA COMPANY

www.mknassociates.us

5 PRICING

The pricing below will remain fixed throughout the duration of the project.

	Senior Project Director	Principal Engineer - GC, PM	Project Manager IV - Traffic	Senior Project Engineer I	Project Engineer I	Plan Check Engineer II - Traffic	Assistant Engineer II	Senior Designer	Traffic Engineer Associate I	Administrative Assistant	Total Hours (MKN)	Labor (MKN)	Geotechnical (Converse)	Potholing (Boudreau)	Surveying (Calvada)	Non-Labor Costs	Total Fee
Hourly Rates	\$ 345	\$ 303	\$ 290	\$ 250	\$ 213	\$ 208	\$ 193	\$ 194	\$ 151	\$ 119							
Project Tasks																	
Task I - Project Management	4	30								8	42	\$11,422	\$ -	\$ -	\$ -	\$0	\$ 11,422
Task II - Progress Meetings		18	2	18							38	\$10,534	\$ -	\$ -	\$ -	\$0	\$ 10,534
Task III - Data Request and Review				4	8		8				20	\$4,248	\$ -	\$ -	\$ -	\$0	\$ 4,248
Task IV - Golf Course and Street Alignment Alternatives Analysis		2		12	16		16	16			62	\$13,206	\$ -	\$ -	\$ -	\$0	\$ 13,206
Task V - Conceptual Design		4		12	24		16	16			72	\$15,516	\$ -	\$ -	\$ -	\$0	\$ 15,516
Task VI - Comprehensive Geotechnical Soils Report		2								2	4	\$844	\$ 24,239	\$ -	\$ -	\$24,239	\$ 25,083
Task VII - Plans and Specifications		48	12	48	36	8	64	162	72	8	458	\$94,960	\$ -	\$ -	\$ 51,480	\$51,480	\$ 146,440
Task VIII - Easement Acquisition Support		2						4			6	\$1,382	\$ -	\$ -	\$ 3,410	\$3,410	\$ 4,792
Task IX - Bidding		4		6	6			6			22	\$5,154	\$ -	\$ -	\$ -	\$0	\$ 5,154
Subtotal	4	110	14	100	90	8	104	204	72	18	724	\$157,266	\$ 24,239	\$ -	\$54,890	\$ 79,129	\$ 236,395
Optional Tasks																	
Task X - Pothole Investigation				1	2			2			5	\$1,064	\$ -	\$ 37,609	\$ -	\$37,609	\$ 38,673
Subtotal	0	0	0	1	2	0	0	2	0	0	5	\$ 1,064	\$ -	\$ 37,609	\$ -	\$ 37,609	\$ 38,673
TOTAL BUDGET	4	110	14	101	92	8	104	206	72	18	729	\$158,330	\$ 24,239	\$ 37,609	\$54,890	\$116,738	\$ 275,068

Agenda Item

12

Engineering Committee Meeting

Meeting Date: January 22, 2026

TO: Engineering Committee
FROM: Roni Grant, Capital Improvement Program Manager
SUBJECT: CTP Facility Planning Assessment Project Update [Project Committee 15]

Overview

SOCWA has retained Dopudja & Wells Consulting (D&W) to assist in the development of the Request for Proposal (RFP) scope of services for the J.B. Latham Treatment Plant (JBL) and Coastal Treatment Plant (CTP) Master Planning initiative.

In April 2025, D&W facilitated a kickoff meeting with SOCWA and its member agencies to outline the strategic direction and priorities for the master planning effort. SOCWA received directions to break the master planning effort into Phase 1 – Facility Planning Assessment, and Phase 2 – Master Planning, similar to the tasks at JBL.

Proposals

SOCWA solicited proposals through PlanetBids on November 7, 2025. Over 15 firms were contacted during this process. Two proposals were received from AECOM and Hazen/Dudek. To better understand the limited response, staff proactively contacted the firms that chose not to submit. The feedback indicated a strong preference among those firms to participate in the subsequent master planning phase, rather than the preliminary effort. This suggests continued interest and engagement from the broader consultant community, positioning SOCWA for a competitive and well-supported master planning process.

The proposals were distributed to the PC 15 Engineering Committee and SOCWA staff on January 15, 2026. The proposals and fee proposals from AECOM and Hazen/Dudek are attached for reference.

A summary of the proposals are in Table 1.

Table 1 – Summary of Proposals

Firm	AECOM	Hazen/Dudek
Project Manager	Ganesh Rajagopalan	Hallie Thornburrow
Total Project Fee	\$494,821	\$723,445
Total Labor Hours	2,160	2,813

Budget

The CTP FPA effort will be funded by PC 15 non-cap engineering.

Recommended Action: Discussion/Direction/Action.

Attachments:

AECOM Proposal and Fee
Hazen Proposal and Fee



PROPOSAL

Coastal Treatment Plant (CTP) Facility Planning Assessment Effort

January 15, 2026

Prepared for: South Orange County Wastewater Authority

AECOM



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Cover Letter

January 15, 2026

Ms. Roni Young Grant
 Capital Improvement Program Manager
 South Orange County Wastewater Authority
 34156 Del Obispo Street
 Dana Point, CA 92629

AECOM

999 Town & Country Road
 Orange, CA 92868
 aecom.com

Re: Coastal Treatment Plant Facility Planning Assessment Effort (ENG 25-08)

Dear Ms. Grant and Members of the Selection Committee:

SOCWA is proactively planning for upgrading and right-sizing of aging coastal wastewater treatment plant (CTP) infrastructure to provide high quality effluent for reuse and ocean discharge while ensuring long-term regulatory compliance, environmental protection, and operational resilience. AECOM Technical Services, Inc. (AECOM) understands your challenges and views this as an opportunity to work side by side with you, leveraging the collective expertise of our experienced team.

Why AECOM?

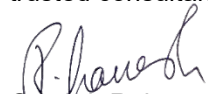
Unbiased Fresh Perspective. With a fresh, independent perspective, AECOM offers a flexible roadmap that builds on CTP's existing processes while preparing not only for future challenges but also future opportunities. Our holistic approach includes evaluation of innovative but proven concepts as for example, nutrient removal at low DO (i.e. low energy) to take advantage of plant capacity, right sizing the plant for process efficiency, use of any excess aeration tank capacity for solids treatment and innovative approaches for salinity removal to increase reuse.

Multidisciplinary Expertise. Our fully in-house experienced team consisting of local staff ably supported by national leaders delivers end-to-end capabilities in all aspects of the project. This enables seamless communication, greater adaptability, and efficient execution tailored to SOCWA's specific needs.

Tailored Expertise for SOCWA's Success. CTP's unique features include remote location, narrow access road, limited space, high salinity water, and flow lower than design capacity. AECOM's seasoned team will tailor global best practices into customized strategies for SOCWA. Our multidisciplinary team assesses each solution's full impact to align with plant operations and regulatory goals.

Project Management and Local Experience. AECOM has selected Ganesh Rajagopalan as Project Manager based on his more than 20 years of local experience planning and right-sizing wastewater and water treatment facilities. His familiarity with regulatory agencies and established working relationships with SOCWA will support efficient coordination and a collaborative, well-informed planning process.

AECOM is very excited for this opportunity to work with SOCWA. We have a long history of working with small and large utilities in southern California, and we will use these experiences to support SOCWA's mission "to collect, treat, beneficially reuse and dispose of wastewater in a manner that protects and respects the environment, maintains the public's health, and meets local, state and federal regulations." AECOM has worked with SOCWA in the past, and we look forward to this opportunity to become your trusted consultant for planning for the future of CTP.



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SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

ADDENDUM No. 1

TO: REQUEST FOR PROPOSAL

FOR CTP FACILITY ASSESSMENT PLANNING

THE PROPOSER SHALL EXECUTE THE CERTIFICATION AT THE END OF THE ADDENDUM AND SHALL ATTACH THE ADDENDUM TO THE PROPOSAL (NOT TO BE INCLUDED AS PART OF THE PAGE COUNT).

1. The proposal page limit is 20 pages, not including the cover letter or attachments.
2. See the attachment for the directions to CTP.
3. See the attachment for the Pre-Proposal Meeting sign-in sheet.
4. See the attachment for the Pre-Proposal Meeting presentation.

DATED: 11/20/2025

Roni Young Grant

Roni Grant
CIP Manager

BIDDER'S CERTIFICATION

I acknowledge receipt of the foregoing Addendum No. 1 and accept all conditions contained herein.

DATED: 12/30/25

BIDDER: AECOM Technical Services, Inc.
BY: Jack Gundarlahalli, PE, Vice President

J. Gundarlahalli

Identification of Responder

AECOM Technical Services, Inc. (Corporation)

Corporate Office:

300 South Grand Avenue, Suite 900
Los Angeles, CA 90071

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Point of Contact:

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Project Understanding and Approach to the Work

Project Understanding

South Orange County Wastewater Authority (SOCWA) is proactively planning for upgrading and right-sizing of aging coastal wastewater treatment plant (CTP) infrastructure to provide high quality effluent for reuse and ocean discharge while ensuring long-term regulatory compliance, operational efficiency, environmental protection, and operational resilience.

CTP, located in Laguna Niguel was built in 1983. The plant has a design capacity of 6.7 million gallons per day (MGD). Due to recent changes in its membership, CTP currently receives a daily average flow of approximately 3.2 MGD and it appears that little additional growth will occur within the CTP's service area. Briefly, the process consists of chemically enhanced primary treatment, activated sludge for carbonaceous removal, secondary clarification, advanced water treatment (AWT) consisting of sand filters and disinfection for partial flow for non-potable reuse. A portion of the AWT effluent is further treated through the Aliso Creek Water Reclamation Facility (ACWRF) consisting of ultrafiltration (UF) and reverse osmosis (RO) processes to blend with remaining AWT effluent for salinity reduction of the reuse water. The primary and secondary solids are thickened in a dissolved air floatation (DAF) and pumped to Moulton Niguel Regional Treatment Facility where it is anaerobically digested.

Facility Planning Study Goals and Objectives

The ultimate goal of this planning effort for SOCWA is to develop a phased roadmap for upgrading and right-sizing CTP that is realistic to implement; provides confidence to SOCWA, its member agencies and their rate payers regarding long-term (30 year) regulatory compliance; operational efficiency and resilience; and environmental protection. In particular, SOCWA is interested in finding answers to the following questions:

- How can CTP economically implement nutrient removal to produce high quality effluent for reuse and ocean discharge?
- What is the most cost and energy efficient way to increase the quality and quantity of recycled water?
- How best to right size the plant for the reduced flow to minimize operational inefficiencies?
- How can the above goals be achieved in an energy efficient and cost effective manner?

- Can solids be treated on-site to produce Class B or better biosolids for beneficial use?
- What measures are needed to address the resiliency of CTP?
- The proposed study (Phase 1) will focus on identifying and evaluating a range of project alternatives. The next phase (Phase 2) will build on Phase 1 findings to develop a detailed facility master plan.

Considerations of CTP-specific Features and Requirements during Facility Planning

From our discussions with SOCWA staff during multiple site visits AECOM has understood some key CTP-specific operational features and requirements. CTP's several unique features and conditions must be carefully considered in the planning for future. Some of these features are listed below:

- The secondary treatment at CTP operates at a mixed liquor suspended solids (MLSS) of just 400 to 600 mg/L which is significantly lower than that at typical wastewater treatment plants (~ 2000 to 3500 mg/L). Hence, there is inherent capacity flexibility and creativity available with existing basin assets.
- CTP receives wastewater through two force mains. The wastewater from some sources is "aged" due to collection system/lift station configurations and is likely to have different characteristics (e.g. higher odor) than typical wastewater influents.
- The salinity of CTP wastewater (~1,200 mg/L) is higher than typical wastewaters, which limits water reuse. Elimination of chemical use could help to minimize any additional TDS added to the effluent.
- CTP has excess capacity compared to the flow and loads received. This could be advantageously used to identify treatment processes with lower energy needs and higher nutrient removal potential.
- CTP desires to have some residual ammonia in the treated effluent for chloramine residual generation for water reuse. New dosing strategies can be explored that allow substantial nitrogen removal while retaining chloramine disinfection.
- The remoteness of the plant and access road conditions may render options involving frequent trucking of chemicals and waste products challenging to implement. Evaluation of treatment alternatives during planning can weigh this as a decision criteria driver.
- CTP is located in a fire-prone, wooded area. It needs special considerations in the resiliency plan.

CTP Water Quality

The typical COD and ammonia levels in CTP influent are approximately 250 and 35 mg/L, respectively. The effluent BOD and ammonia levels are approximately <10 mg/L and 20 mg/L, respectively. Discharge permit levels for cBOD are 25 (average month) and 40 mg/L (average week). In addition, the permit has discharge limits for Total Suspended Solids, Oil & Grease, turbidity and pH. Currently, there are no discharge limits for ammonia. Another parameter of significance is the total dissolved solids (TDS). The TDS in the plant flow is approximately 1,200 mg/L. While currently in compliance with discharge limits, SOCWA is interested in lowering effluent ammonia and TDS levels to improve the quality of effluent discharged to the ocean and to increase the recycled water use.

Exhibit 1 summarizes the objectives and key features of this study. It also presents our understanding of key CTP-specific issues, challenges, and available opportunities for innovations during facility planning for the next 30 years.

Exhibit 1 – Some Key Features, Challenges and Opportunities to Consider for Facility Planning of CTP

1 CTP has aging infrastructure

Need facility planning to meet demand, current & future regulations, risks, and operational resilience.

2 Secondary Treatment needs to be right-sized and reconfigured for nutrient removal

Flow lower than design capacity. Need to right-size to improve process efficiency. Longer SRT, lower energy nutrient removal process can be considered to take advantage of excess capacity. Current MLSS of 400 – 600 mg/L significantly lower than typical concentration. Implementation of nutrient removal may increase MLSS and hence, solids production.

3 On-Site Solids Treatment for Resource Recovery and Long-term Security

Approximately 1 acre available for solids treatment. Need considerations for higher truck traffic, recent/impending CARB rules limiting biogas use, higher O&M requirements. Centrate from anaerobic digestion may increase ammonia load to the plant. Any unused capacity from aeration tanks may be repurposed for aerobic digestion.

4 ACWRF – High Energy and Low Yield due to High TDS

Very high TDS (1200 – 1400 mg/L) in CTP flows, resulting in high energy use & low permeate yield. Needs energy efficient treatment that produces more recycle water.

5 Primary Treatment Uses CEPT

Currently uses ferric chloride for suspended particle and organics (BOD) removal. If nutrient removal is implemented, the ferric chloride dosing may have to be lowered to deliver more BOD to secondary.

6 Review Existing Odor Control System

The existing odor control system is sized to treat the entire headworks building. With covers on the screens and channels, odor control can be limited to the odor sources. Conventional ventilation of the building will reduce the demand on the odor control system, with lower energy use and chemical requirements.

7 Sand Filters May Need to be Replaced Soon

The existing sand filters have a large footprint, and require separate backwash system, air scour and media replacement. New technologies like cloth disc filtration have a small footprint, low head loss, and integral backwashing capability. They can provide equal performance with less maintenance.

8 Disinfection – Consider Potential for adding UV to Decrease TDS level and allow for Increased Ammonia Removal

Potential for incorporation of UV as primary disinfection strategy will be evaluated. Use of UV in lieu of chloramination will lower incremental TDS levels and allow for additional ammonia removal. This can also reduce truck traffic for chemical delivery.



9 CTP is Located in Wooded Area

CTP is located in a somewhat remote and wooded area. Careful consideration is needed to protect the plant from potential fire and other hazards. Risks regarding flare for anaerobic digesters or high temperature processes such as THP need to be carefully addressed.

10 Community Considerations:

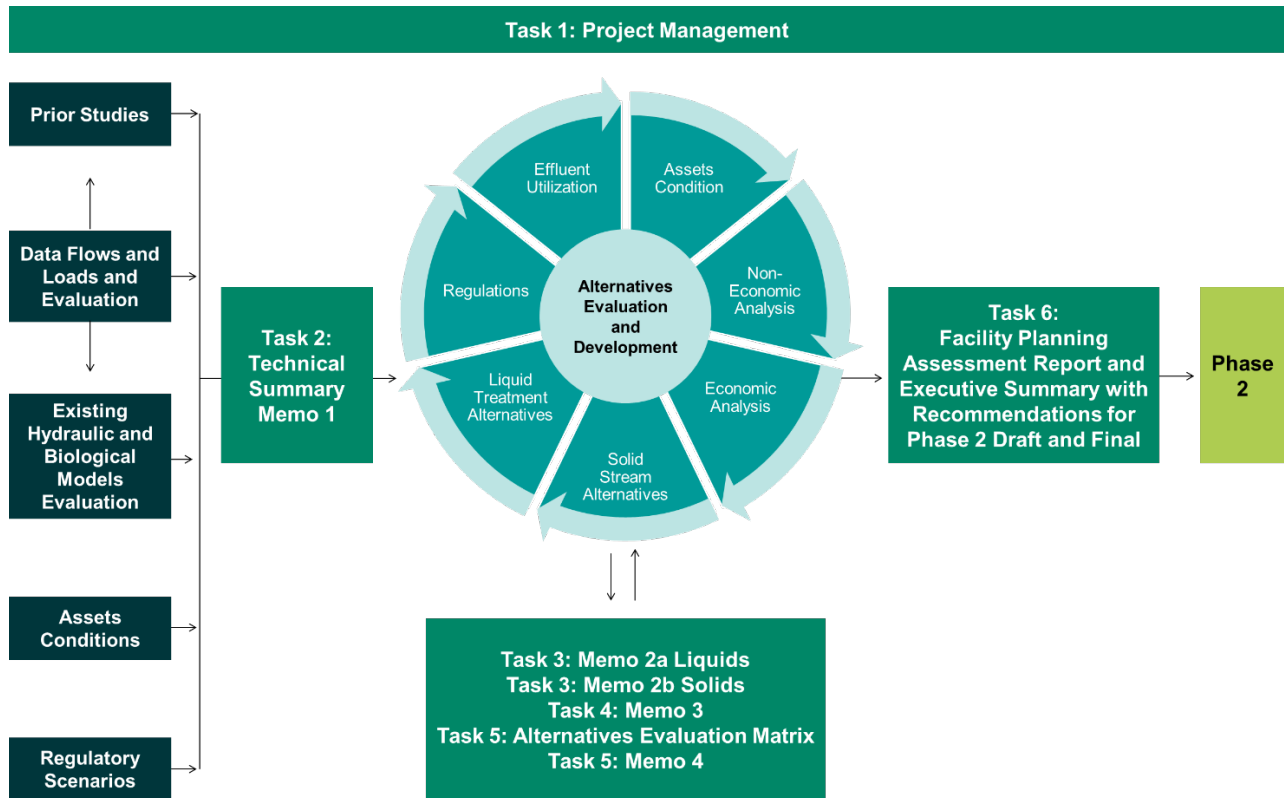
- Desire to improve quality of effluent discharged to ocean
- Increase recycled water production and use
- Truck traffic to CTP
- Construction Impact
- More resilient treatment

Project Approach

Overall Approach

The Phase 1 Facility Planning Assessment (FPA) for CTP will be executed through a structured, collaborative, and decision-focused planning process to address the plant’s needs for the next 30 years, as shown in **Exhibit 2**.

Exhibit 2 – Overview of Project Approach



Task 1. Work will begin with project initiation and management, including development of a Project Control Plan, detailed report outline, schedule, and communication protocols to align the work with SOCWA and PC 15 Member Agencies on objectives, decision points, and deliverables.

Task 2. Our team will establish a baseline by evaluating existing facilities, reviewing prior studies, analyzing historical and projected flows and loads, updating hydraulic and process models, and performing a high-level condition assessment of major treatment assets. These efforts will define current and future capacity constraints, asset condition, and operational risks.

Tasks 3 and 4. Assessment from Task 2 will form the basis for treatment alternatives evaluation for the future. This Task will start with setting treated water quality goals based on current and future regulations and end uses. **Liquid, solids and recycled water treatment are interdependent and hence, will be performed concurrently.** For example, implementing nutrient removal will increase solids production; anaerobic digestion, if selected for solids treatment will deliver nutrient rich centrate to headworks. Hence, concurrent evaluation enables **holistic understanding** of process alternatives. Alternatives evaluation will include considerations for **resource recovery, resilience, vulnerability and future regulations.**

Tasks 5 and 6. Findings from all tasks will then be integrated into up to four combined, planning-level project alternatives with layouts, cost estimates, and triple-bottom-line evaluation. The effort will conclude with the preparation of a comprehensive Facility Planning Assessment Report **to support informed decision-making and transition to Phase 2 Master Planning.**

Existing Facility Evaluation

The first step in developing upgrade alternatives for the Coastal Treatment Plant (CTP) is establishing projected influent flows and pollutant loadings consistent with SOCWA's 30-year planning horizon and Member Agency growth projections. AECOM will develop influent design criteria that reflect anticipated changes in population, land use, wastewater generation rates, and regulatory drivers, while capturing the full range of operating conditions required to support reliable treatment, operational flexibility, and long-term compliance.

Influent flows and loadings will be evaluated using a structured, three-step approach: (1) statistical analysis of historical CTP flow records to characterize diurnal, seasonal, wet-weather, and peak conditions; (2) evaluation of historical influent mass loadings, including biological oxygen demand (BOD), total suspended solids (TSS), total nitrogen (TN), and total phosphorus (TP); and (3) comparison with regional wastewater data and SOCWA planning assumptions to validate trends and projected growth. The resulting flow and load projections will be paired with hydraulic and biological modeling of the existing and future CTP facilities to assess capacity constraints, process performance, and operational flexibility under projected conditions.

AECOM subject matter lead will perform a walkthrough of the plant and discuss and receive input from plant staff for preliminary assessments on the condition of structural, process, electrical and instrumentation and mechanical aspects of major units. Preliminary assessment of the upgrades needed, and their useful life will be made, and this will be used as a criterion in identifying treatment alternatives.

Treated effluent from the upgraded CTP is anticipated to be managed through a combination of ocean discharge and recycled water uses. AECOM will account for applicable permit requirements, including monthly, weekly, daily, and instantaneous limits, and will evaluate treatment alternatives for compliance across the full range of projected flow and loading conditions. Statistical evaluation of historical data, combined with hydraulic and biological model results, will be used to define the Basis of Design conditions, ensuring that recommended alternatives provide sufficient capacity, resilience, and compliance reliability throughout the planning horizon.

Wastewater Treatment Alternatives Evaluation

Alternatives evaluation for wastewater liquid and solids streams (as well as recycled water) treatment will involve a structured multi-criteria decision matrix and will be compared with the existing baseline condition. This framework will support a transparent, consistent, and defensible outcome and will be used to identify the most promising alternatives for advancement to Phase 2 of the project.

The evaluation criteria will be tailored to SOCWA's planning and operational objectives and will reflect the key attributes required for a reliable and resilient wastewater treatment system. Criteria will address, as applicable, regulatory risk and compliance flexibility, system resilience, treatment performance and process robustness, capacity and peaking considerations, opportunities for process optimization, operational complexity and performance, footprint, resource recovery and the condition and adaptability of existing assets within each alternative. Social and environmental considerations will be incorporated to support a comprehensive triple-bottom-line assessment. **In order to prepare CTP for the next 30 years, we will also include Artificial Intelligence (AI)-ready infrastructure as a criterion for evaluation.**

Alternatives will be evaluated using a comparative ranking approach in which each option is assessed relative to the other alternatives for each criterion. Weighting factors developed using input from SOCWA staff will be applied to reflect the relative importance of individual criteria, allowing the evaluation to focus on the attributes most critical to SOCWA's long-term objectives. This approach provides a clear audit trail from qualitative and quantitative inputs to the final ranking outcomes.

This evaluation methodology has been successfully applied by AECOM on comparable wastewater planning and technology selection efforts for LABOE/LASAN, Metropolitan Water District, and East County–Padre Dam and other projects. The approach is inherently flexible and can be refined to incorporate any SOCWA-preferred scoring conventions or decision-making frameworks. Evaluation

criteria and weighting factors will be developed collaboratively with the SOCWA working group to ensure alignment with agency goals, regulatory context, and stakeholder priorities.

Liquid Stream Evaluation

The current liquid treatment train at SOCWA has excess capacity. SOCWA is interested in lowering the nutrient levels and right-sizing the liquid stream treatment process. **CTP's excess capacity can be beneficially used for nutrient removal at a lower energy use and/or repurposed for solids treatment, storage or other beneficial uses.** The liquid stream alternative evaluation will holistically investigate all liquid stream process units (primary, secondary and tertiary treatment). A high-level visual condition assessment will be performed and needed upgrades will be identified, and their impact will be included in the multi-criteria decision matrix. **Exhibit 3** presents a representative list of nutrient removal processes, their benefits, limitations and their suitability to CTP. While these and other treatment process alternatives will be evaluated during the study.

Exhibit 3 – Representative Liquid Stream Treatment Alternatives for Nutrient Removal

Option	Benefits	Limitations	Suitability to SOCWA
Conventional Biological Nutrient Removal (MLE) with Primary Treatment	<ul style="list-style-type: none"> No new construction Simple operation 	<ul style="list-style-type: none"> Energy for mixed liquor (ML) pumping May need alkalinity addition 	<ul style="list-style-type: none"> Able to meet nutrient goals Right-sizes treatment to existing capacity
Conventional Biological Nutrient Removal (MLE) without Primary Treatment	<ul style="list-style-type: none"> No new construction Less sludge and no primary sludge Retains alkalinity for secondary 	<ul style="list-style-type: none"> Energy for ML pumping Needs better grit removal 	<ul style="list-style-type: none"> Able to meet nutrient goals Right-sizes treatment to existing capacity Less solids for on-site treatment
Low DO with Primary Treatment	<ul style="list-style-type: none"> No new construction No ML recycle Lowest energy 	<ul style="list-style-type: none"> Complex to operate Requires tight DO control Slight sludge settleability issues 	<ul style="list-style-type: none"> Able to meet nutrient goals Right-sizes treatment to existing capacity
Membrane Bioreactors	<ul style="list-style-type: none"> High-quality effluent Easy transition to DPR Repurpose excess clarifier volumes 	<ul style="list-style-type: none"> High energy demand and very high capital costs Operational complexity Requires fine screening 	<ul style="list-style-type: none"> Likely not needed if nutrient reduction is the only goal Does not right-size treatment to capacity Very Expensive
Sequencing batch reactors without Primary Treatment	<ul style="list-style-type: none"> Flexible operation Repurpose existing primary/Sec clarifier Retains alkalinity for secondary 	<ul style="list-style-type: none"> Complex process controls More mechanical equipment Needs better grit removal 	<ul style="list-style-type: none"> Repurpose excess capacity in aeration tanks for solids treatment
Aerobic granular sludge	<ul style="list-style-type: none"> Process intensification Repurpose existing primary/Sec clarifier 	<ul style="list-style-type: none"> Needs deeper tanks for granulation More complex operation 	<ul style="list-style-type: none"> Need to identify simpler configurations
MBBR	<ul style="list-style-type: none"> Process intensification Robust and simpler operation 	<ul style="list-style-type: none"> Increased screening Needs higher DO Higher energy demand 	<ul style="list-style-type: none"> Need to identify simpler configurations
Tertiary PdNA in Deep Bed Filters	<ul style="list-style-type: none"> Process intensification 	<ul style="list-style-type: none"> Complex upstream aeration control Requires supplemental carbon 	<ul style="list-style-type: none"> Fit only if effluent nitrogen goal < 10 mg N/L

Option	Benefits	Limitations	Suitability to SOCWA
Sludge densification with hydrocyclones	<ul style="list-style-type: none"> Process intensification 	<ul style="list-style-type: none"> Cost of hydrocyclones 	<ul style="list-style-type: none"> Does not right-size treatment
Calcium carbonate buffering with hydrocyclones	<ul style="list-style-type: none"> Maintain optimum bicarbonate for maximum nitrification rates 	<ul style="list-style-type: none"> Cost of hydrocyclones 	<ul style="list-style-type: none"> Minimize acidification impact on receiving waters Adaptable to all potential CTP nutrient removal configurations
Mobile biofilms	<ul style="list-style-type: none"> Process intensification 	<ul style="list-style-type: none"> Cost of media and retention mechanism 	<ul style="list-style-type: none"> Does not right-size treatment

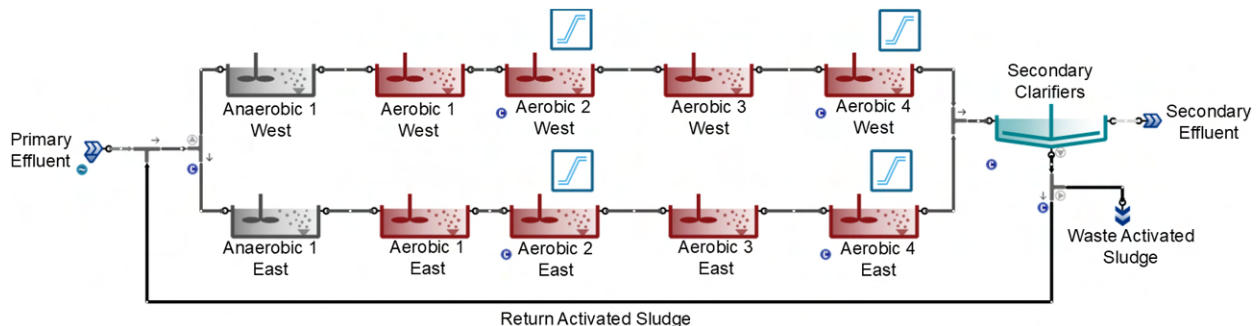
In order to address future regulations and demand, as appropriate, a phased implementation strategy for liquid stream treatment will be developed. AECOM adopted this strategy for wastewater treatment planning for the Nancy Wright Water Reclamation Facility, Desert Hot Springs, CA. The initial treatment plant for the 1.5 mgd facility was designed as a sequencing batch reactor (SBR) facility with percolation pond disposal. As the need for reuse grows, the plant was designed for conversion to a 3.0-mgd MBR facility with Title 22 reuse capability.

Process modeling will be used to support SOCWA’s planning and decision-making by providing a practical, science-based means to evaluate and optimize biological treatment performance before capital investments are made. The models will be calibrated using available plant data and informed by **input from CTP operations staff** to make reasonable, transparent assumptions where data gaps exist and to identify performance limitations or knowledge gaps. Modeling will be applied to inform facility and master planning by defining process sizing, layout, and phasing under realistic operating conditions, and by optimizing reactor volumes, aeration demand, recycle flows, chemical usage, and energy consumption. **Hydraulic modeling will be used alongside biological modeling to assess system capacity, identify bottlenecks, and refine process performance.** Applied early in the planning process, this integrated modeling approach will reduce technical risk, support right-sizing of infrastructure, and enable flexible, cost-effective solutions that can adapt to future regulatory requirements, water reuse objectives, and climate-driven variability.

An example of our process modeling approach is the preliminary SUMO model we built previously for CTP to evaluate a potential conversion to low dissolved oxygen (DO) operation. Low DO operation could be well suited for SOCWA, as it enables right-sizing of the wastewater treatment infrastructure while significantly reducing aeration energy demands by as much as 50%. In addition, this approach eliminates the need for mixed liquor recycle, which is typically required to achieve nutrient removal objectives. **Exhibit 4** shows the process configuration for the Low DO process for CTP developed from preliminary SUMO modeling.

Low DO operation can potentially right-size CTP, reduce energy use and reduce nutrient levels.

Exhibit 4 – CTP Low DO SUMO Model Used for Water Research Foundation Proposal with SOCWA



A preliminary layout of several treatment process options, their suitability and impacts to CTP are shown in **Exhibit 5**.

Exhibit 5 – Preliminary Concept Layouts of liquid and solids stream treatment technologies developed using CTP flows and loads

EXAMPLE LIQUID STREAM OPTIONS



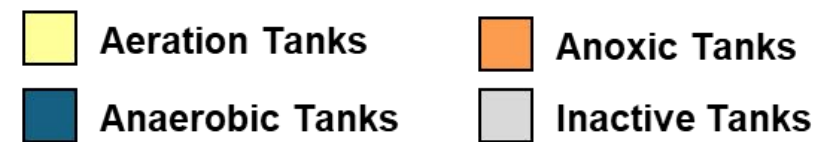
- High SRT
Extended Aeration**
- Bypass Primary Tanks
 - Extended Aeration
 - 6 Secondary Clarifiers



- Low DO BNR**
- All Primary Tanks in Use
 - A/O activated sludge
 - 7 Secondary Clarifiers



- Sequencing
Batch Reactors**
- No Primary Tanks
 - SBR activated sludge
 - No Secondary Clarifiers



EXAMPLE SOLIDS STREAM OPTIONS



- Anaerobic Digestion and
Dewatering (Class B)**
- Thickening
 - Anaerobic Digestion
 - Dewatering
 - Energy Recovery



- Aerobic Digestion and
Dewatering (Class B)**
- Thickening
 - Aerobic Digestion
 - Dewatering



- Chemical Conversion
(Class A)***
- Sludge Storage
 - Dewatering
 - Thermal/Chemical Conversion
 - Fertilizer Production

* - Sizing provided by vendor

All highlighted tanks except grey are active.

Solids Stream Treatment

CTP currently thickens the primary and secondary sludge in the DAF unit to about 1% solids and pumps approximately 100,000 gallons per day (gpd) to the MNWD Regional Treatment plant. However, SOCWA is interested in evaluating on-site sludge treatment options for CTP to potentially take ownership of its solids handling process, provide long-term reliability and avoid accidental raw sewage spills (leakage) in the neighborhood from the main during transmission. SOCWA has identified approximately one acre of open area at the north side of the plant as potential site for installation solids handling facility. SOCWA would like to consider opportunities for production of Class B (or better) biosolids, that have potential for resource recovery.

Alternatives for solids treatment should consider short and long-term regulatory impacts and options for **phased development of biosolids treatment**. For example, while currently there are no regulations regarding PFAS in biosolids, PFAS regulations may be implemented in the future. Further, technologies to destroy PFAS are still emerging and are lacking widespread installation and long-term operational details. If PFAS regulations are eventually implemented, depending on the regulatory levels and implementation timeline, a phased biosolids treatment approach may be needed for CTP. For example, traditional technologies such as aerobic or anaerobic digestion may be selected for near-term treatment. In the future, integration of emerging technologies such as gasification or supercritical water oxidation that can destroy PFAS can be considered.

Exhibit 6 shows a representative range of technologies that can be used for sludge treatment and their current state of development. However, **selection of biosolids treatment option must include CTP-specific considerations**. For example, the relatively smaller size of the plant may pose challenges with the cost of installation and operation of several advanced technologies. Further, the plant is in a remote wooded location with narrow access roads which may introduce challenges to trucking chemicals and treated biosolids to or from the plant.

While a wide range of technologies will be evaluated for screening and selection of solids treatment at CTP, based on AECOM's experience, some technologies that are suitable for sludge treatment and handling for plants of comparable size to SOCWA include:

- Dewatering and sludge drying
- Aerobic digestion
- Anaerobic digestion (including options such as organic waste co-digestion, high solids digestion)
- Alkaline treatment (e.g. Lystek)
- Drying with or without pyrolysis

Exhibit 7– presents the suitability as well as limitations of various technologies at CTP. Technologies for solids treatment will be benchmarked against CTP's existing practice of pumping sludge to MNWD Regional Plant. **Exhibit 5**– (page 8) shows the layout of few potential technologies on the site identified at CTP for solids treatment.

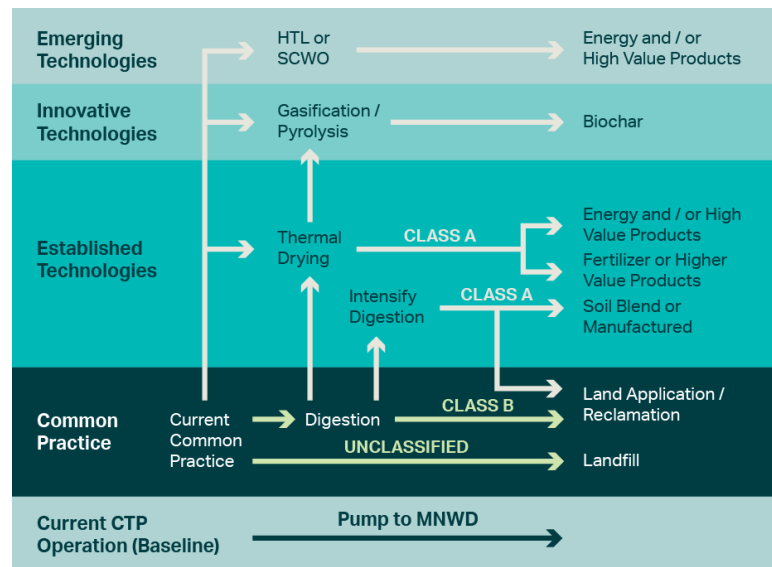


Exhibit 6 - Representative Range of Technologies and Development Status for Biosolids Treatment

Exhibit 7 - Select Benefits, Limitations and Suitability to SOCWA of Typical Sludge Treatment and Handling Processes

Option	Benefits	Limitations	Suitability to SOCWA
Pump sludge to MNWD RTP (Baseline)	<ul style="list-style-type: none"> No new construction Less operational challenges 	<ul style="list-style-type: none"> Long-term reliability issues 	<ul style="list-style-type: none"> Good for short-term Higher % solids may lower pumping volume
Dewatering and Drying	<ul style="list-style-type: none"> Less complex operation 	<ul style="list-style-type: none"> No Class B products. 	<ul style="list-style-type: none"> Available area may not be sufficient. Need to verify.
Aerobic Digestion	<ul style="list-style-type: none"> Suitable for smaller plants Can produce Class B biosolids 	<ul style="list-style-type: none"> Requires energy Higher cost than current operation Future PAFS regulation Transport of cake solids 	<ul style="list-style-type: none"> Viable option Possible to repurpose unused aeration tanks
Anaerobic Digestion (Organic Waste Co-digestion)	<ul style="list-style-type: none"> Produces Class B sludge Biogas recovery Possible organic waste co-digestion 	<ul style="list-style-type: none"> Higher cost/ more infrastructure More O&M Air quality permit Cake solids transport Organic waste management issues 	<ul style="list-style-type: none"> High cost due to smaller size Biogas flare near wooded area Organic waste management issues
Alkaline Treatment (e.g. Lystek)	<ul style="list-style-type: none"> Can produce Class A product 	<ul style="list-style-type: none"> Chemical treatment More unit processes Requires product storage 	<ul style="list-style-type: none"> Wider application of Class A product. No biogas cleaning or co-gen Pumpable product.

Resiliency Assessment of Alternatives

AECOM will perform a vulnerability and resilience assessment of shortlisted alternatives and develop a resilience plan addressing hazards such as fire, flooding, earthquakes, and other risks. A structured **Hazard–Risk–Contingency methodology** will be used to identify threats to critical process trains, evaluate operational, regulatory, and safety impacts, and assess the likelihood and severity of potential failures. **The resilience plan will prioritize** critical functions and recommend backup systems and process controls based on review of plant data, design documents, site investigations, and **input from SOCWA staff. ArcGIS Survey123 or similar tools** will be used to assess vulnerabilities and prioritize upgrades, with recommendations organized into urgent, near-, and long-term improvements.

Our Resilience Assessment Lead, Grant Davies co-authored the NIST Resilience Guidance Manual.

AECOM has successfully used this approach at LASAN's Hyperion Water Reclamation Plant. **AECOM's Resilience Assessment Lead, Grant Davies—water sector technical lead for NIST (National Institute of Standards and Technology) resilience guidance—**will apply this experience to develop a robust and defensible resilience plan for the CTP.

Incorporation of Digital/AI Compatibility in Alternatives Assessment

The 30-year planning horizon for the Coastal Treatment Plant presents a critical opportunity to **evaluate for compatibility with the digital optimization/AI technologies rapidly transforming water-sector operations.** AECOM's Facility Planning Assessment will evaluate each alternative for compatibility with advanced monitoring, data-driven decision support, and automated process control, ensuring recommended improvements are adaptable, implementable, and do not constrain future operational or technological upgrades.

Liquid and solids treatment alternatives will be assessed for their ability to support **real-time operational optimization** of aeration, chemical dosing, and biological processes under varying influent conditions. AECOM will evaluate the applicability of digital twin and scenario modeling tools—building on SOCWA's existing aeration cost optimization efforts—to support capacity validation, stress-testing of projected flows and loads, and reduction of capital and operational risk before implementation. **These considerations will be incorporated into the alternatives evaluation matrix alongside established criteria**, including performance, lifecycle cost, reliability, operability, and maintainability.

Consistent with SOCWA's emphasis on practical and scalable solutions, AECOM's recommendations will focus on targeted use cases that enhance operational efficiency, maintenance planning, and workforce effectiveness. Drawing on experience with SCADA modernization, predictive maintenance, and process optimization for wastewater agencies, AECOM will identify solutions that are feasible, cost-effective, and aligned with SOCWA's operational capabilities. The result will be a Facility Planning Assessment that supports near-term decision-making while preserving long-term adaptability and resilience for CTP. AECOM has successfully implemented these strategies for City of Thousand Oaks (CA), City of Akron (OH), Hampton Road Sanitation District (VA), South Essex Sewerage District (MA) among others.

Recycle Water Facilities Evaluation

Our team will evaluate recycled water operations and future opportunities at CTP, beginning with a review of existing Title 22 facilities, their integrated operation with the ACWRF, and the need to construct a new AWT to support IPR or DPR. **The evaluation will assess current recycled water infrastructure, existing uses, operational performance, and key constraints, while accounting for potential changes in influent and product water quality (such as increasing salinity), regulatory requirements, and water reuse objectives.** Based on this assessment, the analysis will identify capital improvements needed to maintain compliance with current commitments and to support future recycled water demands. **Exhibit 8** - shows the general area of the recycled water treatment.

As part of this effort, **the project will evaluate reverse osmosis (RO) process alternatives with a focus on operational simplicity, site and system constraints, and opportunities to reduce energy consumption.** The findings will support the selection of a RO process that is efficient, resilient, and practical for long-term operation. Strategies and improvements required to address identified impacts will be incorporated into the FPA project alternatives.



Exhibit 8 -General area - currently occupied by tertiary filters, chlorine contact tanks, and RO - available for a future AWT.

Reuse alternatives to be considered will include Title 22 tertiary treated water for unrestricted use, indirect potable reuse (IPR), and direct potable reuse (DPR), including any enhancements required to the AWT and/or ACWRF systems. **Each alternative will be evaluated for technical feasibility, regulatory requirements, environmental impacts, and cost-effectiveness, considering existing plant operations, applicable regulations, required infrastructure improvements, and life-cycle cost implications.** **Exhibit 9** provides an overview of recycled water use and key considerations for SOCWA.

Exhibit 9 – Overview of Recycled Water Use

Reuse Alternative	SOCWA-Specific Application / Baseline	Applicable Treatment Configuration (AWT / ACWRF)	Key Regulatory Status & Permitting Considerations
Title 22 Tertiary Treated Water (Unrestricted Use)	<ul style="list-style-type: none"> Existing and expanded non-potable reuse applications 	<ul style="list-style-type: none"> Secondary biological treatment at CTP Tertiary filtration and disinfection consistent with Title 22 requirements 	<ul style="list-style-type: none"> Title 22 recycled water criteria Requires RWQCB recycled water permit compliance and updates Ongoing compliance with pathogen log-reduction and reliability requirements
Indirect Potable Reuse (IPR)	<ul style="list-style-type: none"> Advanced treated recycled water for augmentation of potable supplies via an environmental buffer 	<ul style="list-style-type: none"> AWT: Ultrafiltration (UF), Reverse Osmosis (RO), and UV/AOP ACWRF: UF and RO for salinity management and treatment of Aliso Creek flows Post-treatment stabilization 	<ul style="list-style-type: none"> Title 22 Advanced Water Treatment RWQCB permitting for discharge to the environmental buffer Evolving IPR regulations and monitoring requirements
Direct Potable Reuse (DPR)	<ul style="list-style-type: none"> Advanced treated recycled water for potable reuse 	<ul style="list-style-type: none"> AWT: UF, RO, UV/AOP as core advanced treatment ACWRF: UF and RO for salinity management and treatment of harvested Aliso Creek flows Post-treatment stabilization Additional monitoring and control systems 	<ul style="list-style-type: none"> Subject to California DPR regulatory Requires enhanced reliability, multiple barriers, and continuous monitoring Extensive DDW review and approval process Additional permitting, public outreach, and environmental review requirements
Salinity Management (for Title 22 Irrigation Application)	<ul style="list-style-type: none"> Management of increasing salinity in recycled water 	<ul style="list-style-type: none"> ACWRF: UF and RO for salinity reduction Integration of operations for blending and operational flexibility 	<ul style="list-style-type: none"> Subject to RWQCB effluent limitations and basin plan objectives

Develop Project Alternatives and Recommendations for Phase 2

Using the findings developed through the liquid treatment, solids treatment, recycled water, and ocean discharge evaluations, AECOM will complete **Task 5 – Develop Project Alternatives** by developing and evaluating a range of future project alternatives for CTP. The treatment trains will be conceptualized considering the interdependency and impact of liquid, solids and recycled water treatment on each other process. This effort will summarize both immediate and future treatment needs by comparing current and projected flows and loadings with the capacity of each process unit, including liquid treatment, solids treatment, energy, and other supporting systems. Risk and resilience elements, potential impacts from regulatory requirements, treatment technologies, capacity needs, peaking, process optimization, operational performance, and the condition of existing assets will be considered.

Alternatives will be evaluated, screened, and a maximum of four combined alternatives will be selected using technical, economic, social, and environmental criteria, including a triple bottom line evaluation.

Planning-level facility descriptions, layouts, site plans, cost estimates, and preliminary design criteria will be developed. **Task 6 – Prepare Facility Planning Assessment Report and Documents**, will document the results, culminating in a comprehensive FPA report and executive summary that summarizes key findings, recommendations, and conclusions, and provides SOCWA and the PC 15 Member Agencies with a clear, defensible basis for advancing selected alternatives into **Phase 2** of the project.

Project Management Approach

Project Schedule Management.

AECOM's project management approach will be focused on adherence to the project schedule and proactive management of the critical path. A detailed critical path schedule will be developed at project initiation and refined following the kickoff meeting with SOCWA to incorporate agency input and priorities. The schedule will be updated regularly with actual completion dates to track progress against the baseline and forecast upcoming activities. This approach allows the project team to identify potential schedule risks early and implement mitigation measures immediately to avoid impacts to key milestones. Our proposed project schedule (**Exhibit 10**) will serve as the primary tool for coordinating tasks, monitoring progress, and maintaining schedule discipline throughout the project.

Budget Control and Quality Management.

Project budgets will be monitored and tracked using AECOM's in-house Oracle accounting system, which generates weekly cost reports broken down by work item and activity. These reports provide real-time visibility into cumulative expenditures and comparisons to the approved project budget, supporting accurate forecasting and timely, transparent invoicing. In parallel, AECOM will implement its ISO 9001-certified Quality Management System to ensure that all deliverables meet uniform standards of quality. A project-specific QA/QC Plan will be developed to define roles, coordination protocols with SOCWA, milestone reviews, and procedures for comment resolution and closure. Designated quality management personnel will perform independent reviews of deliverables to confirm completeness, consistency, and compliance with quality requirements before submittal.

Exhibit 10 – Proposed Project Schedule – This schedule was developed considering a project duration of up-to twelve months as suggested in the RFP. This can be expedited to meet any SOCWA’s requirements.

	2026												2027	
	Q2			Q3			Q4			Q1			Q2	
	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	
KICK OFF MEETING	▲ 4/1/26													
1 PROJECT MANAGEMENT	4/1/26 - 4/1/27													
1.1 Project Control Plan	4/1/26 - 4/21/26													
1.2 Project Meetings and Communication	4/1/26 - 4/1/27													
2 EXISTING FACILITIES EVALUATION	4/1/26 - 7/13/26													
Task 2 Technical Summary of Findings (TM 1) - Draft	▲ 6/15/26													
Task 2 Technical Summary of Findings (TM 1) - Final	▲ 7/13/26													
2.1 Description of Existing Facilities	4/1/26 - 5/5/26													
2.2 Review Existing Reports and Models	4/1/26 - 5/5/26													
2.3 Flow and Loading Analysis														
2.3.1 Historical Wastewater Flows and Loading	4/1/26 - 5/5/26													
2.3.2 Projected Wastewater Flows and Loads	4/1/26 - 5/5/26													
2.4 Existing Facilities Analysis														
2.4.1 Establish Planning and Design Criteria	4/22/26 - 6/1/26													
2.4.2 Hydraulic Capacity Evaluation	4/29/26 - 6/1/26													
2.4.3 Process Model Configuration	4/29/26 - 6/9/26													
2.5 Condition Assessment of Major Unit Processes	4/1/26 - 5/12/26													
3 WASTEWATER TREATMENT ALTERNATIVES	4/1/26 - 11/2/26													
Task 3 Technical Summary of Findings (TM 2a and 2b) - Draft	▲ 10/1/26													
Task 3 Technical Summary of Findings (TM 2a and 2b) - Final	▲ 11/2/26													
3.1 Identify and Develop Treatment Alternatives														
3.1.1 Liquid Treatment Alternatives							6/15/26 - 11/2/26							
3.1.2 Solids Treatment and Disposal Alternatives							6/15/26 - 11/2/26							
3.1.3 Evaluate Electrical Distribution, Instrumentation, and Control Systems							7/24/26 - 11/2/26							
3.1.4 Evaluate Energy Recovery Facilities							6/15/26 - 11/2/26							
3.1.5 Support Processes and Facilities							8/28/26 - 11/2/26							
3.1.6 Site Planning Evaluation							8/28/26 - 11/2/26							
3.2 Risk and Resilience Planning Elements							6/15/26 - 11/2/26							
3.2.1 Resilience Adaptation Planning							6/15/26 - 11/2/26							
3.2.2 Vulnerability Planning							6/15/26 - 11/2/26							
3.2.3 Evaluate Regulatory Scenarios							4/1/26 - 11/2/26							
4 RECYCLED WATER FACILITIES AND EFFLUENT UTILIZATION EVALUATION	6/15/26 - 11/2/26													
Task 4 Technical Summary of Findings (TM 3) - Draft	▲ 10/1/26													
Task 4 Technical Summary of Findings (TM 3) - Final	▲ 11/2/26													
4 Recycled Water Facilities and Effluent Utilization Evaluation							6/15/26 - 11/2/26							
5 DEVELOP PROJECT ALTERNATIVES	8/28/26 - 1/12/27													
Task 4 Technical Summary of Findings (TM 4) - Draft	▲ 12/8/26													
Task 4 Technical Summary of Findings (TM 4) - Final	▲ 1/12/27													
Alternative Evaluation Matrix							▲ 11/2/26							
5.1 Identify Proposed Project Alternatives							8/28/26 - 1/12/27							
6 PREPARE FACILITY PLANNING ASSESSMENT REPORT AND DOCUMENTS	11/12/26 - 2/16/27													
Draft Facility Planning Assessment	▲ 1/4/27													
Final Facility Planning Assessment	▲ 2/16/27													
6 Prepare Facility Planning Assessment Report and Documents							11/2/26 - 2/16/27							

▲ Milestone

Experience and Technical Competence

The benefits of AECOM’s management and technical team are the range of skills, experience, and expertise available to SOCWA for efficient project administration, strong technical and quality control direction, and focused attention on your requirements and needs.

Our primary professional focus is to present a multi-disciplinary team that provides creativity and technical expertise for optimum benefit to SOCWA. This approach is based on our core values of integrity (we keep our commitments), innovation (we continually look for better ways to apply our expertise to our work), and excellence (we pride ourselves on bringing outstanding results to everything we do).

Relevant Experience

AECOM has completed numerous projects for clients locally and nationally that cover the scope of work elements requested by SOCWA. A demonstration of our successes is reflected in the signature projects descriptions below - 1, 2 and 3 and additional relevant AECOM projects presented in **Exhibit 11**.

Client References

During SOCWA's evaluation, we invite the Selection Committee to contact our references for the following three relevant projects.

1 WWTP No. 2 and No. 3 Upgrade and Expansion Evaluations Bakersfield, California

Client City of Bakersfield	Services Provided Hydraulic Capacity Analysis Process Analysis Odor Evaluation Condition Assessment Deficiencies Determination Future Treatment and Capacity Requirements Alternatives Development Service Area & Design Flowrate Planning and Design Criteria Regulatory Requirements Treatment Technology Effluent Disposal Biosolids Management Site Requirements	Key Team Members Ganesh Rajagopalan Nick Cooper Simon Baker Grant Davies Alex Franchi	Client Reference Evette Roldan, Wastewater Manage City of Bakersfield 6901 Mc Cutchen Road Bakersfield, California, 93313 E: eroldan@bakersfieldcity.us T: (661) 326-3249
Start Date August 2025			
Completion Date March 2026			
Overall Value Study Only			
Fee Value \$1.05M			

Description. The City of Bakersfield has initiated a comprehensive long-term planning effort to shape the future of its wastewater treatment facilities. This evaluation and accompanying feasibility study represent the first phase of a multi-year program aimed at rehabilitating, expanding, and developing new treatment capacity to meet community needs for decades to come.



The City currently operates two treatment facilities. Wastewater Treatment Plant No. 2, a 25-mgd trickling filter plant producing secondary effluent stored in dams for agricultural irrigation. Solids are processed through anaerobic digesters and drying beds, yielding Class B biosolids applied to City-owned farmland. Current influent flow is approximately 12-mgd.

Wastewater Treatment Plant No. 3 is a 32-mgd activated sludge facility producing both secondary and tertiary effluent. Secondary effluent is directed to percolation ponds for agricultural irrigation, while tertiary effluent is stored in a 3 MG above-ground tank for landscape irrigation and limited on-site use. Solids are treated in anaerobic digesters and dewatered via centrifuges, producing Class B biosolids for land application on City property. Current influent flow is approximately 21-mgd.

AECOM completed condition assessments and is currently developing alternative options for upgrade and expansion of Plants 2 and 3 with multiple liquid stream processes. Additionally, a preliminary planning report for a potential future Plant 4 is being developed.

2 Nancy Wright Water Reclamation Facility Planning and Design Desert Hot Springs, California

Client Mission Springs Water District	Fee Value \$2.7M	Key Team Members Nick Cooper Alex Franchi Allen Randall	Client Reference Steve Ledbetter, PE, Program Manager Mission Springs Water District 6675 2nd Street Desert Hot Springs, CA 92240 T: 951.680.0440 E: sledbetter@tkeengineering.com
Start Date July 2017	Services Provided Preliminary Design Detailed Design WDR Permitting Air Quality Permitting Bidding Services Construction Services Startup & Commissioning O&M Manual Preparation		
Completion Date April 2024			
Overall Value \$44M			

Description. The Mission Springs Water District provides water and sewer services to Desert Hot Springs and adjacent communities. This area is expected to undergo major development over the next 15 years. To accommodate future growth and development, the District retained AECOM to provide planning, design, and construction services for a new water reclamation facility (WRF). Initial needs were for the relief of the existing wastewater treatment plant and the expansion of service area capacity. Ultimately, the plant will provide reclaimed water for groundwater replenishment and new developments and commercial interests in the area.



AECOM prepared a master site plan for the ultimate build-out of the site as a 20-mgd Membrane Bioreactor (MBR) wastewater treatment plant. A phased conceptual plan was developed for the WRF to address the initial projected flows up to 3 mgd.

The initial treatment plant is a 1.5-mgd sequencing batch reactor (SBR) facility, designed to be converted to a 3.0-mgd MBR facility. The new facility, sited on 60 acres, is compact and encompasses one acre of the site. An administration/operations building provides offices, electrical, aeration blowers, dewatering systems, chemical storage and maintenance areas.

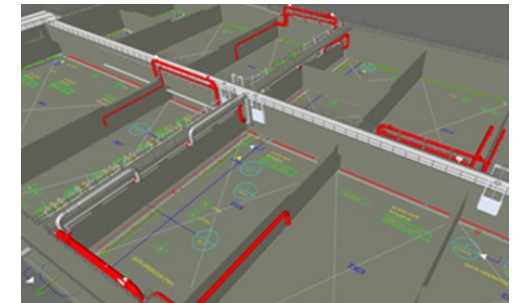
The initial treatment plant includes an influent pump station, screening and grit removal, four SBR tanks, a decant channel, and gravity discharge to three percolation ponds. No disinfection is required for discharge to the ponds, but nutrient removal provides nitrate concentrations less than 8 mg/L. Waste biosolids are aerated in storage tanks before dewatering in a belt filter press. The capacity of the aerobic digesters will provide Class B stabilization.

Additional facilities include plant water (3W) pumping and distribution for irrigation and process needs. Chemicals are provided for supplemental alkalinity and disinfection of 3W water.

3 Regional Water Reclamation Facilities Aeration Diffuser Replacement Study and Design Perris, California

Client Eastern Municipal Water District (EMWD)	Overall Value \$40M	Key Team Members Alex Franchi Ganesh Rajagopalan Allen Randall Nick Cooper	Client Reference William Chen, PE, Project Manager EMWD 2270 Trumble Road Perris, CA 92572-8300 E: chenw@emwd.org T: 951.928.3777
Start Date 2023	Fee Value \$3.5M	Services Provided Planning Aeration capacity evaluation Condition Assessment Technical Analysis Preliminary and Final Design 3-D Design	
Completion Date 2026			

Description. AECOM led a comprehensive aeration system planning effort to define future capacity needs and support phased capital improvements at four of the District's Regional Water Reclamation Facilities (RWRFs). The effort focused on modeling projected flows and loadings to inform long-term aeration requirements and establish a defensible basis for project definition and design.



The first step was the completion of the Diffuser Replacement Study, which evaluated aeration diffuser technologies for each facility within the context of future conditions. Using updated BioWin process models, AECOM projected plant-specific flow and loading scenarios and assessed aeration performance under ultimate planning conditions. This master-planning analysis evaluated diffuser alternatives based on future capacity requirements, oxygen transfer efficiency, constructability, reliability, lifecycle cost (20-year), serviceability, and long-term availability, allowing EMWD to prioritize investments and sequence implementation across facilities.

Based on the planning results, AECOM advanced full design for aeration diffuser replacement and control system upgrades at four step-feed BNR facilities ranging between 9 and 13 mgd.

Design services included updating and calibrating BioWin models for all facilities, developing future-condition aeration demand calculations, and defining infrastructure upgrades required to meet projected loads. The designs addressed extensive piping reconfiguration and were delivered using coordinated 3-D modeling to support constructability and phasing.

Basin-specific condition assessments of structural, mechanical, electrical, and instrumentation systems were conducted to support risk management, constructability, and lifecycle cost control for the proposed upgrades.

At the Perris Valley RWRF, the master-planning effort identified additional future aeration capacity needs beyond diffuser replacement. As a result, AECOM incorporated the design of a new single-stage process blower and associated piping upgrades into the Perris Valley contract, ensuring the facility is positioned to reliably meet projected future flows and loadings. Construction of diffuser replacements across all four facilities is currently ongoing.

Exhibit 11 – Additional Relevant AECOM Projects (#1, 2, 3 detailed above)

Project Name/Client	Planning	Design	Liquid Stream	Solids Stream	Reuse
① WWTP No. 2 and No. 3 Upgrade and Expansion Evaluations City of Bakersfield	●	●	●	●	●
② Nancy Wright Water Reclamation Facility Mission Springs Water District	●	●	●	●	●
③ Regional Water Reclamation Facilities Aeration Diffuser Replacement Study and Blower Addition Design Eastern Municipal Water District (EMWD)	●	●	●		
WWTP Recycled Water Upgrades PDB 2025-2027 - Phase I Design & GMP Development City of Banning	●	●	●	●	●
East County Advanced Water Purification Project Progressive Design-Build (PDB) and Pilot Testing Padre Dam Municipal Water District	●	●	●	●	●
Davis Wastewater Treatment Plant Secondary and Tertiary Improvements Design Build City of Davis	●	●	●	●	
S1 Wastewater Treatment Plant Improvements Project Rialto Water Services	●	●	●	●	
Tertiary Treatment Facility San Bernardino Municipal Department	●	●	●		●
OneWater Nevada Advanced Purified Water Facility City of Reno	●	●	●		●
Sacramento Tertiary Treatment Facility Sacramento Sewer	●	●	●		●
Needs Assessment and Upgrades Kern Sanitation Authority	●	●		●	●
SLC Water Reclamation Facility Salt Lake City	●	●	●	●	

Key Personnel and Sub-Consultants

We recognize that the foundation of a successful project is a committed, cohesive, and fully available team aligned by a shared vision and work ethic. AECOM is proud to provide a highly accessible and responsive project team, supported by a deep bench of multidisciplinary specialists who are ready to meet project demands and quickly address urgent needs. AECOM will provide end-to-end support for this project with no sub-consultants.

Project Manager



Leading the AECOM team is our **Project Manager, Ganesh Rajagopalan, PhD, PE, BCEE**, who will serve as SOCWA's primary point of contact. Ganesh and key team members have already visited CTP multiple times and met with SOCWA management and plant staff, building strong familiarity with site operations and priorities. This proactive engagement ensures a smooth start and informed decision-making. **Ganesh's**

collaborative management style promotes stakeholder alignment and delivers tailored, results-driven solutions that meet SOCWA's goals.

Ganesh is a seasoned professional engineer with nearly 35 years of experience leading complex, multidisciplinary initiatives in the water and wastewater sectors. He brings in-depth expertise in facilities planning, nutrient removal, biosolids and wastewater management, and resource recovery. He was the technical lead for the City of Lompoc facility planning study to comply with the stringent California Toxicity Rule limits for 10 metals. He is also the project manager for an ongoing Department of Energy-funded project to develop engineering design for energy efficient, low footprint nutrient removal process, and partial denitrification deammonification (PdNA).

Ganesh was the technical lead for the centrate equalization study for the Eastern Municipal Water District to manage nutrient load to the secondary from centrate (daytime-only dewatering). He was the Project Manager/technical lead for multiple studies (Santa Margarita Water District, Orange County Sanitation District, City of Petaluma, Silicon Valley Clean Water) to enhance energy recovery through co-digestion.

Ganesh's strategic leadership has driven successful outcomes for utilities navigating emerging regulations, contaminants, and innovative technologies.

Key Personnel

To ensure seamless project execution, Ganesh has selected key personnel with the availability, capacity, and commitment to prioritize this contract. AECOM's team integrates strong local knowledge with national technical depth, providing the specialized expertise required for this project. As shown in **Exhibit 12 – AECOM Key Personnel** and **Exhibit 13 - Organization Chart**, the team is structured to be responsive, flexible, and positioned to deliver the highest level of technical support to SOCWA. Resumes for all personnel are included in **Appendix A**. It is not anticipated that specialized subconsultants will be necessary at this time.

Nick Cooper, PE*, BCEE - Wastewater Analyses Lead. Nick's experience includes biological nutrient removal, water reclamation, and biosolids management for municipal facilities for 50 years. He has designed more than 15 new wastewater treatment facilities and upgraded more than 30 others. He has been Design / Project Manager for nutrient removal, filtration, ultraviolet (UV) disinfection and membrane bioreactors (MBR) facilities. He directs AECOM's Water Academy course in wastewater treatment design.

Terry Goss, PE* – Solids Stream Analyses Lead. Terry is AECOM Global Biosolids Practice Lead. He has more than two decades of hands-on experience with biosolids process design. Terry specializes in equipment integration, project delivery, and plant commissioning. He assisted with updating the biosolids chapters for the 5th edition of the Metcalf & Eddy / AECOM *Wastewater Engineering* textbook.

Grant Davies, PE - Resiliency Evaluation Lead. Grant has nearly forty years of experience and he has provided expert guidance and solutions for major clients across the country addressing aging infrastructure challenges coupled with evolving regulations to meet level of service needs with increased resiliency from hazards and climate change. He was a contributing editor to the Metcalf & Eddy / AECOM *Wastewater Engineering*, 5th Edition textbook, and a co-author for NIST Resilience Guidance Manual.

Alex Franchi, Ph.D., PE, BCEE - Recycle Water Analyses Lead. Alex brings over 30 years of experience in the water / wastewater industry, specifically, in the planning, design, and management of water/wastewater treatment, and recycled water. Alex was the lead designer for East County's Advanced Water Purification Program. Alex has written more than 30 professional publications and papers on various aspects of water treatment and energy recovery from wastewater.

Sarah Schoepflin – Nutrient Removal Evaluation. Sarah has six years of experience in wastewater treatment and research. For her graduate thesis she did extensive research on advanced nutrient removal processes at Hampton Road Sanitation District. She has a strong practical background in project design, operation, and data analysis.

Brett Wagner, Ph.D., PE* – Nutrient Removal Evaluation. Brett is a wastewater process engineer with extensive experience in research, design, and analysis of wastewater treatment. Brett is skilled in process

modeling, field studies and greenhouse gas quantification. His work has focused on anammox processes, MABRs, and life cycle analyses.

Jim McQuarrie, PE* – Technical Advisor: Jim brings nearly 30 years of hands-on operations and engineering experience split between public and private sector roles. His specialization is in wastewater facilities planning, process design, nutrient removal, and facility operations with a consistent emphasis on promoting creative solutions that leverage innovation to maximize the value of already existing assets.

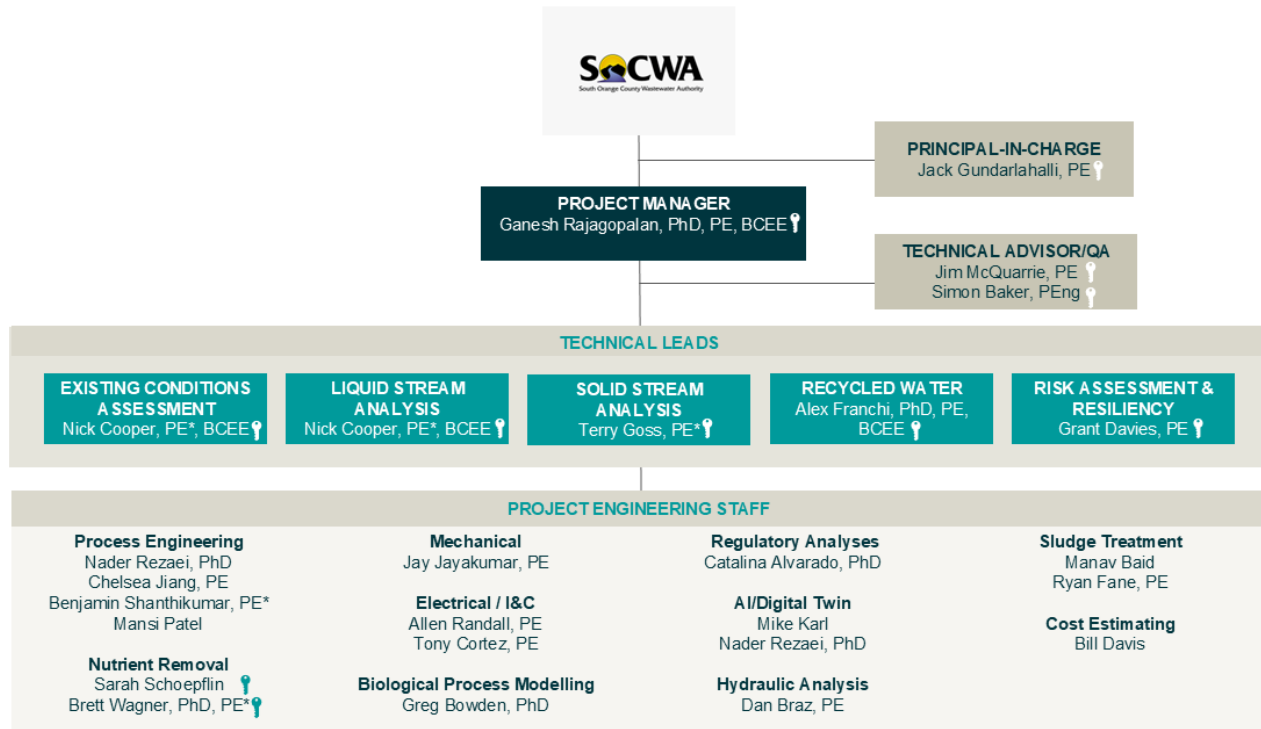
Simon Baker, P. Eng* – Technical Advisor: Simon is the Wastewater Community of Practice lead for AECOM. Simon is a process engineer and project manager with over 30 years of design, construction and commissioning experience of municipal wastewater treatment facilities. Simon brings his “lessons learned” from extensive treatment facility work and innovative technologies such as biological aerated filtration (BAF), moving bed biofilm reactors (MBBR), enhanced nutrient removal (ENR), and hydrolysis of solids.

Jack Gundarlahalli, PE - Principal in Charge: Jack has served in this role on numerous projects and is sensitive to the needs of LACSD. He delivers on their expectations for quality technical work, responsiveness and cost-effectiveness. He will be responsible for monitoring performance of the Team; legally obligating the corporation; and client satisfaction check-ins.

Exhibit 12 - AECOM Key Personnel

Key Team Members/Role ★	Yrs Exp. (Total AECOM)	Planning	Liquid Treatment	Solids Treatment	Reuse	Condition Assessment	Design	Regulatory Compliance
Ganesh Rajagopalan, PhD, PE, BCEE Project Manager	34 4	●	●	●	●			●
Nick Cooper, PE*, BCEE Existing Conditions Assessments; Liquid Stream Analysis	52 32	●	●	●	●	●	●	●
Terry Goss, PE* Solid Stream Analysis	21 14	●		●		●	●	●
Alex Franchi, PhD, PE, BCEE Recycled Water	34 9	●	●	●	●	●	●	●
Grant Davies, PE Risk Assessment & Resiliency	41 37	●	●	●	●	●	●	●
Sarah Schoepflin Nutrient Removal	6 3	●	●		●		●	●
Brett Wagner, PhD, PE* Nutrient Removal	4 4	●	●		●		●	●
Jim Mc Quarrie, PE* Technical Advisor/QA	26 2	●	●	●	●	●	●	●
Simon Baker, P.Eng* Technical Advisor/QA	34 25	●	●	●	●	●	●	●
Jack Gundarlahalli, PE Principal in Charge	33 33	●	●	●	●	●	●	●

Exhibit 13. Organization Chart



* = Registered in other states
 Key Team Member

Pricing

We have provided our costs and fees in a separate file.

Conflicts of Interest

AECOM is unaware of any personal or organization conflicts of interest that would preclude us from providing the services proposed in this submittal.

Scope of Work (Attachment A)

A detailed scope of work provided by SOCWA is included in Appendix B. **AECOM’s assumptions, clarifications, and other general conditions are provided at the end of Attachment A.**

Non-Collusion Affidavit

ATTACHMENT B NON-COLLUSION AFFIDAVIT

The undersigned declares:

I am the Vice President of AECOM Technical Services, Inc., the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on 12/30/25, at Orange, CA.

Signature: J. Gundarshalli

Title: Vice President, Principal-in-Charge

Certifications

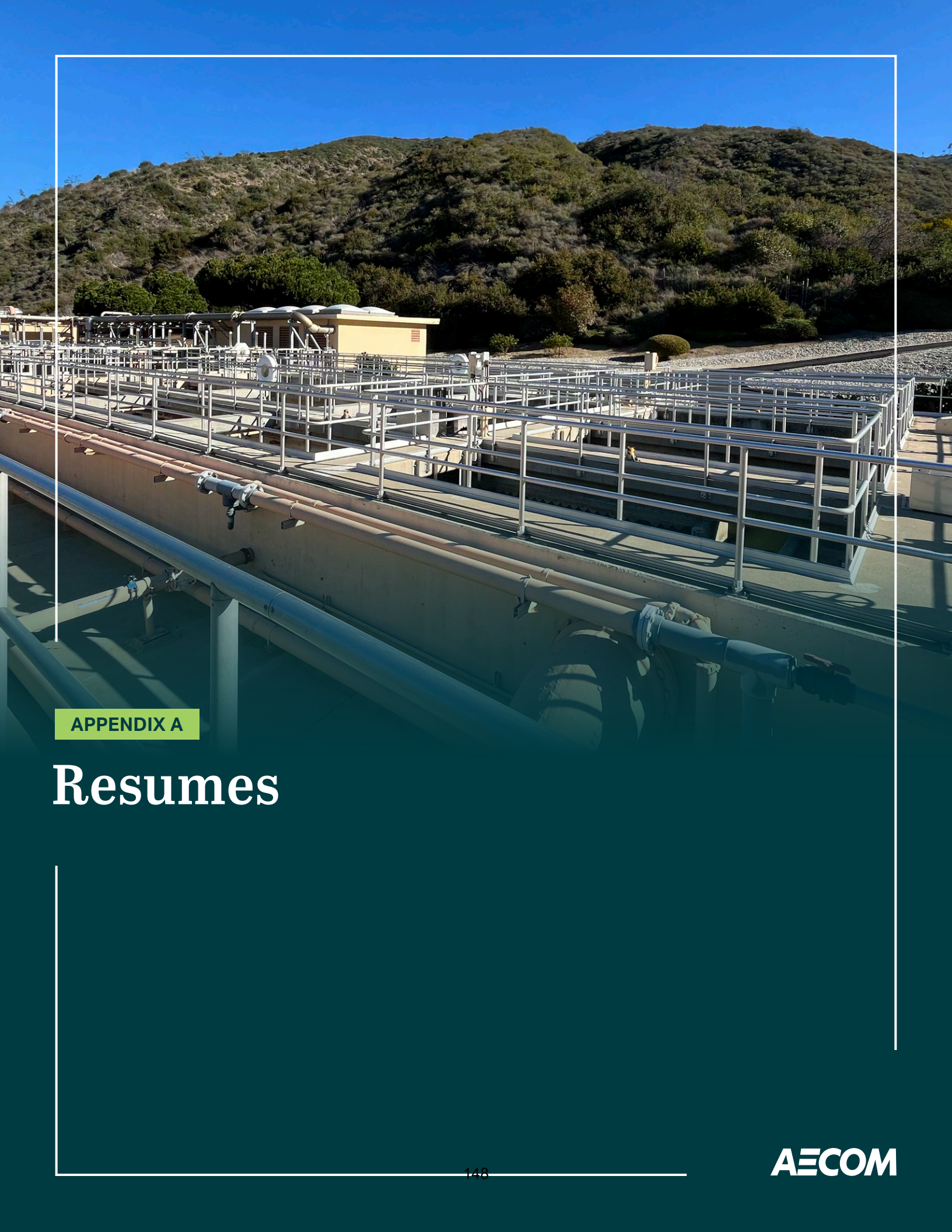
AECOM certifies that it is not aware of any actual or potential conflict of interest that exists or may arise by executing the contract or performing the work that is the subject of this RFP.

AECOM certifies that it is willing and able to obtain all insurance required by the form contract included as Attachment C.

AECOM certifies that it has conducted a reasonable and diligent inquiry concerning the minimum and/or prevailing wages required to be paid in connection with the performance of the work that is the subject of this RFP and certifies that the proposed pricing includes funds sufficient to allow respondent to comply with all applicable local, state, and federal laws or regulations governing the labor or services to be provided.

AECOM acknowledges and agrees with all terms and conditions stated in the RFP. While there may be discussions between AECOM's Legal Group and the Authority about contract terminology, AECOM is fully committed to executing a contract with SOCWA.

AECOM certifies that all information provided in connection with its proposal is true, complete, and correct.



APPENDIX A

Resumes

Ganesh Rajagopalan, PhD, PE, BCEE

Project Manager

Key Skills

Planning Studies
 Energy Efficiency
 Co-digestion/Biogas to Energy
 Resource Recovery
 Research/Pilot Studies
 Grant Proposal Writing
 Dewatering
 Membrane Treatment
 PFAS

Years of Experience

32

Years with AECOM

4

Education

Ph.D., Environmental Engineering,
 University of Tennessee,
 Knoxville, TN, 1995
 MS, Environmental Engineering,
 Virginia Tech, Blacksburg, VA, 1992
 BEng, Civil Engineering,
 University of Allahabad, Allahabad,
 India, 1986

Registrations

Professional Engineer (Civil), California,
 #85846

Professional Associations

American Water Work
 Association
 Water Research Foundation
 Water Environment Federation

Trainings and Certifications

Board-Certified Environmental
 Engineer, American
 Academy of Environmental
 Engineers and Scientists



Ganesh has over three decades of experience in planning, preliminary design, research and pilot and full-scale evaluation of wastewater treatment, anaerobic (co-)digestion, biosolids, nutrient removal, resource recovery, energy efficiency and water reuse projects. He has performed several facility planning studies for Water Resources Recovery Facilities. He currently leads a DOE-funded project to develop design parameters for a novel nutrient removal technology (Partial Denitrification Anammox (PdNA)) that is significantly energy efficient and requires lower footprint than conventional BNR processes. He has performed multiple projects to enhance biogas production from anaerobic digesters. He has performed studies to use recycled water for once through cooling and other non-potable applications.

Professional history

Ganesh brings extensive experience in planning, technology demonstration, preliminary design, project management and research, in wastewater treatment, biosolids, and water reuse. He is a key member of an ongoing masterplanning study to upgrade and expansion of two WRRFs for the City of Bakersfield. He was also the Technical Lead for a facility planning study for the City of Lompoc wastewater treatment facility to assist with stringent discharge levels for ten metals for compliance with California Toxics Rule. Ganesh was the PM for a facility planning study for Santa Clarita Water District to develop PFAS mitigation approach for 35 of their groundwater wells. He recently managed a project for Saudi Arabia for developing a facility plan for wastewater treatment for a new military base with phased development, with emphasis on sustainability, energy efficiency and resource recovery. He was the PM for a project for Southern California Edison to perform techno economic analyses and market potential assessment for the use of recycled water for once-through cooling.

Selected project experience

QAQC, City of Bakersfield, Masterplanning for Upgrade and Expansion of Plants 2 and 3, Bakersfield, California

Responsible for this City of Bakersfield comprehensive long-term planning effort to shape the future of its wastewater treatment facilities. This evaluation and accompanying feasibility study represent the first phase of a multi-year program aimed at rehabilitating, expanding, and developing new treatment capacity to meet community needs for decades to come. The City's two WWTPs use treated effluent for agricultural irrigation and the solids are treated by anaerobic digestion to produce Class B biosolids and biogas for beneficial use. The scope includes current and future flow and load evaluation, screening and ranking solids and liquid

stream treatment alternatives, condition assessment and recommendations for next step.

QAQC Reviewer, Eastern Municipal Water District, Aeration Diffuser Replacement and Blower Addition, Perris, California

Oversaw this study that involved comprehensive aeration system planning effort to define future capacity needs and support phased capital improvements at four of the District's Regional Water Reclamation Facilities (RWRFs). The effort focused on modelling projected flows and loadings to inform long-term aeration requirements and establish a defensible basis for project definition and design. Using updated BioWin process models, plant-specific flow and loading scenarios were projected and assessed aeration performance under ultimate planning conditions. This master-planning analysis

evaluated diffuser alternatives based on future capacity requirements, oxygen transfer efficiency, constructability, reliability, lifecycle cost (20-year), serviceability, and long-term availability, allowing EMWD to prioritize investments and sequence implementation across facilities.

Project Manager, City of Lompoc, Facility Planning Study to Meet Stringent National Pollutant Discharge Elimination System (NPDES) Discharge Limits for Various Metals, Lompoc, California

The objective of this project is to assist the City of Lompoc with meeting the revised NPDES discharge limits for the regional water reclamation plant. The revisions were made due to the implementation of California Toxics Rule (CTR). The new permit included ultra-low discharge limits for ten (10) metals. The revised limit included 50 parts per trillion (ppt) for mercury, and less than 15 parts per billion (ppb) for nine other metals. The scope included source investigation, source control, evaluation of existing unit process removal efficiency, optimization of existing treatment process, performing bench scale studies and inclusion of additional treatment processes.

Project Engineer, Eastern Municipal Water District, Engineering Services for the Regional Water Reclamation Facility (RWRF) Centrate Equalization Study, Perris, California

Due to operational and other constraints, sludge from three of the WRFs is dewatered within a six-hour window and the centrate returned to the headworks without equalization. Unmetered centrate return caused spikes in ammonia loading to the secondary processes. This spike in ammonia load contributed to different challenges at each WRF. Various centrate equalization opportunities were evaluated through cost effective use of existing or new structures to lower the ammonia spike to help stabilize the treatment process and minimize upsets.

Principal Investigator, DOE, Technological Upscaling of the Partial Denitrification-Anammox Process for Decarbonization with Mainstream Deammonification, Washington, DC.

Oversaw this DOE project to facilitate decarbonization of WRRFs through implementation of partial denitrification deammonification (PdNA) for nutrient removal. The objective of the demonstration project is to develop design criteria for the PdNA process in various biofilm media. The demonstration will be performed in five WRRFs that have different nutrient removal process configurations. Four different biofilm media will be tested.

Project Manager, Kingdom of Saudi Arabia, AE Services for Utility Proof of Concept and Facility Planning Feasibility Study for P-563 Site, Riyadh, Saudi Arabia

This utility feasibility study involved a methodical process, the outcomes of which are to inform the overall master planning and design of the P-563 complex. Scope included a thorough review of all applicable codes, standards and regulations for treatment, reuse and disposal options, review of existing site surveys and studies to inform the feasibility analyses, demand and growth projections for treatment and reuse, and benchmarking. Liquid and solids stream alternatives were evaluated, process units were sized and preliminary cost estimates were developed.

Project Manager, Orange County Sanitation District (OC San), Holistic Evaluation of Food Waste Co-digestion, Fountain Valley, California

Managed this study to holistically evaluate impacts of adding processed food waste to OC San digesters. The project evaluated not only the increase in biogas production, but also the impact on biogas quality, dewaterability of co-digested sludge, cake solids odors, centrate quality, and other impacts to liquid stream treatment and discharge limits. The second phase of the study involved evaluation of detailed impact to the facility including, selection of specific digesters for food waste addition, sizing chemical feed systems to digesters due to increased VS loading, detailed specifications for food waste quality, quality control measures, traffic management.

Project Manager, Southern California Edison (SCE) Technical & Market Assessment of Potential Commercial/Industrial Heating and Cooling Applications, Rosemead, California

Evaluated technical and market potential of using municipal reclaimed for water once-through cooling applications in lieu of conventional freshwater cooling tower-chiller systems. Existing and planned reclaimed water systems in project area, commercial/industrial facilities along the reclaimed water mains, water quality impacts of using reclaimed water for heat exchange and improvement in chiller efficiency due to differences in wet bulb and reclaimed water temperatures were addressed. A chemical speciation model 'MINTEQ' was used to evaluate water quality challenges. Energy conservation, conservation of potable water, pollution prevention due to elimination of chemicals and salinity reduction due to elimination of blowdown discharge were identified as the key benefits to the proposed project.

Jagadish (Jack) Gundarlahalli, PE

Principal-in-Charge

Key Skills

Contract/Project Management
Wastewater Collection Systems
Water Treatment/Water
Resources
Remedial Design

Years of Experience

35

Years with AECOM

35

Education

MS, Environmental Engineering,
South Dakota School of
Mines and Technology, 1990
BS, Civil Engineering, National
Institute of Engineering, 1987

Registrations

Professional Engineer (Civil),
California, #54171

Professional Associations

California Association of
Sanitation Agencies
Association of California Water
Agencies
American Society of Civil
Engineers
Water Environment Federation



Jack serves as Contract Manager and Principal-in-Charge on multiple Capital Improvement Programs (CIPs) for municipalities in Los Angeles and Orange counties. He is sensitive to the needs of his clients and delivers on their expectations for quality technical work, responsiveness and cost-effectiveness. Jack is a performance-oriented leader and has managed many multidisciplinary infrastructure engineering projects.

Professional history

Jack has 35 years of civil and environmental engineering experience involving water/wastewater infrastructure projects and environmental restoration. As an environmental engineer and project manager, Jack's experience encompasses planning, design, construction quality management and construction quality control. He is experienced in developing work plans; preparing technical and cost proposals; conducting and supervising field activities; performing engineering analyses; preparing drawings, construction specifications, and test plans; and supervising construction activities. Jack is knowledgeable in the regulatory process of federal, state and local agencies, including the U.S. Environmental Protection Agency (EPA), California Regional Water Quality Control Board, Cal-EPA Department of Toxic Substances Control, and southern California air quality management agencies.

Selected project experience

Contract Manager, Los Angeles County Sanitation Districts, On-Call Engineering Services for Treatment Plants (Contract No. 5352) and On-Call Engineering Services for Sewers (Contract No. 5381 and 5500) 2021 to Present, Whittier, California

Responsible for coordination and execution of On-Call Task orders under these existing contracts for the engineering department. Some of the task orders executed over the last two years under these three On-Call contracts are:

- Soledad Canyon Relief Trunk Sewer Section 4
- Marina Pumping Plant No. 2 Force Main
- Upgrades District 14 Trunk Sewers Rehabilitation
- District 22 Trunk Sewers Group 2 Rehabilitation
- Joint Outfall "B" Trunk Sewers Group 2

ETAP Coordination and Arc Flash Study for Calabasas Landfill JWPCP Conveyor Truss Support Structures Rehabilitation (Conveyors 34, 35, and 36)

Project Manager, San Bernardino Municipal Water Department, Tertiary Treatment Plant Design, Electrical Infrastructure Improvements, and 21-inch Secondary Effluent Pipeline Design, San Bernardino, California

Responsible for preparing 100% design documents for a 5-mgd tertiary treatment system and mega duct bank. Provided full condition assessment of the entire 1400 feet of pipeline, including manholes and connections to other structures. A portion of the 21-inch-diameter pipeline was determined to be vulnerable to collapse. Developed a plan for rehabilitating the pipeline through Cured in Place Pipe (CIPP) methodology, and prepared design drawings and specifications. Prepared bid documents, assisted in selection of contractor, and currently providing engineering support during construction.

Jagadish (Jack) Gundarlahalli, PE
Principal-in-Charge

- Soledad Canyon Relief Trunk Sewer Section 4
- Marina Pumping Plant No. 2 Force Main
- Upgrades District 14 Trunk Sewers Rehabilitation
- District 22 Trunk Sewers Group 2 Rehabilitation
- Joint Outfall "B" Trunk Sewers Group 2
- ETAP Coordination and Arc Flash Study for Calabasas Landfill JWPCP Conveyor Truss Support Structures Rehabilitation (Conveyors 34, 35, and 36)

Program/Contract Manager, Orange County Sanitation District (OC San), On-Call Contracts – Planning Studies (2017 – 2020; 2020 – Present) and Facilities Engineering Design Contract (2015 – 2018; 2018 – 2021; 2021 – Present), Fountain Valley, California

Responsible for coordination and execution of On-Call Task orders under these existing contracts for the planning and engineering departments. Under each On-call contract, the task order fee limit is \$600,000 per year. Some task orders executed over the last several years are listed below:

Contract Manager, Orange County Sanitation District, FE19-02 Plant Water Piping Replacement at Plant No. 1, Fountain Valley, California

Responsible for preparing plans and specifications for replacement of plant water piping, valves, and appurtenances for the CenGen facility. As part of the design, prepared a preliminary design report, final design documents, and cost estimates. Also provided bid support and construction support services.

Contract Manager, Orange County Sanitation District, Guidelines Document to Add to Existing OC San Guidelines PS16-05 Guidelines for the Development in the Area of OC San Facilities, Fountain Valley, California

Prepared guidelines document to add to existing OC San guidelines for developments near and around OC San facilities, fee properties, and easements. The proposed guidelines are intended to be suitable for distribution by OC San to public agencies, land developers, contractors, and other entities who propose external work that could affect OC San facilities.

Contract Manager, MP-512 Trickling Filter Waste Sludge Pump Room Exhaust Fan Relocation at Plant No. 2, Huntington Beach, California

Provided design and construction support services for this project. The existing exhaust fan that served waste sludge pump room was located high above a basement space where access for maintenance was a safety concern. The purpose of this project was to remove the existing exhaust fan and provide a new

exhaust fan located on the exterior wall for easier access for staff. A temporary ventilation system needed to be incorporated into design to allow for proper exhaust in the space during construction.

Contract Manager, Orange County Sanitation District, Plant 1 Control Center Renovation, Fountain Valley, California

Provided services that included both architecture and engineering for the Control Center first floor remodel, day room, and supervisor area. Scope of work included an interior remodel of open and private office space. New work included flooring, ceiling, electrical and HVAC relocation. Coordinated with OC San staff to ensure the furniture, fixtures and equipment and interior space planning met OC San needs. Coordinated with City of Fountain Valley to obtain the building permit. Prepared construction cost estimates.

Contract Manager, Metropolitan Water District of Southern California (Metropolitan), On-Call Consulting Services (Agreement No. 184520) 2019 to present, Los Angeles, California

Responsible for coordination and execution of Task Orders under Agreement No. 184520 for the engineering department. Assisted the client in developing task orders. The task orders executed over the last two years are:

- Badlands Tunnel Pressure Control Facility
- Utility Replacement at Colorado River Aqueduct (CRA) Pumping Plant Villages (Eagle Mountain and Julian Hinds)
- Etiwanda Test Facility Feasibility Study
- Evaluate Seismic Stability of the San Gabriel Dam Tower Access Road
- HVAC Planning Study
- Chillers Planning Study
- Staff Augmentation Services

Principal-in-Charge, OC San, 3-58 Magnolia Trunk Sewer Rehabilitation, Orange County, California

Oversaw the assessment of 12 miles of 38- to 76-inch-diameter trunk sewer pipe. The scope of work included CCTV, physical inspections, odor control, permitting, hydraulic modeling, testing and NASSCO sewer defect classification. AECOM's contract was amended to prepare the project design-build bid documents.

James McQuarrie, PE

Technical Advisor/QA

Key Skills

Nutrient Removal
Anammox Technologies
Process Intensification
Technologies
Process Innovation
Capital Planning
Wastewater Operations
Management

Years of Experience

28

Years with AECOM

2.5

Education

MS, Civil Engineering, Colorado State
University, 1999
BS, Water and Sanitation, Rutgers
University, 1991

Registrations

Professional Engineer (Civil), Colorado,
#37621

Professional Associations/Awards

IWA WEF WRF
WEF Ralph Furhman Medal for
Outstanding Water Quality
Academic Practice Collaboration
(2019)
Water Environment Research
Foundation (WERF) Excellence in
Innovation Award (2013)



Jim brings to the project team nearly 30 years of “hands on” practical wastewater operations and engineering experience split between public and private sector roles. His specialization is in wastewater facilities planning, process design, nutrient removal, and facility operations with a consistent emphasis on promoting creative solutions that leverage innovation to maximize the value of already existing assets and bring cost-effective and sustainable services to rate payers.

Professional history

With extensive engineering experience in bringing innovative treatment approaches to full-scale, process evaluations, studies, collaborative design, and operation of processes including process intensification strategies. Jim brings practical experience with management of wastewater utility operations, staff planning, budgeting and cost center control, asset management and performance improvement strategies. He is a recognized leader in wastewater treatment processes, nutrient removal, new technology evaluation and adoption. Jim’s substantial experience with facility planning and capital improvement program planning and processes will enhance the efforts of our team, as well as routinely update and maintain focus on the right CIP projects, at the right time and for the right cost.

Selected project experience

Lead Process Engineer, Hampton Roads Sanitation District, Nansemond Treatment Plant Advanced Nutrient Reduction Improvements, Suffolk, Virginia

Responsible for design of the biological nutrient removal upgrades and improvements (ANRI Phase 2) to the nominal 35-mgd Nansemond Treatment Plant. These project improvements are designed to achieve the nutrient reduction targets required for water supply to HRSD’s Sustainable Water Infrastructure for Tomorrow (SWIFT) wastewater-to-aquifer-recharge program. Managed the biological process detailed design team taking the overall project from the initial Basis of Design Report (BODR) definition through Preliminary Engineering Report (PER) and detailed design to issue for construction (IFC) drawings.

Chief Innovation Officer, Metro Water Recovery, Robert W. Hite Treatment Plant, Sidestream Anammox Facility, Denver, Colorado

Developed project approach and business case to evaluate, design and commission one of the largest sidestream anammox installations in North America. Managed a technical team and coordinated with fellow utilities to conduct a series of pilot-scale evaluations of commercially available sidestream anammox technologies, including Demon®, Anita™ Mox and Paques Anammox® to eliminate 6,500 lb/d of ammonia from centrate. The work resulted in an evaluated bid procurement approach and eventual design and construction for retooling an under-utilized existing tank into high-rate nitrogen removal process with mainstream bio-augmentation.

Lead Process Engineer, Hampton Roads Sanitation District, James River Treatment Plant (JRTP) Nitrogen Removal Upgrades, Newport News, Virginia

Conducted design deliverable review on the full-scale demonstration and final design of the process intensification upgrades installed to convert the non-nitrifying roughly 15-mgd facility into a compact full nutrient removal facility within the already existing tankage. This first stage of project included design, installation, commissioning, and study of a full-scale biofilm-based strategy to provide consistent nitrogen removal performance. Provided senior design reviews and QA/QC through progression to final design for the aeration tank upgrades and blower facilities from PER to final contract documents.

Senior Project Advisor, South Platte Renew (SPR), South Platte Renew Master Planning Update, Englewood, Colorado

Provided deliverable review for the engineering team on an alternatives analysis to upgrade the existing 24-mgd facility to achieve low level nitrogen and phosphorous limits in a sustainable manner that minimizes reliance on chemicals and energy. Current facilities are limited in terms of their ability to meet strict nitrogen and phosphorus targets in a cost-efficient and sustainable manner. Planning focused on developing innovative alternatives to the otherwise costly conversion approaches premised on conventional best practice for nutrient removal.

Senior Technical Advisor, Colorado Springs Utilities, JD Phillips WRF Facility Planning Update, Colorado Springs, Colorado

Provided process support and deliverable review to project team with comprehensive facility planning for the 12-mgd JD Phillips WRF. The scope of the planning included a detailed condition assessment combined with an in-depth process evaluation to address ammonia and nutrient removal deficiencies at the facility that result from an extreme high amplitude of influent diurnal flow and loading into the plant.

Chief Innovation Officer, Metro Water Recovery, Robert W. Hite Treatment Facility Densified Activated Sludge Full-scale Demonstration, Denver, Colorado

Developed project approach and business case to evaluate, design and commission a full-scale demonstration of application of internal and external selective pressure (hydrocyclones) to induce granulation and dramatically improve the settling velocity of the mixed liquor to increase the throughput capacity of the existing clarifiers.

Operations Officer, South Secondary Complex Startup and Commissioning, Robert W. Hite Treatment Facility, Denver, Colorado

Coordinated with contractor/engineer team and plant operations staff to develop a focused startup and commissioning plan for conversion of a 114 MGD high purity oxygen biological process to new secondary treatment facilities with biological nutrient removal. Startup of the new facilities required careful coordination with plant staff work schedules, coordination other work activities, status of FAT of new equipment, and compliance with effluent limits on Day-1.

Senior Process Design Engineer, City of Cheyenne, Crow Creek Wastewater Treatment Plant Capacity Improvements and Nutrient Removal Upgrades, Cheyenne, Wyoming

Provided design for biological capacity expansion and nutrient removal upgrades to the 6.5-mgd WWTP. It incorporated a novel compact biological nitrogen removal approach to ensure consistent and complete oxidation of ammonia to meet stringent receiving water requirements and water quality requirements for the City's recycled water program.

Senior Technical Advisor and Process Lead, City of Lubbock, Reclaimed Water Supply SEWRF Nutrient Removal Upgrades Study, Lubbock, Texas

Conducted an evaluation of treatment upgrade strategies to address aging assets and improve level of treatment to remove nutrients and increase overall effluent quality such that the treated effluent could serve as a primary water supply source for the City's "Lake 7" storage reservoir component of its broader Strategic Water Supply Plan.

Technical Director, Lehigh County Authority, Sand Springs WWTP Process Performance Evaluation, and Intensification Design, Lehigh County, Pennsylvania

Directed a highly collaborative project with O&M staff on the design, installation, and commissioning of a novel process intensification upgrade for Sand Spring WWTP. The WWTP receives organic loading nearly twice its original design resulting in historical non-compliance and permit violation events. Coordinated project team through a process intensive analysis of the existing facilities plus techno-economic evaluation of multiple upgrade alternatives to determine the most cost-effective approach. The evaluation proposed process intensification modifications to decouple microbial populations.

Simon Baker, P.Eng

Technical Advisor/QA

Key Skills

Wastewater Process Engineering
Wastewater UV Disinfection
Sidestream Treatment
Water Reuse

Years of Experience

34

Years with AECOM

25

Education

MSc, Water Resource Systems Engineering, University of Newcastle-Upon-Tyne
BSc, Industrial Chemistry, City University
Diploma, Water & Environmental Management, Chartered Institution of Water & Environmental Management

Registrations

Professional Engineer (Civil), Manitoba, CAN
Professional Engineer (Civil), Ontario, CAN
Professional Engineer (Civil), Saskatchewan, CAN

Professional Associations

Engineers Geoscientists Manitoba
Professional Engineers of Ontario
Association of Professional Engineer and Geoscientists of Saskatchewan
Water Environment Association
Western Canada Water



Simon is a hands-on Wastewater Process Engineer with extensive experience in the planning, design, and commissioning of complex wastewater treatment systems both in the US and internationally.

Professional history

Simon is a process engineer and project manager with over 30 years of design, construction and commissioning experience of municipal wastewater treatment facilities. His expertise includes the quality review of a range of wastewater treatment designs. Simon brings his “lessons learned” from extensive treatment facility work across North America. One of our most senior treatment specialists, his track record includes innovative technologies such as biological aerated filtration (BAF), moving bed biofilm reactors (MBBR), enhanced nutrient removal (ENR), and hydrolysis of solids.

Selected project experience

Technical Reviewer, City of Bakersfield, WWTP No. 2 and No. 3 Upgrade and Expansion Evaluations, Bakersfield, California

Oversaw the master plan for the upgrade of the two plants.

Technical Reviewer, Los Angeles County Sanitation Districts, Pure Water Southern California, Carson, California

Responsible for planning the use of membrane bioreactors (MBR) at the A.K Warren WRF, to feed MWD’s 150-mgd advanced water purification facility.

Technical Reviewer, East County Advanced Water Purification Joint Powers Authority, Advanced Water Purification Project, Santee, California

Responsible for technical quality and reviews of the liquid stream component of this 16-mgd wastewater treatment plant that will feed effluent

to the advanced water facility for generation of water for indirect potable reuse (IPR).

Process Lead, Sacramento Regional County Sanitation District, Nitrifying Sidestream Treatment, Sacramento, California

Responsible for process design of sequencing batch reactor system for treatment of the ammonia-rich sidestream from this 181-mgd plant. Developed the BODR, preliminary engineering report (which included alternatives analyses), business cases for blowers and fine bubble diffusers, control narratives and commissioning strategy for the sequencing batch reactor system. Supported commissioning activities.

Technical Reviewer, Union Sanitary District, Alvarado Wastewater Treatment Plant, Centrifuge Building Improvements, Union City, California

Responsible for the quality review for the preliminary design report to upgrade the centrifuge building.

Team Lead, City of Salt Lake City, New Water Reclamation Facility, Salt Lake City, Utah

Led the design of the ultraviolet (UV) disinfection facility for this 48-mgd activated sludge plant. A business case evaluation was completed that compared disinfection using chlorine gas, sodium hypochlorite (both bulk delivery and on-site generation), peracetic acid, and UV. Basis of Design Report (BODR) for the UV disinfection facility and preliminary design are completed. Equipment pre-selection via competitive RFP is complete.

Technical Reviewer, City of Austin, Walnut Creek Wastewater Treatment Plant Upgrade, Austin, Texas

Conducted quality review of the process design of the 100-mgd biological nutrient removal upgrade and the UV disinfection system. Features of this upgrade included conversion of the existing 75-mgd complete mixed activated sludge to a Westbank BNR process, and design of a new 25-mgd train. The project included new primary clarifiers, BNR reactors, secondary clarifiers, fermenters, sludge thickening, filtration, UV disinfection, and a wet weather treatment system.

Senior Technical Reviewer, Metro Water Services, Central Wastewater Treatment Plant, Group 2 Process Areas Design, Nashville, Tennessee

Reviewed, as a member of the program management team, design of the UV disinfection for this 125-mgd activated sludge plant that is to be retrofitted into existing chlorine contact tanks. Flows up to 350-mgd will receive UV disinfection. Flows greater than 350-mgd (wet weather flow) will be disinfected using sodium hypochlorite.

Technical Reviewer, City of Orlando, Conserv 1 BNR Upgrade, Orlando, Florida

Performed quality reviews of the process design for this plant to expand from 7.5-mgd to 10-mgd, and to meet $TN < 3 \text{ mg/L}$ and $TP < 1 \text{ mg/L}$. Detailed design is currently in progress, with construction to begin in 2025. Project involves new headworks, grit removal, BNR reactors, and filtration system.

Process Lead, Fairfax County, Noman Cole Water Pollution Control Plant ENR Design, Lorton, Virginia

Led the process design of the 67-mgd denitrifying moving bed biofilm reactor (MBBR) for 3 mg/L total nitrogen limit. Responsibilities included pre-

selection of the MBBR system, preliminary design, detailed design, construction support, process commissioning, and operator training.

Technical Reviewer, City and County of Honolulu, Sand Island Wastewater Treatment Plant Secondary Treatment Design, Honolulu, Hawaii

Responsible for quality review of the process and mechanical design and inter-discipline coordination for this 20-mgd plant upgrade that includes membrane bioreactors.

Technical Reviewer, OneWater Nevada, Advanced Purified Water Facility, Reno, Nevada

Conducted a quality review of the BDOR and preliminary engineering report for this new 2-mgd facility that will generate water for IPR.

Process Lead, Barbados Water Authority, South Coast Water Reuse, Barbados

Led the conceptual design of the 2.4-mgd wastewater treatment plant for the planning of a water reuse strategy for the South Coast of the island. On completion of the planning study, prepared the wastewater treatment plant technical requirements for the contract documents for delivery of the project using engineering, procurement, and construction (EPC).

Process Lead and Deputy Project Manager, Capital Region District, Advanced Wastewater Treatment Facility Upgrade, Harrisburg, Pennsylvania

Responsible for preliminary design of this upgrade of a 37.7-mgd HPOAS to ENR standards. Work included alternatives analyses, and preparation of the preliminary engineering report. Project included RAS regeneration for treatment of ammonia-rich sidestream.

Advisor, Metro Vancouver, Lions Gate Secondary Wastewater Treatment Plant Design/Build/Finance (DBF), Vancouver, British Columbia

Participated in review of bids from DBF proponents for this new-build 27.5-mgd wastewater treatment plant that included a deammonification stage for centrate from dewatering of thermophilic anaerobic digesters.

Nick Cooper, PE, BCEE

Existing Conditions Assessment / Liquid Stream Analysis

Key Skills

Process Engineering
Water Reuse

Years of Experience

52

Years with AECOM

32

Education

BS, Civil Engineering, Cornell University, 1971
MS Coursework, University of Arizona, 1982

Registrations

Professional Engineer (Civil), Texas, #84535
Professional Engineer (Civil), Florida, #40312

Professional Associations

American Academy of Environmental Engineers
Water Environment Federation
American Water Works Association



Nick will leverage his national and global leadership in wastewater treatment facility design to develop optimum solutions. He brings extensive experience in planning, design, and construction management of water and wastewater facilities. Nick has designed more than 15 new wastewater treatment facilities and upgraded more than 80 others. His experience includes biological nutrient removal, odor control systems, and biosolids management for municipal facilities in 20 states and internationally.

Professional history

Nick's experience includes biological nutrient removal, water reclamation, and biosolids management for municipal facilities in 20 states and internationally. He has been Design Manager and Project Manager on new treatment projects as large as 100-mgd, with treatment upgrades on advanced treatment facilities ranging from phosphorus and nitrogen removal, filtration, ultraviolet (UV) disinfection and membrane bioreactors (MBR). He directs AECOM's Water Academy course in wastewater treatment design.

Selected project experience

Technical Lead, City of Bakersfield, Feasibility Study for Upgrade and Expansion of Wastewater Treatment Plant No. 2 and Plant No. 3, Bakersfield, California

Conducted condition assessment of two treatment plants for the City of Bakersfield. Developed three complete plant upgrade alternatives for the 25-mgd Plant 2, and three expansion alternatives for the 32-mgd Plant 3. Alternatives developed included conversion to biological nutrient removal (BNR), integrated fixed film activated sludge (IFAS) and membrane bioreactor (MBR) process for each facility. Evaluations included hydraulics, maximum utilization of existing facilities, initial construction cost and phasing.

Technical Advisor, Regional Water Reclamation Facilities Aeration Diffuser Replacement and Blower Design (EMWD), Perris, California

Responsible for detailed design of new diffusers and aeration blower for the 14 mgd Perris Valley Regional WRF. Project included complex

construction sequencing to maintain full treatment capacity during construction.

Project Director / Technical Lead, Mission Springs Water District, Nancy Wright Water Reclamation Facility (WRF), Desert Hot Springs, California

Led preliminary design, detailed design and construction of a new regional WRF. Alternatives were developed in preliminary design for initial flows and ultimate facility development to 20 mgd. Alternatives for initial development were biological nutrient removal (BNR), membrane bioreactor (MBR) and sequencing batch reactor (SBR) process. Following the feasibility study, the selected process was SBR. The initial facility is a 1.5-mgd sequencing batch reactor (SBR) process that can be reconfigured as a 3-mgd MBR facility. Initial treatment will be for land application, with plans for future upgrade suitable for Title 22 reuse.

Project Manager, City of Oxnard, WWTP Upgrade, Oxnard, California

Managed the design and construction of interim upgrades and reliability improvements for the 32-

mgd treatment facility. Under a multi-phase program, improvements were made to headworks, primary clarifiers, pumping systems, digesters, dewatering facilities and cogeneration. The project included new maintenance storage building, and complete overhaul and replacement of the electrical and SCADA infrastructure.

Technical Director / Process Lead, San Bernardino Municipal Water Department, Tertiary Treatment Facility, San Bernardino, California

Responsible for directing and leading the design of a new 5-mgd tertiary treatment plant with a disk filtration system and UV disinfection facility to meet California Title 22 quality recycled water.

Technical Advisor and Design Lead, Kern Sanitation Authority, New Anaerobic Digester, Bakersfield, California

Provided technical advice to the project team and led the design that doubled digestion capacity for the 6.6-mgd WWTP. The new digester uses linear motion mixing system. Project included expansion of boiler capacity, gas scrubbing system, and transfer pumping between digesters.

Technical Lead, City of Bakersfield, Digesters and Digester Gas Reuse Study, Bakersfield, California

Developed options for upgrades to digesters and cogeneration at the 25-mgd WWTP No. 2 and 32-mgd WWTP No. 3. Identified digester gas purification conceptual design for pipeline quality gas.

Technical Director and Design Manager, Dubai Municipality, Expansion of the Jebel Ali Sewage Treatment Plant, Dubai, UAE

Directed and managed the design for expansion of the plant from 80-mgd to 180-mgd. Plant has advanced BNR treatment, filtration, UV disinfection, and full biosolids management, including digestion, dewatering and solids drying facilities. Other project elements included biological phosphorus removal and on-site hypochlorite disinfection.

Project Manager and Technical Lead, Haya Water, Al Ansab MBR Facility Expansion, Muscat, Oman

Managed project and led design for plant expansion from 14.5-mgd to 33-mgd. This is one of the largest flat-sheet MBR plants in the world. Project expanded all processes at the plant and upgraded the central pumping station.

Project Manager and Technical Lead, City of San Diego Public Utilities Department, Morena Pumping Station, San Diego, California

Oversaw the Morena Pump Station project that will, upon completion, pump an average of 37-mgd from the City's sewer system, 11 miles to the North City WRF, as part of the San Diego Pure Water Program. Using high pressure (215 psi) two-stage pumping, the screened wastewater from this station will be treated through two advanced treatment plants for discharge into the City's water supply reservoir.

Technical Advisor, Metropolitan Water District of Southern California, Pure Water Southern California, Los Angeles, California

Developed standard specifications and details for the program to recycle up to 150-mgd of wastewater effluent to IDP quality, for replenishment of the groundwater in the Los Angeles area. The project will be the largest IDP program in the United States.

Owner's Agent / Project Manager, National Water Company, Tender Evaluation at Airport WWTP-2, Jeddah, Kingdom of Saudi Arabia

Managed the review and evaluation of nine tenders for a new 132-mgd advanced WWTP in Jeddah, Saudi Arabia. Evaluations included firm qualifications, process review, odor study and systems review, cogeneration analysis, life-cycle cost analysis, and equipment evaluation.

Technical Lead, Los Angeles County Sanitation District, Energy Services Performance Contract (ESPC), Los Angeles, California

Provided technical support for implementation of a new oxygen generation facility at the 400-mgd Joint Water Pollution Control Plant. The project included replacement of two 150-ton-per-day cryogenic oxygen generators with vacuum pressure swing adsorption units in a fast-track design/build project.

Charles (Terry) Goss, Jr., PE

Solid Stream Analysis

Key Skills

Biosolids Technology
Process Design
Plant Commissioning
Equipment Integration

Years of Experience

21

Years with AECOM

14

Education

MS, Environmental Engineering,
Villanova University, 2015
Graduate Certificate, Sustainable
Engineering, Villanova
University, 2015
BS, Chemical Engineering, North
Carolina State University,
2003
BA, Chemistry, North Carolina State
University, 2003

Registrations

Professional Engineer (Chemical),
North Carolina, #035005

Professional Associations

Water Environment Federation
Mid-Atlantic Biosolids Association



Terry is AECOM's Global Biosolids Practice Leader who is well versed with all biosolids processes. He has unique experience in introducing and developing new biosolids technologies for the North American market. He has a strong background with all biosolids process and technology applications.

Professional history

As a biosolids technology leader with more than two decades of hands-on experience with biosolids process design, Terry specializes in equipment integration, project delivery, and plant commissioning. He assisted with updating the biosolids chapters for the 5th edition of the Metcalf & Eddy / AECOM *Wastewater Engineering* textbook.

Selected project experience

Biosolids Process Lead, Los Angeles Department of Sanitation, Resiliency Plan, Los Angeles, California

Provided resiliency concept reports for the thickening, dewatering and truck loading facilities at the Hyperion WWTP. The project included evaluating the capacity, resiliency and risk associated with these areas and developing a Capital Improvement Plan to address the resiliency concerns.

Solids Handling Process Lead, East County Advanced Water Purification Joint Powers Authority, Advanced Water Purification Facilities, Santee, California

Responsible for the new solids handling facility that consists of two new rotary drum thickeners for WAS, three anaerobic digesters, centrifuge dewatering, and two dewatered cake hoppers. The digesters were sized and designed to allow future high strength waste co-digestion to be incorporated, and future digestion capacity can be increased either by adding a fourth digester or by adding recuperative thickening. Low torque mechanical mixers suitable for mixing high

digester solids concentrations were chosen for the design.

Design Team Lead, Salt Lake City, Water Reclamation Facility (WRF) Upgrade, Salt Lake City, Utah

Managed the biosolids portion of the secondary treatment design upgrade to BNR. The project included adding mechanical dewatering, evaluating thermal drying, evaluating phosphorus recycling and struvite mitigation strategies and assessing the impact of advanced processes such as thermal chemical hydrolysis and post aerobic digestion on the overall biosolids process. Ultimately, new screw press dewatering was selected. The presses were purchased early to operate in a temporary location, while construction of the new dewatering building is in progress. Several struvite precipitation technologies are currently being evaluated for potential implementation.

Process Engineer, City of Thousand Oaks, Hill Canyon Wastewater Treatment Plant (WWTP) Thickening, Dewatering and Drying Upgrades, Thousand Oaks, California

Performed a feasibility study and alternatives analysis to retrofit an existing thickening building

to include new thickening, dewatering and thermal drying processes. The project did not ultimately proceed as originally proposed, but new screw press dewatering was implemented to replace the older belt filter presses.

Solids Handling Design Engineer, City of Stockton Municipal Utilities, Regional Wastewater Control Facility (RWCF), Stockton, California

Provided design assistance for the solids handling upgrades at the RWCF. The existing plant contains gravity thickening and gravity belt thickening upstream of anaerobic digestion followed by belt filter press dewatering.

Improvements will treat 40-mgd (average dry weather flow, 105-mgd peak hour flow) and meet more stringent nitrogen limits, reduce effluent salinity, and improve overall energy efficiency and operational reliability using a progressive design-build delivery approach.

Technical Design Support, City of Davis, WWTP Design Build Project, California

Responsible for technical design support for WWTP plant upgrades specifically focused on the design, technical specifications and selection of new rotary drum thickening and screw press dewatering. A concept design for a greenhouse solar drying system was also developed but ultimately not implemented.

Technical Reviewer, San Francisco Public Utilities Commission, Program Management for Sewer System Improvement Program (SSIP), San Francisco, California

Provided technical assistance with the program management validation for the Southeast (85-mgd) and Oceanside (19-mgd) plants' biosolids processes. Validation of capacity was performed in parallel with a conditions assessment and both were utilized to determine required short-term projects as well as develop a needs assessment for building a new biosolids facility. Technologies evaluation included anaerobic digestion thermal hydrolysis pretreatment, thermal drying, and gasification. Options for co-digesting high strength organic wastes were also studied to gauge the impact on equipment sizing and electrical production potential in the cogeneration system.

Design Team Leader, City and County of Honolulu, Sand Island WWTP Secondary Treatment Design, Honolulu, Hawaii

Responsible for the biosolids portion of the secondary treatment design. The project includes planning for increased solids handling capacity for thickening, anaerobic digestion, dewatering and thermal drying to account for future loads and the addition of secondary treatment.

Biosolids Technical Lead, Metro Vancouver, Iona Project Definition Report, Vancouver, British Columbia

Led the evaluation for biosolids options to maximize energy and resource recovery. As part of the project, authored the biosolids technology long list and screening technical brief. Also developing the carbon and energy balances for the short-listed options. A major part of the project will include options to phase in innovative technologies, such as hydrothermal carbonization technology in the future once the technologies are commercialized. This phasing included conducting an evaluation considering regional digestion redundancy and incorporating a planned regional dryer facility. As part of the analysis advanced anaerobic digestion processes, such as thermal hydrolysis and recuperative thickening, were evaluated.

Program Management Team, Miami Dade County, Consent Degree Program Management, Miami, Florida

Led the technical efforts for a centrifuge thickening, high-rate digester and dewatering pilot study at Miami's South District WWTP. The pilot included operating the thickening pilot for several months to simulate high-rate anaerobic digestion. The dewatering piloting was conducted on thickened digested sludge to simulate expected future conditions. During the piloting, it was also noted that the plant had a severe struvite issue that currently was managed using time intensive manual cleaning. Because of this issue as well as poor dewaterability, it was recommended to also conduct a struvite recovery pilot using the AirPrex™ technology. The Airprex pilot provided up to 90 percent orthophosphate removal and increased dewatered cake solids by 2 to 4 percentage points using the same polymer dose compared to non-Airprex treated sludge. Since the pilot was conducted AirPrex has been rebranded as MagPrex.

Alessandro (Alex) Franchi, PhD, PE, BCEE

Recycled Water

Key Skills

Technology Evaluation and Selection for Processes for Treatment of Water/Wastewater
 Water Reuse and Potable Water Planning and Economic Evaluations
 Design of Facilities
 Preparation of Feasibility Studies
 Permitting
 Gas Powered Power Plants
 Energy Recovery

Years of Experience

33

Years with AECOM

8

Education

PhD, Environmental Engineering, Johns Hopkins University, 2000
 MSE, Environmental Engineering, Johns Hopkins University, 1995
 BSE, Civil/Chemical Engineering, University of Maryland, 1992

Registrations

Professional Engineer (Civil), California, #75225
 Professional Engineer (Civil), Florida, #82119

Professional Associations

Water Environment Federation

Trainings and Certifications

American Academy of Environmental Engineering Board Certification (BCEE)



Alex’s technical experience encompasses conventional and advanced processes in wastewater, water reuse, and potable treatment, including oxidation, chemical and ultraviolet (UV) disinfection, membrane technologies, advanced oxidation, activated sludge, membrane biological reactors (MBR), media filtration, coagulation, headworks, and pump stations.

Professional history

Alex brings over three decades of experience in the water / wastewater industry, specifically, in the planning, design, and management of water/wastewater treatment, solids handling, and pumping facilities projects. He has worked for consulting firms, equipment manufacturers, and as an independent contractor on projects in the United States and internationally. Alex has written more than 30 professional publications and papers on various aspects of water treatment and energy recovery from wastewater

Selected project experience

Lead Designer (Engineer of Record), East County Advanced Water Purification Program JPA, Advanced Water Treatment Purification Facility – Potable Water Reuse, Santee, California

Responsible for this design-build project (in progress) that is one of the first in the country for the augmentation of a surface water supply with treated wastewater for potable reuse. It will include design, construction and transitional operation and maintenance services (Package 1). Components include a 16-mgd water recycling facility; 11.5-mgd advanced water purification facility, including microfiltration (MF), reverse osmosis (RO) and ultraviolet/advanced oxidation process (UV/AOP); solids handling facility; product water pump station; and a new visitor’s center. The Program has significant regional benefits. It will be one of the first potable reuse projects in the State of California to use the new Surface Water Augmentation (SWA) regulations. The Program will provide up to 30 percent of East County’s

drinking water demands and eliminate the discharge of 15-mgd of partially treated wastewater into the Pacific Ocean.

Project Manager, Regional Water Reclamation Facilities Aeration Diffuser Replacement Design Perris, California

Preliminary and final design. Engineering services during bidding. Engineering services during construction. RWF biological modeling. Design of upgrades to the aeration system to support the new diffusers at three of its regional water reclamation facilities (RWRFs) – namely Perris Valley (PVRWRF), Temecula Valley (TVRWRF), and San Jacinto Valley (SJVWRF). AECOM has completed the modeling and design of the diffuser replacement with tubular diffusers. For PVRWRF, the design of the addition of one blower and standby generators is ongoing.

Senior Engineer, City of Bakersfield, Plant 3 Recycled Water Program, Bakersfield, California

Evaluation of the expansion of the tertiary treatment facility and the addition of a UV disinfection facility for the use of recycled water for groundwater recharge. Supported the evaluation to expand of the recycled water treatment capacity to 8 MGD, associated expansion of non-potable use, as well as exploring the opportunity for groundwater replenishment.

Project Manager, LASAN, Investigations Related to Hyperion 2035 Conversion to Recycled Water Production, Los Angeles California

The Hyperion 2035 Program is a major component of meeting the City of Los Angeles's water sustainability goals. In planning this milestone project, LA Sanitation and Environment is conducting special studies to evaluate the projected impacts of water recycling on the discharge characteristics of the HWRP to Santa Monica Bay, the plant outfall hydraulics, and the effluent pumping plant modifications that will be required. AECOM is supporting LASAN with the following two tasks: Task Order 1- Ammonia Toxicity Study. Task Order 2 – Establish Maximum Recycled Water Flow for Hyperion, Assessment of Hydraulic Capacity of 5-Miles Outfall, and Required Modifications to the Effluent Pump Station.

Advanced Treatment Process Lead, City of Fresno, Airport Satellite WRF Feasibility Study, Fresno, California

Participated in a feasibility study for a 5-mgd WRF that included MBR, RO, UV/AOP and industrial source treatment. Water from this facility will be used for groundwater injection to recharge a depleted aquifer and public or agricultural irrigation uses. The project involved the preparation of a feasibility study, the goal of which was to determine the production of high-quality recycled water from the City's sewer system.

Advanced Treatment Technologist, City of Reno and Truckee Meadows Water Authority (TMWA), OneWater Nevada Advanced Purified Water Facility (APWF) Preliminary Design Report (PDR) and 30 Percent Design Project, Reno, Nevada

Responsibilities included process (including UV and pretreatment) and overall facility layout design. The 2-mgd APWF is an indirect potable

reuse/groundwater recharge initiative. The new APWF site will include ozonation, coagulation/flocculation, BACF, chemical storage, and feed systems, and an Export Pump Station. A transmission pipeline will transport BACF effluent from the APWF to the American Flat site. The APW Polishing Facility at the American Flat site will include BACF effluent storage tanks, injection pumps, self-cleaning screen filters, granular activated carbon (GAC) vessels, novel adsorbent vessels (for future PFAS treatment), UV disinfection, and chemical storage and feed systems.

Process Lead, City of Banning, Water Reuse Project, Banning, California

Working on the planning and preliminary design for an advanced water treatment facility for dual-purpose groundwater recharge and irrigation with water meeting low salinity limits mandated by the local water board. The AWTF includes MBR followed by RO, UV disinfection, evaporation ponds for disposal of the RO brine, and an effluent recycled water pump station.

Project Manager – Engineer of Record, West Valley Water Reclamation Facility, Mission Springs Water District, Desert Hot Springs, California

This 1.5 MGD facility is a new wastewater treatment plant located in Desert Hot Springs, California. The main purpose of the WVWRF is to increase the capacity of wastewater treatment within the District with a view to the future. The method of effluent disposal is land application by discharge to infiltration basins. A groundwater modeling study determined the proposed infiltration basins would be located a sufficient distance downgradient from the nearest public water supply well to not affect the water supply to the well.

The first phase of construction of the plant includes the following facilities: influent pump station; preliminary treatment; metering, screening, and grit removal; secondary treatment (SBR); effluent pumps; infiltration basins; aerated sludge storage with solids thickening; solids dewatering building and odor control; emergency stand-by power generator; administration/electrical building

Provisions will be made for adding future facilities in anticipation of the MSWD advancing their goals to recycle water, including fine screens and membrane bioreactors.

Grant Davies, PE

Risk Assessment & Resiliency

Key Skills

Project Management
Quality Assurance/ Quality Control
Condition Assessment
Facilities Planning
Process Design
Preliminary and Final Design
Construction Management
Commissioning

Years of Experience

41

Years with AECOM

37

Education

MS, Environmental
Engineering, Worcester
Polytechnic Institute, 2002
BS, Civil Engineering,
University of Lowell, 1984

Registrations

Professional Engineer (Civil),
California, #42004
Professional Engineer, (Civil),
DC, #PE921509
Professional Engineer, (Civil),
Massachusetts, #35267
Professional Engineer, (Civil),
Maryland, #37964
Professional Engineer, (Civil),
Utah, #12504923-2202

Professional Associations

American Society of Civil
Engineers
Water Environment Federation -
active on Program and Facility
Operations Committees



Grant is a technically thorough manager who has provided expert guidance and solutions for major clients across the country addressing aging infrastructure challenges coupled with evolving regulatory requirements to meet level of service needs with increased resiliency from hazards and climate change.

Professional history

Project management, engineering, and construction of water resource recovery facilities, pumping and conveyance systems focusing on assessment and upgrades to meet performance objectives and improve process control, hydraulics, energy management, system resiliency, and sustainability. He is a contributing editor to the Metcalf & Eddy Wastewater Engineering, 5th Edition textbook, Subject Matter Expert for AECOM's Water Academy and Technical Practice Network, and Lead Verifier for technical quality review of project deliverables.

Selected project experience

Deputy Project Manager, LA Sanitation On-Call Consultant Services - Hyperion Water Reclamation Plant Resiliency and Vulnerability Mitigation Program, Los Angeles, California

Developed a Resiliency and Vulnerability Mitigation Program for the Hyperion WRP to address various unexpected climatic, regulatory, and operational challenges. Performed desk top studies, condition assessments, and development of facility-specific CIP resiliency concept Reports; the development of an overall resiliency and vulnerability program management plan; vulnerability assessment guidance documents; Staffing and Training Management Plan Review; and development of a resiliency program digital solution (Resiliency Hub).

Chief Engineer, DC Water, Blue Plains Wastewater Treatment Plant (WWTP) Program Management Services, Washington, DC

Responsible for technical oversight of facility planning, process engineering, studies, and design implementing a \$1.4B 10-year capital improvements program to improve and extend the useful life of advanced treatment assets for liquids and solids pumping, conveyance, treatment and support systems including alternative delivery; related aging infrastructure performance, capacity and resiliency improvements; integration with existing 384-MGD plant process; and operations and maintenance.

Project Manager, Salt Lake City (SLC) Department of Public Utilities, New Water Reclamation Facility (WRF), Salt Lake City, Utah

New \$800M 56-mgd water reclamation facility serving metropolitan area adjacent existing

operating facility delivered as a Construction Manager / General Contractor (CM/GC) Alternative Delivery project to meet resiliency and sustainability goals and new discharge limits, reduce odors to neighboring communities, and align with SLC Sustainability Goals (Envision certified components). New liquid treatment train, to meet more stringent nutrient regulations, placed in footprint of sludge drying beds. Condition assessments led to seismic upgrade to digester and appropriate selection of process piping and couplings to interconnect process buildings.

Mechanical Process Technical Lead, Miami-Dade Water & Sewer Department Consent Decree Program Management Services, Miami, Florida

Responsibilities included contract packaging, technical review of submittals, pre-purchase specifications, conventional bid, and alternative delivery bridging documents for \$2.2B program involving 52 phased design and construction projects across three large WWTPs: South District (110-mgd), Central District (143-mgd) and North District (90-mgd). Condition assessments led to phased implementation of new infrastructure.

Program Quality Assurance Manager/Technical Advisor, San Francisco Public Utilities Commission, Sewer System Improvements Program, Program Management Services, San Francisco, California

Performed planning, innovation and sustainable engineering, prioritizing and phasing of projects, triple bottom line assessments, and process modeling for projects under a 12-year \$6.9B program including upgrade and rehabilitation of sewage and combined sewer overflow (CSO) collection and treatment systems; performed scope development for planned construction projects at San Francisco's Southeast Wastewater Treatment Plant including siting, process layout, logistics, contract interfaces, odors, noise, electrical systems, control systems; supported development of staffing and training programs for new facilities.

Senior Project Engineer/Project Manager, Massachusetts Water Resources Authority, Boston Harbor Cleanup Program PM/CM/Lead Design Services, Boston, Massachusetts

Responsibilities for \$3.8B program included developing concept design, packaging, phasing and technical oversight of 32 design contracts; construction services and commissioning for 133

construction and support services contracts comprising large conveyance tunnels, multiple large pump stations, force mains and 350-mgd Deer Island wastewater treatment plant to meet federal court ordered 10-year implementation schedule.

Water Sector Lead, Assessment of Resilience in Codes, Standards, Regulations, and Best Practices for Buildings and Infrastructure Systems, U.S. Department of Commerce National Institute of Standards and Technology (NIST), Gaithersburg, Maryland

Conducted technical review of current water, wastewater, and stormwater system design practices, codes, standards, regulations, and best practices for resiliency to flood, wind, and seismic hazards including role of interdependencies and recovery of level of service for the built environment culminating in a NIST publication.

Project Manager, Region of Peel, Clarkson Water Resource recovery facility (WWRF) Liquids & Biosolids Upgrades Project, Mississauga, Ontario

Oversaw \$850M expansion of rated capacity from 350 MLD to 500 MLD delivered through CMAR including assistance in procurement of CMAR, additional headworks capacity, a new liquid treatment train to provide additional primary and secondary treatment capacity, addition of thermal hydrolysis, pre-dewatering, post-dewatering, odor control, expansion of digestion capacity, a new energy center with standby power and new 27.6 kV underground power distribution grid.

Project Manager, Washington Suburban Sanitary Commission Piscataway WWTP Facility Plan, Accokeek, Maryland

Led engineering studies, condition assessments, and 20 Business Case Analyses for 30 mgd plant to address assets of concern and enable each of the individual unit processes to function seamlessly and reliably with each other over a complete range of anticipated flows and loads and operating scenarios and extend the life expectancy of the assets. Recommended and prioritized 20 construction contracts and a \$172M capital improvements program.

Nader Rezaei, PhD

Process Engineering / AI/Digital Twin

Key Skills

Advanced Treatment Design
Water Reuse Planning
Process Design and Modeling
Water-Energy Nexus
Sustainability Assessment

Years of Experience

15

Years with AECOM

1

Education

PhD, Environmental Engineering
University of South Florida, 2019
MS, Chemical Engineering
Sharif University of Technology,
2011
BS, Chemical Engineering
Sharif University of Technology,
2009

Professional Associations

Water Environment
Federation (WEF)

Trainings and Certifications

Environmental Engineering



Nader is a highly skilled Process Engineer with a strong foundation in advanced water treatment technologies, treatment train design, and water reuse applications, regulatory, and planning. With a PhD degree in Environmental Engineering from University of South Florida and a strong background in Chemical Engineering from Sharif University of Technology, Nader brings a wealth of knowledge and expertise to his field of work.

Professional history

With a professional journey marked by commitment to excellence, innovation, and sustainable development, Nader's professional appointments and expertise further underscore his dedication to maintaining high standards in Environmental Engineering. His experience and skills make him an ideal engineer on projects that require a deep understanding of engineering principles, and the ability to apply them effectively in addressing complex water challenges.

Selected project experience

Water Treatment Engineer, City of Los Angeles, Bureau of Engineering, Hyperion Water Reclamation Plant (HWRP) – Sidestream Treatment Pilot Testing, Los Angeles, California

The objective of the HWRP Sidestream Treatment Pilot Testing project is to select and design for two Anammox-based treatment technologies (as well as the required pretreatments, including the pretreatment requirements for Total Suspended Solids removal, sidestream temperature adjustment, and pre-aeration for inhibition mitigation) in pilot scale, that will become the basis for treatment of the ~4 MGD sidestream centrate at HWRP. This effort is part of the HWRP program to meet its nutrient removal goals and prepare for its 2035 reuse program. As a Water Treatment Engineer, responsibilities include reviewing the engineering reports and historical water quality data, providing technical support to the project, meeting with the project team, technology providers, and the client, preparing reports and presentations on the project progress, technologies evaluation, process modeling, helping with the design of the pilots

(including pretreatment technologies), and reviewing the design reports.

Water Treatment Engineer, City of Reno and Truckee Meadows Water Authority (TMWA), OneWater Nevada Advanced Purified Water Facility Project at American Flat, Reno, Nevada

The OneWater Nevada Advanced Purified Water Facility (APWF) at American Flat is an indirect potable reuse (IPR) project, a joint effort led by the City of Reno and Truckee Meadows Water Authority (TMWA). The Project intends to produce 2 MGD of category A+ advanced purified water. Effluent from the Reno-Stead Water Reclamation Facility (RSWRF) will be conveyed to the Advanced Purified Water Facility (APWF) for advanced treatment and groundwater recharge. As the Water Treatment Engineer, responsibilities include review of the engineering reports, help with the APWF and the groundwater recharge detailed design process, as well as meetings with the project team and the clients and prepare reports and presentations on the project progress. This project is the first IPR project in the State of Nevada.

Principal Engineer, National Alliance for Water Innovation (NAWI), Process Twins for Decision-Support and Dynamic Energy/Cost Prediction in Water Reuse Processes, Irvine, California

Responsible for conducting a pilot study on advanced water treatment and water purification technologies to reduce the energy cost of the finished water, using the concept of Digital Twin (DT). The project, which is funded by NAWI and the Department of Energy, is a collaborative effort among the University of California, Irvine (UCI), the Orange County Water District (OCWD), and the Oak Ridge National Laboratory (ORNL). As the principal engineer on the project, activities include design, development, start-up, and operation of the pilot, development of a DT for the pilot under study, development of SCADA and data management systems, manage collaboration among the involved organizations, and reporting to the funding agencies. This is the first effort to implement a full-scale Digital Twin with all its required elements in an advanced water treatment system.

U.S. EPA's Pretreatment Program Coordinator, Madison Metropolitan Sewerage District, District's Headworks Modification Project, Madison, Wisconsin

Responsible for working with the operation management at the Madison Metropolitan Sewerage District, the largest water reclamation facility in Wisconsin (Treatment Capacity: 96 MGD), on the facility's Headworks Modification Project. The project was intended to modify the location of the plant's major influent pipes so that flowmeters could monitor the pipe flowrates more reliably. Activities included site evaluations, engineering studies, development of Request for Proposals (RFPs) for the design and construction phases of the project, meeting with the candidate firms, proposal and bid evaluations, and selection of the design and construction companies. The position was also responsible for working closely with the treatment facility, the facility's safety department, the facility's clients and industrial users, and the construction company, during the construction phase to ensure the project proceeds successfully.

U.S. EPA's Pretreatment Program Coordinator, Madison Metropolitan Sewerage District, District's Comprehensive PFAS Study, Madison, Wisconsin

As the U.S. EPA's Pretreatment Program Coordinator at Madison Metropolitan Sewerage District, the largest water reclamation facility in Wisconsin (Treatment Capacity: 96 MGD), the

position was responsible for helping the treatment facility develop a comprehensive PFAS analysis plan. The project consisted of Development of a Request for Proposal (RFP), meeting with the candidate consulting firms, proposal and bid evaluations, selection of the consulting firm to help the district with conducting the study, and study plan development. Activities included site evaluation, a detailed evaluation of treatment processes at the treatment facility, selection of sampling locations, implementation of accessing plan to the sampling locations, development of SOPs for sampling and samples analysis, development of safety procedures, as well as data analysis and reporting.

Research Engineer, Hillsborough County Public Utilities, Southcentral Water Service Area's Expansion Master Plan, Tampa, Florida

Provided development of an optimization model to help decision makers and county officials select a location for implementation of a new water reclamation facility (or expand one of the existing treatment facilities), select a technology for secondary treatment, and design of the treatment train, for the expansion of the county's southcentral water service area. The criteria for the selection of location for a new treatment facility consisted of land availability, proximity to the residential areas, and minimizing the wastewater collection and reclaimed water distribution requirements. The criteria for the selection of secondary treatment technology and the design of the treatment train consisted of effluent water quality, implementation and operational costs, and carbon footprints/GHG emissions associated with the operation of the treatment facility. Activities included site assessments, treatment technologies evaluation, cost and environmental assessments, stakeholders' engagement, design, and reporting.

Research Engineer, Polk County Utilities, Polk County Water Reuse Project, Lakeland, Florida

Managed conceptual design of additional treatment trains to advance the Polk County's treatment facilities to meet the quality requirements for different potential water reuse scenarios. The reuse scenarios included agricultural reuse, environmental reuse, potable reuse options, and irrigation. The project also included the design, pumping requirements study, cost analysis, and GHG emission analysis of the considered reuse scenarios. Activities included site evaluations, selection of treatment technologies, design of advanced treatment trains, development of water reuse scenarios, stakeholders' engagement, and reporting.

Chelsea Jiang, PE

Process Engineering

Key Skills

Water & Wastewater Treatment
Process & Facilities Planning
Water Reuse & Potable
Water Planning
Smart Water System Monitoring
Pump Stations & Conveyance
Civil Infrastructure Design

Years of Experience

7

Years with AECOM

6

Education

Master of Science (MSc),
Environmental/Environmental Health
Engineering, Yale University, 2018
Bachelor of Science (BSc),
Environmental/Environmental Health
Engineering, University of Illinois,
Urbana-Champaign, 2017

Registrations

Professional Engineer (Environmental),
California, #93606

Professional Associations

Water Reuse LA Chapter

Trainings and Certifications

AECOM PFAS ENE Academy



Chelsea is a registered water/wastewater project engineer based in the Orange office with experience spanning in wastewater and water treatment facilities, water reuse, pump stations, smart water systems, infrastructure planning, and environmental remediation. Her expertise includes treatment process evaluation and design, regulatory and permitting support, hydraulic analysis, data-driven optimization, and multidisciplinary project coordination across planning and design phases.

Professional history

In her role as a project engineer on water and wastewater treatment and conveyance projects, Chelsea adeptly handled tasks such as facilities planning, applied research, process design, and hydraulic and process calculations. She has extensive experience with water reuse regulations, permitting and compliance, including Title 22 considerations. She has contributed to treatment facility upgrades, aeration and diffuser evaluations, advanced treatment processes, and smart water initiatives, providing technical analyses, cost estimates, and coordination with vendors and discipline leads. Her background also includes environmental remediation projects for oil and gas clients, where she supported system optimization, engineering calculations, troubleshooting, and coordination with operators and vendors.

Selected project experience

Project Engineer, Winterhaven County Water District, Water Treatment Plant and Booster Pump Station Upgrades, Winterhaven, California

Developed and evaluated three site-planning and process alternatives for upgrades to an existing 350-gpm groundwater treatment plant and associated booster pump station, based on source-water quality, cost, technical capacity, and constructability. Prepared preliminary design drawings, equipment sizing, and site layouts, including re-evaluation of the existing wet well and booster pumps, evaluation and resizing of chemical metering pumps, and incorporation of post-greensand cartridge filtration as a polishing step. Generated order-of-magnitude CAPEX/OPEX estimates, mapped design criteria to Title 22 and drinking water regulatory requirements, and supported permit-application submittals for the District.

Project Engineer, Eastern Municipal Water District, Diffuser Replacement, 2024 - Detail Design, Perris Valley, California

Collaborated with the BioWin modeler and other disciplines to conduct preliminary design for replacing secondary treatment diffusers at four Eastern Municipal Water District's (EMWD's) wastewater treatment plants and delivered preliminary design reports.

Project Engineer, Confidential Aviation Utility Improvements - Sanitary Sewer Pump Station and Industrial Waste Pump Station, San Francisco, California

Responsible for two separate pump stations at a major international airport. Work included design of a dry-pit Gorman-Rupp self-priming sanitary sewer pump station and a circular wet-well submersible industrial wastewater pump station. Responsibilities

included wet-well sizing and geometry, pump selection and hydraulic calculations (system curves, TDH, N+1 redundancy, minimum submergence), force main alignment and sizing, and development of bypass and phasing concepts to maintain continuous service during construction. Coordinated with electrical and controls engineers on VFD selection, level instrumentation, and site power requirements, and prepared demolition and new work plans in accordance with airport utility design standards and operational constraints.

Project Engineer, City of Reno (City) and Truckee Meadows Water Authority (TMWA), OneWater, Nevada Advanced Purified Water Facility (APWF) Detailed Design Project, Reno, Nevada

Provided technical support for ozonation process design and preparation project information packages for the Independent Expert Panel. The 2 MGD APWF project is an indirect potable reuse/groundwater recharge initiative led by a regional partnership between the City, TMWA, and the OneWater Nevada team. The project includes the conveyance of Category A recycled water, Advanced Purified Water Facility (APWF), a transmission pipeline transporting finished water to the American Flat site, injection, monitoring, and extraction wells.

Project Engineer, Irvine Ranch Water District, Syphon Reservoir Improvements, Irvine, California

Responsible for aeration system design, including coordinating with vendors to develop the design, providing cost estimates, and engaging in technical writing to support the Syphon Reservoir improvement project near Irvine, California. The Syphon Reservoir Improvement Project (SRIP) will increase its reservoir storage capacity from 500 AF to approximately 5,000 AF to meet the projected 4,500 AF seasonal storage need in the year 2030.

Project Engineer, Los Angeles Bureau of Sanitation (LASAN), Planning & Technical Services 2024-2029 - Ozonation and BAC, Los Angeles, California

Collaborated with national technical leads on water reuse Ozone/BAC topic research, including contaminants management such as CECs and PFAS, conducted presentations to clients, and contributed to the technical reports, summarizing the findings under a multi-year task order contract to provide a context for the pilot work. The goal of the Hyperion 2035 Program is to transform the Hyperion Water Reclamation Plant (HWRP) to an advanced water purification facility to produce up to 230 MGD

purified water. AECOM team is currently assisting LASAN with the evaluation of ozonation and BAC with the goal of summarizing the current state of knowledge in DPR applications and identifying the key design and operational factors for making informed decisions on the optimal location of ozonation and BAC.

Project Engineer, Metropolitan Water District of Southern California, Brackish Water Desalination Study, California

Collaborated with Geosciences to inventory brackish groundwater sources, develop evaluation methodologies, and summarize regulatory requirements. Evaluated brine reduction and management studies to identify feasible water recycling projects, conducted high-level sizing and cost estimates, and researched partnership options and project delivery methods. Summarized the evolution of desalination technologies and provided overall project management services to ensure effective coordination among stakeholders.

Project Engineer, US Army Corps of Engineers Middle East, A-E GCC 2017-2022 - P-563 Site, Utility Proof of Concept & Feasibility Study, Riyadh, Saudi Arabia

Responsible for the waste treatment section of the feasibility study under the supervision of technical leads. Duties involved identifying possible alternatives for the process and developing cost calculations based on engineering designs under a multi-year task order contract for utility proof of concept and feasibility study at P-563 site in Riyadh, Saudi Arabia.

Project Engineer, New York City Housing Authority, City-wide Program Management 2019-2023 - Water Advisory Services, New York, New York

Developed the roadmap for the Advanced Metering Infrastructure project, involving collaboration with the data analyst to identify key metrics and provide meaningful suggestions for the clients based on data analysis results under a multi-year task order contract.

Benjamin Shanthikumar, PE

Civil Process / Process Engineering

Key Skills

Hydrological and Hydraulic Analysis and Design
3D Modeling
Cost Estimating
Wastewater Process Design

Years of Experience

12

Years with AECOM

6

Education

BS, Civil Engineering, University of California, Irvine, 2012
BS, Environmental Engineering
University of California, Irvine, 2012

Registrations

Professional Engineer (Civil), Hawaii,
#21383

Professional Associations

American Society of Civil Engineers (ASCE)
California Water Environment Association (CWEA)
Santa Ana River Basin Section
Water Environment Federation (WEF)



As a Civil/Environmental Engineer specializing in water and wastewater solutions, Benjamin is committed to transforming complex challenges into sustainable, resilient infrastructure through innovative and practical design.

Professional history

Benjamin has more than 10 years of civil engineering experience and specializes in wastewater and water treatment processes, design and water resources. He has served as construction administration and lead designer for a wide range of private and local, state, and federal government projects, including domestic wastewater and water treatment plants, industrial water treatment facilities, pipelines, pump stations, groundwater wells, water storage reservoirs, hydraulic studies, construction management, and permitting.

Selected project experience

Project Engineer, Eastern Municipal Water District (EMWD) Regional Water Reclamation Facilities Aeration Diffuser Replacement Study and Blower Addition Design, Perris, California

Led engineering services for comprehensive condition assessments of aeration basins and diffuser systems across three regional water reclamation facilities. Evaluated system performance, structural and operational constraints, and lifecycle considerations to establish recommendations for system modifications, diffuser replacement, and infrastructure upgrades aimed at improving resiliency and long-term reliability. Supported the design development for the addition of a new process air blower to enhance system capacity, redundancy, and operational flexibility.

Lead Design Engineer, Port of Long Beach, Pier S Pump Station W-030 Rehabilitation Project, Long Beach, California

Managed the hydraulic analysis and process mechanical design including piping, pumping selection and layout for final design for the Pier S Pump Station Rehab. Hydraulic calculations and analyses were performed. Prepared drawings, specifications, construction sequencing plans, engineering reports, cost estimates, hydraulic

models and calculations to facilitate completion of the design according to client needs for pump station rehabilitation which included demolition of existing equipment and upsizing of pumps and replacement of piping.

Design Engineer, Guam Water Authority, Ypao Pump Station, Guam

Responsible for hydraulic analysis and process mechanical design including piping, pumping, and hoist design for Ypao Pump Station Rehabilitation. Hydraulic analyses were performed using a suite of modeling programs including InfoWater, SewerCAD, StormCAD, AutoCAD Civil 3D, and Excel Calculation sheets. Prepared drawings, specifications, construction sequencing plans, engineering reports, cost estimates, hydraulic models and calculations to facilitate completion of the design according to client needs for pump station rehabilitation which included demolition of existing equipment and upsizing of pumps and replacement/modifications of piping and facility layout.

Design Engineer, Guam Water Authority, Mamajanao Pump Station, Guam

Responsible for hydraulic analysis and process mechanical design including piping, pumping, and hoist design for Mamajanao Pump Station Rehabilitation. Hydraulic analyses were performed using a suite of modeling programs including

InfoWater, SewerCAD, StormCAD, AutoCAD Civil 3D, and Excel Calculation sheets. Prepared drawings, specifications, construction sequencing plans, engineering reports, cost estimates, hydraulic models and calculations to facilitate completion of the design according to client needs for pump station rehabilitation which included demolition of existing equipment and upsizing of pumps and replacement/modifications of piping and facility layout.

Project Manager/Technical Lead, LA Sanitation & Environment On-Call Consultant Services – Hyperion Water Reclamation Plant Resiliency and Vulnerability Mitigation Program, Los Angeles, California

Oversaw the development of an overall resiliency and vulnerability mitigation program plan including HWRP Resiliency Data Warehouse and dashboard for program tracking and reporting; Assess identified vulnerable areas of the plant and develop concept reports that identify urgent, immediate, near term, and long term upgrades to improve resiliency against a backdrop of climate change, aging facilities, O&M resource challenges, code compliance, and best practices.

Project Engineer, TOS SN-102: Hyperion 2035 Program – Toxicity Study, Five-Mile Ocean Outfall Hydraulic Evaluation, and Effluent Pump Station Modification, LA Sanitation and Environment Pre-Qualified On-Call Contract, Los Angeles, California

Provided engineering services for the toxicity study, 5-miles ocean outfall hydraulic evaluation and modifications required for the effluent pump station at the HWRP. These engineering evaluations are associated with the forthcoming PWLA Program, a major component of meeting the City's water sustainability goals. Under this program, the HWRP will replace its current conventional secondary wastewater treatment process with advanced treatment processes (membrane bioreactors, reverse osmosis, UV advanced oxidation) to produce up to 217 mgd of recycled water for indirect potable reuse, equivalent to one-third of the total potable water demand of the City. Additional treatment processes for excess wet weather flows, which can reach the plant during storm events, will also be implemented as part of the transformation.

Lead Designer, Irvine Ranch Water District (IRWD) Syphon Reservoir Improvement Project, Irvine, California

Responsible for the hydraulic analysis and design of the Algae Filtration Facility and all associated components of the algae filtration system. An assessment of potential alternatives and the preparation of a Technical Memorandum was completed to discuss project recommendations. The filtrations system included the sizing and selections of an appropriate filter system, several pumping systems and the design of a backwash waste equalization tank. Analysis of flow-equalization for backwash waste was completed to size the backwash waste tank in addition to selecting an appropriate discharge location and sizing the pumps to discharge the required flows.

Lead Designer, Orange County Sanitation District (OCSD) Plant No. 1 P1-105 Headworks Rehabilitation Project, Fountain Valley, California

Responsible for design of grit removal and conveyance systems, which included the rehabilitation of existing aerated grit basins, associated piping and the detailed design of all new grit handling facilities for the 320 mgd PWWF capacity of Plant 1. Design included the placement of new and replacement of existing piping through congested tunnel areas including aeration air piping and diffusers. Prepared drawings, specifications, construction sequencing plans, engineering reports, cost estimates, hydraulic models and calculations to facilitate completion of the design according to client needs. Conducted numerous meetings and interdisciplinary workshops between clients, engineers, and manufacturers to optimize and coordinate project design. Completed a lifecycle cost analysis for alternative grit design solutions with varying equipment. Design of utility piping including the replacement aeration air system for existing grit basins was completed. New and existing plant water piping replacement was also designed to meet plant capacity and pressure needs. Piping alignments were designed through congested tunnel areas where construction sequencing was necessary.

Project Engineer, Eastern Municipal Water District (EMWD) Temecula Valley RWRP 18 MGD Upgrade Project (CM), Temecula, California

Responsible for providing construction services and inspection during startup of Digesters and associated heat exchange loop. Developed electronic operations and maintenance manuals for all new plant facilities.

Mansi Patel

Process Engineering

Key Skills

Emerging Contaminants
Design Drafting and Modeling
Process Design and Engineering
Water Treatment

Years of Experience

5

Years with AECOM

2

Education

Bachelor of Science in Engineering (BSE), ASCE, YMF Member
Environmental/Environmental Health
Engineering, University of California-
Irvine, 2020

Registrations

Engineer-in-Training, California, #171678

Professional Associations

AAEES, Member
AAa/e, Member

Trainings and Certifications

AECOM Expert-led Identifying
and Resolving PFAs Course



Mansi is a passionate environmental engineer with experience in various aspects of wastewater and water treatment, pumping and conveyance. She has worked both on planning and design projects from municipalities across California.

Professional History

Mansi has experience in various water resource/treatment design and engineering. With a broad range of experience in water quality analysis, process design drafting and engineering, hydrology and hydraulics modeling, pathogen removal evaluation and design, and water/wastewater treatment, Mansi aids small and large projects.

Selected project experience

Project Engineer, Regional Water Reclamation Facilities Aeration Diffuser Replacement Design Perris, California

Preliminary and final design. Engineering services during bidding. Engineering services during construction. RWF biological modeling. Design of upgrades to the aeration system to support the new diffusers at three of its regional water reclamation facilities (RWRFs) – namely Perris Valley (PVRWRF), Temecula Valley (TVRWRF), and San Jacinto Valley (SJVWRF). AECOM has completed the modeling and design of the diffuser replacement with tubular diffusers. For PVRWRF, the design of the addition of one blower and standby generators is ongoing.

Project Engineer, City of Los Angeles Sanitation (LASAN), Evaluation of Ozonation and Biological Activated Carbon, Los Angeles, California

Researched and developed the literature review study on wastewater treatment which included PFAs treatment.

Process Engineer, Eastern Municipal Water District, Aeration Diffusers Rehab, Riverside County, California

Preliminary design report development and condition assessment review as part of the design process. This involved understanding of aeration system along with the overall treatment train.

Process Engineer, El Paso Natural Gas Company, LLC Beneficial Reuse Study, Jal, Lea County, New Mexico

Analysis of the existing data and providing recommendations on the reusal of brine produced by the system throughout time.

Project Engineer, City of Winterhaven, Winterhaven Water Quality Analysis, Winterhaven, California

Research and analysis of existing water quality analysis to for overall water treatment system performance.

Project Engineer, City of Los Angeles Sanitation (LASAN), Hyperion Pump Station, Los Angeles, California

Creation of 5-mile outfall hydraulic profile and pump analysis.

Project Engineer, Irvine Ranch Water District, Syphon Reservoir, Irvine, California

Syphon Reservoir improvements for the water treatment building and dam. The water treatment facility includes disk filters for algae removal, chlorination and dichlorination facilities and a pump station.

Project Engineer, City of Los Angeles, Bureau of Engineering (LABOE), TOS 55 Project Management and Process Engineering Support Services, Los Angeles, California

Task Manager for Desk-Top Evaluation of the Redundant Capacity of the Odor Control System at HWRP: This comprehensive assessment was conducted through a desk-top review, encompassing a thorough examination of the as-built drawings for the thirteen sites, South Coast AQMD Permits, and the LASAN Hyperion Odor Control Study for Abatement Order Report. The redundancy assessment focused on evaluating the odor control systems' capacity to effectively perform their intended functions. It systematically analyzed the risk of failure and assessed the potential impact on permit compliance. The goal was to identify any vulnerable points of failure and understand their repercussions on both individual systems and the interdependence of the entire network.

Project Engineer, City of Oxnard, WWTP Upgrade, Oxnard, California

Managed the design and construction of interim upgrades and reliability improvements for the 32-mgd treatment facility. Under a multi-phase program, improvements were made to headworks, primary clarifiers, pumping systems, digesters, dewatering facilities and cogeneration. The project included new maintenance storage building, and complete overhaul and replacement of the electrical and SCADA infrastructure.

Project Engineer, US Navy, Port of Callao, Peru

Developed the layout and sizing of a 0.5 mgd facility for the treatment of wastewater from the port buildings and ships. Treatment included oil and grease separator, equalization, screening, biological treatment, chlorination and dichlorination for discharge to the ocean.

Sarah Schoepflin

Nutrient Removal

Key Skills

ArcGIS
Bluebeam Revu
BioWin
Laboratory Techniques

Years of Experience

6

Years with AECOM

5

Education

MS, Civil Engineering, Virginia Tech, Virginia, 2020
BS, Natural and Environmental Systems with a minor in Entomology, Cornell University, New York, 2016

Registrations

Engineer-in-Training, California, # 117527

Professional Associations

Water Environment Federation (WEF)
American Water Works Association (AWWA)
California Water Environment Association (CWEA)



As a proficient water and wastewater project engineer, Sarah also brings sound knowledge and experience in wastewater treatment research. She has a strong practical background in project design, operation, and data analysis as well as laboratory techniques and field studies.

Professional history

Since starting at AECOM, Sarah has worked on a variety of water and wastewater projects. During the pursuit of her master’s degree, she completed two years of wastewater treatment research as an intern with the Hampton Roads Sanitation District (HRSD). Throughout this time, she studied topics such as biological nutrient removal, membrane bioreactors, and anaerobic digestion in pilot- and full-scale processes. From this experience, she gained skills related to project design, operation, data collection, and data analysis, and presented her research nationally at WEFTEC.

Selected project experience

Deputy PM, City of Reno (City) and Truckee Meadows Water Authority (TMWA), OneWater Nevada Advanced Purified Water Facility (APWF) Preliminary Design Report (PDR) and 30 Percent Design, Reno, Nevada

Responsible for assisting with project management tasks, hydraulic calculations, writing technical memorandums, determining life-cycle costs of equipment, and sourcing equipment from vendors. The project includes the development of the PDR and 30 percent design of the project facilities and systems. The 2 MGD APWF project is an indirect potable reuse/groundwater recharge initiative led by a regional partnership between the City, TMWA, and the OneWater Nevada team.

Project Engineer, Sacramento Regional Wastewater Treatment Plant, Sacramento, California

Led project tasks regarding a tertiary treatment facilities expansion with capacity of up to 330 MGD and upgrades including a filter influent pumping station, granular media filters, and disinfection contact basins. Assisted with writing O&M manuals, reviewing submittals and RFIs, assisting with

backchecking as-built record drawings, and writing SOPs.

Project Engineer, Stockton Regional Wastewater Control Facility Modifications Project, Stockton, California

Responsible for project tasks regarding a design-build of secondary and tertiary facilities improvements to meet more stringent nitrogen limits at a 40 MGD wastewater treatment plant. Assisted with submittal, RFI, and DCN processing, incorporated edits to drawings in Bluebeam Revu, and communicated with contractors and the City of Stockton to provide project updates.

Technological Upscaling of the Partial Denitrification-Anammox Process for Decarbonization with Mainstream Deammonification, Department of Energy, Chelmsford, Massachusetts

Participated in planning of a technical project to investigate the feasibility of mainstream full-scale partial denitrification/anammox (PdNA) use across six WRRFs with different treatment configurations, using five different media and supplemental carbon types.

Project Engineer, Graham Hill Water Treatment Plant Facility Improvements Project, Santa Cruz, California

Assisted with improvement efforts at a water treatment plant in Santa Cruz. Communicated with vendors to source pricing information for ozone generators and liquid oxygen and determined life-cycle costs.

Project Engineer, San Francisco Public Utilities Commission (SFPUC), Water Quality Notifications and Communications Plan (WQNCP), San Francisco, California

Responsible for an update to the SFPUC WQNCP. Assisted with modifications to include current regulations, updated templates for notifications during water quality events, additional references, and other visual, distributional, and organizational improvements.

Project Engineer, San Francisco Public Utilities Commission, Online Water Monitoring Program, San Francisco, California

Oversaw a comprehensive review of SFPUC SCADA screens and sensors. Reviewed approximately 100 SCADA screens and compiled an evaluation of sensor types and utilization at approximately 220 sites across the SFPUC system.

Project Engineer, San Francisco Public Utilities Commission, Safe Pipeline Entry, San Francisco, California

Responsible for an assessment of potential shutdown scenarios for safe pipeline entry during future repairs. Evaluated approximately 30 shutdown scenarios and compiled pipeline lengths in ArcMap.

Project Engineer, San Francisco Public Utilities Commission, California Microplastics Monitoring Project, San Francisco, California

Managed planning of future SFPUC microplastics monitoring efforts. Assisted with writing field sampling SOP to meet requirements laid out by the State of California and compiled a comprehensive literature review of current and emerging methods of microplastics sampling.

Project Engineer, San Francisco Public Utilities Commission, Harry Tracy Water Treatment Plant Filter Underdrain Repair, San Francisco, California

Oversaw a filter underdrain repair project. Reviewed submittals and RFIs regarding filter and underdrain construction, media, and testing and kept up-to-date list of submittals and RFIs.

Project Engineer, Development of Partial Denitrification-Anammox (PdNA) Full-Scale Demonstration, DC Water, Blue Plains, Washington, DC

Assisted with project tasks regarding a full-scale PdNA demonstration project. Assisted with client communication, production of technical memos, and participated in workshops.

Water Research and Technology Intern, Hampton Roads Sanitation District (HRSD), Startup of Mainstream Anammox in Moving Bed Biofilm Reactors (MBBRs), Virginia Beach, Virginia

Researched the startup of mainstream partial denitrification/anammox and partial nitrification/anammox in moving bed biofilm reactors (MBBRs) that culminated in a master's thesis project. Participated in research on several collaborative projects studying biological nitrogen and phosphorus removal. Performed daily data collection and maintenance in a biological nutrient removal pilot. Assisted with a pilot-scale membrane bioreactor (MBR) project and operation of a full-scale anaerobic digestion process.

Engineering Technician, East County Advanced Water Purification JPA, East County Advanced Water Purification Program Package 3, Santee, California

In joint venture, providing a comprehensive equipment tag review for this progressive design-build project. that includes a 16-mgd water reclamation facility, 11.5-mgd advanced water purification facility (Package 1), and conveyance infrastructure (Package 3).

Project Engineer, DC Water, Chemical Systems Assessment, Blue Plains, Washington, DC

Responsible for reviewing entire plant chemical systems. Conducted site assessment of chemical systems, documented individual equipment age and wear in FieldMaps, and produced reports to inform repair schedule of equipment.

Brett Wagner, PhD, PE

Nutrient Removal

Key Skills

Wastewater Process
Intensification
Greenhouse Gas Quantification
Water Reuse

Years of Experience

3

Years with AECOM

3

Education

PhD, Environmental Engineering,
University of Michigan, 2022
MS, Environmental Engineering,
University of Michigan-Ann Arbor,
2017
BS, Civil Engineering with
Environmental Emphasis,
University of Kansas, 2016

Registrations

Professional Engineer
(Environmental), Ohio, #91159

Professional Associations

US Water Environment
Federation
International Water Association



Brett is a wastewater process engineer for the Columbus, Ohio office with a demonstrated history of working in research focused on the wastewater industry. He is the 2nd Vice Chair for the National Water Environment Federation Research and Innovation Community. He is skilled in process modeling, lab- and pilot-scale experimentation, and greenhouse gas quantification.

Professional history

With extensive experience in the research, design, and analysis of wastewater treatment processes, Brett's research has focused on anammox processes, MABRs, and life cycle analyses. His primary interests are focused on wastewater process intensification, anammox processes, greenhouse gas quantification, and water reuse.

Selected project experience

Project Engineer, District of Columbia Water and Sewer Authority Utility Administration, Program Management Services, Washington, DC

Supported a partial denitrification anammox (PdNA) demonstration study at DC Water. Duties involved leading a supplemental carbon analysis, determining the ideal integrated fixed film activated sludge (IFAS) media, assisting with converting gravity thickeners into fermenters, and supporting business case evaluations.

Project Engineer, United States Department of Energy (DOE) Project - Technological Upscaling of the Partial Denitrification-Anammox (PdNA) Process for Decarbonization with Mainstream Deammonification 2023-2028

Oversaw a collaborative DOE research grant that will implement PdNA at full-scale in six WRRFs across the country. Responsibilities included leading process design and analysis, National Environmental Policy Act (NEPA) submittal, as well as determining engineering design parameters such as loading rates, nitrogen removal rates, mixing requirements, headloss, fill ratios, and overall retrofitability of different media for PdNA integration.

Project Engineer, Greater Vancouver Regional District - Wastewater Treatment Plant Division, Iona Island Wastewater Treatment Plant Project Definition Report, Richmond, British Columbia, Canada

Managed a partial denitrification anammox (PdNA) membrane bioreactor (MBR) pilot plan at the Iona Island Wastewater Treatment Plant for Metro Vancouver. Tasks included organizing coordination meeting with utilities that have previously implemented PdNA, creating a pilot experimental design, and creating a preliminary design report for modifying an existing MBR pilot for integration with PdNA.

Project Engineer, City of Austin, Walnut Creek WWTP Expansion 2020-2028 - Preliminary Engineering and Design Phases, Austin, Texas

Assisted with a multi-year task order contract for a 25 million gallon per day (MGD) expansion (75 to 100 MGD) of the Walnut Creek wastewater treatment plant. Duties involved assisting with preliminary through 90% design for the secondary treatment processes (Bio-P basins, aeration basins, and influent splitter box), and biosolids thickening (sludge splitter box, volute mechanical thickeners,

Brett Wagner, PhD, PE
Nutrient Removal

sludge pump station, sludge polymer building, and gravity thickener retrofit).

Project Engineer, Northeast Ohio Regional Sewer District, Southerly Solids Handling Improvements, Cleveland, Ohio

Responsible for the evaluation and design of a 6% liquid sludge receiving facility. Responsibilities included quantifying the amount of sludge to be hauled and recommending locations for the liquid sludge receiving station, methods for unloading, discharge locations, and necessary site upgrades to accommodate the additional truck hauling that will be required.

Project Engineer, Salt Lake City Public Utilities, Wastewater Treatment Plant Design and Construction Management, Salt Lake City, Utah

Assisted with creating a commissioning plan for biological nutrient removal reactors, including both solid and liquid trains, force mains, pump stations, and administration buildings for a newly constructed 56 MGD greenfield wastewater treatment plant.

Project Engineer, US Army Corps of Engineers Middle East, A-E GCC 2017-2022 - P-563 Site, Utility Proof of Concept & Feasibility Study, Riyadh, Saudi Arabia

Oversaw a task order contract for a WRRF proof of concept and feasibility study at P-563 site in Riyadh, Saudi Arabia. The study included the evaluation and preliminary costing of treatment processes for wastewater, biosolids, water reuse, and resource recovery.

Project Engineer, Louisville & Jefferson County Metropolitan Sewer District, Odor Control Master Plan - Phase I (Part 4), Louisville, Kentucky

Tasked with odor analysis within WRRF and collection system in Louisville, Kentucky. Compiled technical memos, sampling data analysis, and odor performance evaluations for the implementation of Part 4 of Phase I of the Louisville and Jefferson County Metropolitan Sewer District's odor control master plan.

Project Engineer, Caliskaner Water Technologies Inc., Advanced Primary and Secondary Treatment Analysis, Orange, California

Provided wastewater process analysis of carbon and nitrogen removal at a 7 gallon-per-minute Microvi pilot system operated at the Linda County Water District in Marysville, California.

Project Engineer, Confidential Client, Water Reclamation Plant Litigation Support, California

Provided environmental impact assessment and big data analysis to identify trends in treatment performance for a wastewater treatment plant litigation support.

Project Engineer, California Department of Toxic Substances Control, Whittier Narrows Operable Unit, Los Angeles, California

Supported the design for the Whittier Narrows Operable Unit to remove groundwater contamination in San Gabriel Valley, California. Project responsibilities involved AdDesignS modeling to simulate the adsorption of PFAS on sequential granular activated carbon (GAC) vessels to determine the GAC replacement and flow direction swapping frequency.

Project Engineer, Torrance Refinery LLC, Refinery Environmental MSA 2022-2025- Remediation Consulting Services 2024, Torrance, California

Assisted with remediation consulting at the Torrance Refinery in Torrance, California. Responsibilities involved AdDesignS modeling to simulate the adsorption of PFAS, gasoline, diesel, PCE, TCE, and long-chain carbons onto GAC for industrial water treatment design.

Project Engineer, Truckee Meadows Water Authority, OneWater General Consulting Services 2020-2022 - Detail Design, Reno, Nevada

Supported the expansion of the Reno-Stead Water Reclamation Facility from 2 to 4 MGD and creation of an advanced purified water reuse facility for groundwater recharge. Produced a technical memo which summarized organic compound removal and bromate minimization during ozonation.

Project Engineer, Los Angeles Bureau of Sanitation (LASAN), Planning and Technical Services 2024-2029 - Ozonation and BAC, Los Angeles, California

Oversaw a literature review for advanced water treatment processes including ozonation and biological activated carbon (BAC) filtration for potable reuse.

Project Engineer, Metropolitan Water District of Southern California, Pure Water Southern California Program, Los Angeles, California

Contributed to the WaterSMART Large-Scale Water Recycling Projects Grant.

Madhavan (Jay) Jayakumar, PE

Mechanical

Key Skills

General Process Mechanical Design
 Pump Systems & Hydraulics Design
 Wastewater Treatment Plant Design
 Water Reuse Treatment Plant Design
 Water Treatment Plant Design

Years of Experience

41

Years with AECOM

>1

Education

MSc, Environmental Engineering, National, University of Singapore, 2003
 ME, Industrial Metallurgy, Bharathydasan University, Regional Engineering College, Tiruchirapalli, India, 1990
 BTech, Mechanical Engineering, University of Calicut, Regional Engineering College, Calicut, India, 1984

Registrations

Professional Engineer (Mechanical), California, #34495



Jay brings design expertise in wastewater treatment, water treatment (conventional and membrane-based treatment), water reuse projects, desalination (seawater and brackish water), water conveyance (pump stations, storage tanks, pipelines), and power plants.

Professional history

With over 40 years of global professional experience, Jay has held various leadership positions; managed large projects as project manager and/or design manager; directed design teams to successfully deliver high quality projects on time and within budget; successfully led multi-firm design teams or was part of design teams on various types of projects, such as design-bid-build, design-build, construction management at risk, and design-build-own-operate. Jay has held varying responsibilities, such as Section Head, Department Head, QA/QC Manager, and Chief Engineer.

Selected project experience

Technical Reviewer, Regional Water Reclamation Facilities Aeration Diffuser Replacement Study and Blower Addition Design (EMWD), Perris, California

Provided technical review of deliverables for the replacement of fine bubble diffusers and aeration blowers for three EMWD plants.

Project Manager, Orange County Sanitation District (OC San), J-124 Digester Gas Facilities Rehabilitation, Fountain Valley and Huntington Beach, California

Both plants with an average treatment capacity of 200 mgd use similar facilities to collect and treat digester gas before transfer to the central generation plants for power generation. The gas facilities needed rehabilitation / replacement for renewal of the aged facilities and to meet current and future process needs and regulatory requirements.

Technical Advisor, Encina Wastewater Authority, Digester Rehabilitation and Improvements, Carlsbad, California

Responsibilities involved designing improvements to aging Digesters 4, 5, and 6. Improvements entailed new electrical, I&C, jet mixing pump at Digester 4 and a waste gas flare; replacing the existing heat exchangers; and modifying the existing alternative fuel receiving facility piping and the digester drainage pit. Digester 4 was cleaned, inspected, repaired, and coated.

Design Manager, East Bay Municipal Utility District, Digester Upgrade Project: Phase 3, Oakland, California

Managed the design management of retrofitting dual membrane covers on two existing digesters and rehabilitation of three digesters.

Design Manager, OC San, Gas Facilities Study for Plants #1 and #2, Fountain Valley, California

Evaluated the condition of the District's existing digester gas facilities at Plants 1 and 2, consisting of pipelines, gas compressors, gas holder, flare

system, gas treatment, and associated accessories to provide recommendations for extending the life of the system by 30 years.

Design Manager, OC San, Primary Clarifier Replacement (P2-98), Huntington Beach, California

Replacement of four 140-foot-wide existing primary clarifiers with new ones and development of rehabilitation recommendations for the remaining ten clarifiers.

Project / Design Manager, City of San Diego, Central Area Small-Scale Facility (CASSF), San Diego, California

As a prelude to the 53-mgd Phase 2 of the San Diego Pure Water Program, the City authorized the program management team to establish a demonstration facility at the existing Point Loma Wastewater Treatment Plant. The CASSF includes primary influent and primary effluent intake and blending, biological nutrient removal, membrane bio reactor, ozone treatment, biological activated carbon treatment, membrane filtration, reverse osmosis, and advanced oxidation/ultraviolet disinfection. The treatment capacity is 200-gpm.

Design Manager, City of Los Angeles, Department of Public Works, Bureau of Sanitation, Hyperion Advanced Water Purification Facility, Playa Del Rey, California

Led design team for the Hyperion Advanced Water Purification Facility. The plant will provide 1.5-mgd of purified water to Los Angeles World Airports and within the Hyperion Water Reclamation Plant, thereby saving the use of potable water. Primary effluent from the plant will be purified through membrane bioreactors, reverse osmosis, and ultraviolet-advanced oxidation process.

Mechanical Engineer, City of Santa Barbara, Secondary Treatment Process Improvements, Santa Barbara, California

Provided mechanical process design and plant modifications to improve secondary effluent quality and ensure consistent reclaimed water production at the El Estero Wastewater Treatment Plant. Modifications included converting the secondary treatment process to step-feed biological nitrogen removal; and designing improvements to the aeration system, secondary clarifier flow distribution; and implementing secondary effluent recycle to the plant influent pumping station. Responsible for the design of chemical feed systems.

Mechanical Lead, City of Soledad, Soledad Wastewater Treatment Plant, Soledad, California

Provided design of a 5.5-mgd conventional wastewater treatment plant in place of an extended aeration process. The treatment process included screening, grit removal, primary biological nutrient removal basins, secondary clarifiers, effluent filtration, ultraviolet disinfection, sludge equalization basins, and solids dewatering using screw presses. Led design of secondary clarifiers, associated RAS/WAS pump stations, sludge equalization basins, screw press system, and associated polymer storage and dosing system.

Design Manager, City of San Diego, Public Utilities Department, North City Pure Water Facility, San Diego, California

To maximize the use of recycled water, the City of San Diego embarked on the Pure Water program to treat as much effluent from the wastewater treatment plants as possible to either direct or indirect potable reuse. North City Advanced Water Purification Facility San Vicente Reservoir Pre-Design (IPR): Led technical delivery of the project. This task developed a pre-design of the North City Advanced Water Purification Facility San Vicente Reservoir. Developed a 30 percent design to sufficiently define four major water purification processes (microfiltration/ultrafiltration, reverse osmosis, advanced oxidation, UV disinfection, product water conditioning).

Process Mechanical Lead, J-111 Central Generation and Emissions Control Preliminary Design, Orange County Sanitation District, Fountain Valley, California

Project included preliminary and final design of emissions control systems for the central generation facilities at the District's two wastewater treatment plants. Emissions control systems consist of gas cleaning using polymorphous graphite to remove siloxane, and two catalytic systems in tandem to remove organics and NOx, respectively.

Design Manager / Process Mechanical Lead, Tuas Desalination Plant, Hyflux, Singapore

Led process and mechanical design and provided commissioning support for a 36 mgd seawater desalination plant. The desalination plant was based on reverse osmosis membrane technology. Major systems included seawater intake consisting of an ocean intake and submersible pumps, pre-treatment process consisting of dissolved air flotation followed by sand filtration, RO membranes, post-treatment, and treated water pumping.

Allen Randall, PE

Electrical / I&C

Key Skills

Electrical Engineering
Wastewater
Water
Stormwater
Industrial
Construction-Phase Electrical Design Services

Years of Experience

54

Years with AECOM

46

Education

MS, Electrical Engineering, University of Pennsylvania, 1971
BS, Electrical Engineering, Kansas State University, 1970

Registrations

Professional Engineer (Electrical), California, #9206
Professional Engineer (Electrical), Oregon, #84572PE
Professional Engineer (Electrical), Washington, #32596

Professional Associations

Institute of Electrical and Electronic Engineers
National Society of Professional Engineers
Association of Energy Engineers



As an experienced Project Manager and Lead Electrical Engineer for various new and improvement projects throughout California, Allen possesses unparalleled familiarity with electrical systems for water, wastewater and stormwater treatment and pumping systems and their unique specifications. Allen has a well demonstrated track record of successful project delivery.

Professional history

Allen’s extensive electrical design and contract administration experience includes pumping stations, reservoirs, distribution facilities, hydroelectric plants, and treatment plants. His experience also includes the management and design of electrical systems for industrial and commercial facilities, including industrial and office lighting, site and roadway lighting, power transmission and distribution, control wiring diagrams, electrical estimating, telemetry systems, and instrument systems.

Selected project experience

Lead Electrical Engineer, City of Bakersfield, Wastewater Treatment Plant No. 2 Expansion, Bakersfield, California

Provided design for plant expansion from 19- to 28.5-mgd that involved anaerobic digesters, sour gas cleaning, digester gas handling facilities, cogeneration and heat recovery system, and headworks modifications, including mechanical screens, primary clarifiers, trickling filters, secondary clarifiers. Two 400-kW generators with synchronizing switchgear were designed to provide electricity for the plant.

Electrical Engineer, City of Bakersfield, Wastewater Treatment Plant No. 3 Dissolved Air Filtration System Rehabilitation, Bakersfield, California

Provided engineering services for rehabilitation of two dissolved air flotation tanks at WWTP No. 3. Conducted an evaluation of the existing polymer dosing system at the plant’s sludge dewatering facility and based polymer dosing on that project’s findings, recommended a new system to achieve better overall efficiency of the thickening process. Also inspected all components of the existing

dissolved air flotation units, including steel components within the dissolved air flotation units, drive units, and all concrete and metal surfaces. Discussions were held with the city’s operations and maintenance staff to ensure that the end-product meets their expectations. The dissolved air flotation units are 45 feet in diameter each with a center-drive type thickener mechanism. Work scope included condition assessment; preliminary and final design; bidding services; and engineering support services during construction.

Electrical Engineer, North of River Sanitation District, Wastewater Treatment Plant No. 1, Bakersfield, California

Designed motor control center and power distribution for the plant. Lighting, controls, and other special systems for the plant. 300-kW and 800-kW standby emergency generators were also included.

Electrical Engineer, City of Sunnyvale, Clean Water Program, Facility Condition Assessment, City of Sunnyvale, California

Inspected and assessed the condition and remaining life expectancy of electrical systems at the Donald J Walters Water Pollution Control

Plant. Portions of the plant were originally built in the 1950s with the addition of oxidation ponds in 1966 and tertiary plant facilities in 1978. The plant has a permitted average dry weather flow rate of 29.5-mgd.

Electrical Engineer, City of Oxnard, Wastewater Treatment Plant Phase 2A, Oxnard, California

Participated in study followed by final design of existing electrical distribution and control equipment at the plant to determine suitability for a remaining life until 2035. After review of existing reports and drawings, each switchboard and motor control center were visually inspected to update existing single line diagrams. Load calculations were developed to determine existing plant connected and peak demand load, including proposed process additions, and deletions for upcoming projects. A new 4.16-kV service, switchboard, standby generator system, and replacement of 14 motor control centers was proposed. Project is presently under construction and Allen is performing construction phase services for electrical systems.

Electrical Engineer, San Francisco Public Utilities Commission, Sewer System Improvement Program, San Francisco, California

Performed electrical review, value engineering, and constructability review of drawings and specifications developed by Commission and other consultants on the multi-billion-dollar SSIP program. Reviews included Southeast Water Pollution Control Plant Biosolids Digester Facilities; Primary Switchgear Upgrades; Liquid Oxygen System Upgrades; and Headworks projects.

Electrical Engineer, City of Thousand Oaks, SCADA Upgrades/Replacements, Thousand Oaks, California

Led a master plan and radio survey of the existing SCADA system with recommended upgrades and replacements followed by detailed design. System includes replacement PLCs and a new radio system at 16 reservoirs, 15 pump stations, two lift stations and 11 turnout structures plus replacement of all SCADA headworks equipment

at the City's main yard. The design also included the addition of chlorine analyzers at 15 reservoirs. Specifications and selection procedures were also implemented to pre-qualify system integrators.

Electrical Engineer, City of Thousand Oaks, Hill Canyon Wastewater Treatment Plant - Screw Press Addition, Thousand Oaks, California

Provided electrical design for the replacement of two existing motor control centers with new motor control centers in walk-in weatherproof enclosures. Control centers served the filter influent pumps, FEB return pumps, cleaning pumps, digester recirculation pumps, digester mixing pumps, hot water pumps, and stormwater pumps. Project also included upgrade of plant instrumentation associated with replaced motor control centers.

Electrical Engineer, Whittaker Corporation, Saugus Aquifer Extraction, Conveyance, and Treatment System, Santa Clarita, California

Designed 13 extraction wells and a treatment plant that included a fluidized bed reactor system for treating perchlorate and granular activated carbon for treating volatile organic compounds. The system included a network of underground piping to connect the wells to a break tank at the top of a ridge, which gravity flows to the treatment plant at the bottom of the other side of the ridge. Electrical design included providing separate power sources to each group of wells, the treatment plant, and the break tank. Control of the wells was designed to be by wireless communication.

Electrical Engineer, City of Porterville, Wastewater Treatment Plant Blower and Solids Dewatering Improvements, Porterville, California

Responsible for electrical engineering services for a new sludge dewatering facility, transfer pumps, oxidation blowers, grit chamber blowers, and associated electrical system upgrades. The project also included replacement of existing aged motor control centers for the clarifiers, sludge pumps, thickeners, DAF facility and miscellaneous site buildings and equipment.

Tony Cortez, PE, CEM, LEED AP BD+C

Electrical / I&C

Key Skills

Quality Assurance
Quality Control
Electrical Design
Construction Administration
Value Engineering

Years of Experience

29

Years with AECOM

5

Education

BS, Electrical Engineering,
California State University,
Long Beach, 1996

Registrations

Professional Engineer (Electrical),
California, #E16161,
Professional Engineer (Electrical),
Arizona, #85285,
Professional Engineer (Electrical),
Nevada, #034891

Trainings and Certifications

Certified Energy Manager (CEM),
#16274
LEED® Accredited Professional,
2008, NC V2.2
OSHA Safety trained

Professional Associations

Institute of Electrical and Electronics
Engineers (IEEE):

- IEEE Founding Member 1584
Arc Flash Committee
- IEEE Costa Rica Chapter Award
Presentation for Short Circuits
and Coordination Techniques
- IEEE PETROBRAS 1584
Standard for Calculating Arc
Flash, Rio de Janeiro Brazil
- IEEE Industry Applications
Society (IAS), Orange County
Chapter, Past Chair

Association of Energy Engineers (AEE):
University of Wisconsin at Madison,
Instructor, Protection and
Coordination of Electrical Power
Systems Course



Specializing in the design and analysis of electrical systems, Tony is adept at preparing project construction documents, leading teams, and ensuring quality control and assurance. His field experience in construction support and knowledge of contract management and value engineering makes him a valuable asset in fostering positive business relationships and delivering successful project outcomes.

Professional history

Tony is a seasoned professional with an impressive three-decade track record in the design and analysis of electrical systems across diverse sectors, including commercial, hospitality, healthcare, educational, industrial, and government projects. His expertise spans the entire project lifecycle, from planning and conceptual design to construction administration and commissioning. Tony excels in preparing comprehensive project construction documents, specifications, and procurement of electrical equipment, while providing technical leadership throughout the design, construction, and start-up phases. He is also a respected manager, leading teams of engineers and designers, ensuring seamless project implementation, and maintaining effective communication with clients and vendors. His field experience in construction support, coupled with his adeptness in contract management and value engineering, underscores his capability to cultivate positive business relationships with clients, multi-discipline engineers, architects, and contractors.

Selected project experience

Lead Electrical Engineer, ENCSD, Ground Water Pumps Station Electrical Upgrades, Bakersfield, California

Designed the replacement of the existing electrical infrastructure including: the utility Switchboard, MCC, Manual Transfer Switch, Generator connections and pump controls scheme into the existing SCADA system. The pump station is composed of four 25hp, 480V, with solid state starters, started with radio controls incorporating pressure sensors and transmitters to turn on/off

pumps. The pump station distributes potable water to the community via holding tanks.

Lead Electrical engineer, Port of Long Beach Pier T lift station modernization, Long Beach, California

Managed the design of the electrical replacement of the existing three 250HP, 480V main storm water pumps and two 60 HP, 480 secondary pump sump pumps, Utility switchboard, ATS, Standby generator, MCC, PLC Controls, lighting and CCTV. Main responsibilities included supervising the electrical and controls design, Normal and Emergency power generator, SCADA system. Oversee the overall

electrical, controls designers, CAD drafters and engineers to verify the design complies with client operational needs and local and national codes and standards. Verify and check the design plies with NFPA 820 standard as well as the CEC.

Lead Electrical Engineer, City of Ontario, Ion Exchange System and Facility, Ontario, California

Responsible for the electrical design of the ion exchange building and ion exchange system. Designed distribution system for normal and emergency power. Worked with process and instrumentation and controls engineers and developed automated ion exchange system that produces 1.0-mgd of potable water. Duties included automation and control schematics, overseeing the electrical design team, and writing specifications. The ion exchange system required 4160, 480- and 208/120-volt power. Worked with Southern California Edison to provide an entirely new service for the Ion exchange building.

Lead Electrical Engineer, Disneyland Resort, Thermal Energy Storage Tanks Water Treatment, Anaheim, California

Led the electrical design and implementation of a new water treatment system to meet California Water Board discharge requirements. The project integrated new and existing storage tanks, recirculation pumps, and a new treatment system. The electrical design includes new electrical service, instrumentation upgrades, and DCS integration. Installation featured a new MCC, Mitsubishi VFDs with 5% harmonic filters, PLCs, local control panels, area lighting, access control, and replacement of cathodic protection system components.

Lead Electrical Engineer, Clark County Water Reclamation District Aeration Blowers replacement and Air Scrubber Biofilters installation, Clark County, Nevada

Led the management of the electrical design team design of the replacement of two air blowers and mixers to support the 105-mgd Water treatment plant. The blowers consisted of 40HP, 480V VFD operated motors and equipped with passive harmonic filters. The design incorporated the blowers and mixer PLC controls to existing plant wide PLC systems. The design included MCC selections, VFD, harmonic filters, area classification and biofilter air sampling stations.

Design Lead, Disneyland Resort, World of Color (WOC) Lagoon Pump Station Rehabilitation, Anaheim, California

Responsible for the electrical design team for the replacement of four 50-HP, 1000-gpm, 480V pumps, variable frequency drives (VFDs), instrumentation and programmable logic controller (PLC). The pumps are essential components for the WOC water screen show. The electrical and controls design includes the replacement of the existing motor control center (MCC), VFD, instrumentation components and PLC, as well as a new cathodic protection system.

Electrical Design Lead, Disneyland Campus, Resort Wide Storm Water Out-Fall Pumps replacement, Anaheim, California

Oversaw the replacement of five storm water diversion outfall submersible pumps located at five separate wet well sites. The project involved upsizing the existing pumps and designing a new MCC, along with integrating a rain diverter and rain detection system. The pump control system was modernized to include level, flow, and pressure sensors, all managed through a PLC-based control system that automatically adjusted pump speeds based on rainfall intensity and wet well water levels. The design also included the integration of an automatic transfer switch (ATS) connected to a standby generator to ensure system reliability during power outages. All work was performed in compliance with NFPA 820 requirements for wastewater and stormwater system classification.

Electrical Design Lead, Disneyland Campus Wide Generator Replacement, Anaheim, California

Responsible for the design of ten diesel generators ranging from 100kW to 500kW, all rated at 480V, with a new system designed to meet updated Air Quality Management District (AQMD) pollution standards. The new configuration included eight generators powered by compressed natural gas (CNG) and two remaining diesel units. Responsibilities included conducting detailed generator sizing studies and designing 2-hour fire-rated feeders to ensure code compliance and system reliability. I developed a distribution system that separated Life Safety and Legal Standby loads into dedicated automatic transfer switches (ATS) and panels, in accordance with applicable codes. The design also incorporated CNG fuel tanks, diesel base tanks, and sound-attenuated enclosures to address both environmental and operational concerns.

Greg Bowden, PhD

Biological Process Modeling

Key Skills

Treatment Systems
Wastewater
Odor Testing

Years of Experience

33

Years with AECOM

20

Education

PhD, Chemical Engineering,
University of Texas, 1991
BS, Chemical Engineering,
Oklahoma State University, 1985

Professional Associations

Water Environment Federation
New Jersey Water Environment
Association
New York Water Environment
Association



Greg is recognized for his leadership in implementing advanced treatment technologies, including deammonification, phosphorus recovery, and membrane bioreactor systems. He has managed feasibility studies, conceptual designs, and lifecycle cost evaluations for projects that enhance water reuse and nutrient removal performance. His ability to deliver cost-effective, energy-efficient solutions has supported utilities in achieving long-term operational resilience and meeting stringent water quality standards.

Professional history

Greg brings deep expertise in advanced wastewater treatment process engineering, specializing in program management and technical leadership for large-scale infrastructure projects. He has played a pivotal role in developing innovative solutions for complex challenges such as odor control, methanol emissions modeling, and facility-wide process optimization. His experience includes guiding utilities through strategic planning and capital improvement programs, leveraging calibrated process models and mass balance analyses to forecast capacity needs and inform design decisions. Greg's work has advanced sustainable practices by integrating cutting-edge technologies and ensuring compliance with evolving environmental regulations.

Selected project experience

Blue Plains Advanced Wastewater Treatment Plant – Program Management, Design and Construction Services, District of Columbia Water and Sewer Authority, Washington, D.C.

Program support responsibilities included the following:

Senior Wastewater Process Engineer - provided technical contributions to: (1) Methanol Air Emissions Model Development and (2) Update to the Facility-Wide Odor Control Master Plan. Tasks included the development and validation of methanol air emissions model for current and future denitrification facilities including review of the model structure, parameter inputs and methodology calculations and QA/QC analysis on treatment plant sampling data used for model validation. For the Odor Control Master Plan, responsibilities included review of on-site odor test data and writing sections of the Odor Control Master Plan.

Task Manager - conducted an alternatives evaluation study to identify biological and

physical/chemical technology options for the treatment of high-strength filtrate to be generated by a future Cambi Thermal Hydrolysis/Anaerobic Digestion process. Supervised the development of conceptual-level capital and operating costs to identify the most viable technologies and support the final recommendations. Assisted in the conceptual design of a Deammonification system (DEMON Sequencing Batch Reactor), which was selected as the preferred technology.

Senior Wastewater Process Engineer - assisted in the development of an updated facility plan by using plant-wide mass balances and a calibrated Biowin process model to validate the historical flows and loads and establish per capita loadings. Through the revised loadings and the projected growth in the service population, the time periods when the capacity of each process area will be reached were identified. The required infrastructure upgrades were provided for the update of the DC Water Capital Improvement Plan.

Senior Wastewater Process Engineer, City of Banning WWTP and Recycled Water Upgrades Project, Banning, California

Responsibilities included establishing a flows and loads design basis for the facility upgrades and assisting the project team with evaluating plant configuration alternatives using process modeling to establish tank volumes, flow and mass balances and energy and chemical consumption rates. Produced sections of the preliminary Basis of Design Report

Senior Wastewater Process Engineer, Joint Powers Authority (Padre Dam Municipal Water District, County of San Diego, and the City of El Cajon); East County Water Recycling Facility with Advanced Water Purification, Santee, California

Oversaw raw wastewater flows and loads analysis to develop the design basis for the new Water Recycling Facility (WRF), biological process modeling and supporting the design of the WRF to meet low nutrients requirements prior to advanced treatment. Responsibilities also include coordinating and supporting the design of a centralized odor control facility that will treat foul air sources from the WRF and the solids handling facility (biotrickling filters followed by activated carbon). The project includes the design, construction, and transitional operation and maintenance services for new facilities including upgrades to an existing raw wastewater pumping station, a new force main to accommodate up to 22 MGD peak hourly flow, a 16 MGD WRF, a 12.5 MGD Advanced Water Purification (AWP) Facility including MF, RO, and UV/AOP, and a solids processing facility.

Senior Wastewater Process Engineer, City of Los Angeles, Hyperion Water Reclamation Plant - Secondary Effluent Ammonia and Acute Toxicity Study, Los Angeles, California

Responsible for assessing the impact of service population growth, water conservation and water recycling on the effluent ammonia load and concentration discharged to Santa Monica Bay through 2035. Study included an assessment of acute toxicity of the current secondary effluent, secondary effluent spiked with an ammonia-N concentration at the NPDES permit limit of 58 mg/L and secondary effluent blended with brine from a Reverse Osmosis process at the West Basin Municipal Water District Edward C. Little Water Recycling Plant. Potential for future NPDES permit non-compliance with aquatic life

and human health toxicants was also assessed if water recycling is implemented in 2035 at the Hyperion WRP.

Senior Wastewater Process Engineer, Phosphorus Removal and Recovery Alternatives Analysis, Salt Lake City Water Reclamation Facility Upgrades, Salt Lake City Department of Public Utilities, Salt Lake City, Utah

A new water reclamation facility with a design annual average flow treatment capacity of 48 million gallons per day was designed and is scheduled to be in operation in early 2025. The new WRF includes enhanced biological phosphorus removal, which will increase struvite formation potential in the digested sludge dewatering process and the centrate phosphorus load. Provided technical support in a study to assess alternatives to reducing the centrate phosphorus load returned to the main treatment plant. Project responsibilities included refining the plant-wide process models to generate phosphorus balances that served as a basis of design. Assessed technologies for the management of phosphorus cycles and struvite mitigation. A detailed analysis of the impact of future BNR and dewatering was conducted along with a detailed review and lifecycle cost analysis for various struvite and phosphorus management options.

Senior Wastewater Process Engineer, Springfield Regional WWTP Upgrades, Springfield Water and Sewer Commission, Springfield, Massachusetts

Managed the Design/Build/Operate project to upgrade the 67 MGD (180 MGD wet weather peak flow) WWTP to comply with a lower plant discharge Total Nitrogen limit for the Connecticut River and provide other site improvements including electrical upgrades and replacement of aging process mechanical equipment. Project responsibilities included development of design flows and loads for the secondary treatment upgrades, process modeling to develop aeration requirements for design of new fine bubble membrane diffuser grids and confirm the transition of the four plug-flow aeration basins to a hybrid step-feed Modified Ludzack-Ettinger (MLE) configuration would result in a lower effluent TN in compliance with the new TN limit, development of a basis of design report and support services during construction, commissioning and startup of the upgraded aeration basins.

Catalina Alvarado-Claro, PhD

Regulatory Analyses

Key Skills

Membrane Filtration
Water Reuse
Potable Reuse
Wastewater Treatment

Years of Experience

8

Years with AECOM

2

Education

PhD, Environmental Engineering,
Rensselaer Polytechnic Institute,
2017
MEng, Environmental Engineering,
Rensselaer Polytechnic Institute,
2015
BE, Chemical Engineering, The Cooper
Union, 2010

Professional Associations

American Institute of Chemical
Engineers

Trainings and Certifications

Engineer-In-Training



Catalina is an expert in urban water management and environmental engineering projects ranging from municipal wastewater treatment, reuse systems, and onsite non-potable systems. Her passion for water sustainability projects began over a decade ago and she prides herself on implementing water reuse projects for communities to use their resources sustainably.

Professional history

Catalina is a membrane filtration specialist with experience in water reuse, wastewater treatment, and environmental sustainability. With extensive experience in environmental engineering and water sustainability design projects, her career has spanned from master-planning and preliminary design projects to design, bidding, permitting, and construction. Catalina’s areas of expertise include water balance modeling, water reuse process design, and wastewater treatment plant design.

Professional Experience

Water Reuse Technical Consultant, Metropolitan Water District of Southern California (Metropolitan), Pure Water Southern California Program – Program Management (2023 – 2026), Los Angeles County, California

In joint venture, part of the technical advisory team for this \$6.4B program to create a new high-quality, climate-resilient water supply. The program consists of multiple implementation phases involving purifying wastewater effluent through AWT processes for reuse. Water will be used to recharge groundwater basins and for direct potable reuse. The scope involves environmental compliance efforts, market sounding and vendor assessment, and drafting procurement documentation for the design and construction of advanced purification facilities at the Warren wastewater treatment facility and 42 miles of large diameter water pipeline infrastructure and pump stations. JV services include program and project management support.

Environmental Consultant, Metropolitan, Brackish Groundwater Desalination Study, Los Angeles County, California

Evaluated the potential for developing additional potable water supplies through brackish groundwater desalination for regional use in Southern California. The objective of the study was to inventory potential brackish groundwater desalination project sites within Metropolitan’s service area, identify partnership opportunities, evaluate new technologies, including offshore desalination, and develop estimates of supply potential. The project management services included participating in review workshops, monthly update meetings; preparation of a draft and final Brackish Groundwater Desalination Research Project Report; and presenting results to the Metropolitan Board.

Technical Writer, Arizona Department of Environmental Quality (ADEQ), Advanced Water Purification Facility (MSA 2023-2024), Phoenix, Arizona

Developed a technical design guidance document to provide designers and engineers general guidelines for implementing carbon-based treatment technologies into the context of advanced water

treatment (AWT) facilities. These guidelines were part of ADEQ's effort to establish a roadmap for implementing AWT technologies and set regulations for direct potable reuse projects in Arizona.

Technical Consultant, Truckee Meadows Water Authority, Future Direct Potable Reuse Conceptual Planning, Sparks, Nevada

Provided technical review of treatment approaches and regulatory permitting strategies for achieving sustainable water management for both entities seeking to implement potable reuse to counteract stringent regulations on nutrient removal and elevated nitrate levels in groundwater wells.

Associate Development Manager, Google Development Ventures, Lendlease's District Systems Program, Sunnyvale, California

Oversaw Lendlease's District Systems program of work (water, energy, and waste) across a core area within a confidential client land portfolio in Mountain View, California (3.1M square feet of office, 7,000 residential units). Managed workloads, stakeholder inputs, project budgeting, and communications. Developed the implementation of innovative approaches to the integration of technologies including anaerobic digestion, building-integrated solar, sewer heat rejection.

Led multi-disciplinary consultant teams to complete district-level masterplan efforts, cost plans, commercial assessment models, design progress reports, and stakeholder presentations. Prepared regulatory submissions and applications to support implementation of sustainable solutions at the local government level.

Developed technical solutions across all resources for commercial and residential Districts. Facilitated development costs and investment models for the project, ensuring solutions were optimized to provide value through the development process.

Prepared proposals and presentations overlaying business models and commercial propositions. Oversaw the delivery of commercial project outcomes to ensure compliance with quality, safety, and sustainability standards.

Design Specialist, Sherwood Design Engineers, Multiple Water Projects, San Francisco, California

Responsible for the design and execution of projects involving the management of alternative water sources to meet onsite non-potable demands such

as toilet flushing, irrigation, and cooling for commercial and residential buildings.

Prepared technical design drawings, specifications for onsite non-potable water systems, basis of design reports, cost estimating and business case evaluations.

Designed systems for rainwater harvesting, graywater, blackwater treatment and reuse applications for mixed-use large-scale projects. Coordinated process design procedures for the permitting of onsite water reuse systems and compliance with the local ordinance and State onsite water reuse regulations.

Achieved environmental sustainability goals using water balance techniques to apply resource recovery strategies. Assisted in the review of construction drawings, submittals, and overall coordination with design partners.

Membrane and Water Quality Specialist, Rensselaer Polytechnic Institute, Multiple Water Reuse Projects, Troy, New York

Evaluated water reuse applications of polymeric membrane filtration for potable and industrial uses in areas faced with water pollution in upstate New York. Employed re-polymerization techniques to minimize membrane biofouling on bench-scale filtration equipment.

Performed computer simulations of biological fouling using traditional pore blocking mechanisms for in-depth fouling studies. Analyzed the effects of fouling on membrane cleanability and water quality to assess effectiveness of anti-fouling strategies. Worked at a local wastewater treatment plant to collect effluent water samples. Processed data to evaluate water quality after membrane treatment.

Publications

Alvarado, Catalina; Farris, Kathryn; James Kilduff. (2016). *Membrane Fouling, Modelling and Recent Developments for Mitigation. Emerging Membrane Technology for Sustainable Water Treatment.* Elsevier.

Shrestha, Namita; Chilkoor, Govinda; Xia, Lichao; **Alvarado, Catalina;** Keating, John J; Kilduff, James*; Belfort, Georges; Gadhamshetty, Venkataramana. (2017). *Integrated Membrane and Microbial Fuel Cell Technologies for Enabling Energy-Efficient Effluent Re-use in Power Plants.* *Water Research.* Elsevier.

Mike Karl

AI/Digital Twin

Key Skills

Master Planning
 Optimization Services
 Technology Selection
 Strategic Enterprise Solutions
 Enterprise-wide SCADA Cyber Security Assessments and Implementations
 Control Systems Design
 Systems Integration and Commissioning
 Project Management
 Certified in Multiple HMI Applications
 Cyber Security Expert
 Big Data Analytics
 Advanced Metering Infrastructure

Years of Experience

26

Years with AECOM

2

Education

Instrumentation and Industrial Control, Perry Technical Institute

Registrations

Certified Water Distribution Manager 2
 Certified Cross Connection Control Specialist

Professional Associations

Chair, SWAN Americas Alliance (2017-Present)
 Former Co-chair, SWAN Digital Twin Holistic Architecture Committee

Training and Certifications

Executive Program in Artificial Intelligence, MIT, 2018
 DHS Cybersecurity Training



Mike is a highly experienced Digital Twin Expert and Quality Control Lead, with over 25 years of experience in the water industry. Serving as AECOM's Global Water Digital Leader, he has been pivotal in utilizing cutting-edge technology to improve utility performance and operational efficiency. His expertise encompasses strategic enterprise solutions and advanced metering infrastructure, positioning him as a key contributor to smart utility projects and SCADA system integrations.

Professional history

With diverse experience as a licensed Water Distribution Manager, Water Utility Board Member, Technology Lead, and recognized National Expert, Mike has proven his ability to right-size technology to utility needs. His experience ranges from full turn-key control system delivery to emergency support and maintenance of supervisory control and data acquisition (SCADA) systems, and he has delivered more than 10 Smart Utility projects. Mike has expertise in SCADA security, with specialized training from the U.S. Department of Homeland Security in addition to security penetration testing. He provides training for the American Water Works Association (AWWA) and SANS Institute on cyber security.

Selected project experience

Smart Utility Program Lead, Portland Water Bureau, Bull Run Water Filtration Plant Program Management, Portland, Oregon

The City of Portland is under a consent decree to build their first surface water treatment plant to serve the City. The plant will provide filtration of their Bull Run supply at an initial capacity of 160 mgd, expandable to 240 mgd. Mike provided oversight in the creation of a technology roadmap for 10 years of technology migration that the bureau will leverage to optimize this new WTP in addition to modernizing the technology for the entire water Bureau.

Principal-in-Charge, SUEZ, Progressive Design-Build SCADA Replacement, New York, New York

SUEZ took the initiative to move towards Smart Utility, beginning with national Smart Utility-based standards. These standards are being implemented as part of a SCADA replacement of their Rockland County (New York) facilities which include 10 treatment plants and over 150 remote sites. Mike was responsible for standardizing the SCADA system across all sites and making sure this project supports the SUEZ's national visioning project. Mike is responsible for the project's success and works with the project team to ensure client needs are being met during the complex 5-year system replacement.

Project Manager, Jordan Valley Water Conservancy District, SCADA System Replacement, West Jordan, Utah

The Jordan Valley Water Conservancy District (District) has three water treatment plants (WTP), including the Jordan Valley WTP (180 mgd conventional filtration), Southeast Regional WTP (20 mgd Actilo), and Southwest Groundwater Treatment Plant (7 mgd Reverse Osmosis); 40 wells; and over 200 remote sites that were migrated to state of the art Smart Utility technology, including a complete replacement of SCADA software. Mike managed a unique approach to focus on the goal of the District being able to fully support the new technology being implemented after the project was implemented.

Developed a team approach that integrated operations, maintenance, engineering, and management through a series of workshops to develop objectives and needs for the implementation and outcomes required to make the project successful. He did this by developing a technology support team with the consulting team and District staff to collectively build the new systems and test implementation. Implementing the new systems on an operating utility required a unique focus on operator training and cut-over planning to not over tax district staff during the implementation and focus on a low-risk implementation. This resulted in a seamless migration from a legacy BIF system to a suite of Smart Utility technologies to deliver long-term value by building an adaptable and flexible system.

Principal In Charge, City of Anacortes, Water Treatment Plant Optimization, Anacortes, Washington

The City of Anacortes is applying a unique approach to optimization with his firm's Opta approach that focuses on a three-part framework: people+technology+adoption that achieves immediate and long-term impacts to improved utility performance. This City is applying real time analytical software (SEEQ) to evaluate and optimize operations of the high service pumping system, filters, and chemical feeds. This effort incorporates SCADA data to find potential performance increases and energy/cost savings for the City. This project is focused on applying advanced analytics to enhance optimization at treatment facilities.

Principal Investigator, Water Research Foundation 4917, Utilizing Smart Water Networks to Manage Pressure and Flow for Reduction of Water Loss and Pipe Breaks, Portland, Oregon

Led a team of over 18 utilities with over 7 participating organizations along with three co-

principal investigators to execute this research project. This project focused on the ability to utilize smart water network solutions to help water utilities better manage pressures and flows in their water distribution networks to extend the life of the piping network and reduce water loss. The research project's primary goals are to plan, organize, provide grants, manage and develop case studies to utilities to utilize smart water network technologies to better manage flows and pressures in their water distribution systems to extend asset life. A guidance manual will be developed to provide best practices and a step wise approach for implementing similar pilots and programs.

Principal-in Charge/Project Manager, SUEZ North America, Smart Utility and SCADA Master Plan, Paramus, New Jersey

As a progressive Owner-Operator with facilities nationwide, SUEZ North America (SUEZ) continuously strives to improve utility performance and deliver best in class service. SUEZ envisioned a standardized system that would equip staff with the knowledge they need to proactively make decisions, reduce the risk of equipment failure, and optimize performance across all facilities. Mike is leading the strategy on the overall vision and technical approach for SUEZ's Smart Utility and coordinating communication with consultant staff and SUEZ staff. Primary objectives involve developing strategies to reduce operator training time by half, energy and chemical usage by 20 percent, and unaccountable water by 5 percent. This requires evaluating over 500 facilities across the nation, conducting user requirements workshops, and developing a set of Smart Utility standards and guidelines that address both operational technologies as well as information technologies.

Principal-in Charge/Project Manager, Smart Utility Visioning, Standards and User Requirements, SUEZ, Paramus, New Jersey

Oversaw the North America Smart Utility project. This represented systems across 5 different states and all owned and operated by SUEZ. This project established the current state of SCADA and Business systems across the US and established a common vision and understanding of the future goals of the system. It included all aspects of Smart Utility from Cyber Security through HMI Standards and integration of GIS, Asset Management, Enterprise SCADA Historian and Advanced Metering Infrastructure.

Daniel Braz, PE

Hydraulic Analysis

Key Skills

Mechanical Engineering
Hydraulic and CFD Computational Analyses
Field Inspections

Years of Experience

13

Years with AECOM

10

Education

MS, Mechanical Engineering, Columbia University - Fu Foundation School of Engineering and Applied Science, 2012
BS, Mechanical Engineering, Columbia University - Fu Foundation School of Engineering and Applied Science, 2011
BS, Physics, Fordham University, 2011

Registrations

Professional Engineer (Mechanical), California, Reg#M38604



Daniel is a mechanical engineer with over ten years of experience. His expertise is in the design and analysis of fluid systems encompassing water and wastewater treatment facilities, pump stations, collection systems, and dams and reservoirs.

Professional history

In addition to direct production work, Daniel has written pre- and post-processing codes to decrease project time and error, establish design bases, and increase reproducibility. His work focuses on the analysis, design, refurbishment, and characterization of fluid systems using a variety of engineering methods ranging from field inspections to CFD solvers.

Selected project experience

Lead Hydraulics Engineer, Joint Powers Authority, East County Advanced Water Purification Project Package #1, San Diego, California

Performed detailed hydraulic calculations to support design-build project for WWTF, WTF, and Force Main systems. Calculation methods included one-dimensional hydraulic profile development, hydraulic transient analyses, and CFD simulations. Results aided in pipe sizing, flow control measures (e.g., weir elevations, anoxic chamber baffle design, influent port sizing for equal flow distribution), and the development of operational and surge mitigation equipment recommendations.

Lead Hydraulics Engineer, Exelon Generating Company and Limerick Generating Station, Still Creek Reservoir Outlet Piping Vibration Evaluation, Rush Township, Pennsylvania

Responsible for performance assessment and alternatives analysis. Hydraulic and CFD calculations assessing current outlet works system performance with a focus on vibration and cavitation. Developed recommendations for system modifications and operations to improve system performance and better align with AWWA guidelines.

Hydraulics Engineer, Newcastle Wastewater Treatment Plant Upgrade, Newcastle, Pennsylvania

Performed detailed hydraulic calculations and review of plant design and upgrade. Reviewed hydraulic calculations for main plant flow and BioActiflo systems. Performed alternatives analysis of passive versus active wet weather bypass control. Final design of bypass system with flow meter assessments and Finite Element Analysis of bypass trough assessing deflection and stress due to static and dynamic loadings. Reviewed calculations and design of Clarifier effluent weirs and launder.

Hydraulics Engineer, Springfield Regional Wastewater Treatment Plant Upgrade, City of Springfield, Massachusetts

Conducted detailed hydraulic calculations of existing plant and developed hydraulic profile drawings. Performed detailed alternatives analysis and calculations on conversion of Aeration Basins to hybrid Anaerobic/Aeration Basins with internal mixed liquor recycle. Used personally developed parallel flow path solvers to investigate effectiveness of step-feed designs, IMLR pump performance and selection, and baffle designs.

Hydraulics Engineer, WWTP Recycled Water Upgrades PDB 2025-2027 - Phase I Design & GMP Development, Banning, California

Reviewer and independent calculation checking for verifying the plant hydraulics and system profile.

Lead Mechanical Engineer, City of Santa Cruz, Newell Creek Dam Outlet Conduit Rehabilitation/Replacement, Santa Cruz, California

Responsible for design of the intake structure and outlet works, including fish screen selection, and valve and piping assemblies for the redesign of a dam reservoir outlet conduit. Responsible for selecting valves and actuators (hydraulic oil and electric), hydraulic analyses, pipe supports, detailed drawings, input to control philosophy, specification writing, layout, and bid, submittal, and shop drawing reviews.

Lead Mechanical Engineer, Santa Clara Valley Water District, Anderson Dam Seismic Retrofit Project and Anderson Dam Tunnel Project, Santa Clara County, California

Responsible for Seismic Retrofit Project performing design, layout and valve selection for high level and low level outlet works systems. Mechanical design for 13-ft by 13-ft fixed wheel bulkhead gate with embedded throttling knife gate valve, developed control strategy to operate gate assembly with a single lifting beam, developed gate hoist performance specification. Performed CFD analyses of flow through embedded gate valve with results used to develop tunnel lining requirements for scour minimization. Performed hydraulic transient analysis to determine minimum valve closing times to minimize surge conditions. Used Infoworks ICM and excel based calculations to produce reservoir drawdown curves to ensure hydraulic performance and DSOD requirements were met. Investigated energy dissipation valve selections balancing Client needs for wide flow control bands and their concerns for valve clogging. RFI and Submittal reviews and supporting calculations for post IFC design revisions for Tunnel Project.

Mechanical and Hydraulics Engineer, Massachusetts Water Resource Authority, Alewife Brook Pump Station Assessment/Optimization, Boston, Massachusetts

Responsible for system analysis and performance assessment of MWRA's Alewife Brook Pump Station. Pump system analysis and operational strategy development to increase pump station capacity and reduce upstream Combined Sewer Overflows. Assessments of proposed operational strategies of combined collection system performed in Infoworks ICM. ICM model used to investigate flow control measures to utilize in-system capacity for storage

during peak flow events to reduce system overflows. Provided Field support to witness pump tests and implementation of operational strategy.

Lead Hydraulics Engineer, Massachusetts Water Resources Authority, Ward Street and Columbus Park Headworks Upgrade, Boston, Massachusetts

Performed CFD analyses of the Ward Street and Columbus Park Headworks Facilities. Developed detailed 3D CAD models of As-Found conditions using Autodesk Inventor. Calibrated computational representation of fine screens using field data. Comparing system performance between As-Found conditions and proposed modifications (different screening technologies and their location within the facility). Developed and analyzed energy dissipating measures to be installed downstream of throttling influent gates. CFD modeling performed in Flow-3D Hydro with post-processing completed in POST. Project engineer and reviewer of physical hydraulic model to confirm and improve on CFD modeling results.

Lead Hydraulics Engineer, Lehigh County Authority, Kline's Island WWTP Influent Pump Station, Allentown, Pennsylvania

Conducted CFD analyses for two influent pump stations. Developed detailed 3D CAD models of As-Found conditions. Performed baseline CFD simulations to assess flow performance including approach flow conditions and swirl angles in vertical pump columns. Performed alternatives analysis on replacement pump configuration, sizing, and swirl suppression features to converge on a design whose hydraulic performance fell within the acceptable limits of ANSI HI 9.8. Assisting in scope writing and review of physical hydraulic model. CFD modeling performed in Flow-3D Hydro and Ansys Fluent allowing for concurrent simulations and in-process independent quality control assessment of results independence.

Hydraulics Engineer, Trinity River Authority of Texas, Equalization Basin and On-Site Storage Basin Modifications Design-Central Regional Wastewater System, Dallas, Texas

Performed CFD analyses for the On-Site Storage Basins to improve self-cleaning performance. Tasks include analysis of As-Found conditions, characterizing hydraulic performance, identifying improvements, development and testing of alternatives including mechanical design of flushing gates. Performed sedimentation calculations to assess potential for sediment bed erosion and particle entrainment.

Manav Baid

Sludge Treatment

Key Skills

Facilities Planning
Growth Projections
Solids Treatment Processes
Treatment Process
Modelling

Education

MS, Civil and Environmental Engineering,
University of Wisconsin-Madison, 2024
BS with Honours (BTech Hons), Civil
Engineering, Indian Institute of Technology
(IIT) Kharagpur, 2022

Professional Associations

US Water Environment Federation
Pennsylvania Water Environment
Association



Years of Experience

3

Years with AECOM

1

Manav is a water and wastewater engineer with the Philadelphia, Pennsylvania office. His graduate work was on novel technologies to enable biogas reuse. At AECOM, he has supported planning projects for municipal as well as industrial clients. Manav is interested in wastewater process intensification, development of novel technologies for resource recovery and water reuse.

Professional history

Manav brings experience in research, planning, design, and analysis of wastewater treatment processes at AECOM. He also brings 2 years of graduate research experience in lab scale on development of novel technology for biogas desulfurization and reuse, working alongside Madison Metropolitan Sewerage District staff in Madison, Wisconsin. His research has included microaeration in anaerobic digestion and mainstream partial denitrification-anammox.

Selected project experience

Project Engineer, Upper Montgomery Joint Authority, Solids Improvements Progressive Design-Build, Upper Hanover Township, Pennsylvania

Supported technical lead with overseeing 30% and 60% design submittals. Upper Montgomery Joint Authority uses aerobic digestion for solids stabilization followed by thickening and drying for producing Class A biosolids. This project includes aeration and mixer upgrades to the digesters, add secondary sludge thickening, and add another dryer to the existing system.

Project Engineer, Philadelphia Water Department, Biosolids and Biogas Master Plan, Philadelphia, Pennsylvania

Supporting technical leads for the master plan for the solids treatment processes across the 3 WRRFs operated by Philadelphia Water Department (PWD). PWD owns and operates 3 WRRFs that treat 540 MGD of wastewater in the city of Philadelphia. AECOM, along with HDR and Andris, are leading the planning effort with PWD to create a roadmap for process and equipment upgrades.

Project Engineer, Lehigh County Authority, Pretreatment Plant Summary Plan and Alternatives Analysis, Allentown, Pennsylvania

Supported technical lead with facilities planning and evaluating alternative processes for a regional industrial pretreatment plant. The pretreatment plant receives high strength industrial discharge and is rated for 76,500 pounds per day of organic load, alongside an extensive regional hauled waste receiving program. The project evaluated alternatives for both liquid and solids stream treatment processes to maintain plant operation for the next 20 years under various growth scenarios.

Research Assistant, Department of Energy, Technological Upscaling of the Partial Denitrification–Anammox Process for Decarbonization with Mainstream Deammonification (DE-EE0010994), Washington, DC

Operated the nitrogen removal pilot at DC Water for part of the project. AECOM is the lead agency, partnering with HRSD, DC Water and 3 other major WRRFs for the Department of Energy-funded project to develop design details for mainstream partial denitrification-anammox.

Project Engineer, Lehigh County Authority, Sand Spring Wastewater Treatment Plant Special Act 537 Planning, Pennsylvania

Supported technical lead with growth projections, process capabilities analysis, and treatment process modelling. Sand Spring WWTP underwent a planning study required by the state regulatory body to report near term growth and facilities that the plant may require to maintain permit compliance.

Graduate Student Research Assistant, Madison Metropolitan Sewerage District, Continuous Microaeration of Mesophilic Anaerobic Digestion for In Situ Biogas Desulfurization, Madison, Wisconsin

Conducted bench scale experiments for validation proof of concept for a novel method of in situ biogas desulfurization in anaerobic digesters treating waste-activated sludge at a municipal wastewater treatment plant.

Ryan Fane

Sludge Treatment

Key Skills

Wastewater Treatment
Water Reuse
Pump Stations/Reservoirs
Pipelines/Conveyance
Stormwater

Years of Experience

23

Years with AECOM

1

Education

BS, Environmental Engineering,
University of California, Riverside,
2002

Registrations

Professional Engineer (Civil), California,
#C69783
Professional Engineer, Texas No.
127028

Professional Associations

ASCE
DBIA
PMI
CWEA

Trainings and Certifications

Project Management Professional,
PMP # 2314637
Qualified Storm Water Pollution
Prevention Plan
Developer/Practitioner,
California, No. 22747
California Emergency Management
Agency Safety Assessment
Program (Cal EMA SAP ID#
68249)
40-Hour HAZWOPER OSHA
Training (per 29 CFR 1910.120)
American Red Cross CPR, AED, &
First Aid Certified



Ryan brings over two decades of relevant experience in the engineering and construction fields with a variety of public works, federal, industrial, and commercial projects for both design-bid-build, and design-build contracts. He specializes in successfully managing complex water projects for high profile clients. Specific areas of practice include wastewater treatment, water reuse systems, water treatment, reservoirs, pipelines, and storm water facilities.

Professional history

Ryan's wastewater experience includes municipal and industrial wastewater treatment plant projects/processes, conveyance systems, lift stations, and sewer rehabilitation. With experience in the design of water systems includes pump stations, pipelines, reservoirs, treatment facilities, recycled water, disinfection facilities, flow metering installations, pressure reducing stations, and master planning. Ryan's construction management experience has entailed managing and coordination of site work including Resident Engineer, inspection, utility relocations, project constructability during the design phase, periodic utility shutdowns, submittal reviews, correspondence via RFI's with all engineering disciplines regarding design modifications and unforeseen field conditions. Storm water projects include conveyance systems, Water Quality Management Plan (WQMP), and Storm Water Pollution Prevention Plan (SWPPP).

Selected project experience

Project Manager, Rialto Solids Handling – Progressive Design-Build 2025-2027, Rialto, California

Responsible for biosolids improvements to the existing 117 million gallons per day (MGD) wastewater treatment plant. The scope of the project involves upgrading the existing thickening, digester gas storage, sludge storage and dewatering systems and installing a new primary sludge screening process to help improve performance, operability and reliability of the biosolids management facilities.

Lead Design Engineer and Civil Engineering Lead, City of Banning, WWTP Recycled Water Upgrades – Progressive Design-Build 2025-2027, Banning, California

Responsible for a new wastewater treatment plant and recycled water treatment plant. Provided expertise for MBR treatment system design, vendor equipment package procurement, and selection. These services were carried out within the framework of a multi-year task order contract.

Resident Engineer, South County Regional Wastewater Authority (SCRWA), Membrane Biological Reactor Expansion, Gilroy, California

Oversaw a 5.0 MGD MBR expansion for all new wastewater treatment plant (WWTP) immediately adjacent to the 8.5 MGD existing treatment plant. The \$65 million design-bid-build contract for SCRWA produces tertiary recycled water supply to support the communities of Gilroy and Morgan Hill.

Unit Operations

- Headworks Building- Influent Pumps, Rotary Drum Fine Screen, Washer Compactor
- MBR - Aeration Tanks, Anoxic Zones, Hollow membrane Tube Filtration (Veolia), Pumps (Effluent, Anoxic Recycle, RAS, WAS), Blowers, and Air Compressors
- Solids Handling Building: Screw Presses, Polymer System, and Screw Conveyor
- UV Disinfection System Improvements
- Chemical Feed and Storage Facility
- Utility Water Upgrades
- Emergency Backup Diesel Generator

Responsible for overall engineering construction implementation directly responsible for multi-disciplined design management on all construction changes, and utility relocations. Lead coordination meetings/workshops with the Contractor, Plant Staff, and Design Team for project integration. Additional activities involved submittal review/responses, and preparation of responses to RFI's. Ground Improvements consisted of rammed aggregate piers for settlement and liquefaction mitigation of native soil.

Design-Build Quality Control Manager, San Francisco Public Utilities Commission (SFPUC) – Treasure Island Water Resource Recovery Facility, San Francisco, California

Responsible for development and implementation of the project-specific Quality Control Plan. Managed the Contractor's field engineering staff and subcontractors for all aspects of the project including earthwork, utilities, hydraulic structures, wetlands, and buildings. Coordinated between Design Staff and the Contractor on critical submittals and RFIs. Performed inspections as necessary for civil, mechanical, and electrical work completed. Responsible for project Daily Reports to the Client including all quality related documentation in contract requirements. The facilities include MBR System, Influent Pump Station, UV Disinfection, Recycled Water System, Odor Control, and Biosolids Dewatering. Through a joint effort with the Treasure Island Development Association (TIDA) and SFPUC it allows for redevelopment of the

previous Naval Facilities to allow for growth by increasing housing on the island.

Assistant Project Manager, Naval Station Guantanamo Bay – P160 Wastewater Treatment Facilities, Cuba

Managed a design-build contract for landfill and liquid-waste treatment at base operations Naval Facilities Engineering Command Southeast (NAVFAC) Guantanamo Bay. Responsible for the wastewater system design, specifications, and cost estimate for the new regional biosolids treatment facility. Sludge (WAS/Septic/Cooking Oil) from each of the 13 treatment plants that discharge system to the new biosolids treatment facility. The treatment process starts with dual influent receiving stations, splitter box, and aerobic digesters. A sludge transfer station discharges 16 sludge drying beds by the dual suction-lift pumps. Final effluent discharge is through a combination of clarifying ponds, evaporation and effluent outfall.

- Influent Receiving Stations with Grinders and Separators
- Aerobic Digestion
- Sludge Drying Beds
- Mechanical Equipment Building – Floating Aerators, Mixers, PD Blowers, Transfer Pumps
- Electrical, Instrumentation, & Controls – Dissolved Oxygen Probes, Control Panels
- New Domestic Potable Water Supply – Reservoir, Disinfection System, Booster Pumps
- Effluent Outfall
- Biosolids Storage Area

Lead Process Engineer, Alcoa/Arconic, Alcoa/Arconic WWTP, Point Comfort, Texas

Responsible for the replacement of the 5 MGD industrial wastewater treatment system. The Alcoa Point Comfort aluminum oxide production location utilizes process water in the production of aluminum oxide. This process water is recycled and treated to meet NPDES regulatory requirements through a surface impoundment called the Process Recycle Lake (PRL) before ocean discharge. The existing WWTP was replaced as a result of new discharge permit requirements and aging treatment system infrastructure. The surface impoundment also collects discharge for stormwater runoff within the 200-acre bauxite residual storage area. New equipment included dual trains of Densadeg packaged flocculation, coagulation, and rapid sedimentation with recirculation system.

William (Bill) Davis

Cost Estimating

Key Skills

Design and Specification Interpretation
 Scope Identification and Cost Allocation
 Quantity Take-Off, Pricing, and Scheduling
 Productivity Analysis
 Wage Rate Development
 Benchmarking
 Change Order Estimate Review

Education

BS, Construction Science, Texas A&M University, 2008



Years of Experience

23

Years with AECOM

17

Bill provides accurate, high quality cost estimates at the 30-, 75- and 100 percent design stages. His project estimates clearly detail the scope of work, assumptions, and risks, as well as aligns with execution strategy. Bill works close with design team members to optimize costs through value engineering.

Professional history

As a senior estimator with over two decades of varied experience, Bill's knowledge and expertise includes performing estimate functions, as well as project management, project controls, scope coordination, change management, and field engineering.

Selected project experience

Lead Estimator, Eastern Municipal Water District, Perris, Temecula, and San Jacinto Aeration Basin Rehabilitation and Blower Replacements, Riverside County, California

Responsible for preparing estimates 3 facilities and 6 projects. The project entailed replacement of header pipes and aeration diffusers as well as replacement of blowers.

Lead Estimator, OC San, P1-140 Activated Sludge Rehabilitation, Newport Beach, California

Responsible for preparing estimates for this \$250M rehabilitation project that involved replacement of several major equipment items (blowers, diffusers, RAS, WAS, clarifiers) that are near the end of their useful lives; rehabilitation of large influent and effluent piping; replacement of air piping to the aeration basins; repair of the splitter boxes; and secondary clarifiers. This project also required substantial electrical improvements, including equipment and all power feeds, backup power feed, deferred maintenance, instrumentation, and DCS system.

Lead Estimator, OC San, Bay Bridge Pump Station, Newport Beach, California

Prepared cost estimate and schedule for the construction of a new pumping station that included 50-foot-deep excavation with shoring and dewatering, 3,000 cubic yards of concrete, 1,300 feet of microtunneling, and associated mechanical and electrical systems.

Lead Estimator, Los Angeles County Sanitation District, Sewer Rehabilitation Projects, Los Angeles, California

Estimated several rehabilitation projects consisting of 80,000 feet of non-reinforced concrete pipe (NRCP) to be rehabilitated with cured-in-place pipe (CIPP), rehabilitation of 300 manholes, and associated traffic control and bypass work.

Estimator, Bureau of Reclamation, Sites Reservoir Program, Maxwell, California

In joint venture, providing estimating services for the ultimate design and construction of the new Sites Reservoir in northern California. The project will include the main and saddle dams, spillway, inlet/outlet tunnels and tower, construction diversion tunnel and pipelines, reservoir emergency release facilities, road work and bridges. The project will provide 1.5M acre-feet (AF) of storage and requires

9 new dams; 12 miles of pipeline, ranging from 9- to 32-feet in diameter; and 20M cubic yards of material. The roadwork scope includes public, county, local and recreation roads and a 3000-foot-long bridge elevated 300 feet high. This project has an estimated value of \$4B.

Lead Estimator, Irvine Ranch Water District Syphon Reservoir Improvements, Irvine, California

Prepared estimates for this reservoir expansion that required replacement of the existing 59-foot-high Syphon Dam with a new 136-foot-high embankment dam. The dam and reservoir require 6M cubic yards of excavation and placement, inlet/outlet structure, spillway, riparian and wetlands, access roads and recreation paths. In addition to the dam, the project required conveyance facilities to integrate the expanded reservoir into the recycled water system, including a pumping station; 8,110-foot-long pipeline; and strainer and disinfection facilities.

Lead Estimator, Irvine Ranch Water District, Santiago Creek Dam Outlet Tower and Spillway Replacement, Silverado, California

Developed estimates for the demolition of the outlet tower, installation of an inclined outlet structure, demolition of the existing spillway, and construction of a new spillway. This was a unique and challenging project that required 20,000 feet of cofferdam, 10,000 cubic yards of concrete demolition, installation of a batch plant and 60,000 cubic yards of reinforced cement concrete (RCC), 17,000 cubic yards Ogee Weir, and 20,000 feet of Tieback wall, 20,000 cubic yards of concrete wall and a 10,000-cubic yard spillway.

Lead Estimator, Rothschild Dam and Gate Replacement, Rothschild, Wisconsin

Prepared cost and materials estimate for the demolition of an existing dam and construction of a new dam and gates on the Wisconsin River. The project encompassed installation of a coffer dam; demolition of existing timber crib dam; installation of cutoff walls and piles; 15,000 cubic yards of concrete for the walls, labyrinth, crest, and stilling basins; and installation of two 45-foot by 15-foot gates.

Estimator, Amazon, World-Wide Design Program

Responsible for preparing estimates for sorting and loading template facilities. Estimates were based on 2D and 3D models and utilized CostX for takeoffs and pricing. Estimates were benchmarked against project actual costs and trended for change within

the VE and NZC programs. Facilities ranged from 50k square-foot single story to 6M square foot multi-story buildings.

Lead Estimator, NW Innovation Works Methanol Plant, Kalama, Washington

Prepared construction estimates for direct-hire work and management, as well as reviewed subcontractor bids. Plant consisted of 2x5000 MTD methanol trains, 150MW power generation, air separation, storage tanks, and associated OSBL (outside battery limits) facilities.

Project Manager, Numerous South Texas Municipalities, Small Capital Improvement Projects, South Texas

Responsible for executing water and wastewater treatment work, such as lift stations, chemical feed systems, reclamation filter, media filter, filter controls, and SCADA integration.

Lead Estimator, Exxon, Phillips 66, HP, Husky, Shell, Various Projects, Continental United States

Prepared estimates for process facility O&M and turnaround work. Estimates ranged from preliminary pricing to definitive lump sum contracts.

Estimator, Recurrent Energy, Crimson Solar/BESS Project, Southern California

Responsible for cost estimate for 350MW Substation, PV Array, and BESS storage, including civil and site work.

Lead Estimator, Midwest Fertilizer, Midwest Fertilizer Plant, Mount Vernon, Idaho

Prepared construction only estimates for a fertilizer plant that included ammonia, urea, NA/UAN, and OSBL facilities. Estimate preparation required working with Italian and German engineering firms, as well as a Pakistani client.

Lead Estimator, DCP Midstream, Mountain View Gas Plant, Greeley, Colorado

Led estimating activities for EPC proposal for a 200MMSCFD cryogenic liquid extraction facility.

Lead Estimator, Keyera Energy, Rimbey Expansion, Rimbey, Alberta, Canada

Conducted a pre-FEED estimate for a 200MMSCFD dew point control gas plant.



APPENDIX B

Attachment A and Assumptions, Clarifications, and Other General Conditions

ATTACHMENT A

BACKGROUND/GOAL/ SCOPE OF WORK

Conceptual Scope of Services for Coastal Treatment Plant Master Planning Effort

November 2025

Background

The South Orange County Wastewater Authority (SOCWA) is a Joint Powers Authority (JPA) responsible for providing wastewater treatment, effluent and biosolids disposal, and water recycling at regional facilities in the southern part of Orange County. The Member Agencies of SOCWA include: the City of Laguna Beach (CLB), the City of San Clemente (CSC), El Toro Water District (ETWD), Emerald Bay Service District (EBSD), Santa Margarita Water District (SMWD), and South Coast Water District (SCWD). SOCWA owns and operates wastewater treatment facilities, transmission mains, and ocean outfalls.

Recently, SOCWA has undergone reorganization impacting ownership of and participation in two critical SOCWA wastewater treatment plants, the J.B. Latham Treatment Plant (JBLTP) and the Coastal Treatment Plant (CTP). The major changes from this reorganization include the withdrawal of one of the original SOCWA Member Agencies, Moulton Niguel Water District (MNWD), from the JPA, the transfer in ownership of SOCWA's Regional Treatment Plant to MNWD, and the transfer of MNWD's capacity in the JBLTP and CTP to the other Member Agencies with capacity in those facilities. The affected SOCWA members recognize the importance of proactive, long-term master planning at both the JBLTP and CTP to support future treatment plant modernization, potential recapitalization, and sizing capacity appropriately to accommodate future uses.

SOCWA administers project responsibilities based on Member Agency participation. If a SOCWA project or facility involves less than all SOCWA's Member Agencies, the affected Member Agencies form a "Project Committee" (or "PC") that is responsible for decisions regarding the construction, operation, and maintenance of that project or facility.

The CTP is governed by CLB, EBSD, and SCWD (together, the "PC 15 Member Agencies") and are the Participating Member Agencies of Project Committee 15 ("PC 15"). This committee

shares financial and decision-making responsibility for the plant's operations and improvements.

Following recent reorganization and reassignment of MNWD's capacity at the CTP to the remaining PC 15 Member Agencies, SOCWA is working in collaboration with the PC 15 Member Agencies in seeking to retain a qualified firm to conduct a comprehensive Facility Planning Assessment (FPA) for the CTP. The primary objective of the FPA will be to prepare a comprehensive analysis of potential treatment facility improvement alternatives that will optimize long-term treatment and beneficial reuse opportunities for PC 15 Member Agencies based on their collective anticipated and projected wastewater flows, reuse objectives, regulatory considerations, and addressing site specific challenges unique to the CTP.

Coastal Treatment Plant

The CTP is located within the Aliso and Woods Canyon Wilderness Park, between the Cities of Laguna Niguel and Laguna Beach, was established in 1983, and treats an average of 3.2 million gallons per day (MGD) of wastewater, with a capacity of 6.7 MGD. It serves communities including the CLB, EBSD, and SCWD.

The treatment plant uses a conventional activated sludge process including screening, grit removal, clarification, and biological treatment. Treated effluent from the treatment plant is partially used for Title 22 recycled water reuse with the remainder discharged into the ocean via the Aliso Creek Ocean Outfall. Figure A provides an overview schematic of the CTP and corresponding treatment processes. The outfall is located approximately 1.5 miles offshore from Aliso Beach in Laguna Beach, California. Primary sludge and thickened waste activated sludge from the treatment plant are pumped through a force main to Moulton Niguel Water District's Regional Treatment Plant (RTP) for solids treatment and disposal under contract with the PC 15 Member Agencies. The CTP also produces Title 22 recycled water for non-potable purposes through the Advanced Water Treatment (AWT) facility located within the CTP. Also located within the CTP is the Aliso Creek Water Reclamation Facility (ACWRF), which uses advanced treatment (ultrafiltration and reverse osmosis) treat Title 22 recycled water from the AWT for salinity management and to treat harvested water from Aliso Creek when available under specific permit conditions. Currently, the ACWRF is unable to access water from Aliso Creek due to limited flows in the creek and permit/operational restrictions. The product water from both the AWT and ACWRF facilities meet Title 22 standards and is blended and distributed for non-potable landscape irrigation uses.

Recent upgrades to the CTP include new energy-efficient aeration systems, electrical improvements, and enhanced safety features. The plant also emphasizes environmental stewardship, operating near protected wilderness areas and adhering to strict pollution prevention standards.

The CTP Treatment process generally includes:

- Screening
- Grit Removal
- Primary Clarification
- Secondary Treatment
- Secondary Clarification
- Thickening

The CTP also includes advanced treatment through the AWT and ACWRF to treat Title 22 recycled water.

Overall Master Planning Goals

The CTP master planning effort has multiple goals, including but not limited to:

- Conducting a phased facility master planning effort to identify potential treatment facility improvement alternatives that will optimize long-term treatment and beneficial reuse opportunities for the CTP.
- Completing a 30-year base capacity utilization and peaking analyses for the CTP based upon current and forecast flows, loads and flow characteristics (peaking), and other future potential uses of the CTP.
- Performing high-level process-by-process assessments to determine existing available capacity, general asset condition, available useful life remaining, and to support assessment of future infrastructure opportunities and capacity right-sizing options.
- Identifying treatment alternatives that ensure facility resiliency and reliability and manage risks related to variations in flows and loading, flooding, regulatory changes and other operational uncertainties.
- Evaluating potential biosolids treatment technologies, if deemed feasible and cost-effective, to achieve Class B solids or as needed based on future regulatory outlook.
- Identifying project alternatives that reduce energy consumption, improve resource recovery and enhance environmental sustainability.
- Determining long-term regulatory compliance and permitting needs and assessing readiness to meet them.

Conceptual Scope of Services: Facility Planning Assessment

The treatment plant master planning effort for the CTP will be completed in two phases. The services requested under this engagement are for Phase 1 only. Phase 2 is not part of this request for services and is only provided for reference. A summary of each phase is provided below:

- Phase 1: Facility Planning Assessment (this effort) - will focus on identifying and evaluating a range of project alternatives to address current and future needs for the CTP. This phase will include technical assessments and regulatory considerations to ensure viable and cost-effective solutions for further consideration in Phase 2.
- Phase 2: Facility Master Plan (future effort) - will build upon the findings of Phase 1 to develop the comprehensive facility master plan for the CTP, outlining recommended improvements, and implementation strategies for future facility upgrades and improvements. If a consultant is successfully selected for Phase 1, they would not be precluded from participating in the future Phase 2: Facility Master Plan effort.

The following should be considered a preliminary scope of services for the Facility Planning Assessment (FPA) under Phase 1. Proposals may include modifications to this scope of services that the firm deems desirable or necessary based upon experience and expertise.

The project scope of work is separated into the following tasks supported by subtasks as outlined below.

1 Project Management

1.1 Project Control Plan

A Project Control Plan (PCP) will be developed by the Consultant to establish clear project management procedures and strategies so that the Consultant and PC 15 Member Agencies are unified in understanding of expectations, roles, and responsibilities. FPA tasks, assignments, and project communications will be documented to provide for the efficient execution of the planning process and to help achieve quality assurance throughout the entire FPA process. The PCP should include decision-making processes, establish planning and design criteria, basis for project cost estimates, coordination needs with concurrent projects, coordination

with SOCWA and the PC 15 Member Agencies, summarize FPA goals and objectives, meetings, workshops, Board presentations, deliverables, and include an overall project schedule with key milestones.

As part of the PCP, the Consultant shall prepare a comprehensive Table of Contents for the FPA Report, outlining each proposed chapter, section, and subheadings of the report. The Consultant shall develop chapters throughout the FPA process and submit each chapter according to their proposed deliverable schedule.

1.2 Project Meetings and Communications

The kick-off meeting will assist in refining the initial vision and objectives developed for the FPA. This includes identifying what the plan is to accomplish, summarizing FPA drivers (e.g. regulatory, policy, strategic initiatives, growth, aging infrastructure, optimization, sustainability, solids handling, etc.), what information it will provide, and how the FPA will be used in subsequent implementation steps.

The Consultant will need to facilitate collaboration, effective communication, open discussion, and constructive interaction among all members of the FPA team. Prepare for and conduct kick-off and progress meetings, conference call updates, and strategically scheduled workshops with SOCWA staff, the PC 15 Member Agencies, and the Board of Directors.

The Consultant shall provide progress reports that include project updates, schedules, and track percent completed by task. The Consultant should assume one (1) kick-off meeting and up-to twelve (12) monthly progress meetings.

The Consultant shall hold and describe in its proposal meetings, workshops, and Board presentations undertaken throughout the FPA process to keep SOCWA and the PC 15 Member Agencies apprised of the work efforts, review work-in-progress, share information, discuss submittals, present findings, receive feedback, and obtain decisions and direction. The Consultant shall include five (5) staff workshops and three (3) Board presentations to present findings based on project milestones outlined in the Tasks below.

2 Existing Facilities Evaluation

2.1 Description of Existing Facilities

Develop descriptions, supporting figures, and tables for the existing wastewater treatment and solids handling and ancillary facilities for the plant. The description will include design criteria, unit sizing, and both hydraulic and process capacities. Provide updated plant layouts, hydraulic profiles, mass balance schematics, and piping and instrumentation diagrams (P & IDs) as necessary for comprehensive alternatives development and analysis.

2.2 Review Existing Reports and Models

Conduct comprehensive review of existing planning documents, master plans, design documents, plant operating data, condition assessment reports, and other pertinent studies necessary for the FPA. This review aims to assess the relevancy and applicability of each report and how they may affect the master planning of future facilities. Review previously developed treatment process and hydraulic models necessary for the completion of the FPA tasks. Review and incorporate, where necessary, the relevance of each major past report/model to the master planning process and confirm the proposed improvements and estimated costs where capital improvements were recommended in reports. The FPA team will review and provide input and comments on these draft documents, as necessary, before they are finalized. Existing documents to be reviewed may include, but are not limited to, the following reports provided by SOCWA.

Coastal Treatment Plant Facility Planning Studies

- 2022: Consequence of failure analysis by Dudek
- 2021: Future Alternative Feasibility Study by Hazen
- 2019: MBR and blower evaluation by Hazen
- 2019: Blower alternatives evaluation by Hazen
- 2013: Facility plan by CH2MHill

The link to access the reports is located here:

[Coastal Treatment Plant](#)

The Consultant may also request copies of the 2025 SOCWA reorganization and capacity assignment agreements referred to in the Background section of this document.

2.3 Flow and Loading Analysis

2.3.1 Historical Wastewater Flows and Loading

The Consultant will review, evaluate, and summarize historical wastewater flows, pollutants and other load characteristics, and loading for the purpose of projecting wastewater flows and loads and evaluating treatment plant capacities. Identify any data gaps, incomplete or inconsistent data, and its impact on projections. Flows, loads, and associated peaking factors will be evaluated on average dry weather, average day, maximum month, and peak hourly basis, along with consideration of peak wet-weather flows. Diurnal and seasonal variability in flow will also need to be considered, as needed, for evaluating process capacities, assessing master plan alternatives, and optimizing existing facilities. The Consultant shall review and summarize past data and reports related to receiving water characteristics.

2.3.2 Projected Wastewater Flows and Loads

The FPA effort will establish and summarize wastewater flow and load projections (average dry weather, average day annual, average day maximum month, and peak hourly, and consideration of peak wet-weather flows) for the planning horizon (30 years) and build-out conditions considering future population projections, per capita wastewater flow rate, and loads, historical flows and loads trending, current and projected trends in water consumption and water conservation, current and projected trends in inflow and infiltration (I/I). The Consultant shall coordinate and obtain flow projections from SOCWA and the Member Agencies.

2.4 Existing Facilities Analysis

2.4.1 Establish Planning and Design Criteria

Determine planning and design criteria to evaluate the capacity of existing facilities. Criteria shall consider original design criteria, the Consultant's experience with similar facilities, SOCWA operational and maintenance experiences, reliability information from other similar types of treatment plants, and from pertinent engineering and industry practices.

The Consultant will review original design and sizing criteria, past reports, historical operations and flow data, and current operational strategies for each treatment plant process. Assess the hydraulic and process capacities of each treatment plant

process by evaluating hydraulic and process loadings, the historical performance of each process, and considering the established design criteria.

2.4.2 Hydraulic Capacity Evaluation

Review and update SOCWA's current hydraulic capacity model for all major unit processes. This effort should be a high-level assessment and update to support appropriate alternative analysis. Provide an updated hydraulic profile and evaluate hydraulic capacity throughout the treatment plant to identify potential hydraulic capacity limitations and assess capacity requirements from changes in average dry weather, average day annual, average day maximum month, and peak hourly flows. The hydraulic model shall be provided to SOCWA at the end of the FPA, including all rights to own and use the model developed under the FPA effort.

2.4.3 Process Model Configuration

Review and update SOCWA's current process loading model for all major unit processes. This effort should be a high-level assessment and update to support appropriate alternatives analysis. Perform any additional configuration and/or calibration required to model future treatment plant alternatives and evaluate existing process capacities. The process model shall be provided to SOCWA at the end of the FPA, including all rights to own and use the model developed under the FPA effort.

2.5 Condition Assessment of Major Unit Processes

The Consultant shall conduct an onsite high-level visual condition assessment of the CTP/AWT/ACWRF major unit processes, both operating and non-operating, focusing on the structural, process, electrical, instrumentation, and mechanical aspects of each process. The objective is to evaluate the current condition and estimate the remaining useful service life of critical equipment and processes that are expected to remain in service as part of the proposed treatment alternatives developed in Task 3.

SOCWA has completed previous conditional assessment studies, which the Consultant shall review and incorporate, where feasible, into the development of the assessment plan, analysis, and recommendations. The Consultant should prioritize assets and major treatment processes based on criticality and condition to determine useful life and feasibility of continued use of assets going forward. In addition, the Consultant shall determine if advanced performance testing,

predictive analysis, or specialized evaluation methods beyond visual inspection would be required to more accurately determine the life expectancy of some of the assets. Information regarding the need for specialized evaluation methods or assessments beyond visual inspection should be provided to SOCWA and the PC 15 Member Agencies for further consideration.

3 Wastewater Treatment Alternatives

3.1 Identify and Develop Treatment Alternatives

3.1.1 Liquid Treatment Alternatives

Prior to developing liquid treatment alternatives, the Consultant shall establish a baseline scenario based on the current plant configuration. The baseline scenario shall assess the existing liquid treatment processes under current and projected flows and loading and include recommended process and capacity optimization. The baseline scenario shall be used as a basis for comparison to other liquid treatment alternatives.

The Consultant shall identify and summarize candidate liquids treatment alternative technologies to meet anticipated regulatory requirements, existing and projected flows and loads (including water conservation impacts), cost and level of service criteria, asset management, performance, and operational efficiency requirements. Liquid treatment alternatives should consider equalization, preliminary, secondary, tertiary, and disinfection treatment processes, as well as effluent discharge and other plant hydraulic and pumping processes and facilities. The Consultant shall consider potential related impacts on other processes, such as potential future solids treatment alternatives. Consideration of future regulatory changes under Task 3.2 should be evaluated to determine the best treatment technologies.

The Consultant shall assess various liquid treatment technologies to establish a range of conceptual treatment alternatives in developing a recommended future liquid treatment strategy. Evaluate, rank and select up to four (4) liquid treatment project alternatives for SOCWA's and the PC 15 Member Agencies' consideration.

3.1.2 Solids Treatment and Disposal Alternatives

The CTP currently sends primary and thickened waste activated sludge to the MNWD's RTP via a force main and pumpstation system for treatment and disposal.

The Consultant shall review and assess potential alternatives and if deemed feasible and cost-effective at CTP, identify candidate solids treatment technologies and disposal alternatives to meet anticipated regulatory requirements, loading, cost and level of service criteria, disposal requirements, asset management, performance, and operational efficiency requirements. Project alternatives shall be compared to the current practice of sending solids to the RTP, and shall consider facilities and costs, assess energy impacts, and air emissions compliance requirements for each proposed technology. The Consultant shall consider potential related impacts on other processes, such as liquid treatment.

If deemed feasible at CTP, solids treatment and disposal alternatives should consider thickening, stabilization, dewatering, and storage processes, as well as other solids handling processes and facilities. Consideration of future regulatory changes in digester gas handling and recovery, biosolids management and disposal under Task 3.2 should be evaluated to determine the best treatment technologies, regardless of location where solids treatment and disposal occurs.

The Consultant shall compare the various solids treatment technologies to consider and assess a range of conceptual treatment alternatives in developing a recommended future solids treatment strategy. Evaluate, rank and select up to four (4) solids treatment project alternatives for SOCWA's and the PC 15 Member agencies' consideration.

3.1.3 Evaluate Electrical Distribution, Instrumentation, and Control Systems

For each proposed treatment alternative, the Consultant shall perform a high-level assessment of recommended improvements to the wastewater plants current electrical distribution (onsite and offsite), instrumentation, and control (PLCs, SCADA, etc.) systems. Assess normal and standby/backup power supply systems and identify strategies to improve reliability.

3.1.4 Evaluate Energy Recovery Facilities

The CTP currently sends solids to the RTP for treatment and disposal and does not have digester gas or other energy recovery facilities. In conjunction with the evaluation of solids treatment and disposal alternatives under Section 3.1.2, the

consultant shall provide a high-level review and assessment of potential alternatives and if deemed feasible at CTP, identify candidate energy recovery technologies and recommend facility improvements and associated agreements. If deemed feasible and cost-effective at CTP, recommend energy recovery improvements as part of the proposed FPA project alternatives.

3.1.5 Support Processes and Facilities

For the top-ranked liquid and solids treatment technologies and corresponding project alternatives, the Consultant shall prepare site layouts showing the general and ancillary support processes and facilities required. Layouts should include the extent of each project alternative, major utility corridors, process piping, support buildings, odor control, major ancillary support processes and facilities, electrical systems, roadways, security, access requirements, etc.

3.1.6 Site Planning Evaluation

Review and summarize previous site plans and evaluate future considerations based on each of the liquid and solids project alternatives. Include costs associated with site configuration adjustments and potential additional land needs based on the proposed treatment alternatives.

3.2 Risk and Resilience Planning Elements

The Consultant shall evaluate the following elements as part of the proposed project alternatives to assess uncertain future conditions regarding operational disruptions, and uncertain regulatory outlook. The following planning elements shall be evaluated and assessed over the 30-year planning period to determine potential impact. The Consultant shall consider these elements as they identify and develop the project alternatives.

3.2.1 Resilience Adaptation Planning

Provide a high-level planning assessment of the potential impacts on the wastewater treatment plant site and operations resulting from items such as extreme wet weather events and flooding, wildfires, ocean level rise, and excessive influent flow peaking from inflow and infiltration (I&I) caused by heavy and prolonged precipitation.

3.2.2 Vulnerability Planning

Assess vulnerabilities with the wastewater treatment plant and provide recommendations for improving SOCWA's resiliency from potential operational disruptions. Vulnerabilities include lack of replacement parts for aged assets, prolonged or frequent power outages from wildfires or other power grid disruptions, and other material vulnerabilities identified by the consultant team.

3.2.3 Evaluate Regulatory Scenarios

Review and assess SOCWA's operating and discharge permits with pertinent regional, federal, and state regulatory requirements governing the treatment and discharge of wastewater to the Pacific Ocean, and Title 22 recycled water reuse. In addition, review solids treatment and disposal regulations, and applicable air quality and emission regulations.

Identify, prioritize, and summarize applicable new and emerging regulatory issues and develop regulatory compliance strategies that encompass the potential future regulatory outlook for SOCWA. Evaluate the proposed regulatory compliance strategy against each project alternative and identify its ability to achieve compliance or determine required improvements for achieving future compliance.

4 Recycled Water Facilities and Effluent Utilization Evaluation

In addition to performing the liquid and solids treatment assessments under Task 3, the Consultant shall conduct an evaluation of recycled water operations and opportunities at the CTP including the existing operations of the plant's Title 22 Advanced Water Treatment (AWT) facilities, and the integrated operation of the Aliso Creek Water Reclamation Facility (ACWRF). The ACWRF uses advanced treatment (ultrafiltration and reverse osmosis) to treat Title 22 recycled water from the AWT for salinity management and to treat harvested water from Aliso Creek when available under specific permit conditions. Currently, the ACWRF is unable to access water from Aliso Creek due to limited flows in the creek and permit/operational restrictions.

To create a baseline scenario, the Consultant shall conduct a review of existing reports, facility data, and operational trends at the CTP, the AWT and the ACWRF and assess improvements necessary to maintain SOCWA's current and projected

uses of recycled water and to evaluate the performance of the existing recycled water infrastructure. The analysis shall also address potential changes in water quality (e.g., increasing salinity), regulatory changes, and identify capital improvements required for continued use of the recycled water facilities to comply with current commitments and future recycled water demands. This includes recommending strategies and improvements necessary to address potential impacts as part of the FPA project alternatives.

The Consultant shall also conduct an analysis of effluent utilization on beneficial reuse alternatives to increase recycled water utilization and reduce or eliminate ocean discharge. Reuse options shall include indirect potable reuse (IPR) and direct potable reuse (DPR) alternatives, including enhancements needed to the AWT and/or ACWRF systems. The assessment shall include technical feasibility, regulatory requirements, environmental impacts, and cost-effectiveness of each alternative considering existing plant operations, applicable regulations, potential treatment plant, AWT and ACWRF infrastructure needs, and lifecycle cost analysis. A multi-criteria decision matrix shall be developed to compare alternatives to the current baseline scenario.

This task is intended to inform SOCWA's long-term planning by identifying additional options for optimizing the use of treated effluent in support of local and regional reuse interests and initiatives. The task will include evaluating, ranking and recommending up to two (2) water recycling options for SOCWA's consideration.

The Consultant shall primarily focus the effluent utilization feasibility assessment on improvements that would be needed at the wastewater treatment plant, the AWT and the ACWRF. Consideration of future recycled water regulatory changes should also be evaluated to determine the best treatment technologies under Task 3. To inform the alternatives analysis where appropriate, the Consultant shall conduct a high-level cursory assessment of potential offsite treated effluent uses, needed off-site infrastructure improvements and other considerations related to each recycling option. The offsite assessment is intended to support early-stage decision-making and does not include detailed design engineering.

Recommendations and findings from this task will inform and be integrated into the FPA project alternatives, ensuring that recycled water remains a viable and optimized resource for SOCWA and the PC 15 Member Agencies.

5 Develop Project Alternatives

The Consultant shall develop a range of proposed future project alternatives for the CTP based on the findings from Task 3 and Task 4. Summarize immediate and future needs of the treatment plant by comparing current and projected wastewater flows and loadings with the capacity of the existing facilities on a process-by-process basis (liquids, solids, digester gas, energy, and other processes as appropriate). Consider related drivers such as risk and resilience elements, potential impact from regulatory requirements, treatment technologies, capacity needs, peaking, process optimization, operational performance, and the condition of existing assets as part of each project alternative.

5.1 Identify Proposed Project Alternatives

Evaluate and rank project alternatives with a maximum of four options. The Consultant shall also utilize key economic, social and environmental evaluative criteria to perform a triple bottom line analysis as part of the overall comparison of FPA project alternatives.

Evaluate, rank and propose up to four (4) combined project alternatives for SOCWA's and the PC 15 Member Agencies' consideration. Prepare planning level facility descriptions, layouts, site plans, cost estimates, and preliminary design criteria for each proposed project alternative. The Consultant shall conduct a staff workshop and Board presentation to present the proposed treatment alternatives.

6 Prepare Facility Planning Assessment Report and Documents

Prepare the required deliverables and technical memorandums (TMs) throughout the FPA master planning process as outlined in Task 6.1. Organize and provide the documents based on the Consultant's deliverable schedule developed as part of the PCP in Task 1. Summarize the major findings, recommendations, and conclusions into a comprehensive FPA report with an executive summary of the final recommendations.

6.1 List of Deliverables

The Consultant shall prepare the following deliverables under Phase 1, including but not limited to the following list, based upon the Consultants’ experience and expertise in master planning processes.

Task No.	Task Description	Deliverable
1	Project Management	Project Control Plan with schedule of workshops and Board presentations.
1	Project Management	Facility Planning Assessment (FPA) Table of Contents and corresponding schedule of deliverables
1	Project Management	Monthly progress reports
2	Existing Facilities Evaluation	Conditional Assessment Report
2	Existing Facilities Evaluation	Process Flow Diagram for Liquid and Solids
2	Existing Facilities Evaluation	Hydraulic model output files
2	Existing Facilities Evaluation	Hydraulic profile
2	Existing Facilities Evaluation	Process model output files
2	Existing Facilities Evaluation	Task 2 technical summary of findings. Material to be incorporated with the corresponding Chapter of the FPA Report.
3	Wastewater Treatment Alternatives	Task 3 technical summary of findings and project alternatives. Material to be incorporated with the corresponding Chapter of the FPA report.
4	Recycled Water Facilities and Effluent Utilization Evaluation	Task 4 technical summary of findings. Material to be incorporated with the corresponding Chapter of the FPA report.
5	Develop Project Alternatives	Project alternative evaluation matrix
5	Develop Project Alternatives	Task 5 technical summary of findings of proposed treatment alternatives and corresponding project alternatives. Material to be incorporated with the corresponding Chapter of the FPA Report.
6	Administrative Draft Facility Planning Assessment Report	Administrative Draft version of each Chapter included in the Facility Planning Assessment Report. Each Chapter shall be developed and submitted according to the deliverable schedule under Task 1.
6	Draft Facility Planning Assessment Report	Draft version of the Facility Planning Assessment Report with Exhibits.
6	Final Facility Planning Assessment Report	Final version of the Executive Summary and final facility planning assessment report that succinctly presents key findings, conclusions, and recommendations.

7 Anticipated Scope of Services for Phase 2 (future phase and for reference only)

As previously indicated, the treatment plant master planning effort for the CTP will be completed in two phases. The services requested under this engagement is for Phase 1. Phase 2 is not part of this request for services, and the following anticipated scope of services is only provided for reference. The intent of pursuing Phase 1 prior to Phase 2 is to allow for a comprehensive analysis of potential treatment facility improvement alternatives that will optimize long-term treatment and beneficial reuse opportunities prior to completing a detailed Facility Master Plan and corresponding Capital Improvement Plan.

Phase 2: Facility Master Plan (future effort) - will build upon the findings of Phase 1 to develop the comprehensive Facility Master Plan for the CTP, outlining recommended improvements, and implementation strategies for future facility upgrades and improvements.

The following conceptual scope of services should be considered preliminary and for reference only for the Facility Master Plan (FMP) under Phase 2.

- Project Management and Communications
- Review and validate Existing Facility Needs
- Review and validate Existing and Projected flows and loadings
- Developing a Repair and Replacement (R&R) Program and Costs
- Evaluate site specific requirements for recommended project alternative under Phase 1
- Perform risk and resilience planning related to climate change, wildfire and other site-specific threats.
- Develop Recommended Master Plan Program
- Develop Capital Improvement Plan
- Identify Funding Opportunities
- Developing an Environmental Compliance Strategy
- Prepare Facility Master Plan Report
- Prepare detailed capital improvement and project summary sheets.

END

Assumptions, Clarifications, and Other General Conditions

General Assumptions: *The basis of our fee estimate is time and materials, and “not-to-exceed”.*

- *AECOM’s scope of work is confined to the area inside the fence of the property line for the Coastal Treatment Plant.*
- *Any opinion of the construction cost prepared by AECOM represents its judgment as a design professional and is supplied for the general guidance of SOCWA. Since AECOM has no control over the changes in cost of labor and material, or over competitive bidding or market conditions, AECOM does not guarantee the accuracy of such opinions as compared to contractor bids or the actual cost to SOCWA.*
- *Consistent with the professional standard of care and unless specifically provided herein, AECOM will be entitled to rely upon the accuracy of data and information provided by SOCWA and other generally accepted sources within the industry without independent verification by the Consultant of their completeness and accuracy.*

General Exclusions

The following services are not included:

- *A review of environmental permitting and CEQA/NEPA requirements is not included.*
- *Financial consulting and legal services are required for the project*
- *Consultation or other services on matters not otherwise provided for in this Agreement*
- *Water quality monitoring*
- *Geotechnical services*

Meetings and Workshops and Site Visits

- *Kickoff Meeting – Blend of in-person for local staff and remote for others*
- *Twelve monthly progress meetings/Technical Discussions – PMs and technical leads as needed. Blend of in-person and remote attendees.*
- *Workshops –*
 - *One for Task 2*
 - *Two for Task 3 (Solids and Liquids)*
 - *One for Task 4*
 - *One for Task 5 (Alternatives Evaluation)*
 - *One for Task 6*

We have estimated a duration of up to 4 hours for each workshop. They will be attended by the PM (in-person) and relevant technical leads (in-person or remote).

- Site visit for infrastructure conditions assessment – Up to two site visits by PM, relevant Technical Leads

Task 2. Existing Facilities Evaluation

Assumptions and Exclusions for Hydraulic Capacity Analyses

- *Elevations of structures will be taken from record drawings and not independently verified. AECOM can provide land survey services for an additional fee.*
- *Flow data will be taken from SOCWA records, and no independent flow monitoring will be conducted.*
- *Water depth data, if needed for calibration, will be obtained by SOCWA staff.*
- *CFD (computational fluid dynamics) modeling will not be performed.*
- *Build out capacity will be based on data provided by SOCWA.*
- *Capacity analysis will be desktop only, based on operating data provided by SOCWA.*
- *No field evaluation or stress testing will be conducted.*

Assumptions and Exclusions for Biological Modeling

- *Biological Modeling will rely upon data provided by SOCWA.*
- *A sampling campaign to characterize biological parameters is not included in the scope of this project.*

Assumptions and Exclusions for Condition Assessment

- *Condition assessment will be based on a visual walk-through inspection*
- *Submerged, inaccessible, and buried facilities and equipment will not be evaluated.*
- *Abandoned facilities will not be evaluated, except to note the size and location for potential demolition.*
- *No CCTV inspection of pipelines will be performed.*
- *Underground utility locating will not be performed.*
- *Materials testing, including concrete coring, is not included.*
- *No confined space entry will be attempted.*

Tasks 3 and 4. Wastewater and Recycled Water Treatment Alternatives

Assumptions

- *Alternative processes or process additions will be developed conceptually with general layouts – no detailed site planning will be provided.*
- *Class 5, preliminary estimates will be prepared for up to four trains selected by the SOCWA.*

About AECOM

AECOM is the global infrastructure leader, committed to delivering a better world. As a trusted professional services firm powered by deep technical abilities, we solve our clients' complex challenges in water, environment, energy, transportation and buildings. Our teams partner with public- and private-sector clients to create innovative, sustainable and resilient solutions throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. AECOM is a Fortune 500 firm that had revenue of \$16.1 billion in fiscal year 2024. Learn more at [aecom.com](https://www.aecom.com).

Contact

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FEE PROPOSAL

Professional Services - CTP Facility Planning Assessment Effort Fee Proposal

January 15, 2026

Submitted to: South Orange County Wastewater Authority



SOCWA - Professional Services – CTP Facility Planning Assessment Effort Fee Proposal

		AECOM Labor Hours and Fee														
Task No.	Task Description	PIC/Technical Advisor	Project Manager	Technical Leads	Senior Project Engineer	Mechanical / Electrical Principal Engineer	Engineer II	Engineer I	Cost Estimator	Drafter/CADD	Admin Assistant	Total Hours - AECOM	Total Labor AECOM	Other Direct Costs	Total AECOM	TOTAL
Hourly Billing Rate		\$335	\$336	\$321	\$220	\$330	\$182	\$165	\$237	\$123	\$135					
Task 1 - Project Management																
1.1	Project Control Plan	1	8	8							4	22	\$ 6,131		\$ 6,131	\$ 6,131
1.2	Project Meetings and Communications	4	96	32							32	164	\$ 48,188	\$ 6,000	\$ 54,188	\$ 54,188
Task 1 - Subtotal		5	104	40	0	0	0	0	0	0	36	186	\$ 54,319	\$ 6,000	\$ 60,319	\$ 60,319
Task 2 - Existing Facilities Evaluation																
2.1	Description of Existing Facilities		4	4				40				48	\$ 9,228		\$ 9,228	\$ 9,228
2.2	Review Existing Reports and Models		4	4	16			44				68	\$ 13,408		\$ 13,408	\$ 13,408
2.3	Flow and Loading Analysis	2	8	8	16			24		4		62	\$ 13,898		\$ 13,898	\$ 13,898
2.4	Existing Facilities Analysis		4	8	16			24		16		68	\$ 13,360		\$ 13,360	\$ 13,360
2.5	Condition Assessment of Major Unit Processes		8	16		32		16				80	\$ 22,008		\$ 22,008	\$ 22,008
Task 2 - Subtotal		2	28	40	48	32	0	148	0	28	0	326	\$ 71,902	\$ -	\$ 71,902	\$ 71,902
Task 3 - Wastewater Treatment Alternatives																
3.1	Identify and Develop Treatment Alternatives												\$ -		\$ -	\$ -
3.1.1	Liquid Treatment Alternatives	4	12	44	36		84	154	30			364	\$ 75,224		\$ 75,224	\$ 75,224
3.1.2	Solids Treatment and Disposal Alternatives	4	44	34	44			74	24			224	\$ 54,616		\$ 54,616	\$ 54,616
3.1.3	Evaluate Electrical Distribution, Instrumentation, and Control Systems		4			16	20	32		8		80	\$ 16,528		\$ 16,528	\$ 16,528
3.1.4	Evaluate Energy Recovery Facilities	2	12	16	12		40					82	\$ 19,758		\$ 19,758	\$ 19,758
3.1.5	Support Processes and Facilities		4	24				44		40		112	\$ 21,228		\$ 21,228	\$ 21,228
3.1.6	Site Planning Evaluation		6	32				54	36	40		168	\$ 34,650		\$ 34,650	\$ 34,650
3.2	Risk and Resilience Planning Elements		4	12				40				56	\$ 11,796		\$ 11,796	\$ 11,796
3.2.1	Resilience Adaptation Planning		4	16				32				52	\$ 11,760		\$ 11,760	\$ 11,760
3.2.2	Vulnerability Planning		4	18				36				58	\$ 13,062		\$ 13,062	\$ 13,062
3.2.3	Evaluate Regulatory Scenarios		8	16			36					60	\$ 14,376		\$ 14,376	\$ 14,376
Task 3 - Subtotal		10	102	212	92	16	180	466	90	88	0	1,256	\$ 272,998	\$ -	\$ 272,998	\$ 272,998
Task 4 - Recycled Water Facilities and Effluent Utilization Evaluation																
4.1	Recycled Water Facilities and Effluent Utilization Evaluation		4	36	32		44	56	20	16		209	\$ 43,896		\$ 43,896	\$ 43,896
Task 4 - Subtotal		0	4	36	32	0	44	56	20	16	0	209	\$ 43,896	\$ -	\$ 43,896	\$ 43,896
Task 5 - Develop Project Alternatives																
5.1	Identify Proposed Project Alternatives	1	12	32				40				86	\$ 21,239		\$ 21,239	\$ 21,239
Task 5 - Subtotal		1	12	32	0	0	0	40	0	0	0	86	\$ 21,239	\$ -	\$ 21,239	\$ 21,239
Task 6 - Prepare Facility Planning Assessment Report and Documents																
6.1	Prepare Facility Planning Assessment Report and Documents	1	12	40				44				97	\$ 24,467		\$ 24,467	\$ 24,467
Task 6 - Subtotal		1	12	40	0	0	0	44	0	0	0	97	\$ 24,467	\$ -	\$ 24,467	\$ 24,467
TOTAL		19	262	400	172	48	224	754	110	132	36	2,160	\$ 488,821	\$ 6,000	\$ 494,821	\$ 494,821

About AECOM

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South Orange County Wastewater Authority



Proposal for
Coastal
Treatment
Plant Facility
Planning
Assessment

January 15, 2026

Hazen

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Key Personnel and Sub-Consultants

Pricing

Conflicts of Interest

Non-Collusion Affidavit

Certifications

Resumes



Hazen and Sawyer
11260 El Camino Real, Suite 102
San Diego, CA 92130 | 858.764.5520

January 15, 2026

Roni Young Grant
Capital Improvement Program Manager
South Orange County Wastewater Authority
34156 Del Obispo Street
Dana Point, CA 92629

Re: Request for Proposals for Coastal Treatment Plant Facility Planning Assessment Effort ENG-25-08

Dear Roni,

Hazen is pleased to submit our proposal for the Coastal Treatment Plant Facility Planning Assessment Effort. We appreciate the opportunity to partner with SOCWA on this critical initiative and. We are teaming with Dudek to bring our combined unmatched proven expertise of the Coastal Treatment Plant to support your long-term vision for resiliency, sustainability, and operational excellence.

Our team offers a unique combination of experience, technical depth, and local presence that sets us apart.

The Hazen team highlights include:



Extensive SOCWA Experience: A proven track record of successful collaboration with SOCWA, including prior work at the Coastal Treatment Plant, and other facilities ensuring familiarity with your systems and priorities.



Comprehensive Master Planning Expertise: Proven methodology for condition assessments, capacity analysis, and phased improvements tailored to SOCWA’s strategic objectives.



Innovative and Sustainable Solutions: Advanced treatment technologies and energy efficiency strategies that deliver resilient, future-ready infrastructure.



Local Presence and Collaborative Approach: A dedicated Southern California team committed to responsiveness, transparency, and stakeholder engagement. We have demonstrated this approach at several other local utilities like Long Beach, San Bernardino Water Department and Encina Water Authority.

We look forward to the opportunity to work closely with SOCWA and deliver a master plan that is practical, defensible, and aligned with your long-term goals. Please feel free to contact Hallie Thornburrow at (760) 223-5666 or HThornburrow@hazenandsawyer.com with any questions or to discuss our approach further.

Thank you for considering Hazen for this effort.

Hallie Thornburrow, PE
Associate

Cindy Miller, PE
Vice President

Legal Name and Address
Hazen and Sawyer, PC
498 Seventh Avenue, 11th Floor
New York, NY 10018
(212) 777-8400

Local Office
11260 El Camino Real, Suite 102
San Diego, CA 92130
(858) 764-5521

Project Understanding and Approach to Work

Project Understanding and Approach to the Work

Hazen’s approach to this project will leverage unmatched institutional knowledge of the Coastal Treatment Plant Treatment Process. This assessment will take a broad approach to assess a wide range of alternatives in order to anticipate the unknowns and plan for the future. This forward-looking approach will incorporate continual collaboration with all SOCWA Stakeholders, to receive input from all parties to make sure all options are properly vetted.

COMPREHEND

Unmatched Institutional Knowledge Lays Foundation for Project Success



Dave Jones, project technical advisor, on-site with CTP operations staff

Our prior work at the Coastal Treatment Plant, our existing process models, and our time spent in the field with your operators will be supplemented with conditions assessments to fully **COMPREHEND** your facility and the drivers for this project.

We hit the ground running and deliver project confidence



This prior work **sets the foundation** for our proposed approach, highlighted on this page, to efficiently evaluate treatment plant alternatives and provide a roadmap for Phase 2 of the Master Plan.

Project Confidence

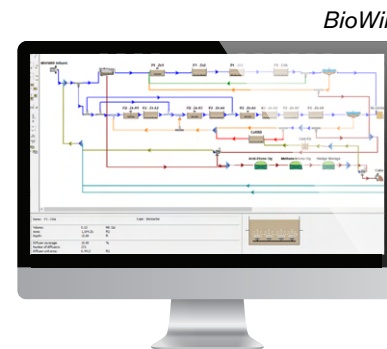


EXPLORE

A Combination of Collaboration and Innovative Thinking will Identify Best Value Alternatives

We will **EXPLORE** the world of alternatives that can achieve your capacity and treatment goals using powerful modeling tools and, most importantly, your input on the success criteria. Those criteria may include:

- Delayed Capital Investments
- Process Complexity
- Robustness
- Capital and O&M costs
- Redundancy
- Flexibility for Future Changes in Flows



Innovation



Hazen workshop

CONVERGE

Approach to Final Screening of Alternatives

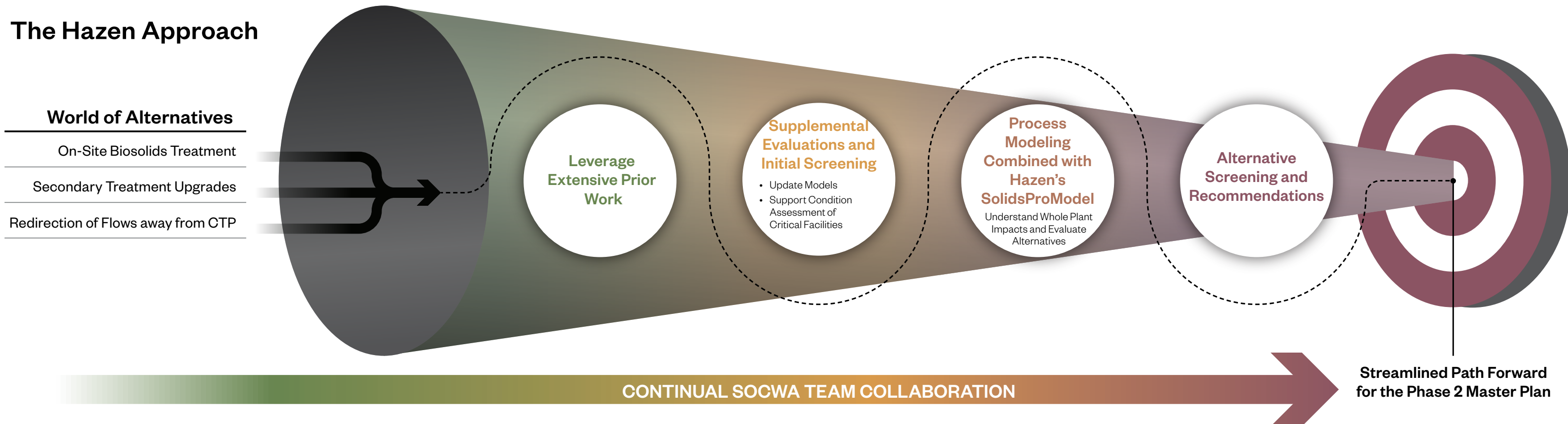
Armed with the results from our analysis and your input on success criteria, we will **CONVERGE** upon the most beneficial solution.

To be proactive, we have already progressed technical evaluations of multiple alternatives, as noted in our past project experience.

Solutions



The Hazen Approach



Our Approach to Facility Planning

Hazen brings a unique headstart to this project through the delivery of the CTP Future Alternatives Feasibility Study Plan project work delivered in 2021. Through this project, Hazen developed facility alternatives for the future CTP upgrades, focused on addressing aging infrastructure, increasing water reuse, and preparing the CTP for the pending ocean nutrient regulations. This work included site plan development, historical data review, high-level process modeling, and cost estimation. The tools (initial process model, calculations, etc) enable Hazen to deliver an alternative evaluation that is comprehensive, consistent, and aligned with SOCWA and stakeholder agency goals and objectives.

The purpose of the Coastal Treatment Plant Facility Planning Assessment (Phase 1) is to provide the technical foundation to support a complete the master plan to be completed in Phase 2. The key components of Phase 1 are a comprehensive condition assessment of the facility, optimization of the secondary treatment process and evaluation of solids treatment/disposal and effluent reuse alternatives. We will follow the Hazen Comprehend-Explore-Converge approach for this project. The previous CTP Alternatives Feasibility Study will serve as a solid basis to update the treatment process evaluation. The diagram to the left provides an overview of evaluation of the solids treatment and disposal alternatives.

We will use our proven process for facility planning to ensure comprehensive evaluation and inclusion of current/near-term needs, as well as future needs, and the identification of triggers for the potential future scenarios.

Project Initiation

The Project Initiation phase is designed to ensure the process starts with a fully aligned team. The outcome of this phase is accepted clear expectations about objectives, project schedule and well-defined lines of communication



Comprehend

This will establish the foundation for a successful Facility Plan.

Leveraging Our Understanding of the Facility Means No Ramp Up Time

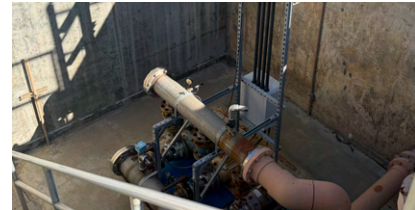
A solid comprehension of the existing facilities by the consultant team is paramount to complete an effective plant roadmap, documenting the existing conditions will set the stage for the next phase of the Master Plan. Hazen will conduct site visits that will include all boots on the ground to properly understand the condition of the plant to feed into the alternative evaluation.

Hazen and Dudek both have dedicated asset management groups with SOCWA experience and several other local facilities that will be performing the condition assessment and work hand-in-hand with the discipline experts to develop a plan to recommended upgrades and any specialized condition assessments as part of Phase 2.

Our planned on-site work will combine with Dudek's recent exhaustive report to establish conditions and consequence of failure. Hazen's and Dudek's combined first hand knowledge of the CTP will inform and accelerate solutions to address aging infrastructure.

The Importance of O&M Considerations

While the priority of the condition assessment is to understand and document the feasibility of reusing existing assets, we also understand operational ease and accessibility for maintenance is a very important consideration. We will report tight areas and other qualitative input from the operators. Proper maintenance will extend the life of equipment and a properly designed plant with operations in mind means happy operators, both are key to the successful longevity of a plant.



The sludge pump area at the CTP includes many O&M constraints, we will identify other locations for O&M redesigns.

Hazen has a Diverse in House Staff. In addition to the Civil/Environmental all support disciplines mentioned in this proposal are part of the direct Hazen team. We have experience with this consistent team which saves schedule and budget.



The Dudek team will be leading the general mechanical portion of the facilities assessment. Dudek's team will document the current condition, criticality, and estimated remaining useful life of equipment expected to remain in service under potential project alternatives. This analysis will provide concise, actionable inputs to support risk assessment, resiliency planning, and lifecycle cost evaluations

Capacity Assessment and Deficiencies

Hazen's previous work with SOCWA included a high-level process model evaluation of the liquid treatment process. This institutional knowledge will be applied to expand upon the previous hydraulic and loading capacity assessment. Through Hazen's work and review of RFP materials, we understand well the previously performed condition assessments. Once this understanding has been developed, we will combine the asset assessments with our updated calibrated process models to identify bottlenecks and risks while developing preliminary alternatives.



Hazen's goal for this Task is to LEAF where beneficial for the CTP. We will incorporate this approach during the alternatives evaluation to highlight solutions that:

- Can be implemented with existing infrastructure
- Are synergistic with long term solutions
- Increase capacity
- Reduce cost and operator complexity

Condition Assessment

Following the high-level facilities evaluation, initial functional evaluation of the processes, and risk assessment, we will develop a “Focused” visual condition assessment plan in collaboration with SOCWA’s O&M staff. Unlike traditional approaches that assess every asset regardless of criticality, our methodology strategically prioritizes the assessment effort. The focused assessment will concentrate exclusively on critical assets that are considered high risk for plant operations.



This approach maximizes value to SOCWA by directing resources toward assets that genuinely require attention, reducing assessment costs and timeline, and delivering actionable information for evaluating alternatives.

Explore

This phase ensures best-fit holistic solutions are identified.

Planning for the Unknowns

Our team understands that there are several uncertainties which could affect the planning trajectory for the Coastal Treatment Plant, but a plan needs to start somewhere. Our Approach is to develop a plan for the future around the current design approach, but accommodate ‘decision trigger points’ in the event of anticipated unknowns. Some of these unknowns could include political decisions, new regulations, stakeholder changes, etc.

Hazen and Dudek will take the baton from the programming team and start conceptual design of the upgrades. Our leads will work very closely together to ensure consistency between the project phasing, design features, and controls. This will result in the new treatment facilities operating smoothly and logically according to operator preferences and in a manner that reduces overall O&M.



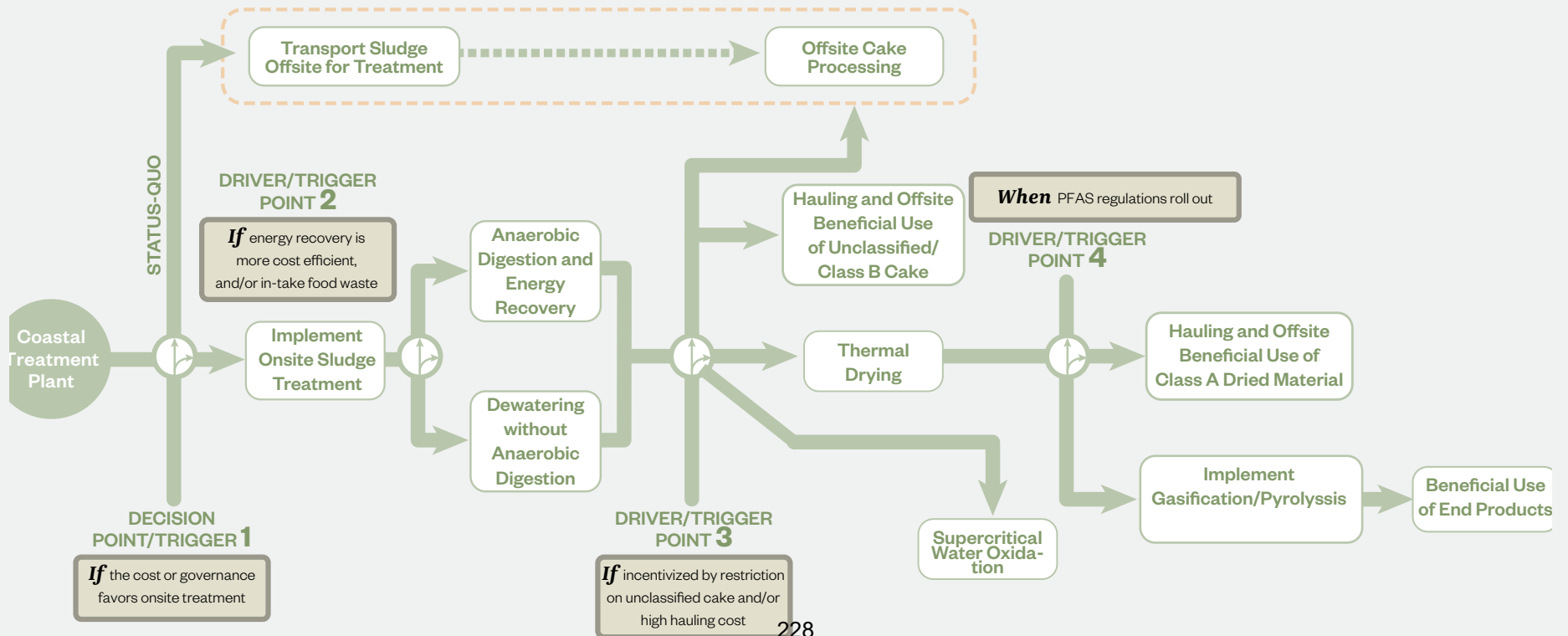
Biosolids Assessment

Definition of the biosolids project requires a comprehensive evaluation of the current wastewater solids systems and processes from SOCWA. We applied our current understanding of your facility to develop a preliminary trigger based roadmap for the solids facility. This is the type of graphic that we will develop for each of the major streams at the CTP.

Recycled Water Facilities and Effluent Evaluation

Similar to Task 3, a baseline scenario will be created for the existing AWT (tertiary filtration and disinfection) and the ACWRF (UF/RO) to support SOCWA’s current and projected recycled water. The baseline will evaluate the impacts of water quality such as potential salinity increase and regulatory changes, and identify capital improvements necessary to ensure facility capacity to meet existing and future recycled water demands while addressing impacts. An analysis of additional beneficial reuse of treated effluent will include IPR (lead by the Dudek team) and DPR (lead by the Hazen team) alternatives for the purpose of maximizing recycled water utilization and minimizing or eliminated discharge to the ocean. The analysis will include various technical, regulatory, environmental, cost, and other suitable factors as part of a multi-criteria evaluation and comparison of the alternatives against the baseline scenario. Technical feasibility will need to address multibarrier treatment requirements, brine handling and discharge, energy use and availability, use of existing treatment system where possible, and other factors. The Task will focus on treated effluent utilization at the existing CTP, AWT, and ACWRF.

Proposed Approach to Solids Treatment and Disposal Alternatives

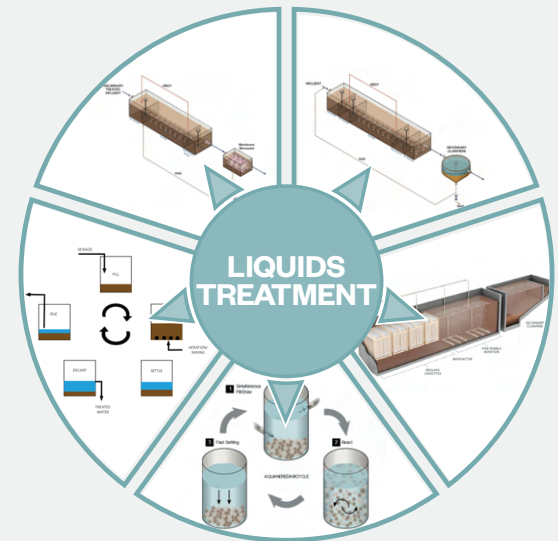


Liquids Assessment

Hazen brings a unique headstart to this project through the delivery of the CTP Future Alternatives Feasibility Study Plan project work delivered in 2021. Through this project, Hazen developed facility alternatives for the future CTP upgrades, focused on addressing aging infrastructure, increasing water reuse, and preparing the CTP for the pending ocean nutrient regulations. This work included site plan development, historical data review, high-level process modeling, and cost estimation. The tools (initial process model, calculations, etc) enable Hazen to deliver an alternative evaluation that is comprehensive, consistent, and aligned with SOCWA and stakeholder agency goals and objectives.

Pulling together the key findings from the Feasibility study previously completed by Hazen, nutrient removal upgrade alternatives, we will develop a overall liquids train roadmap developed as part of the Converge Phase. This roadmap outlines the SOCWA’s long-term effluent strategy, including baseline upgrades and triggers for future expansion to the secondary treatment system related to nutrient removal. Definition of the biosolids project requires a comprehensive evaluation of the current wastewater solids systems and processes from SOCWA.

Previous Feasibility Study completed an In-depth investigation of Liquid Treatment Alternatives



Preliminary Costs



Site Layouts



Future Reuse Considerations



O&M Considerations

Public Outreach (Optional)

While public outreach is not specifically mentioned in the RFP, we present this an optional task for consideration. It is essential that the shortlisted alternatives receive buy in from the SOCWA member agencies, key stakeholders and the public in order for the project to become a success and to avoid delays. Hazen has an internal communications team with decades of public outreach experience for water and wastewater projects throughout the US. While Report Executive summaries are a useful tool to communicate the key ideas to the public, however Hazen has internal staff to take this one step further. Our communication team can create a brochure specifically tailored to the project to communicate the shortlisted project alternatives and increase stakeholder and public buy in.

We build & manage Public Outreach Programs

Support Can Be At Any Point Throughout The Project’s Life Cycle

Strategic Communications Planning Communication plans, engagement schedules, key messages, brand and logo development	✓
Outreach Materials Writing and editing, graphic design, videos, website interactives, animation	✓
Website and Social Media Content Content and posts, videos, updates, recommendations	✓
Event Coordination Logistics planning, agenda development, recommendations	✓
Stakeholder Engagement Meetings workshops, events, school partnerships, public information lines, construction relations	✓

Project Management

Hallie Thornburrow will serve as Hazen’s Project Manager, collaborating closely with the Technical Advisors, Dave Jones and Bryce Danker, to develop and execute the project in accordance with the Project Management Plan (PMP). The PMP will define success criteria and establish project controls essential for achieving our goals.

Project Controls, Budget, and Schedule Tracking

The Hazen Project Management Dashboard provides an easy means to understand overall project health (e.g. budget, schedule, risks, meetings, etc.) at a glance and can be tailored to the specific needs of SOCWA.

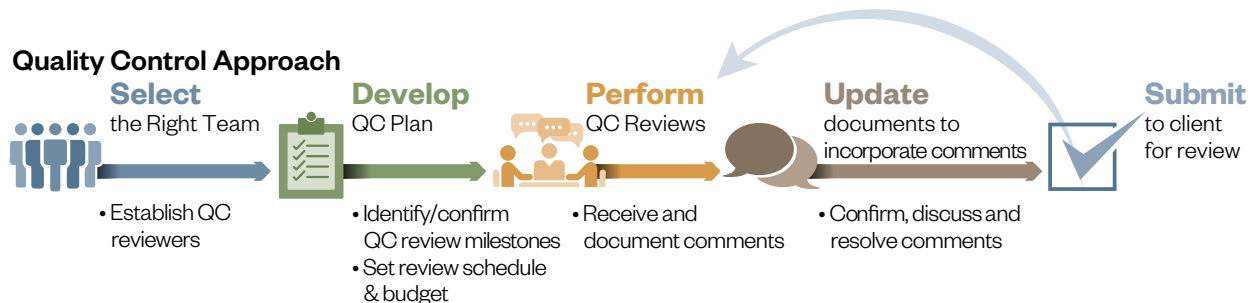
We can utilize this dashboard during this project if desired by the SOCWA team.

Quality Assurance/Quality Control

At Hazen, a commitment to Quality Assurance (QA) and Quality Control (QC) is integral to our project delivery ethos. We have developed comprehensive Quality Control and Quality Assurance Manuals to ensure effective project completion with the highest standards of quality. This framework emphasizes early engagement of experts and robust collaboration throughout all project phases.

Strong collaboration, facilitated through meetings and workshops, will capture input and preferences from your engineering, operations, maintenance, safety, and compliance teams. Our QA/QC process guarantees high-quality deliverables, with responsive handling of feedback from SOCWA staff.

We prioritize the early identification of qualified reviewers who will actively participate in project development from initial evaluation through final deliverables. QC protocols ensure that technical reviews are conducted by experienced staff before each milestone submission, with thorough incorporation of client feedback.



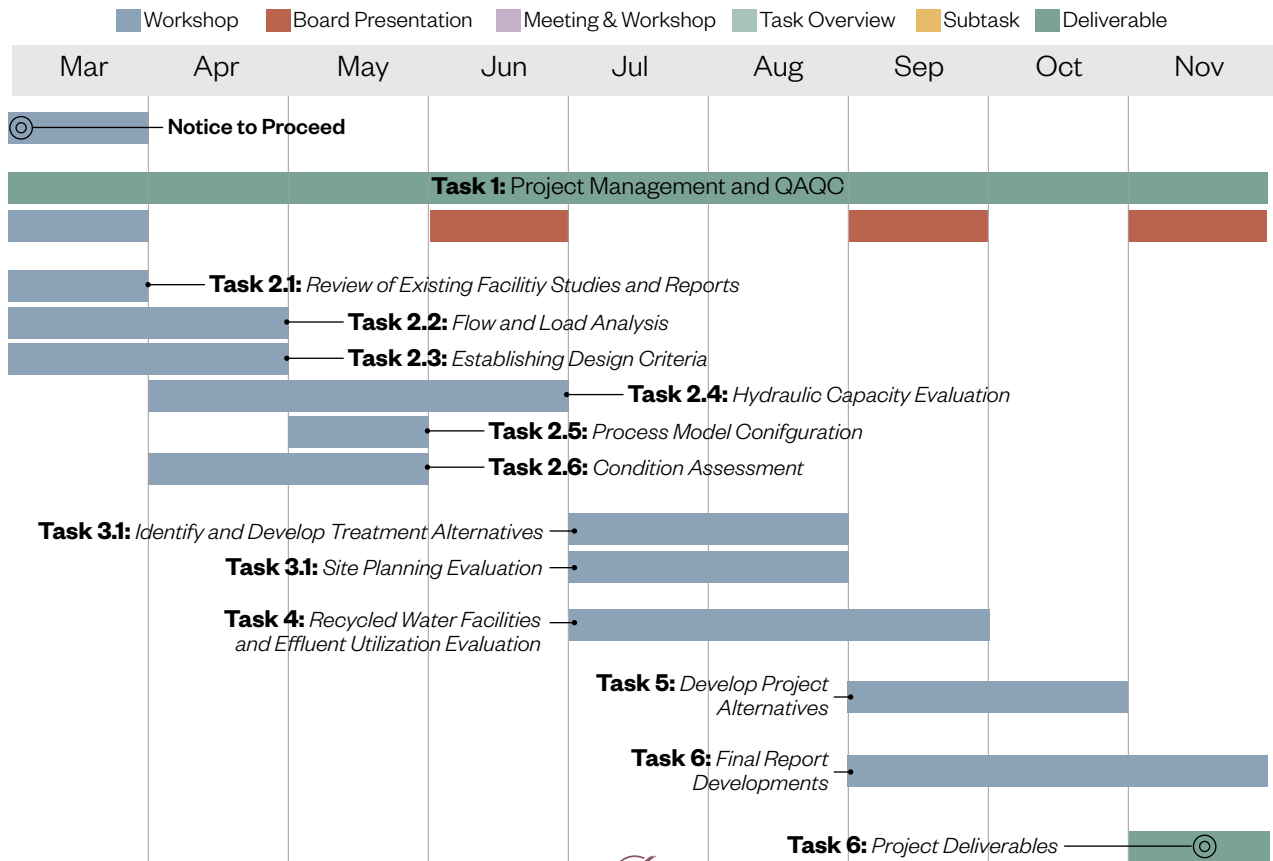
Schedule

We understand efficient delivery of this facility plan is crucial to the future of the Coastal Treatment Plant Facility.

Our preliminary project schedule aims to balance project efficiency with technical thoroughness to set a solid foundation for Phase 2 of the Master Plan. This schedule relies on the efficient delivery of submittal milestones in order to maximize review time such that all stakeholder voices can be accommodated. This optimized schedule is possible thanks to the Hazen’s institutional knowledge and industry-leading experience.

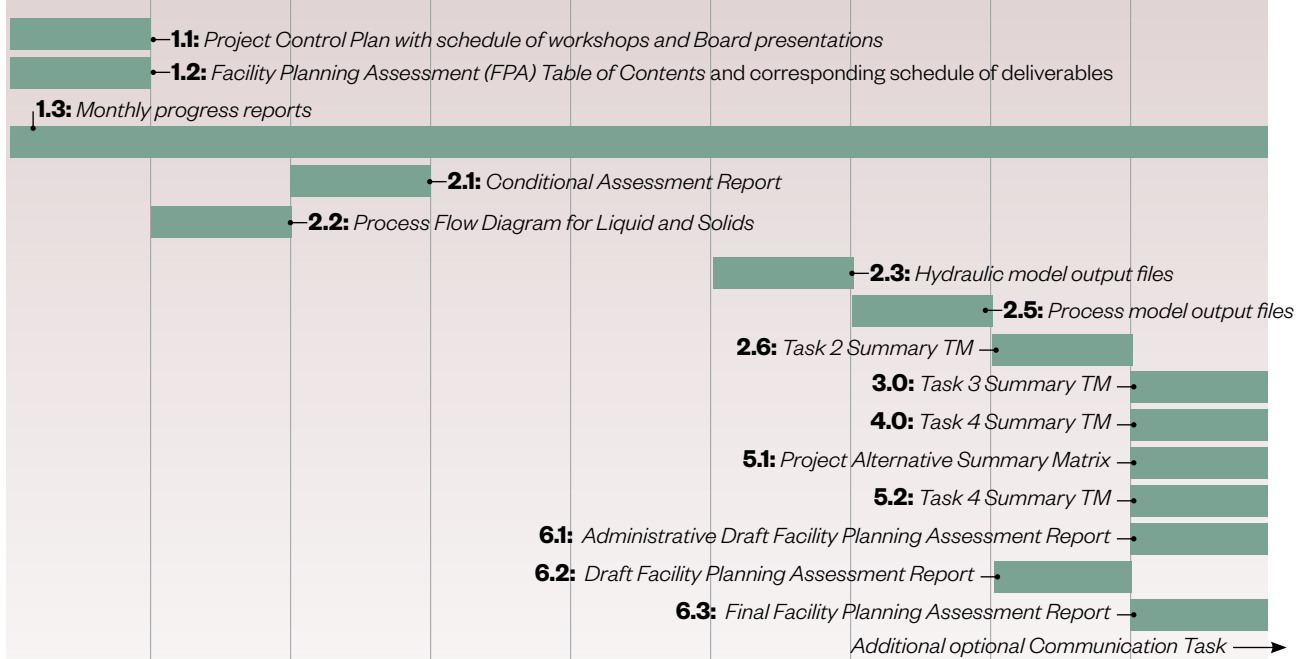
Project Schedule

2026



PROJECT DELIVERABLES

Monthly Project Progress



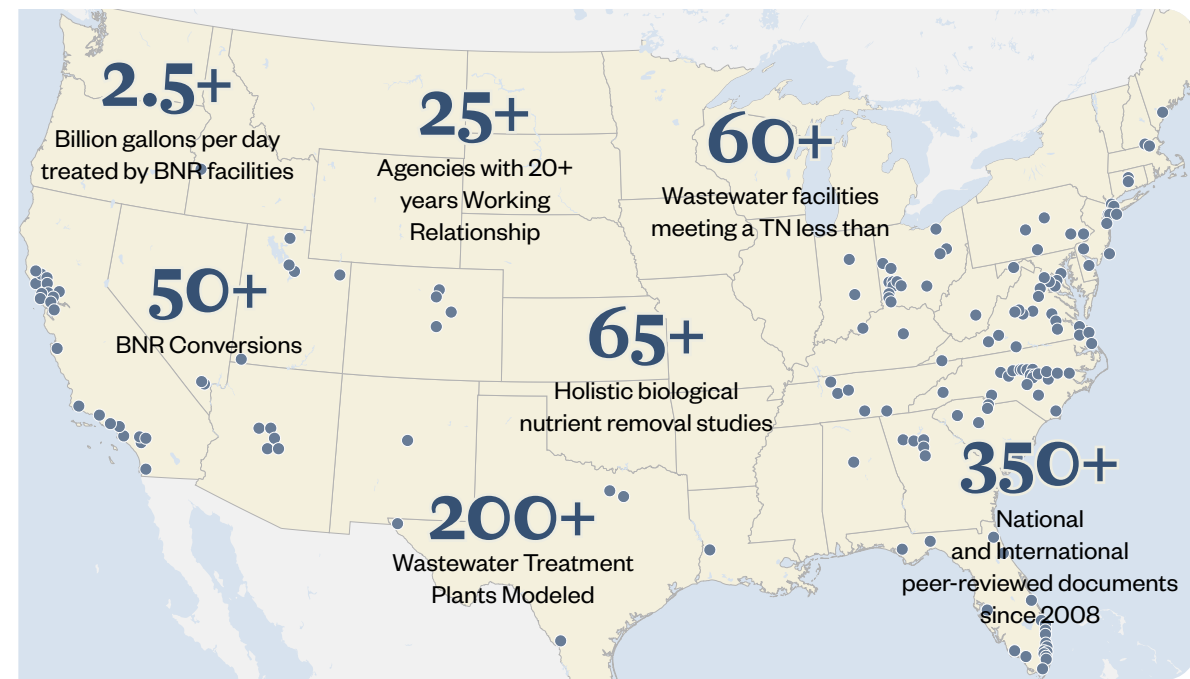
Experience and Technical Competence

The background of the slide features a tropical sunset scene with palm trees silhouetted against a sky of soft pinks, oranges, and blues. A large, solid blue triangle with a thin yellow border is positioned in the bottom-left corner, extending diagonally across the page.

Experience and Technical Competence

Hazen is an industry leader in wastewater evaluations and designs.

This sampling of projects demonstrates a long history of successfully applying a holistic look to determine the full suite of impacts and costs to support clients in selecting the best alternative to meet their unique challenges and drivers. SOCWA can leverage our decades of experience, covering all aspects of this project, to have full confidence in selecting the best value solution for your WWTP.



Our Past Experience ensures an efficient path forward to the future. The Hazen team spent extensive time reviewing historical data and developing a conceptual design basis for the liquids treatment upgrades. We have already worked with your team to develop alternatives and performed an evaluation to choose the best option. We will apply what we learned during our past projects to eliminate the learning curve and hit the ground running.



Process Hydraulic Modeling



BNR Conversions



Operations Support



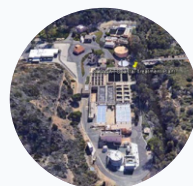
Planning Studies & CIP



Design/Construction

PLANT	CAPACITY (mgd)	WORK PERFORMED
Joint Water Pollution Control Plant, Carson, CA	450	■ ■ ■ ■ ■
Robert W. Hite TF, Denver, CO	220	■ ■ ■ ■ ■
Plant No 1. & Plant No. 2, Fountain Valley, CA	180	■ ■ ■ ■ ■
Bowery Bay WPCP, New York, NY	150	■ ■ ■ ■ ■
North Regional WWTP, Broward County, FL	95	■ ■ ■ ■ ■
26th Ward WWTP, New York, NY	85	■ ■ ■ ■ ■
Neuse River WRF, Raleigh, NC	75	■ ■ ■ ■ ■
Henrico County WRF, Richmond, VA	75	■ ■ ■ ■ ■
East Central Regional WRF, West Palm Beach, FL	70	■ ■ ■ ■ ■
Valley Creek, Jefferson County, AL	60	■ ■ ■ ■ ■
T.Z. Osborne WRF, Greensboro, NC	56	■ ■ ■ ■ ■
Roanoke WPCP, Roanoke, VA	55	■ ■ ■ ■ ■
Plum Island WWTP, Charleston, SC	36	■ ■ ■ ■ ■
Nansemond Treatment Plant (HRSD), Suffolk, VA	30	■ ■ ■ ■ ■
Northern TP, Denver CO	28	■ ■ ■ ■ ■
T.P. Smith WRF, Tallahassee, FL	26.5	■ ■ ■ ■ ■
Eastside WWTP High Point, NC	26	■ ■ ■ ■ ■
Arlington East WWTP, Jacksonville, FL	25	■ ■ ■ ■ ■
Alvarado Wastewater Treatment Plant, Union City, CA	22	■ ■ ■ ■ ■
South Durham WRF, Durham, NC	20	■ ■ ■ ■ ■
East End WWTF, Portland, ME	19.6	■ ■ ■ ■ ■
Plantation Regional WWTP, Plantation, FL	19	■ ■ ■ ■ ■
Broad Run WRF, Ashburn, VA	16.5	■ ■ ■ ■ ■
Crooked Creek WRF, Gwinnett County, GA	16	■ ■ ■ ■ ■
Napa Sanitation District, Napa, CA	10	■ ■ ■ ■ ■

Experience with South Orange County Wastewater Authority



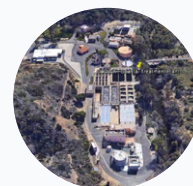
CTP Facility Improvements Design

SOCWA hired Hazen in 2017 to upgrade the CTP, a conventional activated sludge plant with a 6.7 MGD secondary treatment capacity. The project aimed to enhance safety, reliability, and performance by replacing outdated equipment and facilities. Key improvements included aeration system upgrades, electrical and instrumentation enhancements, ferric chloride system updates, headworks improvements, structural upgrades, and plant-wide fall protection measures.



CTP Feasibility Study

Hazen provided support for a comprehensive planning study to identify and evaluate potential future secondary treatment alternatives for the CTP. This work included historical data review, process modeling and potential alternatives, conceptual sizing and layouts, cost estimations and future considerations. Alternatives included MBR, AGS, Five-Stage BNR, MABR, and SBR. This document sets the foundation for this new planning effort that will be delivered as part of this project.



CTP Aeration Improvements

Hazen was selected to provide the detailed design documents and services during construction for this project. This work included development of demolition and mechanical plans to replace the existing Parkson Panels with new 9-inch disk diffusers. Hazen provided a forward thinking design, including separate zones to enable transition to nutrient removal efficiently, as identified in the CTP Feasibility Study. This forward thinking saves SOCWA significant time and capital costs.

Napa Sanitation District



Wastewater Treatment Master Plan

NapaSan engaged Hazen to develop a 20-year Master Plan for the Soscol Water Recycling Facility, addressing short-term decisions and long-term strategies. The plan covers condition assessment, capacity, nutrients, biosolids, energy, recycled water, and climate vulnerabilities. It includes integrated biosolids and energy roadmaps, leading to the installation of the first Mainspring Linear Generator at a wastewater facility using biogas from anaerobic digestion.

Client Contact:

Matt Lemmon, PE
Engineering Director
(707) 258-6004
mlemmon@napasan.com

Date Initiated:

2020

Date Completed:

2022

San Bernardino Municipal Water Department



Water Reclamation Plant (WRP)

Facilities Assessment and Master Plan

SBMWD selected Hazen to develop a dynamic, data-driven master plan for its 33-MGD Water Reclamation Plant, originally built in 1958. Facing aging infrastructure, stricter regulations, and reduced flows and revenue from an upstream scalping plant, Hazen is integrating asset management into the planning process. The approach includes asset inventory, risk and condition assessments, remaining useful life analysis, valuation, and interactive dashboards to guide short- and long-term improvements.

Client Contact:

Francisco Lopez-Jimenez
Associate Engineer
(909) 453-6169
Francisco.Jimenez@sbmwd.org

Date Initiated:

2019

Date Completed:

2020

Delta Diablo Sanitation District



Wastewater Treatment Master Plan

Delta Diablo's 31-mgd Resource Recovery Facility serves 214,000 customers in Antioch, Pittsburg, and Bay Point. Facing aging infrastructure and future regulatory demands, the District engaged Hazen to develop a comprehensive master plan covering all treatment processes, biosolids, and recycled water systems. The plan will deliver a trigger-based roadmap for near- and long-term capital improvements, ensuring strategic, cost-effective investments aligned with future needs.

Client Contact:

Mr. Vince De Lange
General Manager
(925) 756-1920
vinced@deltadiablo.org

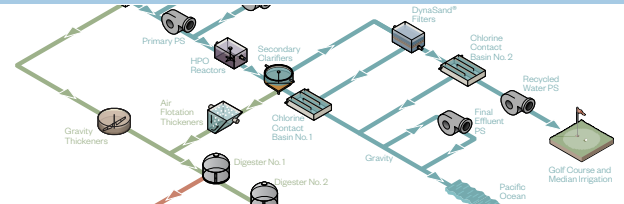
Date Initiated:

2020

Date Completed:

2022

City of Daly City



NSMCSD Wastewater Treatment Facility Master Plan

NSMCSD operates a 6.0 mgd wastewater treatment facility serving the San Francisco Peninsula. Hazen is developing the first Facilities Master Plan, assessing aging infrastructure and planning major upgrades to meet future flows and regulatory needs. The plan will provide a 10-year capital improvement roadmap plus a long-term outlook for resource and compliance planning.

Client Contact:

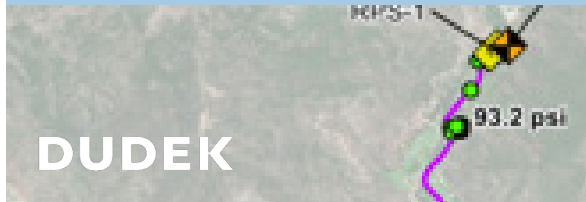
Greg Krauss
Chief of Operations
(650) 991-8204
gkrauss@dalcycity.org

Date Initiated:

2023

Date Completed:

Ongoing

SOUTH COAST WATER DISTRICT**Client Contact:**

Taryn Kjolsing, PE
 Director of Engineering
 tkjolsing@scwd.org
 949-342-1154

Date Initiated:

2022

Date Completed:

2022

Recycled Water Roadmap

Dudek developed the South Coast Water District (SCWD) Recycled Water Roadmap to advance the District's recycled water program, originally outlined in its Integrated Water Resources Plan (IWRP) with a goal of full system expansion by 2035. The District had prioritized existing potable water irrigation customers for conversion to recycled water in six phases, with Phases 0, 1, and 2 implemented or scheduled between 2020 and 2025. Dudek's work focused on planning the timing and implementation strategy for Phases 3 through 6, scheduled for 2026 through 2035.

Dudek updated recycled water hydraulic model demands and scenarios, confirmed pipeline sizing and delivery pressures, evaluated infrastructure needs and timing, and prepared planning-level cost estimates. The roadmap identified phased infrastructure improvements, evaluated alternative storage scenarios, including contingency plans for potential loss of the Joint Reservoir, and recommended pipeline and facility upgrades to ensure reliable service delivery.

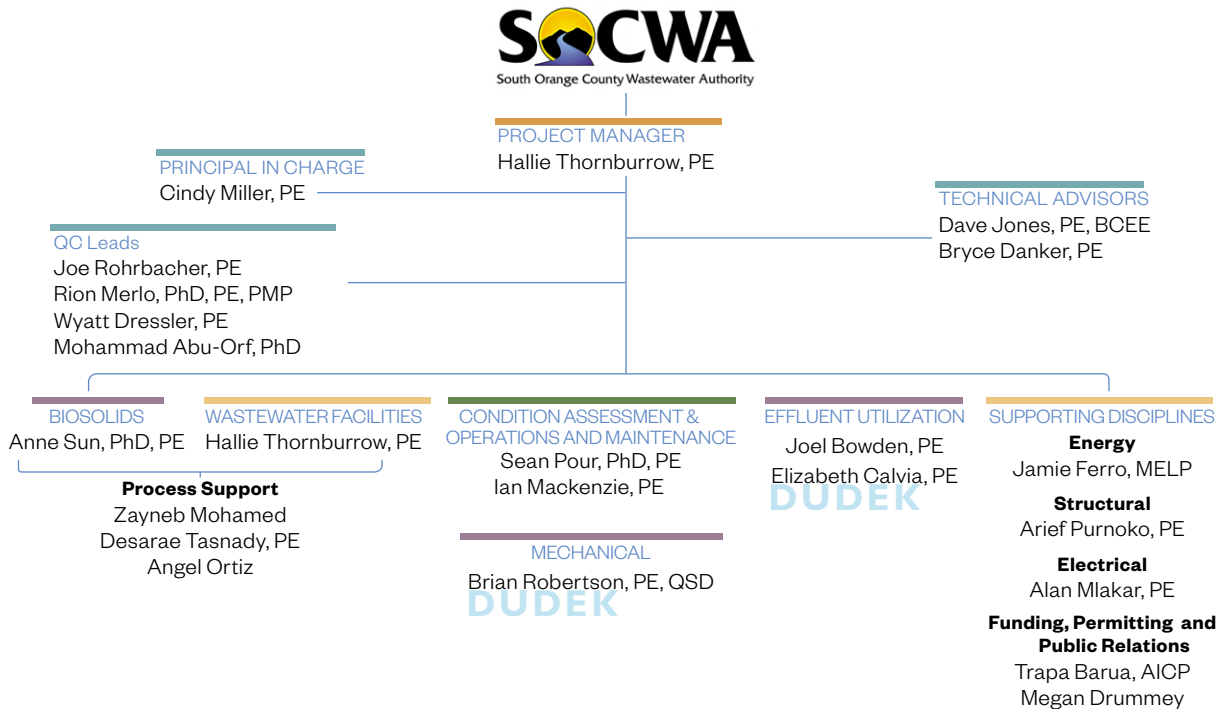
Key Personnel and Sub-Consultants

Section No.



Key Personnel and Sub-Consultants

We have assembled an accomplished and cohesive team of experts that will form a collaborative partnership with SOCWA to map out multiple pathways to achieve your short- and long-term objectives



Hallie Thornburrow, PE

Project Manager

Hallie brings 15 years of experience as a resourceful engineer, with a proven ability to solve problems. She has planned and designed wastewater infrastructure, blending technical expertise with business analysis and pragmatism. She also has extensive technical expertise and will serve a technical role leading the hydraulic modeling and flows and loads analysis.

Hallie is an enthusiastic, local, technical Project Manager. Her knowledge of Southern California's unique challenges promotes quick, informed decisions.



Cindy Miller, PE

Principal-in-Charge

Cindy is a seasoned leader in water infrastructure, known for guiding complex projects with technical expertise and clear vision. Her experience and collaborative approach drive successful outcomes for clients and communities.



Dave Jones, PE, BCEE

Technical Advisor

Dave is an expert in wastewater treatment and facility planning, with decades of experience advising on complex infrastructure projects. Combined with his extensive experience at the CTP, his technical insight supports innovative and practical solutions tailored to the needs of the Coastal Treatment Plant.



Bryce Danker, PE

Technical Advisor

Bryce specializes in process engineering and system optimization for water and wastewater facilities. His hands-on approach and deep technical knowledge help drive efficiency and reliability throughout project delivery. He was led the CTP Alternative Feasibility Study and Aeration Improvements projects.



Sean Pour, PhD, PE

Condition Assessment

Sean specializes in prioritizing critical assets and integrating condition data into digital platforms for real-time decision-making. Sean has delivered condition assessment programs for major California utilities, ensuring actionable insights that drive CIP development and long-term reliability. remaining asset life calculation, risk assessment, life cycle cost projection, and project validation and prioritization.



Joe Rohrbacher, PE

QC Lead -Liquid Stream

Joe brings a strong background in quality control and regulatory compliance for large-scale water projects. His attention to detail and commitment to best practices safeguard project integrity from planning through execution. He has worked closely with Bryce on all the treatment process evaluations at the CTP.



Wyatt Dressler, PE

QC Lead - Structural

Wyatt is known for his expertise in quality assurance and process improvement. He leverages his experience to maintain high standards and deliver consistent, dependable results for every phase of the project.



Mohammad Abu-Orf, PhD

QC Lead - Solids

Mohammad combines advanced technical expertise with a rigorous approach to quality management. His leadership in research and practical application ensures robust solutions and continuous improvement for complex water infrastructure projects.



Jamie Ferro, MELP

Energy

Jamie specializes in energy optimization for water and wastewater facilities. With a background in sustainable systems, Jamie develops strategies that reduce operational costs and environmental impact, supporting efficient performance at the Coastal Treatment Plant.



Anne Sun, PhD, PE

Biosolids

Anne has extensively worked on applied research on life cycle analysis and greenhouse gas emission from innovative biosolids treatment technologies, and fate of contaminants of emerging concerns. Her particular area of expertise involves biosolids process master planning and design, technology piloting and evaluation, and process modeling.



Ian Mackenzie, PE

Wastewater Facilities

Ian brings extensive experience in the planning and design of wastewater treatment plants. His technical expertise and practical approach contribute to reliable, high-performing facility upgrades and expansions. He was the Project Engineer on the CTP Facilities Improvement Design Project.



Trapa Barua, AICP

Permitting

Trapa's particular focus is on all aspects of environmental quality review and grand funding including: air permitting, and various environmental audits.

Acknowledgment of Addenda

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

ADDENDUM No. 1

TO: REQUEST FOR PROPOSAL

FOR CTP FACILITY ASSESSMENT PLANNING

THE PROPOSER SHALL EXECUTE THE CERTIFICATION AT THE END OF THE ADDENDUM AND SHALL ATTACH THE ADDENDUM TO THE PROPOSAL (NOT TO BE INCLUDED AS PART OF THE PAGE COUNT).

1. The proposal page limit is 20 pages, not including the cover letter or attachments.
2. See the attachment for the directions to CTP.
3. See the attachment for the Pre-Proposal Meeting sign-in sheet.
4. See the attachment for the Pre-Proposal Meeting presentation.

DATED: 11/20/2025

Roni Young Grant

Roni Grant
CIP Manager

BIDDER'S CERTIFICATION

I acknowledge receipt of the foregoing Addendum No. 1 and accept all conditions contained herein.

DATED: 1/15/2026

BIDDER: Hazen and Sawyer

BY: *Cindy Miller*
Cindy Miller, PE
Vice President

Conflicts of Interest



Hazen confirms there are no actual, apparent, direct or indirect, or potential conflicts of interest that may exist with respect to our firm, employees, or other persons identified in the Proposal relative to the services to be provided under the Agreement Services to be awarded pursuant to this RFP.

Non-Collusion Affidavit



**ATTACHMENT B
NON-COLLUSION AFFIDAVIT**

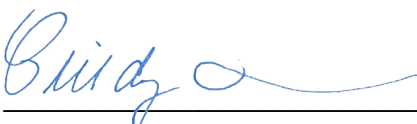
The undersigned declares:

I am the Vice President of Hazen and Sawyer, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on 1/14/26[date], at Irvine [city], California[state].

Signature: 

Title: Vice President

The background of the page features a tropical sunset scene with palm trees silhouetted against a sky of soft pinks, oranges, and blues. A large, solid blue triangle with a thin yellow border cuts across the bottom-left corner of the image.

Certifications

Certifications

1. Respondent certifies that it is not aware of any actual or potential conflict of interest that exists or may arise by executing the contract or performing the work that is the subject of this RFP.
2. Respondent certifies that it is willing and able to obtain all insurance required by the form contract included as Attachment C.
3. Respondent certifies that it has conducted a reasonable and diligent inquiry concerning the minimum and/or prevailing wages required to be paid in connection with the performance of the work that is the subject of this RFP and certifies that the proposed pricing includes funds sufficient to allow respondent to comply with all applicable local, state, and federal laws or regulations governing the labor or services to be provided.
4. Respondent acknowledges and agrees with all terms and conditions stated in the RFP.
5. Respondent certifies that all information provided in connection with its proposal is true, complete, and correct.

Authorized Signature:

A handwritten signature in blue ink, appearing to read "Cindy", followed by a long, horizontal flourish.

Cindy Miller - Vice President

The background features a tropical sunset scene with palm trees and a blue sky. A large, solid blue diagonal shape with a yellow border covers the bottom-left portion of the page. A semi-transparent blue horizontal bar is positioned at the top right, containing the word "Resumes" in white serif font.

Resumes



Hallie Thornburrow, PE

Project Manager

Hallie is a mechanical design engineer and specializes in Computational Fluid Dynamics modeling to evaluate hydraulic performance of existing facilities and predict performance and impacts of proposed designs and retrofits.

Education

MS Civil Engineering,
McGill University,
Montreal, QC, Canada

BS Civil Engineering/
Environmental
Engineering, McGill
University, Montreal, QC,
Canada

Certification/License

Professional Engineer:
CA

Areas of Expertise

- Hydraulics /
Conveyance
- Computational Fluid
Dynamics Modeling
- Water / Wastewater
Design

Biosolids Loadout Condition Assessment Study and Detailed Design, Eastern Municipal Water District, Perris, CA

Technical Lead. The biosolids loadout facility at the PVRWRRF has experienced failure of several components including loadout gates and loadout measurement cells. These failures have necessitated greatly increased operator involvement to keep the facility functioning. Hazen was appointed to evaluate current condition of the facility to recommend improvements that would restore it to reliable operation.

Regional Water Reclamation Facility Capital Improvement Prioritization Program, Eastern Municipal Water District, Perris, CA

Capacity Analysis and Modeling. The project focused on evaluating the CIPs for all four of EMWD's Water Districts Regional Water Reclamation Facilities (RWRFs). The evaluation included analyzing historical data to develop design flows and loads, developing flow and load projections in close collaboration with EMWD's planning group, evaluating whole plant capacities for all major unit processes, determining when each major expansion would need to be on-line by and developing cost estimates. This work also includes development of a CIP dashboard for use in tracking and managing projects in real time as flows and loads to the RWRFs change in the future.

Sidestream Treatment Project, Eastern Municipal Water District, Perris, CA

Technical Lead. Hallie led the yard piping design and hydraulic profile evaluation at Temecula Valley and Perris Valley. In addition to hydraulic calculations this work included close coordination with pipe material vendors and EMWD operators to ensure the best pipe selection for operability, longevity, and meeting project budget constraints. Hallie also assisted in the multidisciplinary project coordination which produced well-coordinated, high-quality client deliverables.

Wastewater Treatment Plant Improvements Engineering Report, Seeley County Water District, Seeley CA

Technical Lead. This project included developing planning and design of improvements to address effluent permit violations which have resulted in notices of noncompliance, including an Administrative Civil Liability Complaint and Time Schedule Order. The first phase of project evaluated various treatment alternatives and performing an alternatives analysis to recommend a cost-effective treatment approach. The second phase included design of this approved recommendation which included an MBR system, mechanical dewatering, sludge drying beds and a new lift station. Ms. Thornburrow led the hydraulic evaluation by designing the MBR lift station and developing hydraulic profiles for the plant.

Technical Analysis of Biological and Advanced Water Treatment Processes at the Joint Water Pollution Control Plant, County Sanitation Districts of Los Angeles County, Los Angeles, CA

Hydraulic Analysis. The JWPCP critical to supply the needs of over 3.5 million people and many industries in Los Angeles County. LACSD and MWD of Southern California have partnered to evaluate the potential development of the Regional Recycled Water Program and potentially implement a full-scale advanced water treatment facility (AWTF) to produce up to 150 million gallons per day (mgd) for potable reuse. This project effort included several tasks related to this program including process modeling, analysis of plant retrofit options and production of conceptual designs to meet the treatment goals and evaluation of the potential impacts on the existing plant operations. Hallie developed conceptual level hydraulic design and plant site layouts for the various alternatives. This effort included developing hydraulic profiles, pump sizing and equalization approach and flow control evaluations.

Palmdale Ditch Conversion Feasibility Study, Palmdale Water District, Palmdale, CA

Project Engineer. The Palmdale Water District is looking to replace the existing Palmdale Ditch, a 7.2-mile earthen or concrete-lined ditch that conveys water from Littlerock Dam to Lake Palmdale with a pipeline. This feasibility study included a hydraulic analysis, pipe sizing recommendation to increase the flow capacity to 60 cfs, a complete a pipe materials evaluation and recommend a material selection, an evaluating water loss savings and development of feasibility level cost estimates for construction. This information was summarized to ultimately prioritize ditch sections for replacement.

Second Aqueduct Diversion Complex Operational Reliability Alternatives Analysis, San Diego County Water Authority, San Diego, CA

Project Engineer. The Second Aqueduct Diversion Complex is a central hub in the Water Authority's entire system where both untreated and treated water are conveyed and distributed throughout the region. The overall objective of this comprehensive study was to evaluate alternatives to improve operational reliability of the Second Aqueduct Diversion Complex by improving structural resiliency and enhancing operations. The work included a site inspection of the existing facilities, review of operations data and discussions with the operations staff which were all documented in a technical report. The investigation results were used to produce conceptual design alternatives and perform an alternatives analysis which evaluated the hydraulic, risk, cost, environmental and operational impacts, among others to produce an overall recommendation. Ms. Thornburrow's efforts focused on the evaluation and conceptual design development of a new treated water weir facility and new flow regulatory structure. will include two skids, one containing the dewatering skid connected to the AirSCWO Nix6 skid.



Cindy Miller, PE

Principal in Charge

Cindy serves as Hazen's Irvine and Inland Empire Operations Manager. She has extensive experience in the planning, design and construction of water supply, treatment, storage and conveyance facilities.

Education

BS, Civil Engineering,
University of California, Irvine

Certification/License

Professional Engineer

Areas of Expertise

- Project Management
- Program Management
- Project Delivery
- Groundwater Supply
- Well Equipping Planning and Design
- Pump Station Planning and Design
- Reservoir Storage Planning and Design
- Pipeline Planning and Design
- Drinking Water

Baker Water Treatment Plant, Lake Forest, CA

Project Manager. The project includes planning and design of a 28-mgd microfiltration treatment plant with UV disinfection. The project includes design of a 100-percent redundant flow control facility utilizing dual sleeve valves, a 56-cfs raw water pump station to convey flow to the plant from Irvine Lake, upgrades to a Metropolitan Water District turnout facility and transmission pipeline to increase deliveries to 100 cfs, a 6-cfs raw water pump station for Trabuco Canyon Water District, a fore-bay designed to provide adequate contact time for chlorine dioxide injection, feedwater pump station, coagulation injection, strainers, 14 pressure microfiltration membrane racks, UV disinfection system, chlorine contact basin, chemical building housing 9 different chemicals, an extensive chemical piping delivery system, solids dewatering facilities, civil site work, finished water pipelines, retrofit of two 16 MG pre-stressed concrete reservoirs, Product Water Pump Station, transmission pipeline and connection to Metropolitan Water District's South County Pipeline.

Chino I Desalter Expansion and Chino II Desalter Projects, Inland Empire, CA

Project Manager. Provided engineering services to the Chino Basin Desalter Authority (CDA) for the multimillion-dollar Chino I Desalter Expansion and Chino II Desalter projects. The assignment involved design of a new desalter facility; expansion and upgrade of an existing desalter facility; design of water distribution facilities, including pump stations, pipelines, and well equipping. The project included expansion of an existing 9 MGD reverse-osmosis treatment plant to a 14 MGD plant by adding ion exchange treatment for nitrate removal and VOC treatment for removal of TCE. Other plant improvements included the upgrading of the existing disinfection system to 0.8 -percent solution sodium hypochlorite generated on site, expansion of the on-site product water pump station, and other miscellaneous upgrades to improve plant performance. In conjunction with increasing the Chino I Desalter's capacity, three new wells were added to increase the system's raw water supply. Delivery facilities from the Chino I Desalter were added to enhance movement of treated water to the end-users. Delivery facilities included two new

booster pump stations with capacities of 2,600 gpm and 1,400 gpm and approximately 14,000 linear feet of product water pipeline, 12 inches to 24 inches in diameter. The project also included design of a new 10 MGD Chino II Desalter. This treatment plant was designed to target TDS and nitrate removal and using reverse-osmosis and ion exchange in parallel. The project included eight new groundwater wells; approximately 30,000 linear feet of raw water pipeline, 16 inches to 36 inches in diameter; approximately 24,000 linear feet of product water pipeline, 12 inches to 42 inches in diameter; and a new booster pump station with 3,000 gpm capacity. The new and expanded desalters, which include the Chino I Desalter and the Chino II Desalter, provide potable water to and strengthen the water supply reliability of cities and agencies in the southwesterly region of the Inland Empire, including Jurupa Community Services District, City of Chino, City of Chino Hills, City of Ontario, Santa Ana River Water Company, and the City of Norco.

La Brea Subarea Groundwater Supply Project – Wells, Transmission Main, and Treatment Facilities, City of Beverly Hills, CA

Principal in Charge. Responsible for the City of Beverly Hills La Brea Subarea Groundwater Supply Project. This is a \$50 M project the City is implementing to expand their local water supply by developing groundwater in the La Brea Subarea of the Central Groundwater Basin. The project includes three (3) groundwater wells to be drilled and equipped, 4-miles of raw water transmission main through the City of Los Angeles and Beverly Hills, and upgrade of the City's existing reverse osmosis treatment plant. The first phase of the project which Hazen is leading is the drilling and equipping of the first groundwater well, and construction of the 4-mile transmission main.

Water Master Plan Update and GIS Conversion Project, City of Chino, Chino, San Bernardino County, CA

Principal in Charge. The City of Chino serves over 12 million gallons per day of potable water to a population of approximately 74,000. Key components of this project include the creation of a GIS geodatabase of the City's potable water distribution system, preparation of a Water Master Plan Report, and completion of a Risk and Resiliency Assessment for compliance with America's Water Infrastructure Act requirements. The Water Master Plan effort includes hydraulic model development and calibration; comprehensive hydraulic analysis of the City's conveyance, pumping, and storage facilities; and development of a prioritized Capital Improvement Program for the planning horizon including preliminary cost estimates.

Regional Brackish Water Reclamation Program - Phase 1 Pilot Testing and Water Quality Characterization, Water Replenishment District of Southern California, Lakewood, CA

Program Management/Delivery. Cindy led the pilot program and design for the Regional Brackish Water Reclamation Program. The Phase 1 Project develops a well drilling and water quality characterization program to define where the trapped seawater plume is within the aquifer and to determine the best location for production wells to pump the plume to a 10,000 AF (9 mgd) Reverse Osmosis System. The project includes drilling a nested pilot well to supply water to a treatment pilot. The project includes developing preliminary designs of the wells, pipelines, pretreatment, reverse osmosis and post treatment pumping and brine disposal lines. The project will remediate the aquifer and reclaim water that will be supplied to multiple local stakeholders.

Eastside Facility Expansion, Chino CA

Principal in Charge. Cindy led the 3,500 gpm treatment expansion for the City of Chino at the Eastside Facility. Treatment includes GAC for 1,2,3-TCP and ion exchange for nitrate. The design includes treatment of three wells, with potential for a fourth, pipelines, buildings and control systems. This design requires careful integration of the new equipment with existing treatment on site.



Bryce Danker, PE

Technical Advisor

Bryce serves as Hazen's lead wastewater process engineer in Southern California.

Education

MS, Environmental Engineering,
University of California, Irvine

BS, Civil & Environmental
Engineering, California
Polytechnic University, Pomona

Certification/License

Professional Engineer: CA

Areas of Expertise

- Wastewater Process Engineering and Modeling
- Wastewater Facility Design
- Sidestream Deammonification Evaluation and Design
- Detailed Mechanical Design
- Pilot Testing
- Oxygen Transfer Efficiency Testing and Research

Enhanced Treatment & Site Upgrade (ETSU) Program, Union Sanitary District, Union City, CA

Lead Process/Mechanical Engineer. The Union Sanitary District (District) has embarked on the \$450M Enhanced Treatment and Site Upgrade (ETSU) Program which will result in increased plant capacity, replace aging infrastructure, future nutrient removal, and provide flexibility for wet weather discharge to the San Francisco Bay. The program includes aeration basin modifications to convert from carbon removal to biological nutrient removal, a new eighth aeration basin, new secondary clarifiers, new RAS/WAS pump station, new effluent facilities (chlorination, dechlorination, effluent pump station, wet weather discharge pump station, recycled water pump station and elutriation water pump station) new carbon odor scrubbers, new primary effluent equalization, and a new administration building. The project included extensive hardening of the electrical infrastructure to accommodate the future loads and provide electrical redundancy. In addition to design, Hazen is providing permitting, CEQA development, and financing application support for the multi-phase program.

Joint Technical Analyses Program, Regional Recycled Water Program Piloting, CA

Lead Process Engineer. Bryce is serving the pilot design, optimization and process evaluation for multiple pilots associated with the Regional Recycled Water Program (RRWP). The RRWP will provide up to 150 mgd of advanced treated water for indirect potable reuse in southern California. The pilot testing includes secondary densified activated sludge (DAS) and a tertiary MBBR with the potential for enhancement with PANDA. Additionally, lead process engineer working with the Hazen team to develop a concept to achieve nutrient removal utilizing the existing HPOAS reactor. This full-scale demonstration has the potential to save the program 100's of millions of dollars during the life of the program.

Technical Analysis of Biological and Advanced Water Treatment Processes, JWPCP Los Angeles County Sanitations Districts, CA

Lead Process Engineer. Bryce served on this important Regional Water Recycling Program (RRWP) to expand water resources for the Southern California Region. Roles include leading the plant baseline evaluation and process model development. This effort included historical plant data evaluations, plant as-built review, plant wide mass balance development, process model development and calibration, and staff training. Additional duties include developing conceptual designs for 150+ mgd facility retrofits to achieve nutrient removal and prepare the water for advanced treatment and potable reuse. This includes capital, O&M and life cycle cost estimating, conceptual layout and design development, process and hydraulic modeling, fatal flaw screening, plant wide operational impacts evaluations, and alternatives screening. Development of conceptual designs to meet future ocean nutrient limits through a whole plant upgrade will also be completed during this project. Based on the findings of these efforts, the detailed design of the selected alternative will continue the development of the RRWP.

Joint Technical Analyses Program, Regional Recycled Water Program – HPOAS Demonstration

Lead Process Engineer. Bryce is serving on the pilot design, optimization and process evaluation for multiple pilots associated with the Regional Recycled Water Program (RRWP). The RRWP will provide up to 150 mgd of advanced treated water for indirect potable reuse in southern California. Additionally lead process engineer working with the Hazen team to develop a concept to achieve nutrient removal utilizing the existing HPOAS reactors. Roles included operational test plan development, facility sampling, on-site operational support and troubleshooting, and extensive process evaluations.

PVRWRF and TVRWRF Sidestream Deammonification Facilities Preliminary and Final Design, Perris and Temecula, CA

Lead Process Engineer and Project Manager. EMWD selected Hazen to deliver detailed design and startup services for two sidestream deammonification facilities. These will be the first two AnitaMox facilities in California. Bryce's role included process mechanical design for the deammonification reactors and support facilities. He also served as the project manager for this project and coordinated client requirements, internal and external quality control, vendor procurement, cross-discipline coordination and delivery of the project on time and on schedule.

Process Support for Plant 2 Transition to Non-Reclaimable Flow (PS21-08), Orange County Sanitation District, CA

Lead Process Engineer. The purpose of this project is to provide specialized process support for the Plant 2 transition to operation in non-reclaimable flow mode as part of the final GWRS expansion. This work included developed of a startup guide for operations to use during this transition. This work included extensive historical data review, on-site analytical testing, process and CFD modeling, operational training, and microscopic analysis. Additionally, the team determined new operational parameters for this 90 mgd HPOAS facility and identified optimization opportunities. New standard operating procedures were also developed during this project to support current and future successful operation.

Hyperion Process Model and Facility Optimization, City of Los Angeles Sanitation, CA

Lead Process Engineer. Developed a calibrated process model for the Hyperion WRF. Tasks included historical plant data evaluations, plant as-built review, plant wide mass balance development, process model development and calibration, and staff training. The process model developed is a powerful tool that provides insight to current and future operation of the Hyperion WRF. This process model will be used to assist the Hyperion staff with what-if analyses, evaluating improvement to support the Operation Next Water Supply Program.



Dave Jones, PE, BCCE

Technical Advisor

Dave has experience in wastewater, recycled water, stormwater, and drinking projects.

Education

MBA, University of Southern California

MS, Civil/Environmental Engineering, Stanford University

BS, Civil Engineering, Northeastern University

Certification/License

Professional Engineer

Areas of Expertise

- Project Management and Project Delivery
- Drinking Water
- Wastewater
- Water Recycling
- Stormwater Quality Management

Barrier Pump Station and Basin Rehabilitation and Replacement (R&R) Project, West Basin Municipal Water District, CA

Project Manager. Hazen conducted detailed condition assessment of six pumps (two 150hp and four 300hp) including variable frequency drives (VFDs) and all associated mechanical, electrical and control systems. In addition, a detailed structural condition assessment was conducted of the concrete basins – the Barrier Product Water Storage Tank and Barrier Product Water Pump Station Wet Well. Condition assessment of the tank and wet well required confined space entry procedures. Hazen prepared a technical memorandum documenting the condition assessment work and subsequently, worked with West Basin staff to prepare a project construction phasing plan to align the estimated \$8 million construction project with the District’s Capital Improvement Plan (CIP) budget. Hazen has been retained to conduct the design of the R&R improvements and prepare bid documents.

Water Reclamation Plant (WRP) Facilities Assessment and Master Plan, City of San Bernardino Municipal Water Department, CA

Project Manager. Conducted an asset inventory and condition assessment of facilities, equipment and other assets for the City’s 60-year-old, 33-mgd WRP. Work involved review of all WRP data including as-built drawings and computerized maintenance management system (CMMS) and preparation of a desktop inventory. The inventory was verified by field visits throughout the WRP including assessment of the condition of the assets. A risk-based condition assessment was prepared including determination of remaining useful life estimated costs for rehabilitation and replacement for input into the capital improvement program for the WRP. Based on the condition assessment, a master plan was prepared to identify near-term (within 5 years) and longer-term (greater than 5 years) recommended improvements for both capital and operation & maintenance projects. The final deliverable included interactive asset management dashboards linked to the City’s intranet.

Hollenbeck Park Lake Rehabilitation and Stormwater Management Project, LASAN, City of Los Angeles, CA

Project Manager. Since February 2020, Hazen has been leading a diverse team of consultants to build on the 2016 Concept Report prepared for the Hollenbeck Park Lake (HPL) Rehabilitation and Stormwater Management project. The HPL is a valued community asset for the Boyle Heights neighborhood of the City of LA. The project proposes to implement water quality improvements at HPL, by diverting and treating runoff

from Caltrans, City and County drainage areas, replacing a portion of current potable water deliveries at HPL with stormwater and dry weather flow diversion, restoring HPL's aesthetics, and providing a long-term solution to erosion around the Lake's edge. The stormwater treatment Best Management Practices (BMP) proposed for the Project consist of hydrodynamic separators or equivalent water quality pre-treatment devices immediately upstream of the Lake, shoreline wetlands around the perimeter of the Lake, and in-lake treatment involving chemical feed system, aeration, and recirculation.

Prop O Projects Optimization – Temescal Canyon Park Stormwater BMP, LASAN, City of Los Angeles, CA

Principal-in-Charge. Conducted condition and performance assessment of the conveyance and treatment systems for the Temescal Canyon Park Stormwater Best Management Practice facilities. Worked closely with LASAN including staff from the Watershed Protection Division and Wastewater Collection Systems Division to make recommendations to rehabilitate and optimize the Phase 1 and Phase facilities. Facilities included CDS unit, wet weather storage tank, tank mixing system, tank drainage system, park irrigation pumping system and instrumentation and control systems.

Solid Resources Program, Program Management Support Services, LASAN, City of Los Angeles, CA

Program Manager. Work involved development of the City's plan (RecycLA) for managing and diverting organic (food) waste from landfills in compliance with state laws. Worked directly with LASAN executives and City Hall staff to formulate the successful roll-out of the program. Lead the preparation of an RFP to procure a design-build contractor for an Organic Waste Processing Facility to be located within an existing City transfer station. The food waste slurry will be routed to the City's wastewater system for energy recovery.

Hollenbeck Park Lake Rehabilitation – Phase 2 Conceptual Design, Los Angeles, CA

Program Manager. This project included the preparation of the concept design report of the water quality improvements to restore the 4-acre urban lake. Improvements included floating wetland islands, aeration system, alum chemical feed, lake recirculation, and lake perimeter pedestrian walkway with subsurface natural treatment/filtration system.

Hollenbeck Park Lake Rehabilitation – Phase 1, Los Angeles, CA

Program Manager. Dave was responsible for the fast-tracked rehabilitation design and installation of this 4-acre urban lake located in the Boyle Heights neighborhood of Los Angeles. Project involved working with the local city council office, City of LA Bureau of Sanitation, and City of LA Recreation & Parks staff to successfully design and install 5 Floating Wetland Islands in the lake in time for a major neighborhood community celebration event within a 2-month timeframe.

Optimization of Proposition O Natural Treatment Systems for City of Los Angeles, Bureau of Sanitation Watershed Protection Division, Los Angeles, CA

Principal-in-Charge. Dave provided senior review and managerial guidance of the establishment and system performance of three natural treatment systems (Echo Park Lake, South Los Angeles Wetland Park, and Hansen Dam Wetland Recreation Area). To achieve optimal performance, each project needed to be observed and managed from the combined perspectives of water quality treatment, hydraulic management, vegetation



Mohammad M. Abu-Orf, PhD

QC Lead

Dr. Abu-Orf “Mo” is Hazen’s Residuals Group Practice Leader and has over 25 years of experience in the areas of solids dewatering, drying, stabilization, and energy recovery.

Education

PhD, Environmental Engineering,
University of Delaware

MS, Environmental Engineering,
University of Delaware

BS, Civil Engineering, Birzeit
University, West Bank, Palestine

Areas of Expertise

- Residuals
- Biosolids master planning
- Process optimization
- Sludge dewatering
- Energy recovery

Wastewater Residuals Handling Facilities Study, Westchester County, NY

The project provided the county with the most efficient, flexible and cost effective method to handle wastewater residuals at the County’s seven treatment plants. Provided technical review of the Phase 4 results that developed a 20-year plan with the flexibility to consolidate residuals handling operations for multiple Water Resource Recovery Facilities at one or more locations through using emerging and state of the art processes.

Engineering Support Services for Biosolids Processing Solution Project, Morris Forman Water Quality Treatment Center (MFWQTC), Louisville, KY

On-Going Project, Technical Director. This project is providing engineering support services for the Bio-solids Processing Solution Project at the (MFWQTC) in Louisville, Kentucky. MSD has started evaluating solutions for their aging biosolids processing infrastructure and is considering an alternative delivery solution, either including design-build or public private partnership with a private source operation, ownership, or financing. The technical scope of this project includes assisting MSD in narrowing the field of technologies and vendors from the 11 statement of qualifications submitted, short-listing up to 5 of the technologies and vendors to be included in the request for proposal process, identifying the most favorable technology and vendor for them, and navigating the contract negotiations with the successful bidder.

Long Term Comprehensive Biosolids Management Plan, Cape May County Municipal Utilities Authority, NJ

Provided technical review to various deliverables for this project. Cape May County Municipal Utilities Authorities owns and operate four wastewater treatment plants and a centralized composting facility. The project provided the County with a long term biosolids management plans for its generated residuals.

Thickening Technology Evaluation and Gravity Belt Thickening Pilot, Newtown Creek Wastewater Treatment Plant, NYC DEP, NY

Technical advisor role for evaluating the feasibility of alternative biosolids thickening technologies for replacing the existing thickening centrifuges. The technology evaluated include Gravity belt thickening (GBT), Rotary drum thickening, and centrifuges. GBT was recommended as the optimal alternative based on quantitative and qualitative evaluation. GBT piloting was conducted alongside the existing centrifuges. GBT offered the greatest 20-year Net Present Value and shortest Discounted Payback Period. was recommended after evaluating.

Business Case Evaluation of the Enhanced Anaerobic Digestion at Sawgrass WWTP, City of Sunrise Utilities, FL

The project intended to provide the City with a business case evaluation comparing the previously recommended conventional mesophilic anaerobic digestion to anaerobic digestion with thermal hydrolysis pretreatment. Provided technical review to the business case evaluation and recommendations.

Nuisance Struvite and Dewaterability Improvements Project, Metro Wastewater Reclamation District, CO

This project is to value near-term, mid-term, and long-term management strategies and technologies and develop a basis of design to address nuisance struvite and dewaterability at Robert W. Hite Treatment Facility. Technical lead on piloting demonstration and results evaluation and developing strategies.

Decant and Sludge Storage Facilities – Site Assessment and Conceptual Design Report, Passaic Valley Sewer Commission, NJ

Technical director for Project Area Four which focused on waste sludge flow processing alternatives, which evaluated various alternatives for thickening the sludge including splitting primary sludge to gravity thickening while processing the WAS through centrifuges or passing a portion of the WAS through gravity thickening.

Business Case Evaluation of the Enhanced Anaerobic Digestion at Sawgrass WWTP, City of Sun-rise Utilities, FL

The project intended to provide the City with a business case evaluation comparing the previously recommended conventional mesophilic anaerobic digestion to anaerobic digestion with thermal hydrolysis pretreatment. Provided technical review to the business case evaluation and recommendations.



Sean Pour, PhD, PE

Condition Assessment & Operations and Maintenance

Sean is the asset management practice lead for Hazen's West Region with a wide range of experience helping clients to be more proactive in planning rehabilitation and replacement activities.

Education

PhD, Civil and Environmental Engineering, concentration in Const. Eng. And Mgmt., Oklahoma State University

MS, Civil and Environmental Engineering, concentration in Const. Eng. And Mgmt., Amirkabir University of Technology (Tehran Polytechnic)

BS, Civil and Environmental Engineering, concentration in Const. Eng. And Mgmt., Amirkabir University of Technology (Tehran Polytechnic)

Certification/License

Professional Engineer

Areas of Expertise

- Asset Management
- Life Cycle Cost Analysis
- Asset Inventory / Condition Assessment
- Risk Assessment
- Capital Improvement Project Validation

He specializes in analyzing condition data to improve the accuracy of the estimation of remaining effective life and risk. His areas of asset management specialization include assisting clients in performing remaining asset life calculation, risk assessment, life cycle cost projection, and project validation and prioritization.

Sewage Lift Station Condition and Risk Assessment, Eastern Municipal Water District, Perris, CA

Asset Management Lead. EMWD identified 38 of the 47 lift stations for complete at grade visual condition assessment. Led the team in performing field condition assessment and risk assessment (i.e., Likelihood of Failure and Consequence of Failure) rating for each lift station asset and each lift station district-wide, to determine appropriate maintenance activities and rehabilitation or repair alternatives and cost estimates. The outcome of this Project was EMWD was provided with the data and tools, including an interactive Dashboard to confidently make decisions that will ensure the long-term functionality and reliability of each lift station for EMWD's future needs.

Water, Recycled Water, and Sewer Master Plan, Trabuco Canyon Water District, Lake Forest and Rancho Santa Margarita, CA

Condition Assessment Lead. The 2022 System-wide Master Plan Update and Condition Assessment has been prepared as an update to the 1999 Water, Wastewater and Reclaimed Water Master Plan. This report provides comprehensive documentation, analysis, and recommendations for the water system, non-domestic water system, and sewer system including a calibrated GIS-based hydraulic model for each system. The Master Plan develops a Capital Improvement Program (CIP) that identifies the recommended projects needed to ensure that the District continues to provide safe, reliable, and efficient water, non-domestic water, and sewer service to its customers.

Water Master Plan, Santa Clarita Valley Water Agency, City of Santa Clarita, CA

Asset Management Lead. Led the development of logics for a risk-based prioritization of rehabilitation of the Agency's water pipelines using InfoAsset Planner software. Led the condition assessment of critical pump stations, reservoirs and treatment facilities. Using the data from the Agency's GIS, CMMS and InfoWater, built and calibrated the risk model within InfoAsset. Planner for the water pipelines and developed logics to recommend pipe segments for rehabilitation, replacement, or further condition assessment. Led the development of rehabilitation and replacement recommendations to develop CIPs. The project included training of the Agency staff on the implementation of the risk-based R&R prioritization logics in InfoAsset Planner.

Water and Recycled Water Master Plan, City of Chino Hills, Chino Hills, CA

Condition Assessment Lead. Hazen and Sawyer completed the City's Water and Recycled Water Master Plan Update. The City's goal was to create a comprehensive updated Citywide water and recycled water master plan complete with a new GIS-based hydraulic model and mapping tools. The document and the new modeling system is a guide for planning, operating, and maintaining the City's water and recycled water systems and infrastructure. The proposed CIP evaluated the City's water and recycled water system and identified recommended projects through year 2045. Major scope elements included hydraulic model development and calibration (InfoWater), system analysis, condition assessment of high priority facilities, Urban Water Management Plan, Water Shortage Contingency Plan, Master Plan final report, and a prioritized Capital Improvement Program.

Treatment Plant Facility Improvement Master Plan, Long Beach Water Department, Long Beach, CA

Condition Assessment Lead. The project entailed developing a master plan for the Groundwater Treatment Plant (GWTP) to ensure the right investments at the right time are made to ensure reliability and redundancy of the plant by enhancing the condition of existing assets. Led the condition and risk assessment of the entire facility and developed prioritized repair and rehabilitation plan to incorporate into the CIPs.

Barrier Pump Station and Basin Rehabilitation and Replacement Project, West Basin Municipal Water District, El Segundo, CA

Condition Assessment Lead. Led the detailed condition assessment of six pumps (two 150hp and four 300hp) including variable frequency drives (VFDs) and all associated mechanical, electrical and control systems. In addition, a detailed structural condition assessment was conducted of the concrete basins – the Barrier Product Water Storage Tank and Barrier Product Water Pump Station Wet Well. Prepared a technical memorandum documenting the condition assessment work and subsequently, worked with West Basin staff to prepare a project construction phasing plan to align the estimated \$8 million construction project with the District's Capital Improvement Plan (CIP) budget.

Union Sanitation District (USD), Pump Station Asset Condition Assessment Study, Union City, CA

Asset Management Lead. Performed condition assessment for 2 pump stations and 4 lift stations. Evaluated business risk exposure of all the assets within these stations. Identified major CIPs for the stations and developed an implementation schedule for the CIPs. Developed an Asset Management Decision Support Dashboard using Power BI to visualize the risk and condition assessment results along with long range funding needs to better support the decision-making process for future capital investment.



Trapa Barua, AICP

Funding, Permitting, and Public Relations

Trapa is a skilled Principal Scientist for Hazen and Sawyer's Environment Planning and Permitting Group.

Education

MS, City and Regional Planning,
Pratt Institute

BA, Planning and Public Policy,
Edward J. Bloustein School of
Planning and Public Policy at
Rutgers University

Certification/License

American Institute of Certified
Planners

Areas of Expertise

- Environmental Quality Review
- Socioeconomic Development
- Geographic Information Systems

Enhanced Treatment & Site Upgrade, Union Sanitary District, Union City, CA

Funding Support. Crafted the funding application materials for Union City's successful grant proposal for the construction of a solar array and electric vehicle charging station from the U.S. Department of Energy's Energy Efficiency and Renewable Energy.

Twin Vista Levee Emergency Repair Project, City of Santa Rosa, CA

Environmental Review. The project includes assessment, design, permitting, and construction for the emergency repair of the Twin Vista levee along the Petaluma River to prevent loss of property. The levee was identified as high risk of levee failure based on the condition assessment. To address the high-risk deficiencies, emergency repair was conducted via Rock Slope Protection (RSP), which involves placing rip rap at these eroded areas to provide bank stability and restore the levee crest. Permits were obtained from the following regulatory agencies with jurisdiction: US Army Corps of Engineers, US Fish and Wildlife Services, California Department of Fish and Wildlife, Regional Water Quality Control Board, Bay Conservation and Development Commission, and Sonoma County.

Windsor Water Reclamation Regional Biosolids Resource Recovery Facility, Town of Windsor, Sonoma County, CA

Funding Support. Supported the development of a funding application for the Town of Windsor's application for a proposed Biosolids Handling Facility under the Climate Pollution Reduction Grant which is awarded by the US Environmental Protection Agency.

Coastal Treatment Plant Facility Improvements, South Orange County Wastewater Authority, Dana Point, CA

Funding Support. Contributed to the development of a funding strategy for the Coastal Treatment Plant's proposed 4 million gallons per day upgrade, identifying potential opportunities under the Bipartisan Infrastructure Law, including grants and other sources. These sources encompass the Department of Water Resources, FEMA, U.S. Bureau of Reclamation, US EPA, and State Water Resources Control Board.

One Watershed, The City/County of Association of Governments (C/CAG), San Mateo, CA

Funding Support. Assisted with the development of funding materials for the City/ County of Association of Governments of San Mateo for NOAA's Climate Resilience Regional Challenge grant program to introduce climate resilient infrastructure throughout San Mateo County.

Torrance Groundwater Desalter Expansion, Water Replenishment District, Lakewood, CA

Funding Support. Supported several different grant applications (USBR Title XVI, California State Water Resources Control Board Drinking Water State Revolving Fund, WIFIA).

Department of Water Resources Urban Community Drought Relief Funding, San Gabriel Valley Municipal Water District, Azusa, CA

Funding Support. Supported project management needs and gathering informational needs behalf of the San Gabriel Valley Municipal Water District for differing grant application processes which include the California State Water Resources Control Board Drinking Water State Revolving Fund and USBR Title XVI.

Hexavalent Chromium Maximum Contaminant Level Funding Analysis, Indio Water Authority, CA

Funding Support. Assisted in developing a technical funding document outlining various financing options available to the Indio Water Authority for compliance with the State Water Board's proposed Chromium-6 standards.

Chino II Desalter Concentrate Reduction Facility Protection System Project, Chino Basin Desalter Authority, Jurupa Valley, CA

Permitting Support. Prepared the Notice of Exemption for the proposed work for the Chino II Desalter Concentrate Reduction Facility. Project scope involved performing improvements to four existing tanks located at the existing facility.

Soscol Recycled Water Pump Station, Napa Sanitation District, CA

CEQA Task Lead by developing the Initial Study/Mitigated Negative Declaration and Alternative Analysis for the Soscol Recycled Water Pump Station project. The project focused on improvements to the Soscol Water Recycling Facility by replacing the existing jockey pump, add an additional jockey pump and an additional vertical turbine pump, and would include the addition of a pump bay.

Wastewater Reclamation Facility Biosolids Treatment and Disposal Upgrades, Town of Windsor, CA

CEQA Support. Assisted in CEQA support by developing and reviewing the Initial Study/Mitigated Negative Declaration for the proposed upgrades and improvements to the solid's treatment process at the current Windsor Water Reclamation Facility.



Wyatt Dressler, PE

QC Lead

Wyatt leads structural design for water infrastructure projects at Hazen, specializing in water storage tanks, reservoirs, and hydraulic structures.

Education

BS, Civil Engineering, California State University, Northridge

Certification/License

Professional Engineer: CA, AZ, CO, UT, NM, NV, OR

Areas of Expertise

- Concrete hydraulic structures for water & wastewater treatment
- Masonry buildings for pump stations, well equipping, electrical and operations
- Bridge pipeline crossings
- Structural and seismic evaluation
- Structural modeling

Aurora Water Zone 5 Tank & Zone 7 BPS, Aurora Water, Aurora, CO Structural Technical Advisor/QAQC. Aurora Water contracted the design team of Hazen and Black & Veatch for the design of a 5 million gallon water storage tank in the Zone 5 area of the Prairie Point subdivision and a 7 mgd Zone 7 booster pump station. The goal is to provide Aurora residents with redundant water service for Zones 5 – 8A, and to facilitate additional storage to alleviate any pressure losses that may arise between Zones 5 – 7. Hazen’s structural scope included design of the 5 MG circular tank as an AWWA D115 style, tendon prestressed tank based on Aurora Water’s standardization of the D115 tank for their water storage infrastructure. The booster pump station consists of a reinforced cast-in-place concrete substructure on a mat foundation to house the pumps and piping, which includes an overhead bridge crane for maintenance. At grade, supported by the lower level pump station, is a single-story masonry building to house electrical and controls, a bathroom, and provides stairway access to the lower level.

Brooks and Lindsay Reservoirs Cover Replacement Design, Mesa, AZ Structural Engineer of Record. Reservoir cover replacement final design project. Following the condition assessment task of Brooks and Lindsay Reservoirs, the City contracted Hazen to perform the detailed design phase based on the recommendations from the condition assessment tech memo. The detailed design involved full replacement of the cover system at both reservoirs. The scope of work involved preparing detailed drawings and specifications for construction of the cover system. This included new steel girders, purlins, connections and aluminum decking cover, due to corrosion as well as insufficient member capacity in conformance with current codes. The existing reservoir basin slope lined walls, lined floor, and concrete columns were protected in place for demolition of the old cover and construction of the new system.

Park Manor Reservoir Cover Replacement Study, City of Glendale, Glendale, CA

Structural Lead. Evaluation and study of reservoir cover replacement at Park Manor Reservoir. The City of Glendale retained Hazen to study the feasibility and cost associated with full replacement of the aging existing wood framed cover with a lighter weight cover system, or full

replacement of the existing hopper-bottom concrete sloped lined partially buried reservoir with dual circular tank storage system in the same location. Structural scope included onsite inspection of the existing reservoir, preparing an initial evaluation report, and completing a final preliminary design report based on the City's selected option. This approach to evaluation and study would be adopted by the City for three other similar type existing reservoirs the City owns and operates that require rehabilitation.

Elizabeth Reservoir, Booster Pump Station and Well No. 29, City of South Gate, South Gate, CA

Structural Design Engineer. Design team for the Elizabeth Reservoir and Well No. 29 project for the City of South Gate. The structural scope of work included the design of a booster pump station building and concrete mat foundation for a new 2.3 MG welded steel tank reservoir (designed by others), as well as the design of four concrete block building structures at the Well No. 29 site. The structural scope of work at the well site also included the retrofit of the foundations for an existing elevated steel tank reservoir. Wyatt's responsibilities included design, plans, and specifications for the concrete block buildings and equipment supports at each site, which includes the pump station building, well head building, sodium hypochlorite building, and a generator building. Each building was designed using special reinforced masonry shear walls supporting a flexible roof diaphragm. The building roof system consists of fabricated steel trusses supporting structural metal decking with plywood sheathing and metal tile roofing. The well head building was designed with a section of removable roof and removable walls to facilitate removal of the well pump and piping for maintenance or replacement.

Plant 30 Wellhead Treatment Project, Monte Vista Water District, Montclair, CA

Structural Lead and EOR. Plant 30 Wellhead Treatment Project for MVWD. Hazen was retained by MVWD to provide a comprehensive long-term solution to treat the District's groundwater wells for 1,2,3-TCP and nitrate. A GAC + IX combination treatment approach was selected as the best alternative to treat the wells. Structural tasks included detailed design of an asymmetrical mat slab type foundation for support of 6 pairs and 3 future pairs of GAC vessels trains, 4 current and 3 future ion exchange vessels and a pair of bag filters. A separate mat slab foundation was designed to support 3 brine storage and 1 future brine storage tank, with an estimated full weight of 175,000 lb per tank. Design of a conventional reinforced concrete slab with spill containment curbs to support a pre-engineered, precast concrete building structure for chemical storage. A circular mat foundation slab was designed to support a 50,000-gal welded steel tank for water recovery storage. The mat slab foundation was selected over the conventional ring footing based on design vertical and lateral seismic loads.

Leo J. Vander Lans WTF Calcium Chloride Bulk Storage Expansion, Water Replenishment District of Southern California, Lakewood, CA

Structural Lead. Calcium Chloride Bulk Storage Expansion Project. Calcium chloride is used at the Leo J. Vander Lans Advanced Water Treatment Facility to stabilize reverse osmosis permeate prior to groundwater injection for the seawater barrier. The existing 5,000 gal calcium chloride storage tank does not provide adequate storage capacity when the plant operates at average flow, and for max 8 mgd design flow. Hazen recommended expanding storage by installing a new 5,000 gal storage tank. The structural scope included design of a conventionally reinforced, cast-in-place concrete containment structure for chemical storage, and cast-in-place concrete pipe trench with traffic rated precast covers used to connect the existing chemical containment structure with the new one.



Jamie Ferro, MELP Energy

Jamie serves as Hazen and Sawyer's West Region Energy Management Lead.

Education

MELP, Environmental Law and Policy, Vermont Law School

BA, Political Science, University of Southern California

Areas of Expertise

- Energy Management and Resource Recovery
- Sustainability and Resilience Planning
- Program Design
- Project Management
- Policy Development

Water Resources Energy Master Plan, City of Santa Barbara, Water Resources Department, CA

Project Manager. Jamie is leading evaluation of optimization, self-generation, and flexible load management strategies across the City's water and wastewater systems, including treatment plants, desalination, hydroelectric, and distribution networks. Developed a comprehensive Microsoft PowerBI energy dashboard to visualize baseline energy use and support decision-making on efficiency and CIP planning.

Conceptual and Preliminary Design for Microgrid System, Goleta Sanitary District, CA

Project Manager and Technical Lead. Jamie guided the District from concept through 30% design for a microgrid integrating solar, battery storage, cogeneration, and utility power to improve resilience, reduce emissions, and lower costs. Work included cost-benefit analysis, board and senior management education, and preparation of detailed drawings and plans for procurement and collaborative delivery.

Energy Minimization and Greenhouse Gas Reduction Plan, Doheny Desal Partners and South Coast Water District, CA

Renewable Energy Lead. Progressive Design Build team constructing California's newest desalination facility with a mandate for net carbon-neutral energy. At 60% design, Mr. Ferro developed a four-tiered strategy to cut energy costs, enable public-private partnerships, and implement onsite/offsite renewable projects. Coordinated with utilities on timelines and tariff options to support a resilient water supply. Onsite system includes solar, battery storage, linear generators, and emergency diesel generators.

Distributed Energy Resources Resilience Feasibility Study, City of Davis, Public Works, CA

Deputy Project Manager and Workshop Facilitator. Evaluated four water system facilities for distributed energy resources (DERs) as backup power. Assessed replacing diesel generators with solar PV, battery storage, and microgrid controllers to maintain water supply during outages and improve emergency response.

Water-Energy Nexus Pilot Study, Metropolitan Water District, Los Angeles, CA

Project Manager and Technical Supervisor. Project development and project management activities for the Southern California Regional Energy Network Water-Energy Nexus Pilot Study. The goal of the project was to quantify the embedded energy savings that resulted from three years of water conservation incentive programs offered by the Metropolitan Water District of Southern California. This partnership with the University of California at Santa Barbara Bren School of Environmental Management, in coordination with the California Public Utilities Commission (CPUC) Water- Energy Team of the Climate Action Team (WET-CAT), utilized the CPUC's Water-Energy Cost-Effectiveness Tool to calculate the regional energy impact of water conservation activities throughout the different Southern California Cities served by the Metropolitan Water District. The project determined which water conservation measures resulted in the highest embedded energy savings, and in what locations geographically throughout the water system. Further, this pilot study tested a variety of messaging strategies and platforms to encourage participation in water-energy incentive programs utilizing predictive analytics and survey sampling methodologies utilized by political and advertising campaigns but not yet considered for conservation messaging.

Energy Efficiency Audits, City of San Luis Obispo - Utilities Department, San Luis Obispo, CA

Program and Project Manager. Jamie provided services to the City through multiple energy utility-funded investigations, pilot studies, and optimization projects. Over a four-year period starting in 2017, Jamie helped the City utilize approximately \$150,000 of energy optimization audit and pilot study funding including the Large Integrated Audit and RAPIDS program with PG&E. These pursuits included the facilitation of multiple internal and peer-to-peer workshops to identify opportunities and pursue additional financial incentives for optimization, and subsequently led to multiple conference and workshop presentations about the City's challenges related to high-strength sewage and treatment intensification that is common to many Central Coast and Southern California water and wastewater utilities.

Energy Efficiency Audits, San Diego Gas & Electric and the City of San Diego - Public Utilities Department, San Diego, CA

Project Manager. Jamie was the project manager for a city-wide water infrastructure energy efficiency audit that included a preliminary assessment of energy cost-saving opportunities at three water treatment facilities, three wastewater treatment facilities, and one regional biosolids treatment facility, as well as investment grade audits (ASHRAE Level II) at seven water pump stations. The initiative was funded as a part of the City's participation in San Diego Gas & Electric's Local Government Partnership Program and required the utilization of a robust calculation methodology to quantify energy efficiency benefits to meet the California Public Utilities Commission (CPUC) guidelines for incentive eligibility.



Joel Bowdan, PE

Water Reuse

Joel serves brings deep expertise in water and wastewater infrastructure planning, design, and construction.

Education

BS, Civil Engineering, California State University

Certification/License

Professional Engineer: CA, MI

Areas of Expertise

- Process Engineering (water, wastewater, industrial)
- Pumping facilities (water, wastewater, recycled water, stormwater)
- Groundwater Treatment (Filtration, IX, BW NF/RO, Adsorptive Media, Biological Media)
- Wastewater Treatment
- Industrial Cooling Tower Treatment

His background includes treatment systems, pump stations, groundwater remediation, and recycled water facilities across California and the Southwest. Joel has led multi-disciplinary teams through all phases of delivery, including hydraulic modeling, surge analysis, permitting, and stakeholder coordination. His recent work with CVWD and other regional agencies reflects Hazen's commitment to delivering technically sound, cost-effective solutions that meet community and regulatory needs.

CVWD IXTP 7991 Replacement Construction Phase, Coachella Valley Water District, Mecca, CA

Project Manager. Responsible for professional engineering support services during construction for the replacement of the existing packaged ion-exchange treatment system with a new single-pass, adsorption media based, arsenic removal system including pre-filtration, backwash water recover and recycle, chemical feed storage and injection, new deep well turbine well pump, electrical distribution system, PLC-based control system, and related piping, valves, and appurtenances. Prior to joining Hazen, Joel also served as the Project Manager and EOR for the preliminary and detailed design phases of the project.

Upper Valle De Los Caballos Regional Pump Station, Rancho California Water District, Temecula, CA

Project Manager. Preliminary and final design for new regional water booster station comprising four 1305 PZ Pumps (19,000 gpm capacity) and three 1380 PZ Pumps (6,850 gpm capacity) vertical turbine can pumps, new 2,000 lb/day onsite sodium hypochlorite generation system, new LAS storage and injection facilities, new chlorine contact tank, including new 10,000 SF CMU building with TPO membrane roofing system, upgraded electrical utility service and new switchgear, MCC, and VFDs. New redundant PLC based control and SCADA system.

Chino Hills 123-TCP Removal Project, Chino Hills, CA

Project Manager. Responsible for the preparation of a feasibility and preliminary design study for a proposed centralized granular activated carbon (GAC) system for the removal of 1,2,3-TCP from several groundwater wells. The feasibility and preliminary design study reviewed several alternatives including several distributed wellhead treatment systems and a centralized treatment facility. The selected project will be a centralized facility having a treatment capacity of 6.8 mgd.

Reverse Osmosis Water Treatment Plant, California State Polytechnic University, Pomona, CA

Project Manager. Responsible for project management and design oversight for the planning, preliminary design, final design, environmental permitting, grant application assistance, construction management, and start-up assistance for a new 1.0 mgd brackish groundwater reverse osmosis water treatment plant (WTP). The new facility allowed Cal-Poly Pomona to utilize its own groundwater wells by providing treatment for the removal of total dissolved solids, nitrates, and perchlorate from the impaired groundwater. The project required review and approval by an architectural review committee for building aesthetic requirements and was designed to conform to LEED® Silver targets. The project won ASCE Riverside/San Bernardino County Branch 2015 Outstanding Private Section Civil Engineering Project Award and Metropolitan Los Angeles Section 2015 Outstanding Sustainable Project of the Year.

Ryan Ranch Arsenic Removal Project, California American Water, Monterey, CA

Project Manager. Responsible for leading multi-discipline team for the early phase evaluation, equipment selection, equipment prepurchase, installation design, and construction phase assistance services for the replacement 0.22 Mgd Ryan Ranch Arsenic Removal Facility. Facility utilized proprietary media for the removal of Arsenic, Iron, low levels of Manganese, and intermittent Sulfides. Prepared project plans, specifications, and estimates, commencing with the preparation of a technical memorandum to discuss alternatives for minimization of the overall project based on the selected vendor to meet available California American Water (CAW) budget. The project included major modifications to the existing control building, electrical systems, instrumentation and control, chemical feed system, and onsite storage ponds.

New River Phase I Improvement Services, California State Water Resources Control Board, Calexico, CA

Task Manager – Trash Screen and Diversion Structure. Responsible for the design of the trash screen and diversion structure for the New River Improvement Project. Oversaw preparation of the preliminary design report, written determinations, and detailed design of the New River channel improvements to accommodate a new automatic trash screen and river diversion structure. The trash screen and diversion structure are designed to handle wet weather flows up to 1,600 cfs and divert up to 160 cfs of dry weather flow to a separate bypass pipeline encasement system. The trash screen includes a trolley-mounted, hydraulically powered automatic raking system to remove up to 1 ton per day of trash from the New River. Responsible for oversight and coordination of site/civil grading, drainage and access drives, structural, mechanical, electrical, instrumentation and control. Innovative computational fluid dynamics and 3D modeling was performed to evaluate the functionality of the screen and diversion system under varying flows up to 1,600 cfs to inform the final design, and potential impacts of the trash screen on river flows. Extensive visual and 3D modeling was critical for stakeholder feedback during public forum meetings.



Ian Mackenzie, PE

Condition Assessment & Operations Maintenance

Ian has managed projects for water supply and sewage treatment including the design and construction of sewage systems, sewage treatment works, water treatment works and reservoirs.

Education

B.Sc., Civil Engineering, Queen's University (Canada)

Certification/License

Professional Engineer

Areas of Expertise

- Design and construction of wastewater/water treatment plants
- Design and construction of wastewater collection systems
- Preparation of construction contracts

Professional Activities

California Water Environment Association – WEF Delegate Director

Glenoaks Pump No. 1 Replacement Project, City of Glendale, CA

QA/QC. The project included preparing the plans, specifications and estimates the replacement of Pump No. 1, a 125 hp, 4160 volt 875 gpm centrifugal pump that has outlived its useful life. The pump was replaced in kind in the Glenoaks Pump Station (2018). The pump serves the 1290 pressure zone in the Glenoaks Canyon area. Pump No. 1 serves the daily flow condition for the 1290 pressure zone. Pump No. 2, a 250 hp, 4160 volt, 2,000 gpm centrifugal pump, which was recently replaced, will serve as the high demand pump. The work included a hydraulic analysis Technical Memorandum used for pump selection and a review of the hydraulic performance of the pumping station. The work also included the engineering services during construction by doing the RFI and Submittal reviews for the City.

Peck Reservoir Replacement and Pump Station Project, City of Manhattan Beach, CA

Design Manager. The project included the design of a 4.5 mgd groundwater treatment facility. The facility will remove ammonia and manganese using breakpoint chlorination followed by greensand filtration. In addition to treatment, the facility included chemical storage and dosing facilities and a backwash water recovery system. Hazen's design scope included mechanical, electrical, instrumentation and security system design.

Biosolids Loadout Condition Assessment, Eastern Municipal Water District, Perris, CA

Project Manager. The biosolids loadout facility at the PVRWRRF has experienced failure of several components including loadout gates and loadout measurement cells. These failures have necessitated greatly increased operator involvement to keep the facility functioning. Hazen was appointed to evaluate current condition of the facility to recommend improvements that would restore it to reliable operation. Mr. Mackenzie is leading the Hazen team investigating these improvements.

District-Wide Asset Management Plan, El Toro Water District, Lake Forest, CA

Process Mechanical Condition Assessment Lead. Hazen was selected through a competitive procurement to develop an asset management plan for the El Toro Water District's Pumping Division, which is responsible for the District's potable water pump stations, wastewater lift stations, storage tanks, and pressure-reducing valves. The effort included the development of the District's first ever asset management plan. Key elements of the asset management plan included adopting formal strategies around risk analysis, assigning likelihood and consequence of failure values, and performing staff consultation and field condition assessment to capture key asset condition and performance information. This information was used to identify and prioritize the District's capital improvement program. Deliverables of the work included an update asset register, written asset management plan, and data visualization dashboard.

Vertical Facilities Asset Inventory and AM Framework Pilot Project, Laguna Hills, CA

Project Engineer. Assisted the team with the inventory and condition assessment of a lift station, a pump station, a reservoir and a pressuring regulating facility as part of the asset management pilot project. The purpose of the pilot project was to develop an asset inventory for a representative sample of Moulton Niguel Water District's vertical assets to provide a basis for planning the development of a broader asset management system.

Rio Hondo Recycled Water Pump Station Condition Assessment, Central Basin Municipal Water District, City of Pico Rivera, CA

Assessment Lead. Mr. Mackenzie was responsible for condition assessment of mechanical equipment and civil and structural components of this 15,000 gpm recycled water pumping station. The Condition Assessment included the pumps, pipes, valves, electrical equipment and the hydraulic performance of the pumps. The Condition Assessment used a matrix approach for each asset (86) to determine the remaining useful life and to prioritize the elements needing replacement immediately and over the next 5 years such as the large pump VFDs, one of the electrical transformers, some valves and a drain sump pump. CBMWD will use this Condition Assessment to evaluate their plans going forward to either update the pump station or replace it and add capacity for their future demands.

Influent WetWell and Headworks Screening Project, Town of Windsor, CA

Process Engineer. This project upgraded the 2mgd Windsor Wastewater Reclamation Plant. The project evaluated replacement of the facility's existing fine screen and grit removal facilities as well additional upstream protection to resolve clogging issues at the influent pumping station.

Hyperion Treatment Plant Central Odor Control Facility Capacity Assessment, City of Los Angeles, CA

Project Engineer. This project assessed the capacity of the existing odor control facilities serving the primary batteries at the Hyperion Treatment Plant. The aim of the project was to investigate the potential for expanding the duty of these facilities to serve the Intermediate Pumping Station. The project measured the effectiveness of the new tank covers at controlling air leakage into the Primary Batteries and also investigated other sources of air leakage in the system. Mr. Mackenzie conducted the capacity assessment and prepared a report presenting the results.

Terminal Island Water Reclamation Plant Effluent Pump Station Renewal, City of Los Angeles, CA

Project Engineer. This project evaluated options for improving performance of the main effluent pumps at TIWRP, which are sized to transfer a peak flow of 60 mgd. The project evaluated the use of magnetic drives, variable frequency drives and compared these with the cost of upgrading the existing eddy current drives. The project ultimately identified a cost-effective approach to reconditioning the existing drives, which would have minimal interruption to existing operations.



Rion Merlo, PE, PhD, PMP

QC Lead

Rion is a trusted environmental engineer, experienced in wastewater treatment and resource recovery. He has guided agencies in developing cost-effective, operator-friendly strategies.

Education

PhD, Civil and Environmental Engineering, University of California, Berkeley

MS, Civil and Environmental Engineering, University of California, Los Angeles

BS, Microbiology, University of California, Santa Barbara

Certification/License

Professional Engineer

Project Management Professional

Areas of Expertise

- Wastewater treatment
- Water reuse

Advanced Treatment Technology Pilot Study, Sacramento Regional County Sanitation District, Elk Grove, CA

Process Engineer. SRCSD was required to meet stringent NPDES permit requirements by December 2021, specifically regarding ammonia and nutrients. The technologies that were tested included air activated sludge for nitrogen removal, followed by tertiary filtration and disinfection. Granular media filtration (GMF) with pre-ozonation and membrane filtration were identified as viable tertiary filtration technologies; and chlorination, ozonation and UV disinfection were the identified disinfection technologies. Rion led a team of eight operators, overseeing all operations and data collection for the Pilot Project. Rion led weekly meetings with the District, District's consultants and BC team members to present results and discuss data interpretation. The findings from the pilot study have led to a program savings of over \$200 million. The pilot project was awarded the CWEA Sacramento Area Section Research Achievement Award, CWEA State 2013 Research Achievement Award, and 2014 WERF Award for Excellence in Innovation.

Daly City WWTP Master Plan, Department of Water and Wastewater Resources, Daly City, CA

Process Manager. The North San Mateo County Sanitation District Wastewater Treatment Plant encountered challenges due to aging infrastructure, the need to accommodate future demands, evolving regulatory requirements, and the impacts of climate change. As part of the master planning initiative, Hazen conducted a thorough inventory of above-ground assets, capturing relevant asset attribute information. Hazen will be performing condition and risk assessment on the treatment plant assets. The results of these assessments will inform a prioritized CIP and optimized O&M program tailored to the needs of the City. Hazen conducted a desktop evaluation of the condition and risks associated with the underground assets aiming to estimate their remaining useful life and assess risks.

Main Wastewater Treatment Plan Master Plan, East Bay Municipal Utility District, Oakland, CA

Process Engineer. Rion directed the capacity assessment of all treatment processes at the Main Wastewater Treatment Plant. He developed both short-term and long-term solutions to improve performance and increase capacity. He helped develop a roadmap to the future that addresses future nutrient regulations and capacity limitation.

Fairfield-Suisun Sewer District Aeration Basin Upgrades, Fairfield, CA

Lead Process Engineer. In response to effluent nitrogen discharge limits recently imposed by the San Francisco Bay Regional Water Quality Control Board, the District is retrofitting two existing aeration basin trains to perform biological nutrient removal (BNR). Hazen performed an alternatives analysis as part of the pre-design process to select the preferred BNR configuration and prepared a Basis of Design Report (BODR). Hazen prepared the detailed design documents for the selected BNR upgrade, including addition of anoxic zones, mixers, new diffuser system, electrical and controls upgrades, and miscellaneous structural and mechanical improvements.

Wastewater Treatment Plant Master Plan, Napa Sanitation District, Napa, CA

Process Engineer. This project included a comprehensive review of the 8-mgd activated sludge treatment system and parallel oxidation pond system. The team provided recommendations for improvements needed to accommodate growth and more stringent regulations in the next 20 years. Rion determined primary capacity and used results for historical data and field testing. He also created a process model of the secondary system to determine process capacity. Rion oversaw field testing of the secondary clarifiers to determine treatment capacity.

Enhanced Treatment & Site Upgrade (ETSU) Program, Union Sanitary District, Union City, CA

Process Engineer. USD embarked on the \$450M Enhanced Treatment and Site Upgrade (ETSU) Program which will result in increased plant capacity, replace aging infrastructure, future nutrient removal and provide flexibility for wet weather discharge to the San Francisco Bay. The program includes aeration basin modifications to convert from carbon removal to biological nutrient removal, a new eighth aeration basin, new secondary clarifiers, new RAS/WAS pump station, new effluent facilities (chlorination, dechlorination, effluent pump station, wet weather discharge pump station, recycled water pump station and elutriation water pump station) new carbon odor scrubbers, new primary effluent equalization and a new administration building. The project included extensive hardening of the electrical infrastructure to accommodate the future loads and provide electrical redundancy. In addition to design, Hazen is providing permitting, CEQA development, and financing application support for the multi-phase program.

Delta Diablo Resource Recovery Facility Master Plan, Delta Diablo, Antioch, CA

Technical Advisor. This Master Plan was development for their Resource Recovery Facility (RRF). The scope included every facet of treatment at the RRF, including: influent conveyance, optimization of existing processes, biosolids processing and recycled water distribution. The goal of the plan is to identify near- and long-term capital improvement projects which achieve the requirements developed during the master plan.

San Jose/Santa Clara Water Pollution Control Plant Master Plan, City of San Jose, CA

Process Engineer. Rion performed an evaluation of several secondary treatment processes to meet potential future regulations for ammonia and nitrogen. Rion used BioWin™ modeling to estimate the required secondary system improvements for each alternative and the associated aeration requirements.



Zayneb Mohamed, PE

Process Support

Zayneb has experience in both the wastewater and water reuse fields, including biosolids master planning, troubleshooting and optimization of plant performance, and recycled water treatment.

Education

BS, Chemical and Biomolecular Engineering, Johns Hopkins University

Certification/License

Professional Engineer

Areas of Expertise

- Biosolids Master Planning
- Process Mechanical
- Recycled Water Treatment

Professional Activities

Water Environment Federation
International Water Association

Owner's Agent for the Torrance Groundwater Desalter Expansion Project, Torrance, CA

Assistant Engineer II. The Water Replenishment District (WRD) is expanding their Robert W. Goldsworthy Desalter through the Torrance Groundwater Desalter Expansion (TGDE) project. Hazen is the Owner's Agent for WRD and assists with project management and engineering services during the design and construction phases of the project. Ms. Mohamed was an operator for an 8-month long reverse osmosis pilot as part of the TGDE project, and assisted with sampling, data collection, and data analysis. Additionally, she is working on another pilot for the project involving an automatic backwash strainer at the desalter treating groundwater from two wells. Her tasks for this pilot include regular site visits, data collection, sampling, data analysis, and weekly report updates to WRD regarding the performance of the pilot.

Professional Engineering Services for Water Reclamation Plant Projects, Camarillo, CA

Assistant Engineer II. Ms. Mohamed is involved in a project with the Camarillo Sanitary District to advise on upgrades to their Water Reclamation Plant (WRP). Ms. Mohamed was responsible for historical data analysis, population and flow projections, CIP planning, and the writing of technical memoranda.

Biosolids Facilities Plan, Howard County, MD

Assistant Engineer II. Howard County's Biosolids Facilities Plan project is an undertaking to optimize the solids handling and treatment system at their Little Patuxent WRP. Ms. Mohamed was responsible for outlining optimization opportunities for their centrifuge treatment system. This task involved an analysis of their historical centrifuge and polymer feed system data, a review of previous reports on their centrifuges, and report sections detailing the optimization opportunities available to the County.



Angel Ortiz

Process Support

Angel has over 3 years experience in various wastewater, drinking water, stormwater, and hydrology projects throughout her academic career. As an undergraduate researcher, she developed technical and field work capabilities to collaborate in diverse work settings.

Education

BS, Environmental Resources Engineering, Humboldt State University

Professional Activities

- Water Environment Federation:

Joint Outfall H – Unit 8L Rehabilitation Project Design, Los Angeles County Sanitation Districts, Azusa, CA

Assistant Engineer. Reviewed CCTV and aerial images to verify existing sewer and manhole conditions, identified locations for CIPP rehabilitation, performed CIPP thickness and flow calculations, communicated with host jurisdiction and permitting facilities to identify public impacts and project constraints.

Plant 3A Solids Handling Facilities Improvements, Moulton Nigel Water District, Laguna Hills, CA

Assistant Engineer. Assisted with review of submittals, coordinated communication and reviews between owner and construction manager, preparation of progress payment summaries.

Co-Digestion Feasibility Study, Union Sanitary District, Union City, CA

Assistant Engineer. Assisted with solids process calculations, biogas production calculations, pipe and tank sizing calculations, preliminary design layout of co-digestion facility, and preparation of technical memorandums.

Wastewater Treatment Facility Master Plan, City of Daly City, Daly City, CA

Assistant Engineer. Assisted with solids process calculations, development of solids process design alternatives, and preparation of technical memorandum.

Secondary Treatment Facility Plan for A.K. Warren Water Resource Facility, Los Angeles County Sanitary District, Carson, CA

Assistant Engineer. Assisted with preliminary design layout of secondary effluent screening, vendor procurement, cost estimates, and preparation of technical memorandum.

Lakeside Valve Station Replacement CM Services, City of San Diego, Lakeside, CA

Assistant Engineer. Assisted the construction management team with daily oversight of contractor progress on-site, created summary daily reports, management of submittal and RFI's, communication between Contractor and Engineer, preparation of meeting minutes for progress meetings with Contractor and Owner.

TVRWRF Nutrient Loading and Treatment Evaluation, Eastern Municipal Water District, Temecula Valley, CA

Assistant Engineer. Assisted with field testing including TSS, FSS, DSS, MLSS, settling rates, etc., processing and analysis of field data, preparation of technical memorandum, and preparation of presentation to summarize results.

PVRWRF and TVRWRF Sidestream Design, Eastern Municipal Water District, Temecula Valley, CA

Assistant Engineer. Assisted with consolidation of client comments in tracking log, updated specifications for design and bid sets, and assisted in submittal reviews during PVRWRF construction phase.

Camarillo Water Reclamation Plant Upgrades, Camarillo Sanitary District, Camarillo, CA

Assistant Engineer. Assisted with solids flows and load calculations, solids pro calculations, analysis of historical solids data, and NDPES permitting review.

Coachella Valley Water District, Coachella Valley, CA

Assistant Engineer. Assisted with preliminary review of submittals during construction phase.

WWTP Operational and Optimization Services, Fritz Wastewater Treatment Plant, Reading, PA

Assistant Engineer. Assisted with data analysis of historical hypochlorite data and development of technical memorandum.

Assistance with Completion and Submission of LCRR Service Line Inventories for OC Agencies, Municipal Water District of Orange County, Orange County, CA

Assistant Engineer. Assisted in the analysis of historical lead and copper records, evaluated code reviews, updated GIS with service connections, development of technical memorandums summarizing LSL inventory, action plans, and development of LSL material database for EPA and DDW.

Chino II Desalter Lime Storage Tanks Mixing Evaluation Project, Chino Basin Desalter Authority, Jurupa Valley, CA

Assistant Engineer. Assisted with analysis of mixer model results, identification of potential areas for improvement, development of technical memorandum.

ADEQ Statewide Small Systems Inventory, Arizona Department of Environmental Quality (ADEQ), AZ

Assistant Engineer. Assisted in the analysis of historical lead and copper records, evaluated code reviews, and development of technical memorandums summarizing LSL inventory.

City of Glendale LCRR/LCRI, City of Glendale, Glendale, AZ

Assistant Engineer. Assisted with the development of sample site inventory, preparation of school/CCFs sampling protocol and communication material, preparation of presentation for client progress meetings.



Joe Rohrbacher, PE

QC Lead

Joe has extensive experience in wastewater process modeling having modeled more than 100 WWTPs and has presented many process optimization and wastewater modeling studies at national and regional conferences.

Education

ME, Civil Engineering, University of Florida

BS, Civil Engineering, University of Florida

Certification/License

Professional Engineer

Areas of Expertise

- Aeration and blower system design
- Wastewater process modeling
- Water and wastewater process design
- Biological nutrient removal
- Hydraulic analysis
- Energy optimization

Blower Electrification Preliminary Design for the EMWD RWRFs, Eastern Municipal Water District, CA

Technical Lead. Directed the evaluation and preliminary design for replacement of engine-driven blowers with high-speed direct-drive (turbo) blowers at three RWRFs. Provided technical direction for detailed design of the blower replacement project.

Fairfax County Noman M. Cole WPCP Primary/Secondary Improvements Project, Lorton, VA

Senior Process Engineer. Developed and evaluated secondary process expansion alternatives to expand the NMCPCP from 67 mgd to 80 mgd while meeting effluent TN and TP limits of 2.5 mg/L and 0.15 mg/L, respectively. A calibrated Biowin model was developed to assist in the evaluation. Expansion alternatives considered include conventional step feed BNR, membrane bioreactors and aerobic granular sludge. Assisted in development of a pilot plan of study to further assess potential novel technologies.

Advanced Wastewater Treatment Program Assistance, NYCDEP, New York, NY

Project Engineer. Assisted in the process modeling of nitrogen removal alternatives at various WWTPs as part of a nitrogen reduction strategy.

Broad Run WRF Master Plan and Expansion to 16.5 mgd, Loudoun Water, Loudoun County, VA

Project Engineer. Comprehensive master plan to expand the 11-mgd WRF. Services include capacity analysis of existing unit processes, process model development, opportunities for optimization, screening and ranking alternative treatment technologies, quadruple bottom line analysis, site utilization planning, planning for asset management and renewal, financial model development, and baseline energy profile. Joe assisted in development of the capacity evaluation and process optimization, specifically the sections pertaining to aeration. He also is assisting in the secondary process and sidestream deammonification design for the expansion to 16.5 mgd.

North Regional WWTP Modules A, B and D conversion, Broward County, FL

Project Engineer. Assisted in the detailed design to convert three 20-mgd mechanically aerated modules to diffused aeration including selection and specification of new blowers to allow foul air diffusion at the 95-mgd North Regional WWTP.

Plantation WWTP Conversion to Diffused Aeration, City of Plantation, FL

Aeration Expert. Assisted in preliminary and detailed design of the conversion from mechanical aeration to fine bubble diffused aeration at the 18-mgd Plantation WWTP. The project includes installation of new multi-stage blowers and foul air diffusion through the new system to reduce odor control costs.

Twelve Mile Creek WWTP Expansion to 7.5 mgd, Union County, NC

Project Engineer. Developed the preliminary design and assisted in the detailed design to convert the existing oxidation ditches to diffused aeration basins while increasing the plant's rated capacity from 6 mgd to 7.5 mgd. The project includes installation of new fine bubble diffusers and single-stage integrally-gearred blowers.

Bayshore Regional Sewerage Authority (BRSA) WWTP Blower Replacement, Union Beach, NJ

Aeration Expert. Evaluation and design of new turbo blowers and fine bubble diffusers for the BRSA WWTP Aeration Improvements Project. Developed technical specifications for blowers and diffusers. Assisted in detailed design, life-cycle analysis and Biowin process model development.

Village Creek WWTP Energy and Optimization Improvements, Jefferson County, AL

Project Engineer. Assisted in the development of contract documents for diffuser modifications, blower rehabilitation and aeration control improvements as part of the optimization and energy reduction project at the 60-mgd Village Creek WWTP.

Valley Creek WWTP Energy and Optimization Improvements, Jefferson County, AL

Project Engineer. Assisted in the development of contract documents for diffuser modifications, blower rehabilitation and aeration control improvements as part of the optimization and energy reduction project at the 80-mgd Valley Creek WWTP. The project included replacement of the existing ceramic diffusers with new tapered membrane diffusers and air piping modifications to reduce leakage and provide greater dissolved oxygen control.

Crooked Creek WWTP Diffused Aeration Conversion, Gwinnet County, GA

Project Engineer. Mr. Rohrbacher developed the preliminary design and assisted in the detailed design to convert an existing Orbal oxidation ditches to a plug-flow aeration basin to provide for biological phosphorus removal to reduce chemical usage. He assisted in the design of new high-speed direct drive blowers for the modified basins.



Anne Sun, PhD

Biosolids

Anne earned her PhD in the field of microplastics in water reclamation, and has been actively involved in applied research on microplastics, wastewater and biosolids treatment processes since she joined Hazen.

Education

PhD, Civil and Environmental Engineering, University of California, Irvine

MS, Engineering, University of California, Irvine

BS, Environmental Engineering, University of California, Irvine

Certification/License

Professional Engineer

Areas of Expertise

- Emerging Contaminants
- Biosolids Management
- Wastewater and Water Treatment
- Life Cycle Analysis

374 Water, OC SAN, Fountain Valley, CA

Project Engineer. Anne Assisted in the air emissions and odor control design in support of an AQMD permit. She prepared the Controlled Performance Study Test plan in close collaboration with the OC SAN laboratory managers, project engineers, contract labs and equipment provider. The project is for a fast-track design to deliver an innovative biosolids technology to reduce biosolids volume and resultant cost. OC San manages over 250,000 wet tons of wastewater residuals and biosolids; treating residuals and converting it to biosolids is an expensive energy-, chemical-, and labor- intensive process that results in >93% beneficial reuse as fertilizer and compost as Class B Biosolids. 374Water is an innovative technology designed for a one-year demonstration, with potential to convert to permanent use if OC SAN desires. Project team delivered the design within cost and schedule objectives, working through design review opportunities with client.

Master Plan Update and Cogeneration Upgrade Design, City of Sunnyvale, CA

Project Engineer. This project provides a 30-year master planning for the water reclamation facility of the City of Sunnyvale. The evaluation of this project included analyzing historical data and regional population growth to update the flows and loads, assessing treatment process units' capacity based on flows and loads, and evaluate future alternatives. Additionally, the project also included comprehensive strategic updates on PFAS and microplastics related regulations, analytical methods, and PFAS destruction technologies for liquid and solids stream.

Evaluating Innovative and Sustainable Treatment Options for Biosolids, San Diego/Irvine, CA

Task Lead. This Water Research Foundation (WRF) awarded project aimed to evaluate innovative treatment technologies to identify pathways for sustainable biosolids management. Anne led the task of technology screening, in which innovative biosolids treatment technologies were scored using a multi-criteria framework and stakeholder's input, developed the framework for life cycle assessment (LCA) incorporating PFAS, and supported literature review, biosolids end-use market assessment, and development of a PowerBI dashboard.

Tertiary Moving Bed Biofilm Reactor, Los Angeles County, CA

Project Engineer. A 1-gpm tertiary moving bed biofilm reactor (tMBBR) was designed to remove nutrients from secondary effluent. Anne performed on-site analysis, operation and maintenance to maintain and enhance the performance of the tMBBR under various conditions.

Technology Evaluation for Biosolids Treatment and Disposal, Town of Windsor, CA

Project Engineer. The study focused on thickening and dewatering technologies including rotary drum thickener and gravity belt thickener, gravity filter press and centrifuge respectively. Anne performed a life cycle assessment (LCA) encompassing GHG emissions, CAPEX and OPEX, operation and maintenance effort to evaluate different alternatives by HazenConverge.

Biosolids & Energy Phase 2 & 3, Goleta Sanitary District, Goleta, CA

Project Engineer. Anne designed a High Strength Waste receiving station for 10-mgd facility for current and future demands including high strength waste additions; evaluated regional facilities' sludge contribution, prepared a funding application for the High Strength Waste receiving station and flare upgrade, as well as updated the biosolids end-use market assessment.

Aeration Diffuser Replacement, South Orange County Wastewater Authority, South Orange County, CA

Project Engineer. Anne helped in designing the replacement of aeration diffuser in aeration basins and prepared a proposal for engineering service during construction (ESDC).



Desarae Tasnady, LEED GA

Process Support

Desarae has experience in applied research, green building design, water reuse, drinking water, and wastewater projects.

Education

B.S. Civil/Environmental Engineering, California Polytechnic University Pomona

Certification/License

LEED Green Associate

Areas of Expertise

- Wastewater Process Engineering
- Water Reuse
- Applied Research
- Stream Restoration Design
- Watershed Management
- Wetland Preservation
- Stormwater
- Groundwater
- Hydraulic and Hydrologic Modeling
- Green Building Design
- CAD/BIM

Sidestream Treatment at Warren Facility, Los Angeles County Sanitation District, Carson, CA

Assistant Engineer. Desarae aided in team coordination, technical support, data analysis, and vendor procurement. The Warren Facility is LACSD's largest wastewater resource facility with an average flow of 240 MGD serving a population of 4.8 million people. LACSD is implementing sidestream treatment in order to comply with nutrient reduction permit requirements. The goal of the sidestream treatment is to remove nitrogen loads with cost-effective means.

Outfall Initial Dilution Model, Orange County Sanitation District, Fountain Valley, CA

Role. Desarae aided in technical writing, sampling procurement, and team coordination. The Outfall Initial Dilution Model includes developing a comprehensive workplan, providing inputs and assessments for initial dilution and plume dispersion modeling, and conducting whole effluent toxicity (WET). The project will evaluate the effects of reduced total effluent flow at Plant 2 and increased reverse osmosis concentrate from the Groundwater Replenishment System (GWRS).

Advanced Water Purification Project, VenturaWaterPure, Ventura, CA

Assistant Engineer. Desarae supported the design team through aiding in team coordination, technical support, data analysis, and vendor procurement. VenturaWaterPure's advanced water purification project (AWPP) highlights Ventura's dedication to sustainability commitments and to providing their growing community with sufficient water resources. The AWP will intake 3.2 MGD for indirect potable reuse with the ability to adapt to direct potable reuse in the future.

PS21-10 Integrated Nitrogen Removal, Orange County Sanitation District; Huntington Beach, CA

Role. In partnership with Hazen, Orange County Sanitation District (OCSAN) process engineers gathered data and assisted in conducting a batch test to explain increasing cBOD values in the non-reclaimable effluent at Plant 2. As a Student Intern in the process engineering division, Ms. Tasnady gathered samples from the HPOAS facility, assisted in data collection and aided in identifying possible point sources.

J-120 Process Control Systems Upgrade, Orange County Sanitation District; Fountain Valley, CA

Role. The process engineering division utilized the TPOD report as a fiscal year summary of Plant 1 and 2 operational data at Orange County Sanitation District (OCSAN). Since TPOD's inception there have been process configuration changes and removal of major equipment that has required an evaluation of TPOD's extensive data report (over 23,000 data points). As a student intern in the process engineering division, Ms. Tasnady identified relevant parameters and verified background calculations for all constituents.

Enhancing Organic Contaminant Removal from Wool Scouring Wastewater with Chemically Enhanced Biochar, Cal Poly Pomona Foundation; Pomona, CA

Role. As an undergraduate research assistant Ms. Tasnady was involved in the initial conception to the final publication for this USDA funded research. The goal of the publication was to demonstrate biochar's ability to act as a sufficient adsorbent medium for fats, oils, and greases (OFGs) in recycled wool scouring wastewater. Removing OFGs from recycled streams can assist in reducing process upsets in recycled wastewater. The biochar was subjected to three different types of chemical treatments to create maximum surface area and retention. Testing included FTIR spectroscopy and COD testing of the resulting wastewater effluent to evaluate the treatment's effectiveness. KOH-treated biochar demonstrated the highest effectiveness in removing OFGs from the recycled effluent stream. Implementation of chemically modified biochar can help the wool textile industry become more sustainable in their water usage and treatment. Ms. Tasnady assisted in developing/executing procedures, performing tests, data analysis, and academic writing support.

Brian Robertson, PE, QSD

MECHANICAL ENGINEER

Brian Robertson brings 19 years of experience in planning and designing wastewater and water infrastructure projects. He is recognized for delivering high-quality work on time and within budget, with expertise in water, wastewater, recycled water and drainage conveyance improvements for municipalities and special districts across California. His capabilities include preparing detailed analyses, reports, drawings, specifications, and cost estimates, as well as coordinating with multidisciplinary teams, utilities, and permitting agencies. Brian combines technical proficiency with professionalism to deliver complete design packages, construction support, development review, and staff augmentation.

Project Experience

Final Effluent Sampler and Building Area Upgrades (J-110), Orange County Sanitation District, Huntington Beach, California. Project Engineer for Orange County Sanitation District's Plant No. 2 improvements, which included construction of a new Final Effluent Sampler Building, rehabilitation of the Short Ocean Outfall system, and miscellaneous site upgrades. Responsibilities encompassed development of a work and contingency plan for condition assessment of the 120-inch Short Ocean Outfall and associated large-diameter yard piping, structures, and equipment. Work involved coordinating and performing field activities with contractor inspection crews and specialized subconsultants, evaluating pipeline rehabilitation alternatives, and preparing site civil and mechanical design for the new sampler building and related improvements. Deliverables included the Preliminary Design Report, technical memoranda, and contract drawings and specifications to support final design and construction.

Foul Air System Reconstruction Final Design, South Orange County Wastewater Authority, Coastal Treatment Plant. Project Manager for the final design of foul air system improvements at SOCWA's Coastal Treatment Plant. The project includes rehabilitation of the existing chemical wet scrubber, installation of a new two-stage biofilter/carbon odor control unit, and replacement of foul air ductwork serving the rotary screens, aerated grit chambers, and primary sedimentation tanks along with supporting civil, structural, and electrical upgrades. The design effort encompassed evaluation of odor control alternatives, development of bypass and sequencing plans to maintain continuous odor control during construction, and preparation of technical specifications and construction sequencing requirements. Deliverables include 50%, 90%, and bid-ready plans and specifications, cost estimates.

Edinger Pump Station Rehabilitation Study, Orange County Sanitation District, Huntington Beach, California. Project Engineer for a comprehensive planning study to evaluate alternatives for the rehabilitation, replacement, relocation, or abandonment of the Edinger Pump Station. Directed a multi-disciplinary condition assessment addressing geotechnical, structural, seismic, mechanical, corrosion, and electrical code compliance issues. Developed and analyzed relocation alternatives to move the pump station out of the Edinger Avenue travel way and assessed hydraulic feasibility for converting the system to gravity flow to eliminate pumping requirements.



Education

Cal Poly State University,
San Luis Obispo
BS, Civil Engineering,
2006

Certifications

Professional Civil
Engineer (PE), CA No.
C77990
Qualified SWPPP
Developer (QSD)

Led the alternatives evaluation process, including conceptual site layouts and hydraulic modeling, and facilitated collaborative workshops with OC San engineering, operations, electrical/I&C, public relations, and right-of-way staff. Applied a decision matrix scoring system to rank alternatives based on constructability, lifecycle cost, safety, reliability, and community impacts, providing OC San with clear, data-driven recommendations for future capital improvements.

Olivenhain Municipal Water District Wastewater Master Plan Update, Encinitas, California. The 2024 Wastewater Master Plan Update established a comprehensive 10-year Capital Improvement Plan (CIP) to ensure reliable wastewater and recycled water service for the District’s 6,600 customers. The plan prioritized infrastructure investments based on operational performance, risk mitigation, and regulatory compliance, resulting in a \$31 million CIP. As part of this effort, Mr. Robertson led the operations study for the 4S Ranch WRF recycled water storage pond, evaluating overflow prevention strategies and contingency measures. This included assessing operational protocols, identifying hydraulic and electrical constraints, and developing an overflow connection to the City sewer system to mitigate wet-weather risks. Recommendations were for Recycled Water Storage Pond Upgrades project, improving system reliability, maintenance access, and seasonal storage management.

La Salina Wastewater Treatment Plant Decommissioning, Oceanside Water Department, Oceanside, California. Senior Project Engineer for the evaluation and cost analysis for two strategic wastewater management alternatives: (1) comprehensive upgrade of the 5.5 MGD La Salina Wastewater Treatment Plant and (2) decommissioning and conveyance of flows to the San Luis Rey Wastewater Treatment Plant. Led needs assessment of aging infrastructure, developed process unit scopes, and prepared capital and O&M cost estimates over a 50-year planning horizon. Coordinated multidisciplinary condition assessment and input, applied ENR-indexed cost modeling, and integrated regulatory, operational, and lifecycle considerations to support City decision-making. Findings confirmed Alternative 2 as the least-cost option, reducing 50-year projected expenditures by \$120M and aligning with Pure Water Oceanside program objectives.

Plant 2 Headworks Rehabilitation Final Design, South Orange County Wastewater Authority (SOCWA), J. B. Latham Treatment Plant No. 2. Project manager for the design of a new headworks improvements project, including wastewater channel and liner replacement, channel cover upgrades, odor control improvements, construction bypassing, and roof structural and electrical upgrades. Key design considerations included working within a confined building footprint, maintaining plant operations, and managing complex construction phasing. Project challenges included addressing severe corrosion and structural deterioration, improving odor control, coordinating construction sequencing, and ensuring long-term facility durability.

WRF 1 Aeration System Improvements, City of Corona, California. Project Manager for the design and implementation of fine bubble diffuser upgrades and a new air supply piping system across three aeration basins to enhance step-feed aeration and enable biological nitrogen removal. Scope included pipe sizing, routing alternatives evaluation, construction sequencing, and final design for overhead air header relocation. Key features incorporated a pipe bridge, cantilevered deck supports, retrievable aeration grid, and mechanical upgrades including actuated gates, motor-operated valves, flow meters, electrical systems, and SCADA integration. The project was completed on schedule with no significant issues and was awarded as an APWA 2025 Best Project.

Headworks Screening System Improvements, Olivenhain Municipal Water District, Encinitas, California. Project Engineer for condition assessment and upgrade of the existing headworks facility, including new mechanical bar screens, grit classifiers, odor control, slide gates, influent channel improvements, and protective lining. Developed comprehensive plant bypass and construction sequencing plans to minimize operational shutdowns and flow diversions during implementation.

Elizabeth Caliva, PE

PRINCIPAL ENGINEER

Elizabeth Caliva (*cuh-LEE-vuh*) is a professional engineer and seasoned project manager with over 22 years of experience leading water, wastewater, and recycled water planning efforts. She specializes in managing complex infrastructure master plans and planning studies, serving as both technical lead and project manager. Elizabeth is known for delivering high-quality projects on time and within budget, with a strong emphasis on clear communication, client collaboration, and team coordination. Her technical foundation includes extensive experience in hydraulic modeling and infrastructure planning. While she now leads teams and oversees project delivery, she maintains proficiency in key modeling platforms such as InfoSWMM (Innovyze), AquaTwin Sewer and AquaTwin Asset (Aquanuity). Her project portfolio spans master planning, Sanitary Sewer Management Plans (SSMPs) and audits, condition assessments, and the design of treatment plants, pump stations, and pipelines. Elizabeth is known for her leadership in guiding multidisciplinary teams through complex infrastructure planning efforts, ensuring alignment between technical goals and client priorities.



Education

University of California, Berkeley
 MS, Water Resources and Water Quality Engineering, 2003
 BS, Environmental Engineering, 1999

Certifications

Professional Civil Engineer (PE), CA No. 64331

Professional Affiliations

WateReuse Association

Project Experience

Planning/Modeling

Wastewater Master Plan, City of Laguna Beach, California. Served as Project Manager for the City’s first comprehensive Wastewater Master Plan, overseeing all aspects of planning, technical analysis, and project coordination. Led a multidisciplinary team, including three subconsultants, in conducting extensive field surveys, flow monitoring, and developing the City’s inaugural sewer hydraulic model to evaluate system capacity. Directed condition assessments for 26 lift stations, 25 urban water diversion structures, 400 manholes, and 20 miles of pipeline. Developed a risk-based prioritization model to inform a phased 20-year capital improvement program. Delivered the project on time and within budget, providing the City with a strategic, data-driven roadmap to guide future infrastructure investments, improve system reliability, and support proactive asset management. Received positive feedback from the client for project quality and responsiveness. (8/2024 – 12/2025)

Recycled Water Roadmap, South Coast Water District, Dana Point, California. Project Manager. Developed and managed the comprehensive roadmap for a multi-phase expansion of South Coast Water District’s recycled water system. Led cross-disciplinary teams in advanced hydraulic modeling, infrastructure assessment, and contingency planning to address future irrigation demands and system resilience. Delivered actionable recommendations for phased pipeline and facility upgrades, supporting the District’s strategic goal to convert potable irrigation customers to recycled water. The plan optimized capital investments, enhanced long-term water reliability, and positioned the District for sustainable growth, with a projected investment of \$25M–\$32M.

Sewer Model Calibration and Update, South Coast Water District, Dana Point, California. Project Manager. Managed the calibration and update of the District’s sewer system hydraulic model to enhance the accuracy of capacity assessments and support future infrastructure planning. Oversaw the integration of recent flow

monitoring data, coordinated with District operations staff, and directed technical analysis across three distinct service areas. Led the allocation of sewer flows using potable water usage data, refined model parameters, and validated results through field data and advanced calibration techniques. Conducted a system-wide capacity stress test to identify potential risk areas and inform targeted monitoring and improvement strategies. Delivered a robust modeling platform that provides the District with greater confidence in system evaluations and supports data-driven decision-making for capital investments and operational planning.

Recycled Water Transfer from CTP to JB Latham – Hydraulic Analysis, South Coast Water District, Dana Point, California. Project Manager. Leading the technical evaluation of South Coast Water District’s recycled water system to assess the feasibility and requirements for transferring up to 4 MGD of recycled water from the SOCWA Coastal Treatment Plant (CTP) to the JB Latham Treatment Plant. Overseeing hydraulic modeling under multiple demand scenarios, coordinating system updates, and identifying operational constraints and infrastructure needs. Managing the analysis of pump station and pipeline capacities and developing phased improvement strategies to optimize system performance and support future expansion. Collaborating with District staff to deliver actionable recommendations for capital projects, ensuring reliable transfer operations and supporting long-term water resource planning. Project is currently in progress.

Sewer Master Plan Update, City of Corona, California. Serving as Project Manager for the City of Corona’s 2025 Sewer Master Plan Update, overseeing planning, technical analysis, and environmental documentation for a complex municipal sewer system spanning 440 miles of pipelines and 15 lift stations. Leading a multidisciplinary team in conducting comprehensive capacity analysis and condition assessments to address aging infrastructure and support ongoing population growth. Coordinating the development of a Program Environmental Impact Report (PEIR) to facilitate future improvements. The updated master plan will provide the City with a strategic, phased roadmap for capital investments, regulatory compliance, and reliable sewer service across diverse neighborhoods and development patterns. The project is currently on schedule and within budget. (6/2024 – Present)

Water and Sewer Master Plan Updates, City of El Centro, California. Serving as Project Manager, leading the development of the City’s first updated water and sewer master plans in over 17 years, managing all aspects of planning, technical analysis, and project coordination. Overseeing comprehensive infrastructure evaluations, including hydraulic modeling of the sewer trunk system, condition assessments of pipelines, lift stations, and the wastewater treatment plant, as well as capacity and condition analysis of the water distribution system and 21 MGD water treatment plant. Coordinating with subconsultants on rate studies to ensure financial sustainability. The master plans will deliver a realistic, strategic framework for guiding phased capital improvements and updated utility rates, aligning infrastructure investments with projected growth and improving system reliability. Project is currently on schedule and within budget. (9/2024 – Present)

Interceptor Risk Analysis 2020, Victor Valley Wastewater Reclamation Authority, Victorville, California. Project Manager. Oversaw the evaluation of future interceptor system flows and infrastructure needs as a follow-up to the Authority’s 2019 capacity study. Coordinated with member agencies to develop updated growth projections and leveraged the Authority’s calibrated hydraulic model to assess system capacity through 2030. Directed field investigations and integrated CCTV and sonar data to evaluate condition-limited areas, supporting the prioritization of over \$120M in recommended projects. Facilitated the initiation of a regional inflow and infiltration (I/I) study to identify opportunities for capacity improvement prior to major upgrades. The analysis provided the Authority with a targeted investment strategy and actionable guidance for enhancing system performance and planning future improvements. Project delivered on schedule and within budget.

Agata Bugala, EIT

TREATMENT ENGINEER

Agata Bugala is a senior engineer with over 7 years of professional experience as a water/wastewater engineer, specializing in the design of water and wastewater treatment systems, including planning and process engineering. Her technical skills include aeration process modeling and energy optimization using BioWin, report preparation, cost estimation, specifications, and construction support. Ms. Bugala's experience in planning, design, and construction provides her with unique insights and knowledge that she employs to drive projects toward successful and timely completion.

Relevant Previous Experience

Wastewater Treatment Plant Capacity and Condition Assessment, City of Banning, California. Project engineer for performing a full-scale field condition and capacity assessment of the existing equipment of major unit operation processes—i.e., pumps—and pipes throughout the wastewater treatment plant (WWTP) using a portable ultrasonic flow meter. Evaluated and prepared a report describing short-term and long-term WWTP upgrades, maintenance, and replacement components.

Consequence of Failure Analysis, Multiple Clients and Locations, California. Project engineer for the preparation of a Consequence of Failure Analysis (CoFA) for multiple WWTPs and lift stations in California. CoFA utilizes workshops with O&M, engineering, and management staff and the project team to assess failure consequences and probabilities. The project identifies and prioritizes risk within the facility with the goal of prioritizing projects and confirming effectiveness of the current capital improvement program (CIP) to mitigate risk. Treatment plants assessed by Ms. Bugala include the following:

- South Orange County Wastewater Authority, 6.7 MGD Coastal Treatment Plant
- South Orange County Wastewater Authority, 12 MGD Regional Treatment Plant
- Moulton Niguel Water District, 4 MGD Plant 3A
- South Orange County Wastewater Authority, 13 MGD J.B. Latham WWTP
- Olivenhain Municipal Water District, 2 MGD 4S Ranch WRF and 14 Lift Stations

Rams Hill Wastewater Treatment Facility Capacity Analysis and Expansion Cost Estimates, Borrego Water District, Borrego Springs, California. Project engineer for a capacity analysis of Borrego Water District's Wastewater Treatment Facility. This analysis included an evaluation of each unit process to determine the total and remaining capacity under future growth. Through this evaluation, Ms. Agata identified key capacity



Education

The City College of New York
BE, Environmental Engineering, 2018

Certifications

Engineer-in-Training (EIT), No. 173501

Professional Affiliations

California Water Environment Association
Young Professional, Active Member

Water Environment Association, Active Member

Santa Ana River Basin Section, Member

Professional Awards

Water Environment Association, EPA National Engineering Award, 2017

bottlenecks in the facility and developed cost estimates for expanding the plant and removing bottlenecks. The resulting planning document allows the District to determine the necessary plant expansions and associated costs based on the number of new connections, providing them with a roadmap for future growth and expansion.

4S Ranch Water Reclamation Facility Master Plan, Olivenhain Municipal Water District, Encinitas, California.

Senior engineer and project engineer for performing full-scale capacity assessment of the existing equipment of major unit operation processes, Consequence of Failure Analysis (COFA), 10-year Capital Improvement Plan (CIP) and operation assessment study. Developed four technical studies and prepared a comprehensive Master Plan report. Managed and facilitated internal coordination throughout the project.

Inland Empire Brine Line Master Plan, Santa Ana Watershed Project Authority, Riverside, California. Project engineer for evaluating PFAS removal technologies and DDW PFAS limits for drinking water. This project included evaluation of treatment alternatives, equipment selection and cost estimates, preparation of master plan report.

Sodium Hypochlorite Feasibility Study, City of Inglewood, California. Project engineer for developing a feasibility study that assessed the viability of switching a water treatment facility's disinfection process from gaseous chlorine to liquid sodium hypochlorite. The study's findings concluded that the City could proceed with the conversion without endangering its customers or operators. To support this conclusion, the study incorporated interviews with other agencies that had previously undergone the same conversion and on-site discussions with other operators. This project included development of preliminary site layouts, equipment selection, cost estimates, and specifications for essential equipment. The study also recommended necessary edits to the City's disinfection O&M manual to justify the conversion.

4S Ranch Water Reclamation Facility Biological Process Optimization, Olivenhain Municipal Water District, Encinitas, California. Project engineer for engineering and operational support services to optimize biological treatment processes at the facility. Performed an examination of the activated sludge system and analyzed water quality, operational data, and process control data. The oxidation ditch was fitted with nitrogen monitoring equipment that enabled real-time control and nitrogen monitoring. Proposed targeted modifications to process set-points resulted in significant energy savings while maintaining the high standard of effluent water quality.

Temescal Valley Water Reclamation Facility, Temescal Valley, California. Project engineer for evaluating the sludge handling process at the WRF. Developed mass balance models to establish current baseline conditions and characteristics of the entire WRF. These models aimed to provide the District with a comprehensive understanding of each process's performance, with the ultimate goal of achieving efficient and reliable plant-wide compliance into the future. Additionally, estimated future sludge characteristics and production rates to facilitate long-term planning and optimization efforts.

Nano-Aeration Demonstration Testing, Municipal Wastewater Treatment Plant, City of Gonzales, California.

Assisted in the evaluation of nano-aeration technology (Nano₂) at the City of Gonzales WWTP. Prepared a conceptual design for an Nano₂ system on how to remove nitrogen in the most efficient and cost-effective way rather than use traditional biological treatment processes.

City of Redlands Master Plan, Redlands, California. As project engineer, performed full-scale capacity assessment of the existing equipment of major unit operation processes. Evaluated the existing system to identify key performance parameters of the WWTP and recommend potential ways to increase operational efficiency while reducing electrical costs of the facility, including power costs associated with pumps, blowers, and cogeneration.



Hazen

Hazen and Sawyer
7700 Irvine Center Drive • Suite 200 • Irvine, CA 92618



South Orange County Wastewater Authority



Fee Proposal for

Coastal Treatment Plant Facility Planning Assessment

January 15, 2026

Hazen

Fee Schedule

Hazen and Sawyer	Hazen and Sawyer								Hours	Labor	ODCs	Dudek Hous	Dudek Fee	Total	
	Vice President	Senior Associate	Associate	Senior Principal Engineer	Principal Engineer	Engineer	Senior Administrator	Designer							
	\$430	\$370	\$290	\$235	\$220	\$180	\$155	\$215							
1. Project Management															
1.1 Project Control Plan	7	4	16	0	0	0	3	0	30	\$ 9,595		2	\$ 575	\$ 10,170	
1.2 Project Meetings and Communications	72	134	69	16	32	72	0	0	395	\$ 124,310		15	\$ 4,690	\$ 129,000	
Facility Planning Assessment (FPA) Table of Contents and corresponding schedule of deliverables	5	2	4	0	0	0	0	0	11	\$ 4,050			\$ -	\$ -	
Monthly progress reports	8	0	24	0	0	0	0	0	32	\$ 10,400		8	\$ 1,760	\$ -	
TASK 1 TOTALS	92	140	113	16	32	72	3	0	468	\$ 148,355	\$ 3,000	25	\$ 7,025	\$ 158,380	
2. Existing Facilities Evaluation															
2.1 Description of Existing Facilities	0	16	8	0	0	48	0	8	80	\$ 18,600		6	\$ 1,515	\$ 20,115	
2.2 Review of Existing Reports and Models	0	0	8	0	16	24	0	0	48	\$ 10,160		6	\$ 1,510	\$ 11,670	
2.3 Flow and Loading Analysis	8	12	12	0	0	74	0	0	106	\$ 24,680		1	\$ 275	\$ 24,955	
2.4 Existing Facilities Analysis	0	16	24	0	8	100	0	0	148	\$ 32,640		1	\$ 275	\$ 32,915	
2.5 Condition Assessment of Major Unit Processes	0	64	24	0	0	0	0	0	88	\$ 30,640		1	\$ 275	\$ 30,915	
Task 2 Summary TM	2	56	16	0	0	16	8	0	98	\$ 30,340		30	\$ 7,925	\$ 38,265	
QAQC of TM2	28	0	0	0	0	0	0	0	28	\$ 12,040		36	\$ 8,920	\$ 20,960	
TASK 2 TOTALS	38	164	92	0	24	262	8	8	596	\$ 159,100	\$ 1,000	81	\$ 20,695	\$ 180,795	
3. Wastewater Treatment Alternatives															
3.1 Identify and Develop Treatment Alternatives	46	160	24	0	40	72	0	16	358	\$ 111,140			\$ -	\$ 111,140	
3.2 Risk and Resilience Planning Elements	0	48	0	80	0	72	0	0	200	\$ 49,520			\$ -	\$ 49,520	
Task 3 Summary TM	16	72	8	0	0	48	8	0	152	\$ 45,720			\$ -	\$ -	
QAQC of TM3	0	0	0	0	0	0	0	0	0	\$ -			\$ -	\$ -	
	0	0	0	0	0	0	0	0	0	\$ -			\$ -	\$ -	
TASK 3 TOTALS	62	280	32	80	40	192	8	16	710	\$ 206,380	\$ -		\$ -	\$ 206,380	
4. Recycled Water Facilities and Effluent Utilization Evaluation															
Determine Current and Projected Recycled Water Uses	0	0	0	0	0	0	0	0	0	\$ -		23	\$ 6,130	\$ -	
Identify Offsite Alternative Options	0	0	0	0	0	0	0	0	0	\$ -		42	\$ 11,420	\$ -	
Develop Effluent Utilization Alternatives	0	0	0	0	0	0	0	0	0	\$ -			\$ 15,040	\$ -	
Develop Onsite Utilization Alternatives	0	60	8	0	0	24	0	0	92	\$ 28,840		54	\$ -	\$ -	
Task 4 Summary TM	0	16	4	0	0	24	8	0	52	\$ 12,640		54	\$ 15,340	\$ -	
QAQC of TM4	8	4	0	0	0	0	0	0	12	\$ 4,920			\$ -	\$ -	
TASK 4 TOTALS	8	80	12	0	0	48	8	0	156	\$ 46,400	\$ -	173	\$ 47,930	\$ 94,330	
5. Develop Project Alternatives															
5.1 Identify Proposed Project Alternatives	0	4	0	0	0	0	0	0	4	\$ 1,480			\$ -	\$ 1,480	
Project Alternative Summary Matrix	0	12	8	0	0	8	0	0	28	\$ 8,200			\$ -	\$ -	
Summary TM	0	0	8	0	0	24	8	0	40	\$ 7,880			\$ -	\$ -	
QAQC of TM 5	16	0	0	0	0	0	0	0	16	\$ 6,880			\$ -	\$ -	
TASK 5 TOTALS	32	176	40	0	0	128	24	0	400	\$ 24,440	\$ -		\$ -	\$ 24,440	
6. Prepare Facility Planning Assessment Report and Documents															
Administrative Draft Facility Planning Assessment Report	6	32	8	0	8	24	8	0	86	\$ 24,060			\$ -	\$ -	
Draft Facility Planning Assessment Report	0	16	8	0	0	24	8	0	56	\$ 13,800			\$ -	\$ -	
Final Facility Planning Assessment Report	0	0	8	0	0	0	8	0	16	\$ 3,560			\$ -	\$ -	
Report	22	16	8	0	0	0	0	0	46	\$ 17,700			\$ -	\$ -	
TASK 6 TOTALS	28	64	32	0	8	48	24	0	204	\$ 59,120	\$ -		\$ -	\$ 59,120	
TASKS 1-6 GRAND TOTALS	260	904	321	96	104	750	75	24	2534	\$ 643,795	\$ 4,000	279	\$ 75,650	\$ 723,445	

Agenda Item

13

Engineering Committee Meeting

Meeting Date: January 22, 2026

TO: Engineering Committee

FROM: Jim Burror, Deputy General Manager/Chief Engineer
and Roni Grant, Capital Improvement Program Manager

SUBJECT: Draft Capital Improvement Program Budget for Fiscal Year 2026-27

Overview

This item covers the draft Fiscal Year 26-27 Capital Improvement Program (CIP) budget. The CIP is presented for each of the next 10 years by project and by proposed member agency cash requests/billings.

Recommended Action: Information Item.

Agenda Item

14

Legal Counsel Review: No

Meeting Date: January 22, 2026

TO: Engineering Committee
FROM: Amber Boone, General Manager
STAFF CONTACT: Roni Grant, Capital Improvement Program Manager
SUBJECT: Engineering Cost Estimate Update

Summary

In competitive bidding for the Coastal Treatment Plant (CTP) and J.B. Latham Treatment Plant (JBL) projects, significant discrepancies emerged between engineering estimates and actual bids, with variations up to 56% in CTP bids highlighting differences in contractor assessments, risk evaluations, and market perceptions. These independent, sealed bids underscore the challenges in achieving accurate cost forecasting, emphasizing the need for SOCWA to adopt advanced tools and systems to minimize such gaps.

SOCWA brought this discussion to the SOCWA Board on January 8, 2026. The Board advised SOCWA staff to work with the Engineering Committee to seek guidance on methods and tools the Engineering Committee members have developed to decrease the discrepancy between engineering estimates and construction costs.

Budget Implications

SOCWA staff brought a process for addressing cost overruns to the SOCWA Finance Committee on January 20, 2026.

Recommended Action: Committee Direction/Discussion/Action

Agenda Item

15

Budgeted: N/A

Legal Counsel Review: Yes

Meeting Date: January 22, 2026

TO: Engineering Committee
FROM: Amber Boone, General Manager
SUBJECT: Cost Allocation Policy

Summary

At the January 8, 2026 Board of Directors meeting, SOCWA staff brought the updated draft Policy Handbook for review. The SOCWA Board requested the SOCWA Engineering Committee Review the Engineering allocation costs related to PC2 & PC15.

Recommended Action: Committee Discussion/Direction/Action

Attachments:

Draft Cost Allocation Policy
Carollo Report

Cost Allocation Policy

Purpose

This policy establishes the methodology for allocating costs associated with the operation, maintenance, administration, and unfunded liabilities of the South Orange County Wastewater Authority (SOCWA). It ensures fair, transparent, and consistent distribution of costs among member agencies and project committees and shall govern the allocation of costs reflected in SOCWA's Budgets, including costs related to administration, operation, and maintenance, capital projects, information technology, fringe benefits, Unfunded Accrued Liabilities (UAL), and Other Post-Employment Benefits (OPEB).

Budget Components

SOCWA's budget consists of four principal components outlined below.

1. **Capital Improvement Plan (CIP) Budget** – The CIP Plan is a multi-year plan outlining SOCWA's planned investments in public facilities and infrastructure, and more specifically, the financing, location, and timing of capital improvement projects. The CIP Budget is created with input from the Engineering Committee. The CIP Budget includes maintenance costs not directly related to use of the Project facilities, including necessary capital improvements, repairs, adjustments, replacements, and extraordinary or standby maintenance, and incidental accounting and administrative costs in connection therewith. Any change to the cost allocation methodology for the CIP Budget set forth in this Policy must be made by the unanimous consent of all the SOCWA Board of Directors in accordance with Section 6.3.1 of the SOCWA Joint Powers Agreement.
2. **Operations and Maintenance (O&M) Budgets** – Operations and maintenance budgets are prepared for each Project operated and maintained by SOCWA and approved at or prior to each June meeting of the Board for the ensuing Fiscal Year. Operations and maintenance costs directly related to the use of the Project facilities, including necessary improvements, repairs, adjustments, and replacement costs in connection therewith, are paid by each Member Agency using the Project facilities in proportion to its use, consistent with Section 6.3.1 of the SOCWA Joint Powers Agreement. The O&M Budgets include (a) the estimated expenses of operating the Project; (b) the estimated expenses of maintaining the Project, (c) an estimate of income from operations, if any; and (d) the allocation of operation and maintenance expenses among the Member Agencies in each particular Project Committee (the "Participating Member Agencies") in accordance with the formulas set forth in this Policy. O&M Budgets must be approved by a two-thirds (2/3) vote of the Participating Directors in that Project in accordance with Section 6.3 of the SOCWA Joint Powers Agreement. The O&M Budget includes two departments:
 - Department 01: Operations and Maintenance
 - Department 02: Environmental Services

3. **Administration Budget:** The Administrative Budget contains the administrative and incidental accounting costs arising specifically from the operations and maintenance of the Project facilities, as well as the allocation among the Member Agencies of the amounts necessary to cover the Administrative Budget expenditures. Because the Administrative Budget is a Project; the O&M costs for a Project, the Administrative Budget also must be approved by a two-thirds (2/3) vote of the Participating Directors in that Project in accordance with Section 6.3 of the SOCWA Joint Powers Agreement. The Administration Budget includes the following:
- Department 03: Engineering. Greater than 60% of non-labor expenses (residual engineering) in this department are administrative in nature, which were combined with administrative expenses. Engineering labor is billed directly to Capital projects in the CIP Budget with minimal time billed to administration.
 - Department 04: Administration. Includes administration and incidental accounting costs arising specifically from the operations and maintenance of the Project facilities.
 - Department 05: Information Technology - Expenses are budgeted as direct costs where technology services or equipment are needed at SOCWA facilities or as indirect costs based on the IT pool of expenses. Department 05 expenses are distributed to all project committees and departments based on the "where labor worked" methodology.
4. **General Fund Budget:** The General Fund Budget includes the general administrative expenses of SOCWA and the allocation among the Member Agencies of the amounts necessary to cover the General Budget expenditure. The General Fund Budget is allocated evenly among the six participating Member Agencies. If the General Fund Budget provides an allocation to the Member Agencies on some basis other than equal amounts, the General Fund Budget must be approved by the unanimous consent of all the Member Agencies in accordance with Section 6.1 of the SOCWA Joint Powers Agreement. Certain expenses are split between the General Fund Budget and the Administrative Budget.”. Items included in the General Fund Budget include portions of the following categories, as allocated in Table 1 and described below Table 1 for clarity.

Please note that the percentages in Table 1 are the General Fund percentage allocations, and the remaining percentage allocations for each category of expense are allocated entirely to the Administration Budget. For example, Regular Salaries of the General Manager shall be split 50% into the General Fund (allocated equally to the SOCWA member agencies) and 50% into the Administration budget, which is allocated based on where labor worked, following O&M expenses.

Table 1: General Fund Expenses and Percentage Allocations

General Fund Allocation	
Salary and Fringe	
Regular Salaries-Admin	50% (General Manager)
Assistant Clerk	50%
Comp Time - Admin	50%
Other Expenses	
Car Allowance (General Manager)	50%
Public Notices	100%
<u>Public Relations</u>	<u>Board Member Agency Directed</u>
Contract Labor/Part-Time Labor	25%
Audit	100%
Legal Fees	40%
Memberships, Conferences, Training, and Travel	75%
Small Purchases and Consumables	5%
IT Allocations into PC's & Depts.	5%

Definitions of the General Fund:

Audit: Annual audit shall be filed with the State Controller, Orange County Auditor and each Member Agency within six (6) months of the end of the Fiscal Year under examination. All costs associated with this requirement shall be included in this category.

Car Allowance: Monthly allowance for vehicle expense per the General Manager's contract.

Contract Labor/Part-Time Labor: Board approved budget for this additional work as needed.

General Fund: Also known as the General Budget as described in the SOCWA: "(i) "General Budget" means the approved budget applicable to the expenses of administration of the Authority."

IT Allocations into PC's & Depts: IT allocations follow O&M labor.

Legal: For matters related to conducting Board-related business for labor and general counsels.

Public Notices/~~Public Relations~~: Expenses incurred related to any public ~~relations~~-notices required for the business of the Authority.

Public Relations: Expenses incurred to support Public Relations efforts based on Board-directed or Member Agency requests. Public Relations expenses ~~and~~ may be funded or co-funded through ~~respective~~ Member Agency partnerships. Public Relations expenses shall be allocated on a case-by-case basis at the direction of the SOCWA Board. Public Relations expenses shall first be presented to the SOCWA Board for discussion regarding whether the expense, or a portion of the expense, belongs in the General Budget, or whether the expense should be subject to a different allocation. Upon the unanimous vote of the SOCWA Board, a Public Relations expense may be added to the General Budget (and thereby allocated evenly among the six participating Member Agencies) or allocated on some basis other than equal amounts among all Member Agencies. If there is not unanimous consent regarding the proposed allocation by the SOCWA Board, then that Public Relations expense may be funded by one or more Project Committees, or by two or more Member Agencies, subject to the unanimous consent of the Participating Directors representing the Member Agencies that will fund the expense.

Regular Salaries-Admin: Regular salary of the SOCWA General Manager

Small Purchases and Consumables: Small tools and supplies, subscriptions, postage, office supplies in admin, miscellaneous, and shipping/freight that support Board-related business.

5. **Other Budget Components:**

- UAL - "UAL" is an abbreviation for Unfunded Actuarial Liability, which is the gap between a pension plan's total obligations to employees and the assets it has on hand to pay for those benefits. This liability represents the portion of accumulated benefits that an organization is committed to paying but for which it has not yet set aside sufficient funding. For example, in the UAL calculation for a public agency, the UAL represents the amount of promised benefits that is greater than the plan's assets.
- OPEB - An OPEB liability is an accounting term for the financial obligation an employer has to pay for Other Postemployment Benefits (OPEB) provided to its retired employees and their beneficiaries. These benefits are non-pension benefits earned during an employee's service period but paid after employment has ended.

Cost Allocations

The following sections provide the allocations by each component outlined above.

Engineering Allocations

Capital costs are considered projects that maintain the SOCWA facilities and follow Section 6.3.1 of the SOCWA JPA agreement, which states that capital costs “shall be paid by the Participating Member Agencies in proportion to their respective percentage share of the ownership of capacity in said Project facilities.” The December 2024 reorganization agreements contain the most current cost allocations for capital projects and are utilized in the budget creation.

The capital portion of the O&M Budget is presented to the SOCWA Board’s Engineering Committee for review, comment, and incorporation by consensus of each project committee member.

Administrative Cost Allocation

Administrative costs follow Section 6.2 of the SOCWA JPA agreement. The methodology divides costs per agency by the total Operations and Maintenance budget (Departments 01 & 02) without including Admin, UAL, or OPEB costs. This ensures administrative costs remain proportional to services received, as identified in the annual budget. Any changes to this methodology require unanimous consent from all Participating Member Agencies per Section 6.3.1 of the SOCWA JPA.

Fringe Benefit Allocation

SOCWA utilizes a fringe benefit pool methodology that is applied to salaries with a utilization rate. The fringe benefit pool encompasses costs for accrued leave, group insurance, PERS Normal Costs, and other paid benefits. The utilization rate is the pay-for-time-worked rate based on the number of hours on leave divided by the total number of hours available to work. SOCWA plans to transition from the fringe pool method to an actual cost allocation approach to better accommodate labor changes throughout the fiscal year.

Information Technology Allocation

IT costs are distributed using a labor-based (“where labor worked”) allocation methodology, distinguishing between:

- Direct costs: Technology services or equipment needed at specific SOCWA facilities.
- Indirect costs: Distributed across project committees and departments based on labor allocation.

Unfunded Liabilities Allocation

The allocation of Unfunded Accrued Liability (UAL) requires annual payments based on actuarial distributions. Distribution adheres to a proportional methodology based on labor services received by each Member Agency and is updated by an actuarial firm, when necessary, to account for structural changes at the agency. Employer retirement costs are allocated according to labor distribution and agency participation levels, reviewed and updated periodically by an outside consulting firm. Certain agencies (referred to as Contract Agencies as defined herein) are

contractually obligated to cover certain UAL and OPEB costs based on terms set forth in individual agreements, such as withdrawal or continuing services agreements.

Contracted Services Allocations

SOCWA may contract from time to time with partners to provide those partners with certain specialty services, such as recycled water permitting, permitting compliance services (such as NPDES and master recycled water permits), pretreatment program services, and/or laboratory services using the same general facilities and standard of care as provided to SOCWA's Member Agencies. Generally, SOCWA provides these services and invoices for the contracted partners, such as the Trabuco Canyon Water District and the Moulton Niguel Water District, on a quarterly or annual basis for actual costs, plus reasonable administration and overhead costs, which are calculated proportionately based on the same overhead and administration methodology used for Member Agencies.

De minimis contracts that provide revenue sources of under \$100k annually will have a flat overhead and administration rate, which will be set and reviewed annually, and these revenues will be used to offset costs associated with the specific Project Committee applicable to the service provided, if applicable, and shall be reconciled and credited as appropriate during the use audit process.

SOCWA will defer to agreed-upon contract language from previous member agencies negotiated as part of subsequent withdrawal agreements related to unfunded public system liability while agencies were members of the Authority.

SOCWA will provide notice to each contracted services partner no later than March 1 each year to determine whether they desire to continue using SOCWA's services for the following fiscal year, to determine inclusion in the budget, where and as applicable.

Project Committee Allocation

SOCWA operates through a series of Project Committees (PCs), each with specific operational responsibilities and Participating Member Agencies. The Project Committee costs are inclusive of facility usage, operational needs, special studies determined by Engineering or Finance Committees, permit requirements, regulatory drivers, labor, and utility operational costs. Specific allocation methodologies vary by Project Committee. SOCWA will utilize the capacity ownership amounts set forth in the December 2024 Reorganization Agreements as normal budgeted costs and resolve the usage in the Use Audit process.

Table 2 sets forth the current SOCWA Project Committees, Member Agencies, and Contract Agencies. "Contract Agencies" are agencies that have contracted capacity through other SOCWA Member Agencies and/or otherwise receive services through contracts directly with SOCWA.

Table 2: SOCWA Project Committee Participating Member Agencies and Contract Agencies

Project Committee	Description	SOCWA Participating Member Agencies	Contract Agencies
PC 2	JB Latham WWTP	SCWD, SMWD	MNWD
PC 5	San Juan Creek Ocean Outfall (SJCOO)	CSC, SCWD, MNWD, SMWD	MNWD
PC 8	Pre-Treatment Program	CLB, CSC, EBSD, ETWD, SCWD, SMWD	IRWD, MNWD
PC 12	Recycled Water Permit	SCWD, SMWD	MNWD, TCWD
PC 15	Coastal WWTP	CLB, EBSD, SCWD	N/A
PC 21	Effluent Transmission Main (ETM)	ETWD	IRWD, MNWD
PC23	North Coast Interceptor (NCI)	CLB, EBSD	N/A
PC 24	Aliso Creek Ocean Outfall (ACOO)	CLB, EBSD, ETWD, SCWD	IRWD, MNWD

Agency Abbreviations:

- CLB: City of Laguna Beach
- CSC: City of San Clemente
- EBSD: Emerald Bay Service District
- ETWD: El Toro Water District
- IRWD: Irvine Ranch Water District (a Contract Agency, not a Member of SOCWA)
- MNWD: Moulton Niguel Water District (a Contract Agency, not a Member Agency of SOCWA)
- SCWD: South Coast Water District
- SMWD: Santa Margarita Water District
- TCWD: Trabuco Canyon Water District (a Contract Agency, not a Member Agency of SOCWA)

PC 2 (JB Latham WWTP)

PC 2 O&M costs are budgeted and allocated based on the capacity rights specified in the Assignment and Assumption Agreement (PC 2) (Agreement No.5/Agreement #7 to PC 2, effective December 12, 2024), as outlined in Table 3. Please note that, based on the agreement, *MNWD costs are combined with SCWD costs, effective December 12, 2024:* “MNWD’s 23.08% liquids treatment capacity allocation in (and effluent from) the JB Latham

Treatment Plant, totaling 3.00 mgd; and (ii) MNWD’s 21.62% solids treatment capacity allocation in the JB Latham Treatment Plant, totaling 8,340 lbs/day ((i))”.

Table 3: PC 2 Capacity Summary (Owned and Operated by SOCWA)

PC 2 - SOCWA JBL Capacity Summary (Owned and Operated by SOCWA)					
Agency	Liquids (mgd)	Solids (mgd) (1)	Solids (lbs)(1)	Common-S (%)	Common - L (%)
SCWD	6.75	7.70	16055	41.62%	51.92%
SMWD	6.25	10.80	22518	58.38%	48.08%
Total	13.00	18.50	38573	100%	100%

PC 5 (San Juan Creek Ocean Outfall)

PC 5 O&M costs are budgeted and allocated based on the hydraulic capacity ownership amounts set forth in the Assignment and Assumption Agreement (Agreement No.6, effective December 12, 2024) and represent fixed costs as noted in Table 4. Please note that, based on the agreement, *MNWD costs are combined with SMWD costs effective December 12, 2024*: “MNWD hereby permanently assigns to (a) SMWD and SMWD hereby accepts 59% of MNWD’s assigned Outfall Capacity, and (b) SCWD and SCWD hereby accepts 41% of MNWD’s Assigned Outfall Capacity and 100% of MNWD’s Assigned Pumping Capacity.”

Table 4: PC 5 - SOCWA San Juan Creek Ocean Outfall Capacity Summary (Owned and Operated by SOCWA)

Agency	Ownership (%)	Hydraulic Capacity (mgd)
CSC	16.620%	13.296
SCWD	18.829%	15.063
SMWD	64.551%	51.64
Total	100.000%	80.00

PC 8 (Pretreatment Costs)

PC 8 costs remain in the budget with direct costs billed to Contract Agencies based on where labor worked.

PC 12 (Water Reclamation Permits)

The PC 12 costs are volume based (recycled water produced) and are allocated by_Agency in the following manner.

- MNWD: The amount of reclaimed water produced from the Regional Treatment Plant (RTP) and the 3A Treatment Plant (split with SMWD).
- South Coast Water District (SCWD): The total reclaimed water produced from the Coastal Treatment Plant (CTP).
- Santa Margarita Water District (SMWD): The combined sum of reclaimed water produced from the Oso Creek Water Reclamation Plant (OCWRP), the Chiquita Water Reclamation Plant (CWRP), and the Nichols Water Reclamation Plant (NWRP), the acre-foot sum of the Rosebaum well, the Mission Street Well, and the total reclaimed water from the SMWD/CSJC intertie.
- Trabuco Canyon Water District (TCWD): Reclaimed water produced from the Robinson Ranch Water Reclamation Plant (RRWRP).

PC 15 (Coastal Treatment Plant) Allocation

PC 15 O&M costs are budgeted and allocated according to the Liquids, AWT, and Common capacity amounts set forth December 12, 2024, Coastal Treatment Plant Capacity Rights Transfer Agreement (Agreement No.3MNWD Capacity Rights in Project Committee 15), as noted in Table 5.

Table 5: PC 15 - Coastal Treatment Plant Capacity Summary (CTP Owned and Operated by SOCWA: AWT is owned by SCWD but operated by SOCWA)

Agencies	Liquids (mgd)	AWT (%)	Common (%)
CLB	3.64	0	54.30%
EBSD	0.2	0	3.00%
SCWD	2.86	100	42.70%
Total	6.7	100	100.00%

PC 21 (Effluent Transmission Main) Costs

PC 21 O&M costs are budgeted and allocated according to hydraulic capacity ownership as set forth in the Assignment and Assumption Agreement (Agreement No.7, effective December 12, 2024) (Project Committees 21 and 24) as noted in Table 6. Please note that *IRWD costs are combined with ETWD costs, effective July 1, 2023, with 50% capacity rights to IRWD and 50% capacity rights to ETWD for ETM reach B/C/D, and IRWD and MNWD costs are combined with ETWD costs, effective December 12, 2024, with 23.29% allocated to ETWD, 23.29% allocated to IRWD, and 53.43% allocated to MNWD for Reach E.*

Table 6: PC 21 - Effluent Transmission Main (ETM) Capacity Summary Reach B/C/D/E (Owned and Maintained by SOCWA)

Agency	Hydraulic Capacity	Ownership Percentage (%)
ETWD - B/C/D	15	100%
ETWD - E	32.2	100%

PC 23 North Coast Interceptor Costs

PC 23 O&M costs are budgeted and allocated according to hydraulic capacity ownership as set forth in the November 22, 2006, Amendment No. 3 to the Agreement for Design, Construction, Use, Operation, Maintenance, Repair, and Replacement of Phase I North Coastal Interceptor Sewer Pipeline and Pumping Stations for AWMA for and on Behalf of PC No. 7-A as noted in Table 7.

Table 7: PC23 North Coast Interceptor

Agency	Capacity Ownership Percentage (%)
CLB	95.88
EBSB	4.12

PC 24 (Aliso Creek Ocean Outfall) Costs

PC 24 O&M costs are budgeted and allocated according to hydraulic capacity ownership as set forth in the December 12, 2024, Assignment and Assumption Agreement (Agreement No.7) (Project Committees 21 and 24) as noted in Table 8. As noted in the Agreement: “*Note MNWD costs are combined with ETWD costs, effective December 12, 2024. Assignment and Acceptance of MNWD’s Assigned Capacity and Rights and Obligations. MNWD hereby permanently assigns to ETWD, and ETWD hereby accepts from MNWD, (1) MNWD’s 53.42% capacity allocation in Reach E of the Effluent Transmission Main; (2) MNWD’s 43.848% capacity allocation in the ACO Outfall ((1) and (2) are collectively referred to herein as “MNWD’s Assigned Capacity”). Note that IRWD transferred capacity rights to ETWD effective July 1, 2023 via an Assignment and Assumption Agreement.*”

Table 8: PC 24 - Aliso Creek Ocean Outfall (ACOO) Capacity Summary (Owned and Operated by SOCWA)

Agency	Hydraulic Capacity (mgd)	Ownership Percent (%)
CLB	5.500	11.00%
EBSB	0.390	0.78%
ETWD	37.955	75.91%
SCWD	6.155	12.31%
Total	50.000	100.00%

Cost Allocation Principles for SOCWA Wastewater Treatment Facilities

The following principles guide SOCWA's cost allocation methodologies and are applicable to PC 2 & PC 15. The other PCs have fixed cost distribution (PC 5 & PC 24), and are based on production (PC 12), or labor allocation (PC 8). Additional allocation categories are described below.

Treatment Plant Cost Allocation Categories

1. Process-Based Allocation: Costs are allocated based on operational processes (Liquids, Solids, Common, AWT).
2. Facility-Specific Considerations: Each facility has a unique allocation structure reflecting its operational characteristics.
3. Direct vs. Shared Costs: Direct costs are allocated to specific processes; shared resources are allocated proportionally.
4. Labor Distribution: Based on actual time spent supporting each facility or project committee.
5. Utility-Specific Allocation: Based on metering data and operational requirements.
6. Chemical Usage Tracking: Based on actual usage by treatment process, resolved in the use audit.
7. Equipment-Based Allocation: Based on the primary function of equipment (solids, liquids, or common costs).

PC 2 Cost Allocation Structure

PC 2 operates with a four-way allocation system distributing costs among Liquids (55.1%), Solids (43.4%), Common/Liquids (0.8%), and common Solids (0.8%) treatment processes. This allocation structure applies to regular labor costs, benefits, and most operational expenditures. Notable variations include:

- Electricity: 65.0% Liquids, 25.0% Solids, 5.0% Common/Liquids, 5.0% Common/Solids

- Natural Gas: 65.0% Liquids, 25.0% Solids, 5.0% Common/Liquids, 5.0% Common/Solids
- Chlorine/Sodium Hypochlorite: 50.0% Liquids, 50.0% Solids
- Polymer Products: 100% Solids
- Ferric Chloride: 100% Liquids
- Other Chemicals: 54.0% Liquids, 46.0% Solids
- Non-Control Chemicals: 50.0% Common/Liquids, 50.0% Common/Solids
- Laboratory Services: 75.0% Liquids, 25.0% Solids
- Grit Hauling: 100% Solids
- Capital projects follow the ownership allocations, depending on the type of project, that are presented as the Common-L or Common-S.

PC15 Cost Allocation Structure

PC 15 employs a different allocation structure than PC 2, with costs distributed among Liquids (55.4%), Common/Liquids (3.4%), and AWT (41.2%) treatment processes. This reflects the facility's distinct operational focus. Key allocation patterns include:

- Regular Salaries: 76.4% Liquids, 18.2% Common/Liquids, 5.4% AWT
- Overtime Salaries: 64.9% Liquids, 21.9% Common/Liquids, 13.2% AWT
- Electricity: 100% Liquids
- Natural Gas: 50.0% Liquids, 50.0% Common/Liquids
- Water: 90.0% Liquids, 10.0% AWT
- Chlorine/Sodium Hypochlorite: 100% Liquids
- Ferric Chloride: 100% Liquids
- Laboratory Supplies: 75.0% Liquids, 25.0% AWT
- Petroleum Products: 50.0% Liquids, 3.4% Common/Liquids, 41.2% AWT
- Uniforms: 55.4% Liquids, 3.4% Common/Liquids, 41.2% AWT
- Maintenance Equipment & Facilities (Liquids): 100% Liquids
- Maintenance Equipment & Facilities (Common): 100% Common/Liquids
- Maintenance Equipment & Facilities (AWT): 100% AWT
- Solids Pumping Costs (discussion item)
- Capital projects follow the ownership allocations, depending on the type of project, that are presented as Common or AWT--

PC 5, 21, 23, and 24 Cost Allocation Structure

All budgeted capital and O&M costs for PCs 5, 21, 23, and 24 are allocated based on the Member Agencies' ownership of hydraulic capacity of the pipelines.

Contract Agency Services

SOCWA provides services for Contract Agencies through contractual agreements, such as laboratory and permitting services. The budget for these services is provided to the Contract Agencies by March of each year for approval of continuation of services.

Budget Allocations

Once the total cost of providing staffing and services on behalf of MAs is completed by SOCWA staff and approved by the Board, the following standardized methodology allocates costs to

project committees (PCs) and ultimately rolled up to each SOCWA Member Agency. It ensures equitable distribution of operations and maintenance (O&M) expenses, administrative costs, general fund (GF) contributions, unfunded actuarial liability (UAL), and other post-employment benefits (OPEB) liabilities. All allocations shall be based on verifiable data sources, such as capacity rights, labor utilization, or flow percentages, and shall adhere to board-approved guidelines and reorganization agreements. SOCWA staff shall provide Member Agency staff with the raw data for the allocations and methodology employed with a statement of quality assurance in adherence with the allocation steps below with the annual SOCWA Budget.

The steps for cost allocation are as follows:

1. Allocation Based on Capacity Rights: Utilize established capacity rights to determine the proportional contribution per agency for each PC and MA.
2. Alternative Allocation Methods: In instances where capacity rights are unavailable, employ labor utilization metrics (e.g., “where employee worked”) or flow percentages to calculate the proportional utilization by each agency.
3. Calculation of MA Operating Cost Percentages: Determine the percentage that each MA's operating costs represent relative to the total O&M budgeted expenses. This calculation excludes administrative costs, GF contributions, UAL, and OPEB liabilities.
4. Determination of Administrative Costs per MA: Multiply the percentage derived in Step 3 for each MA by the draft budget amount to compute the total administrative cost attributable to that MA.
5. Computation of Administrative Cost Allocation Percentage: Divide the O&M cost per facility or service budget by the total MA budget to establish the administrative cost allocation percentage.
6. Allocation of General Fund: Calculate the percentage of costs based on Table 1, subtract that amount from the administrative costs and divide equally between the six member agencies.
7. Allocation of Administrative Costs per PC or Service: Multiply the percentage from Step 5 by the total administrative cost from Step 4 to allocate administrative costs to each PC or service.
8. Allocation of UAL and OPEB Liabilities: Use the admin cost allocation percentages per PC (that follows where labor worked) for the liability distribution of the UAL and OPEB. The total liability is the sum of the PCs that the MA is a member of based on UAL Methodology established by the SOCWA Board in 2018¹.
9. Total Budget per Agency: Sum all allocated costs (including O&M, administrative, GF (if applicable), UAL, and OPEB) to derive the total budget attributable to each agency.

This procedure shall be reviewed as needed to incorporate any updates to board methodologies, reorganization agreements, or budgetary frameworks. All calculations must be documented and auditable, with supporting data retained as required by the SOCWA Records Retention Policy.

¹ Actuaries Marilyn Jones of Nyhart and Mary Beth Redding of Bartel Associates provided the updated UAL methodology at the June 17, 2018 Finance Committee meeting. The Finance Committee recommended to use the methodology on August 29, 2018, further discussion at the September 19, 2018 Finance Committee meeting, final action to approve the methodology for use in the audited financial statements on October 4, 2018 by the Finance Committee. This methodology was used in the distribution of liability in FY 2017-2018 audited financials that was brought to the Board to receive and file at the December 6, 2018 SOCWA Board meeting. The SOCWA Board voted to receive and file the audited financial statements and approved the methodology in the approval of the FY 2017-18 Annual Use Audit.

Use Audit Allocation

The Use Audit is completed by applying established flow allocation methodologies, circulated annually for review to SOCWA member agencies, which distribute costs among member agencies based on their proportional usage of treatment facilities. The process involves collecting actual flow data (measured in million gallons per day) and solids loading data (calculated from BOD and TSS measurements) for each Member Agency during the fiscal year, then comparing these actual values against budgeted amounts to determine each agency's percentage share of total system usage.

The allocation methodology varies by project committee - some use average flows over multiple years, others incorporate solids loading calculations, and some account for special agreements between agencies (like the 2018 MNWD-SMWD agreement for solids allocation). Once the actual usage percentages are calculated and compared to budgeted percentages, any differences result in either disbursement of funds to agencies that were overcharged or collection of additional funds from agencies that were undercharged, with the final results reviewed through the Engineering and Finance Committees and recommended to the SOCWA Board of Directors before implementation. Table 9 provides a summary of the Use Audit Methodology with PC descriptions below Table 9.

Table 9: Use Audit Methodology Table

Project Committee (PC)	Method	O & M Costs - Variable	O & M Costs - Fixed	Capital Costs
PC 2	Variable	Liquids-related costs are based on each agency's prior calendar year flows to prepare the budget. Solids-related costs are based on each agency's three (3) year prior pounds (BOD + TSS)/2) to prepare the budget. The Use Audit process utilizes the actual FY totals for Liquids and the actual FY solids, along with the two prior FY solids totals.	Common costs are allocated based on the average ownership of liquids and solids capacity percentages, or $((L\% + S\%)/2)$.	For facilities or equipment with a service life equal to or greater than 5 years, or a value in excess of \$1,000, costs are allocated on the basis of liquid treatment capacity ownership and/or solids treatment capacity ownership as may be applicable.
PC 5	Fixed	Allocated to PC members based on fixed ownership.	Allocated to PC members based on fixed ownership.	Allocated to PC members based on fixed ownership.
PC 8	Variable	Allocated based on percentage of staff time.	Shared equally among all member agencies.	Shared equally among all member agencies.

PC 12	Variable	Total costs are split 50/50 between fixed and variable. Allocated proportionally to each PC member based on non-potable water production and projections.	Total costs are split 50/50 between fixed and variable. Divided equally between each PC member. Insurance is allocated equally amongst the Participating Member Agencies.	Not applicable
PC 15	Variable	Liquids related costs are allocated based on the agency's prior calendar year's flows to prepare the budget. The Use Audit process uses the actual FY totals for Liquids. 100% of the AWT costs are attributed to SCWD.	Common costs are allocated to the PC members based on their liquids ownership allocations.	Plant Liquids and Common capital costs are allocated to the PC members based on their liquids ownership allocations. 100% of the AWT capital costs are allocated to SCWD.
PC 17*	Variable	All costs are allocated to MNWD unless otherwise stated in the Budget/Use Audit.	All costs are allocated to MNWD unless otherwise stated in the Budget/Use Audit.	Any designated capital costs will be allocated to the Budget/Use Audit based on the accompanying agreement.
PC 21	Fixed	Not applicable.	Allocated to each PC member based on percentage of ownership.	Allocated to PC members based on percentage of ownership.
PC 23	Fixed	None or NA - All Costs are considered to be allocated using the Fixed method	All O&M Costs are allocated by ownership percentages per PC23 agreements (see Section 7 of the 11-4-1976 agreement).	All Capital O&M Costs are allocated by ownership percentages per PC23 agreements (see Section 7 of the 11-4-1976 agreement).
PC 24	Fixed	Allocated to PC members based on fixed ownership.	Allocated to PC members based on fixed ownership.	Allocated to PC members based on fixed ownership.

*Included to complete the FY 24-25 Use Audit and will be no longer after the FY 24-25 Use Audit is completed.

The following provides the method for the Use Audit by PC:

PC 2

Member Agency average flows for the FY were used in the flow allocation and applied proportionally from the total combined flow from each tributary trunk line. The PC 2 uses FY flows and three-year FY average solid loadings to reconcile the budgeted amounts. Solids loadings are calculated from adding the average FY BOD and TSS and, dividing by 2, and then multiplying the result by the flow and the 8.34 pounds conversion factor. In March 2018, PC2 members Moulton Niguel Water District (MNWD) and Santa Margarita Water District (SMWD) came to an agreement on how to allocate solids for budgeting and use audit purposes. The new method captures the influent loading at Plant 3A, as it was recognized that this allocation would isolate MNWD's solids contributions to JBL to a single variable. SMWD solids to JBL would then be the balance of solids contributed by the Oso Creek Water Reclamation Plant, 3A, and any other discharges to the Oso Trabuco line to JBL.

PC 5

Fixed costs based on ownership capacity per Member Agency.

PC 8

Allocation is based on timecard (where labor worked).

PC 12

The PC 12 method of production is detailed by Member Agency in the following narrative. San Juan Capistrano is the acre-foot sum of the Rosebaum well, the Mission Street Well, and the total reclaimed water from the SMWD/CSJC intertie. For MNWD, it is the amount of reclaimed water produced from the Regional Treatment Plant (RTP) and the 3A Treatment Plant (split with SMWD). South Coast Water District (SCWD) is the total reclaimed water produced from the Coastal Treatment Plant (CTP). The Santa Margarita Water District (SMWD) is the combined sum of reclaimed water produced from the 3A Treatment Plant (split with MNWD), the Oso Creek Water Reclamation Plant (OCWRP), the Chiquita Water Reclamation Plant (CWRP), and the Nichols Water Reclamation Plant (NWRP). The Trabuco Canyon Water District (TCWD) is reclaimed water produced from the Robinson Ranch Water Reclamation Plant (RRWRP).

PC 15

Due to the lack of solids handling capacity at the Coastal Treatment Plant (CTP), allocation methodology is based on flows to the treatment plant. In addition, there are no current flow meters installed to account for any flow sent to CTP from MNWD, so no flow is being accounted for in this PC flow allocation methodology, unless for emergency use as needed through authorization by the PC15 members, with billing based on use, reconciled in the annual use audit. The City of Laguna Beach (CLB) is the average annual flow into CTP (metered). The Emerald Bay Services District (EBSD) is the average annual flow into CTP (calculated from monthly meter read from the

lift station divided by the days in the month). The South Coast Water District (SCWD) is the average annual flow into CTP (metered). The meter calibration is performed annually in June.

PC 17

The final use audit will be for FY 24-25 due to the reorganization agreements. The method is therefore included in this policy for memorialization.

PC 17 has liquid and solids contribution. The liquid flow allocation is based on influent flow to the plant. The influent flow is solely contributed by the MNWD. The export sludge line transports solids to RTP from CTP for further processing. The liquid flow from CTP's export sludge line is divided by five and distributed to each agency, then summed up to create a total liquid flow to RTP. The flows are then distributed on a proportional basis. The solids contribution is based on the total daily average pounds contributed by each agency distributed proportionally. The meter calibration is performed annually in June.

PC 24

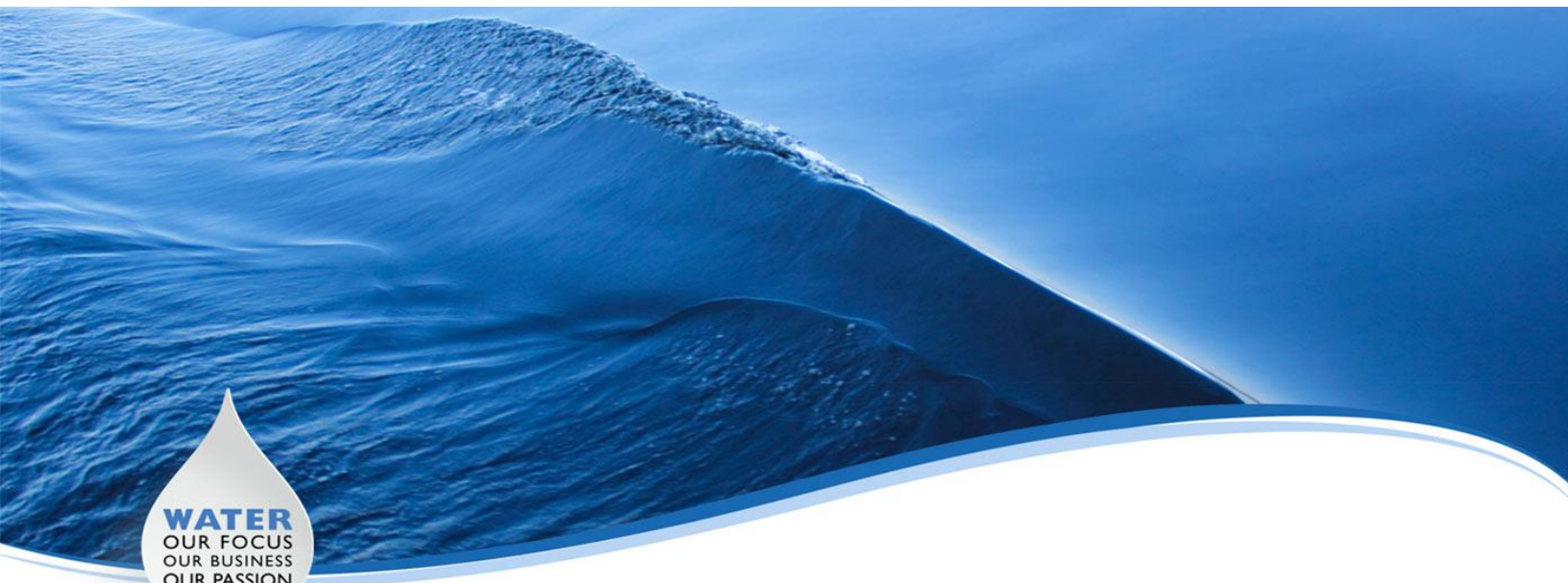
Fixed costs based on ownership capacity per Member Agency.

Review and Adjustment

Budgeted administrative costs may be adjusted mid-year as necessary to ensure accurate cost allocation, with all adjustments promptly communicated to member agencies. This policy undergoes periodic review during the budget development process, allowing for modifications based on operational changes, financial circumstances, or evolving Member Agency needs. Changes to this policy may only be made by the unanimous consent of all the Participating Member Agencies as set forth in Section 6.3.1 of the SOCWA Joint Powers Agreement.

Policy Approval and Adoption

This Policy has been reviewed by the Authority Board of Directors and adopted by Resolution No. 2025-16 on December 11, 2025, superseding all previous versions.



South Orange County Wastewater Authority
OPERATIONAL COST DISTRIBUTION ANALYSIS

Technical Memorandum
OPERATIONAL COST DISTRIBUTION ANALYSIS
FINDINGS AND RECOMMENDATIONS

March 20, 2019

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Section 1

INTRODUCTION

Beginning in 2015, SOCWA Board began a process of considering cost apportionments and agreed to review cost distributions for operational costs. The purpose of this Technical Memorandum (TM) is to summarize the results and proposed recommendations of the Operational Cost Distribution Analysis project performed by Carollo Engineers, Inc. (Carollo) for The South Orange County Wastewater Authority (SOCWA). This TM includes an overview of SOCWA’s existing budget and cost distribution process (for Fiscal Year (FY) 2017-2018), and presents Carollo’s proposed revisions to the methodology, and the associated impacts to SOCWA Member Agencies.

The purpose of the analysis is to provide a review of how SOCWA distributed costs for FY 17-18 and to identify potential changes to improve the supportability and/or clarity for future budgets.

1.1 SOCWA Organization, Budgeting, and Cost Distribution Overview

SOCWA was formed in 2001 with the mission to manage the collection, transmission, treatment, and disposal of wastewater for over 500,000 residences and businesses in south Orange County, California. SOCWA is a Joint Powers Authority with ten Member Agencies that each provide wastewater collection services to their residents. SOCWA is under the direction of a General Manager and is governed by a ten-member Board of Directors, which is comprised of representatives from each Member Agency. Table 1 lists these ten Member Agencies and the abbreviations utilized in this TM.

Table 1 SOCWA Member Agencies

Member Agency	Abbreviation
City of Laguna Beach	CLB
City of San Clemente	CSC
City of San Juan Capistrano	CSJC
El Toro Water District	ETWD
Emerald Bay Service District	EBSD
Irvine Ranch Water District	IRWD
Moulton Niguel Water District	MNWD
Santa Margarita Water District	SMWD
South Coast Water District	SCWD
Trabuco Canyon Water District	TCWD

SOCWA operates and maintains three treatment plants, two ocean outfalls, one effluent transmission main, and multiple permits to meet requirements under the National Pollutant Discharge Elimination System (NPDES). Each of these facilities and their associated Member Agencies are referred to as Project Committees (PC) (Table 2).

Member agencies, in their role as both user participants and capacity owners at each PC, are contractually responsible for contributing funding necessary to operate each PC. Pursuant to the Member Agencies agreements, SOCWA agencies share facilities costs based on budgeted and actual usage. Costs are grouped into the categories of “liquids”, “solids”, “AWT” (advanced water treatment), and “common.” Usage is determined for liquids based on metered and assumed flows¹. Solids usage is determined by TSS and BOD expressed as pounds per day. The distribution of AWT costs is determined by ownership of the AWT facilities, regardless of flow. Operational costs may also be designated as common expenses related to general facility functions not otherwise characterized as liquids or solids. In June of each year, SOCWA establishes budgets based on prior annual and averaged periods of use². Each year, following the close of the fiscal year (June 30), costs are redistributed based on actual incurred liquids, common, and solids expenses and usage adjusted to actual.

Because utilities, chemicals, supplies and other expenses are incurred as bulk purchases to meet liquids, solids and common treatment purposes, historical cost distribution percentages are utilized to apportion costs to specific functions. Historical cost distribution approaches include metering, estimating, and evaluation of percentage to track purpose of the cost incurred. Since 2014, the SOCWA Board has made adjustments to move costs between liquids, solids and common expenses, considering factors such as the fixed or variable nature of the expenses incurred. This Operational Cost Distribution Analysis has been undertaken to go one step further and update the distribution approaches, evaluating the equity behind the apportionment methods, and to recommend adjustments.

Table 2 SOCWA Project Committees

Project Committee (PC) Number	PC Description	Member Agencies			
2	JB Latham WWTP	CSJC	MNWD	SCWD	SMWD
5	San Juan Creek Ocean Outfall (SJCOO)	CSJC CSC	MNWD	SCWD	SMWD
8	Pre-Treatment	CLB CSC CSJC	EBS ETWD	IRWD MNWD	SCWD SMWD
12	Recycled Water Permits	CSJC MNWD	SCWD	SMWD	TCWD
15	Coastal WWTP	CLB	EBS	MNWD	SCWD
17	Regional WWTP	CLB EBS	ETWD	MNWD	SCWD
21	Effluent Transmission Main (ETM)	ETWD	IRWD	MNWD	
24	Aliso Creek Ocean Outfall (ACOO)	CLB EBS	ETWD IRWD	MNWD	SCWD

¹ MNWD is assumed to contribute 1.4 mgd of flow to the J.B. Latham Treatment Plant (PC 2) and solids are assumed to be delivered to JBL in a strength that is equivalent to the influent flows to Plant 3A. This data is provided to SOCWA periodically from the operations staff at 3A.

² Member Agencies participate in review and approval of the budget projections and background flow/strength information used to prepare the Budgets.

1.2 Operational Budget Overview

Each year SOCWA creates an operating budget for each PC. The budget process begins in December with the SOCWA management team's review of the prior year's budget in order to identify areas of the budget that required adjustment from the prior year. At the same time, the Engineering Committee reviews ongoing and upcoming capital projects. SOCWA's General Manager then provides the Member Agency with the proposed budget, and holds a workshop to provide Member Agencies the opportunity to propose revisions. Mutually agreed-upon adjustments are made to the budget for Member Agency review and the final operating budget is presented to the Board of Directors for adoption in June. As noted above, budgets distribute usage costs to liquids, solids, AWT, and common purposes and propose apportionments for bulk incurred expenses with percentages assigned to equitably apportion based on the purpose of the expense. Costs that are not related to use, such as capital costs, are distributed based on facility ownership capacity with agencies owning differing percentages of liquids and solids capacity in each facility.

SOCWA invoices Member Agencies in equal quarterly amounts based on their share of the adopted budget. As noted above, at the end of each year, the budget is reconciled against actual expenses incurred, and the Member Agencies are credited or billed for the difference between budgeted and actual expenses for the given year. The budget process begins again with the actual expenses from the previous year(s) serving as the foundation for the next year's budget.

Section 2

PROJECT SCOPE

Carollo provided SOCWA with an analysis of its current cost apportionment methodology for each PC, and recommended potential modifications to streamline the process and increase efficiency. The focus of this TM is to review the methods by which expenses are apportioned among liquids, solids, AWT, common and recommend alternative approaches distribute costs to each PC and to the Member Agencies. This section provides information regarding the approach and scope of this study, as well as an explanation of historical cost distributions.

Carollo met with SOCWA staff to assess needs and request the information necessary to conduct a thorough and supportable analysis. Proposed adjustments to SOCWA's existing cost distribution methods were discussed with SOCWA staff, and feedback was considered in Carollo's proposed recommendations. The resulting operational cost distribution recommendations and accompanying model provides SOCWA with an improved platform for budget preparation.

Carollo's analysis is based on available data and relied on aggregated data provided by SOCWA for evaluation of labor and incurred expenses. Carollo developed a budget model using Microsoft Excel to facilitate adjustments to the budget data and to analyze the impacts. This model uses the FY 2017-18 budget data and allows for adjustments to apportionments and functional categories of expense accounts to estimate budget impacts. Figure 1 illustrates the focus of Carollo's review of the Operational Cost Distributions.

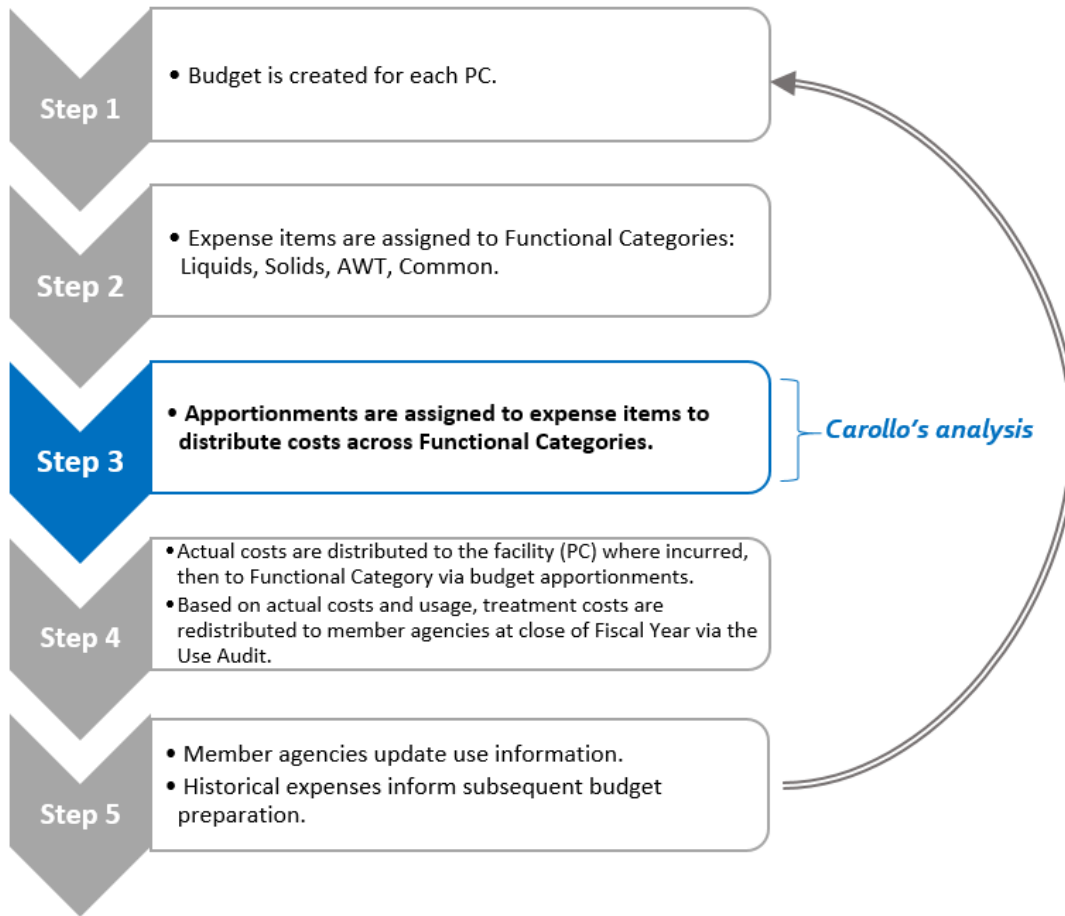


Figure 1 Operational Cost Distribution Analysis Project Scope

2.1 SOCWA Budget Process and Terminology

In Fiscal Year 2017-2018, SOCWA’s operations and maintenance budget was \$18.0 million (per the Fiscal Year 2017-18 Total Operating Budget Report, Approved June 14, 2017). Table 3 shows the budget by PC. Carollo’s proposed adjustments to the apportionment methodology do not alter SOCWA’s overall budget or the budget for each PC. However, the proposed changes do change the overall dollar amounts payable by each Member Agency.

Table 3 Budget Breakdown by PC

PC #	Description	FY 17-18 Budget
2	JB Latham Treatment Plant	\$5,689,556
5	San Juan Creek Ocean Outfall	\$475,884
8	Pre-Treatment	\$192,224
12	Recycled Water Permits	\$244,872
15	Coastal Treatment Plant	\$3,000,388
17	Regional Treatment Plant	\$7,849,616
21	Effluent Transmission Main	\$63,224
24	Aliso Creek Ocean Outfall	\$474,196
TOTAL BUDGET		\$17,989,960

Source: Fiscal Year 2017-18 Total Operating Budget Report (Approved June 14, 2017)

2.1.1 Functional Categories

Functional Categories are the process areas within each PC that benefit from the specific expense. The primary Functional Categories include:

- **Solids** – Expenses that benefit wastewater solids processes measured based on TSS and BOD as pounds per day of treated solids.
- **Liquids** – Expenses that benefit wastewater liquids processes measured based on delivered wastewater flows. Measurement may be by metered flow or assumed flows.
- **Advanced Water Treatment (AWT)** – Expenses related to advanced water treatment processes. AWT units are 100% cost distributed to single member agencies.
- **Common** – Expenses that are specific only to the overall facility and neither specifically liquids, solids, nor AWT treatment process related.
- **Outfall, Fixed** – Expenses that are accrued by the outfall’s operation, regardless of flow.
- **Outfall, Variable** – Expenses that are accrued by the outfall’s operation, based on the amount of flow.

The Functional Categories that apply to each PC are identified in Appendix B.

2.1.2 Apportionment Basis

An Apportionment Basis is a group of similar actions identified for distribution of like costs. The proposed apportionments cover 22 different basic expenses and distribute costs across one or more Functional Categories (i.e. liquids, solids, AWT, common).

Table 4 lists the Apportionment Basis used in SOCWA’s budgeting process. In the table, the Apportionment Basis shows grouping and color based on similarity of expenses. For example, the blue grouping includes staffing and timecard-related expenses. The green grouping includes expenses related to a single function within a given facility. The yellow grouping includes consumables and other expenses that are distributed into functional categories based on metering, equipment and understanding of purpose for costs incurred.

Table 4 Apportionment Basis Definitions

Apportionment Basis	Definition
Labor - Actual Use	Apportioned using staff's actual timecard inputs.
Labor - Allocation	Apportioned using actual (timecard) percentages.
Labor - Overtime	Apportioned using actual (timecard) percentages of overtime.
Actual Use - Bills Coded	Distributed based on actual bills coded by PC and functional area for payment (dollar amounts). This is rarely used during the budget process, but is used during the use audit to reconcile specific expenses.
Common	Apportionment to solely common purposes. Split equally between common liquids and common solids.
Solids	Cost incurred only for solid processes.
Liquids	Cost incurred only for liquid processes.
AWT	Cost incurred only for AWT processes.
Outfall – Fixed	Cost incurred without relationship to flow volume identified as fixed. Applies only to outfalls (PC5 & PC24).
Outfall - Variable	Costs incurred with relationship to flow volume. Applies only to outfalls (PC5 & PC24).
ETM	Operational Cost applies only to effluent transmission main (PC21) with a 2/3 and 1/3 split between Reach B/C/D and Reach E, respectively.
Electricity	Apportioned to functional area based on horsepower and of equipment run times.
Natural Gas	Apportioned to functional area based on the metering of large equipment.
Potable & Reclaimed Water	Apportioned to functional area based on past engineering studies and staff estimates. ⁽¹⁾
Chlorine/Sodium Hypochlorite	Apportioned to functional area based on tracked AWT and RAS usage.
Ferric Chloride	Apportioned to functional area based on an estimate of benefit to processing.
Odor Control Chemicals	Apportioned based on airflows to system by source.
Laboratory	Apportioned based on actual laboratory expenses.
Petroleum Products	Apportioned based on HP of equipment run times.
Recycled Water Permitting	Applies only to PC12, which apportions 50% of costs to Recycled Water Produced in Region 9 and 50% Equally.
Insurance	PC8 insurance costs are distributed equally across all member agencies. All other PC property insurance costs are included in "Common" costs apportionments.

Notes:

(1) JB Latham Treatment Plant was analyzed by Pace in 2014.

For Budget preparation, expenses with a given Apportionment Basis are distributed into Functional Categories based on a percentage allotment varying up to 100%. The percentage allotment for each Apportionment Basis can vary by facility as each facility is of differing age, operating equipment and construction. The following examples are meant to illustrate how this is done for some of the distributions:

- Labor distributions by PC and functional area is budgeted each year based on the prior year actuals. "Labor – Actual Use" is apportioned based on the timesheet inputs of staff at each PC. As examples, this may be 45% Solids, 35% Liquids, 10% Common Solids, and 10% Common Liquids for PC2 (JB Latham WWTP), but could be 75% Solids, 0% Liquids, 25% Common Liquids, and 0% Common Liquids at PC17 (Regional WWTP) reflective of the services provided by staff.
- Consumables such as chemicals are estimated for budgeting based on prior year actual and any planned changes in plant operations. Consumables are distributed based on area of benefit to plant operations. As an example, "Ferric Chloride" is distributed based on the primary benefit it provides at a given PC. The specific use of the ferric chloride chemical varies due to the difference in plant processes. For PC 2 (JB Latham WWTP) it is 100% Solids, 100% Liquids at PC15 (Costal WWTP), and 80% Solids and 20% Liquids at PC17 (Regional WWTP).
- Metered utilities are budgeted based on prior year actual and any planned changes in plant operations. Metered utilities are distributed based on analysis of available data as to equipment usage. As an example, "Electricity" is distributed based on an analysis of equipment run times. The horsepower rating of major equipment is used to estimate the portion of energy consumed by each process within each plant.

Appendix B includes summary tables of the percentage apportionments of each Apportionment Basis to Functional Categories for each PC for the FY 18 budget.

Figure 2 illustrates the apportionment process for a sample expense. In this example, "Landscaping" expense is assigned the Apportionment Basis "Common". "Common" expenses are distributed 50/50 to liquids and solids ownership percentages as determined by the applicable PC capacity shares.

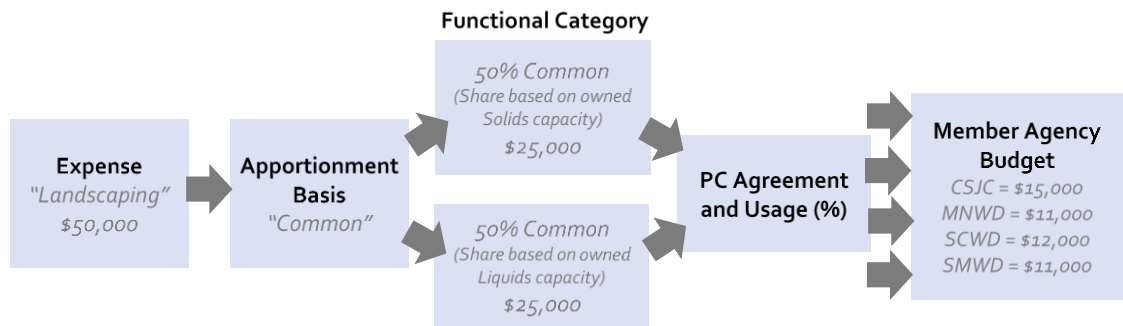


Figure 2 Cost Apportionment Process Example

Section 3

RECOMMENDED APPORTIONMENT CHANGES

Carollo’s proposed adjustments to SOCWA’s cost apportionment methodology is designed to more equitably distribute expenses based on their areas of provided benefit. As a result, some PCs see small changes while others will see greater shifts among apportionments to Functional Categories and corresponding Member Agency funding requirements. The proposed adjustments are presented in the tables below.

3.1 Treatment Plant Changes

Certain expenses have recommended apportionment changes that are constant across the three treatment plant PCs. Table 5 presents proposed apportionment basis changes that are consistent for all treatment plants (JB Latham, Coastal, and Regional).

Table 5 Proposed Apportionment Changes for Treatment Plant PCs

Account Code	Expense	Current Apportionment	Proposed Apportionment	Reasoning
5700	Standby Pay	Labor – Allocation	Common	Pay is not dependent on process that requires work.
5021	Small Vehicle Expense	Labor – Allocation	Common	Benefits entire plant equally, not reflective of timesheets
5026	Small Vehicle Fuel	Labor – Allocation	Common	Benefits entire plant equally, not reflective of timesheets
5033	Recruitment	Labor – Allocation	Common	Benefits entire plant equally, not reflective of timesheets
5061	Mileage	Labor – Allocation	Common	Benefits entire plant equally, not reflective of timesheets

For account codes 5014 (Engineering Misc.), 5015 (Management Support Services), 5016 (Audit Environmental), and 5017 (Legal Fees), we recommend these remain “Common” for budgeting purposes, to provide staff the flexibility to distribute charges to agencies or specific functions as needed during the Use Audit process.

3.2 Ocean Outfall Changes

The apportionment methodology changes are the same for both outfalls (San Juan Creek and Aliso Creek). After discussions with staff and member agencies, it was decided that, for budgeting purposes, all outfall expenses will be assigned the “Outfall – Fixed” Apportionment Basis because most expenses accrued by the outfall PCs occur regardless of the amount of flow through the outfall.

However, permit expenses may potentially be apportioned differently in the future. SOCWA staff developed a memo that examines potential options for outfall flow capacity costs to meet requests from the SOCWA Board. This memo is included in Appendix D. These examinations and calculations are outside the scope of Carollo’s analysis and are included here for reference only.

An additional apportionment methodology change is to consolidate Apportionment Basis in the Outfall PCs. The current budgeting process for outfalls utilizes three Apportionment Basis to distribute expenses to Member Agencies; "Fixed", "Variable – 5%", and "Variable – 95%". The Apportionment Basis "Fixed" and "Variable – 5%" have identical Member Agency distributions, and the division of variable expenses into two categories provides no observed benefit to the distribution of costs. Carollo recommends that "Variable – 5%" and "Variable – 95%" be consolidated into a single "Variable" Apportionment Basis to simplify the cost apportionment process.

Table 6 lists the expenses that were previously assigned the "Variable – 95%" Apportionment Basis for one or both of the two outfall PCs. It is proposed that all of these expenses are changed to the "Outfall – Fixed" Apportionment Basis.

Table 6 Proposed Apportionment Changes for Outfalls

Account Code	Expense	Current Apportionment ⁽²⁾	Proposed Apportionment	Reasoning
5000	Regular Salaries – O&M	Variable	Fixed	Not dependent on amount of flow
5001	Overtime Salaries	Variable	Fixed	Not dependent on amount of flow
5302	Performance-Based Merit Pay	Variable	Fixed	Not dependent on amount of flow
5306	Scheduled Holiday Work	Variable	Fixed	Not dependent on amount of flow
5307	Weekend Shift Pay	Variable	Fixed	Not dependent on amount of flow
5315	Comp Time – O&M	Variable	Fixed	Not dependent on amount of flow
5401	Fringe Benefits	Variable	Fixed	Not dependent on amount of flow
5700	Standby Pay	Variable	Fixed	Not dependent on amount of flow
5011	Laboratory Services	Variable	Fixed	Not dependent on amount of flow
5014	Engineering – Misc. ⁽¹⁾	Variable	Fixed	Not dependent on amount of flow
5015	Management Support Services ⁽¹⁾	Variable	Fixed	Not dependent on amount of flow
5017	Legal Fees ⁽¹⁾	Variable	Fixed	Not dependent on amount of flow
5031	Safety Program & Supplies	Variable	Fixed	Not dependent on amount of flow
5034	Travel Expense/Tech. Conferences	Variable	Fixed	Not dependent on amount of flow
5036	Laboratory Supplies	Variable	Fixed	Not dependent on amount of flow
5044	Offshore Monitoring	Variable	Fixed	Not dependent on amount of flow
5045	Offshore Biochemistry - 20B	Variable	Fixed	Not dependent on amount of flow
5046	Effluent Chemistry	Variable	Fixed	Not dependent on amount of flow
5058	Maintenance Equip. & Facilities (Common)	Variable	Fixed	Not dependent on amount of flow
5301	Vehicle Pay	Variable	Fixed	Not dependent on amount of flow
5305	Medicare Tax Payments for Employees	Variable	Fixed	Not dependent on amount of flow
5705	Monthly Car Allowance	Variable	Fixed	Not dependent on amount of flow
6500	IT Allocations in to PC's & Depts.	Variable	Fixed	Not dependent on amount of flow

Notes:

- (1) For account codes 5014 (Engineering Misc.), 5015 (Management Support Services), and 5017 (Legal Fees), and any other line items that are identified specifically to an agency that is functionally specific, we recommend that staff should retain the flexibility to distribute charges to agencies or specific functions as needed during the Use Audit process.
- (2) O&M Costs Apportionment (Variable) – Current variable O&M costs for the Outfall are determined on the basis of the average annual flows of each PC Member in a fiscal year apportioned to each PC Member based on the following formula: (a) 5% variable cost component calculated by multiplying 5% of the total variable cost by the ownership percentage and this can be considered a "fixed cost". (b) 95% variable cost component calculated by multiplying 95% of the total variable cost by the average Outfall flows for the preceding calendar year.

3.3 PC-Specific Changes

Several recommended changes are unique to a particular facility (PC) For example, both Coastal and Regional Treatment Plants have changes for a few Apportionment Basis percentages.

J.B. Latham Plant (PC2)

- Ferric Chloride costs at this facility are used to benefit the digester gas processes. Therefore, these costs should be apportioned 100% to the solids Functional Category. The current apportionment is 80% to liquids and 20% to solids. (This change was implemented in the FY18-19 budget based on the results of the Budget Workshop process and by approval of the Board.)
- In general, electricity apportionments are determined based on equipment usage and run times. It is recommended that the calculation for electricity and natural gas at this facility be performed annually with the preparation of the budget.

Coastal Treatment Plant (PC15)

- In general, electricity apportionments are determined based on equipment usage and run times. For the Coastal Treatment Plant, the AWT facility is metered separately to South Coast Water District (SCWD) and paid for by SCWD. Accordingly, the current electricity distribution should be revised to 100% liquids.
- In general, natural gas is apportioned based on gas metering for large equipment at each facility. The AWT facility is metered separately to South Coast Water District (SCWD) and paid for by SCWD. Accordingly, the current gas distribution should be revised to 50% liquids and 50% common.
- It is recommended that the calculation electricity and natural gas at this facility be performed annually with the preparation of the budget.
- Unlike PC2 and PC17, the “Ferric Chloride” costs at this facility are for odor control and are 100% liquids costs. No change is needed, since the apportionment basis already reflects this.

Table 7 illustrates the changes made to “Electricity” and “Natural Gas” Apportionment Basis at PC15 (Coastal WWTP).

Table 7 PC15 Functional Category Changes by Apportionment Basis

Basis	Current			Proposed		
	Liquids	AWT	C/Liquids	Liquids	AWT	C/Liquids
Electricity	94%	2.5%	3.5%	100%	-	-
Natural Gas	95%	-	5%	50%	-	50%

Regional Treatment Plant (PC17)

- Ferric Chloride costs at this facility are used to benefit the digester gas processes (similar to PC2). Therefore, these costs should be apportioned 100% to the solids Functional Category. The current apportionment is 80% to liquids and 20% to solids.
- In general, electricity apportionments are determined based on equipment usage and run times. It is recommended that the calculation electricity and natural gas at this facility be performed annually with the preparation of the budget.

Table 8 shows the recommended change for PC 17 “Ferric Chloride” Apportionment Basis.

Table 8 PC17 Functional Category Changes to Apportionment Basis

Basis	Current		Proposed	
	Liquids	Solids	Liquids	Solids
Ferric Chloride	80%	20%	-	100%

Remaining PCs

In addition to treatment plants and outfalls, the apportionment methodologies for PC8 (Pre-Treatment), PC12 (Permits), and PC21 (ETM) were examined. No changes to the cost apportionment approach are recommended for these PCs.

Section 4

RESULTS

The proposed changes to the cost apportionment method results in the redistribution of expense budgets across Functional Categories, due to changes in Apportionment Basis and PC-specific alterations. This section presents the redistribution of expense budgets by Apportionment Basis, Functional Category, and finally by Member Agency.

4.1 Results by Apportionment Basis

The proposed apportionment methodology revisions reassign certain expenses to a new Apportionment Basis, as described in the previous sections. Table 9 provides details of expenses by Apportionment Basis for each PC before proposed changes were applied. Table 10 shows expenses by Apportionment Basis for each PC after the proposed changes were applied. Finally, Table 11 illustrates the difference between the two, with negative (red) values indicating less expense was distributed to that basis after the proposed revisions (a decrease in budget), and positive (black) values indicating that more expense was distributed to that basis after the proposed revisions (an increase in budget). These proposed adjustments do not change the total budget for any PC, however, the proposed changes do alter the dollar amounts among Apportionment Basis within each PC.

Of the original FY 17-18 budget, the majority of the costs were in Apportionment Basis “Labor – Actual Use” (24%), followed by “Labor – Allocation” (20%), “Solids” (13%), and “Common” (13%). After implementing the proposed changes, these total percentages change only slightly, however these basis remain the largest in terms of total expenses.

After the proposed changes, “Outfall – Fixed” increased by 2.9% (\$524,067), while “Outfall – Variable” decreased by the same amounts. And “Common” increased by 0.7% (\$130,699), which resulted from decreases to “Labor – Actual Use” by -0.3% (-\$46,666) and “Labor – Allocation” by -0.5% (-\$84,033).

Table 9 Expenses by Apportionment Basis Before Proposed Changes

Apportionment Basis	PC2	PC5	PC8	PC12	PC15	PC17	PC21	PC24	Total Expenses	%
Labor - Actual Use	\$ 1,428,833	\$ -	\$ 85,113	\$ 50,586	\$ 875,443	\$ 1,819,549	\$ -	\$ -	\$ 4,259,524	23.7%
Labor - Allocation	\$ 1,085,752	\$ -	\$ 61,961	\$ 37,238	\$ 658,668	\$ 1,675,422	\$ -	\$ -	\$ 3,519,041	19.6%
Labor - Overtime	\$ 22,110	\$ -	\$ -	\$ -	\$ 11,121	\$ 39,345	\$ -	\$ -	\$ 72,576	0.4%
Actual Use - Bills Coded	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Common	\$ 811,307	\$ -	\$ 40,427	\$ -	\$ 555,654	\$ 951,232	\$ -	\$ -	\$ 2,358,620	13.1%
Solids	\$ 1,265,000	\$ -	\$ -	\$ -	\$ -	\$ 1,142,000	\$ -	\$ -	\$ 2,407,000	13.4%
Liquids	\$ 280,000	\$ -	\$ -	\$ -	\$ 327,000	\$ 307,000	\$ -	\$ -	\$ 914,000	5.1%
AWT	\$ -	\$ -	\$ -	\$ -	\$ 35,000	\$ 58,996	\$ -	\$ -	\$ 93,996	0.5%
Outfall - Fixed	\$ -	\$ 166,373	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 259,642	\$ 426,015	2.4%
Outfall - Variable	\$ -	\$ 309,491	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 214,576	\$ 524,067	2.9%
ETM	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 63,231	\$ -	\$ 63,231	0.4%
Electricity	\$ 524,000	\$ -	\$ -	\$ -	\$ 283,000	\$ 675,000	\$ -	\$ -	\$ 1,482,000	8.2%
Natural Gas	\$ 65,000	\$ -	\$ -	\$ -	\$ 3,000	\$ 141,000	\$ -	\$ -	\$ 209,000	1.2%
Potable & Reclaimed Water	\$ 15,000	\$ -	\$ -	\$ -	\$ 13,000	\$ 34,000	\$ -	\$ -	\$ 62,000	0.3%
Chlorine/Sodium Hypochlorite	\$ 28,000	\$ -	\$ -	\$ -	\$ 100,000	\$ 350,000	\$ -	\$ -	\$ 478,000	2.7%
Polymer Products	\$ -	\$ -	\$ -	\$ -	\$ 2,000	\$ 406,000	\$ -	\$ -	\$ 408,000	2.3%
Ferric Chloride	\$ 100,000	\$ -	\$ -	\$ -	\$ 30,000	\$ 125,000	\$ -	\$ -	\$ 255,000	1.4%
Odor Control Chemicals	\$ 25,000	\$ -	\$ -	\$ -	\$ 85,000	\$ 50,000	\$ -	\$ -	\$ 160,000	0.9%
Laboratory	\$ 23,500	\$ -	\$ 2,500	\$ -	\$ 19,504	\$ 33,020	\$ -	\$ -	\$ 78,524	0.4%
Petroleum Products	\$ 16,000	\$ -	\$ -	\$ -	\$ 2,000	\$ 42,000	\$ -	\$ -	\$ 60,000	0.3%
Recycled Water Permits	\$ -	\$ -	\$ -	\$ 157,083	\$ -	\$ -	\$ -	\$ -	\$ 157,083	0.9%
Insurance	\$ -	\$ -	\$ 2,199	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,199	0.0%
Rounding	\$ 54	\$ 20	\$ 24	\$ (35)	\$ (2)	\$ 53	\$ (7)	\$ (22)	\$ 85	
Total	\$ 5,689,556	\$ 475,884	\$ 192,224	\$ 244,872	\$ 3,000,388	\$ 7,849,617	\$ 63,224	\$ 474,196	\$ 17,989,961	100.0%

*Rounding values from Fiscal Year 2017-18 Total Operating Budget Report, Approved June 14, 2017

Table 10 Expenses by Apportionment Basis After Proposed Changes

Apportionment Basis	PC2	PC5	PC8	PC12	PC15	PC17	PC21	PC24	Total Expenses	%
Labor - Actual Use	\$ 1,405,500	\$ -	\$ 85,113	\$ 50,586	\$ 852,110	\$ 1,819,549	\$ -	\$ -	\$ 4,212,858	23.4%
Labor - Allocation	\$ 1,060,252	\$ -	\$ 61,961	\$ 37,238	\$ 645,468	\$ 1,630,089	\$ -	\$ -	\$ 3,435,008	19.1%
Labor - Overtime	\$ 22,110	\$ -	\$ -	\$ -	\$ 11,121	\$ 39,345	\$ -	\$ -	\$ 72,576	0.4%
Actual Use - Bills Coded	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Common	\$ 860,140	\$ -	\$ 40,427	\$ -	\$ 592,187	\$ 996,565	\$ -	\$ -	\$ 2,489,319	13.8%
Solids	\$ 1,265,000	\$ -	\$ -	\$ -	\$ -	\$ 1,142,000	\$ -	\$ -	\$ 2,407,000	13.4%
Liquids	\$ 280,000	\$ -	\$ -	\$ -	\$ 327,000	\$ 307,000	\$ -	\$ -	\$ 914,000	5.1%
AWT	\$ -	\$ -	\$ -	\$ -	\$ 35,000	\$ 58,996	\$ -	\$ -	\$ 93,996	0.5%
Outfall - Fixed	\$ -	\$ 475,864	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 474,218	\$ 950,082	5.3%
Outfall - Variable	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
ETM	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 63,231	\$ -	\$ 63,231	0.4%
Electricity	\$ 524,000	\$ -	\$ -	\$ -	\$ 283,000	\$ 675,000	\$ -	\$ -	\$ 1,482,000	8.2%
Natural Gas	\$ 65,000	\$ -	\$ -	\$ -	\$ 3,000	\$ 141,000	\$ -	\$ -	\$ 209,000	1.2%
Potable & Reclaimed Water	\$ 15,000	\$ -	\$ -	\$ -	\$ 13,000	\$ 34,000	\$ -	\$ -	\$ 62,000	0.3%
Chlorine/Sodium Hypochlorite	\$ 28,000	\$ -	\$ -	\$ -	\$ 100,000	\$ 350,000	\$ -	\$ -	\$ 478,000	2.7%
Polymer Products	\$ -	\$ -	\$ -	\$ -	\$ 2,000	\$ 406,000	\$ -	\$ -	\$ 408,000	2.3%
Ferric Chloride	\$ 100,000	\$ -	\$ -	\$ -	\$ 30,000	\$ 125,000	\$ -	\$ -	\$ 255,000	1.4%
Odor Control Chemicals	\$ 25,000	\$ -	\$ -	\$ -	\$ 85,000	\$ 50,000	\$ -	\$ -	\$ 160,000	0.9%
Laboratory	\$ 23,500	\$ -	\$ 2,500	\$ -	\$ 19,504	\$ 33,020	\$ -	\$ -	\$ 78,524	0.4%
Petroleum Products	\$ 16,000	\$ -	\$ -	\$ -	\$ 2,000	\$ 42,000	\$ -	\$ -	\$ 60,000	0.3%
Recycled Water Permits	\$ -	\$ -	\$ -	\$ 157,083	\$ -	\$ -	\$ -	\$ -	\$ 157,083	0.9%
Insurance	\$ -	\$ -	\$ 2,199	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,199	0.0%
Rounding	\$ 54	\$ 20	\$ 24	\$ (35)	\$ (2)	\$ 53	\$ (7)	\$ (22)	\$ 85	
Total	\$ 5,689,556	\$ 475,884	\$ 192,224	\$ 244,872	\$ 3,000,388	\$ 7,849,617	\$ 63,224	\$ 474,196	\$ 17,989,961	100.0%

*Rounding values from Fiscal Year 2017-18 Total Operating Budget Report, Approved June 14, 2017

Table 11 Impacts on Expenses by Apportionment Basis After Proposed Changes

Apportionment Basis	PC2	PC5	PC8	PC12	PC15	PC17	PC21	PC24	Change in Total Expenses	%
Labor - Actual Use	\$ (23,333)	\$ -	\$ -	\$ -	\$ (23,333)	\$ -	\$ -	\$ -	\$ (46,666)	-0.3%
Labor - Allocation	\$ (25,500)	\$ -	\$ -	\$ -	\$ (13,200)	\$ (45,333)	\$ -	\$ -	\$ (84,033)	-0.5%
Labor - Overtime	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Actual Use - Bills Coded	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Common	\$ 48,833	\$ -	\$ -	\$ -	\$ 36,533	\$ 45,333	\$ -	\$ -	\$ 130,699	0.7%
Solids	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Liquids	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
AWT	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Outfall - Fixed	\$ -	\$ 309,491	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 214,576	\$ 524,067	2.9%
Outfall - Variable	\$ -	\$ (309,491)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (214,576)	\$ (524,067)	-2.9%
ETM	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Electricity	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Natural Gas	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Potable & Reclaimed Water	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Chlorine/Sodium Hypochlorite	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Polymer Products	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Ferric Chloride	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Odor Control Chemicals	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Laboratory	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Petroleum Products	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Recycled Water Permits	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Insurance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
Total Changes	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

Budget Increase / (Budget Decrease)

4.2 Results by Functional Category

The proposed revisions to the cost apportionment methodology results in the redistribution of expenses across Functional Categories, which correspondingly results in changes to the total costs billed to Member Agencies. Table 12 provides detail of expenses distributed by Functional Category prior to the proposed changes. Table 13 shows expenses by Functional Category after the proposed changes were implemented. Table 14 illustrates the difference between the two, with negative (red) values indicating less expense was distributed to that category after the proposed revisions (a decrease in budget), and positive (black) values indicating that more expense was distributed to that category after the proposed revisions (an increase in budget).

These proposed adjustments do not change the total budget for any PC, however, the proposed changes do alter the dollar amounts among Functional Categories within each PC. Because no changes were made to PC8, PC12, and PC21, the Functional Categories for these PCs were grouped in the "All Others" column to simplify the tables.

The proposed changes have a net reduction in Liquids, AWT, and Outfall Flows Functional Categories, and a net increase in Solids, Common, and Capacity Functional Categories. The largest shift occurs at the outfalls (PC5 and PC24) due to the many changes described in Section 3.2 (Ocean Outfall Changes) and Table 6.

Table 12 Expenses by Functional Category Before Proposed Changes

	Treatment Plants					Outfalls		Others	Rounding	PC Total
	Solids	Liquids	AWT	C/Solids	C/Liquids	Outfall Flow	Capacity	All Others		
PC2 JB Latham WWTP	\$2,500,731	\$1,993,963		\$ 597,404	\$ 597,404				\$ 54	\$ 5,689,556
PC5 San Juan Creek Outfall						\$ 309,491	\$ 166,373		\$ 20	\$ 475,884
PC8 Pre-Treatment								\$ 192,200	\$ 24	\$ 192,224
PC12 Recycled Water Permits								\$ 244,907	\$ (35)	\$ 244,872
PC15 Coastal WWTP		\$1,680,516	\$ 378,466		\$ 941,408				\$ (2)	\$ 3,000,388
PC17 Regional WWTP	\$3,529,815	\$2,175,392	\$ 858,752	\$ 641,698	\$ 643,908				\$ 53	\$ 7,849,617
PC21 ETM								\$ 63,231	\$ (7)	\$ 63,224
PC24 Aliso Creek Outfall						\$ 214,576	\$ 259,642		\$ (22)	\$ 474,196
Functional Category Total	\$6,030,546	\$5,849,871	\$1,237,218	\$1,239,101	\$2,182,720	\$ 524,067	\$ 426,015	\$ 500,338	\$ 85	\$ 17,989,961

Table 13 Expenses by Functional Category After Proposed Changes

	Treatment Plants					Outfalls		Others	Rounding	PC Total
	Solids	Liquids	AWT	C/Solids	C/Liquids	Outfall Flow	Capacity	All Others		
PC2 JB Latham WWTP	\$ 2,511,761	\$ 1,963,795		\$ 606,973	\$ 606,973				\$ 54	\$ 5,689,556
PC5 San Juan Creek Outfall						\$ -	\$ 475,864		\$ 20	\$ 475,884
PC8 Pre-Treatment								\$ 192,200	\$ 24	\$ 192,224
PC12 Recycled Water Permits								\$ 244,907	\$ (35)	\$ 244,872
PC15 Coastal WWTP		\$ 1,673,313	\$ 366,642		\$ 960,436				\$ (2)	\$ 3,000,388
PC17 Regional WWTP	\$ 3,541,700	\$ 2,132,453	\$ 849,268	\$ 661,967	\$ 664,177				\$ 53	\$ 7,849,617
PC21 ETM								\$ 63,231	\$ (7)	\$ 63,224
PC24 Aliso Creek Outfall						\$ -	\$ 474,218		\$ (22)	\$ 474,196
Functional Category Total	\$6,053,460	\$5,769,561	\$1,215,910	\$1,268,940	\$2,231,585	\$ -	\$ 950,082	\$ 500,338	\$ 85	\$ 17,989,961

*Rounding values from Fiscal Year 2017-18 Total Operating Budget Report, Approved June 14, 2017

Table 14 Impacts on Expenses by Functional Category After Proposed Changes

	Treatment Plants					Outfalls		Others	PC Total Change
	Solids	Liquids	AWT	C/Solids	C/Liquids	Outfall Flow	Capacity	All Others	
PC2 JB Latham WWTP	\$ 11,029	\$ (30,168)		\$ 9,569	\$ 9,569				\$ -
PC5 San Juan Creek Outfall						\$ (309,491)	\$ 309,491		\$ -
PC8 Pre-Treatment									\$ -
PC12 Recycled Water Permits									\$ -
PC15 Coastal WWTP		\$ (7,203)	\$ (11,824)		\$ 19,027				\$ -
PC17 Regional WWTP	\$ 11,885	\$ (42,939)	\$ (9,484)	\$ 20,269	\$ 20,269				\$ -
PC21 ETM									\$ -
PC24 Aliso Creek Outfall						\$ (214,576)	\$ 214,576		\$ -
Total Functional Category Change	\$ 22,915	\$ (80,310)	\$ (21,308)	\$ 29,838	\$ 48,866	\$ (524,067)	\$ 524,067		\$ -

Budget Increase / (Budget Decrease)

4.3 Results by Member Agency Budget

The proposed cost apportionment methodology revisions have no impact on the total budget for any PC. However, the proposed changes do result in a redistribution of costs among Member Agency budgets within each PC. Table 15 shows the current budget breakdown by Member Agency and PC for FY 17-18, without any of the proposed changes.

Table 16 shows a revised FY 17-18 budget by agency and PC, based on the proposed changes discussed in this TM. Table 17 shows the difference between the two, with negative (red) values indicating less expense was distributed to that member agency after the proposed revisions (a decrease in budget), and positive (black) values indicating that more expense was distributed to that member agency after the proposed revisions (an increase in budget).

The total expense impacts for each PC and Member Agency is the result of the proposed changes made to Apportionment Basis and Functional Categories as described in the previous sections of this TM. After the proposed changes, Regional Treatment Plant (PC17) experiences the largest impacts to the distribution of expenses across Member Agencies. The outfalls (PC5 and PC24) also experience large shifts in the distribution of expenses among Member Agencies due to the Apportionment Basis changes that re-distribute many outfall expenses from "Variable" to "Fixed" Apportionment Basis.

Table 15 Cost Summary by PC Before Apportionment Changes (FY18)

Member Agency	PC2 J.B. Latham	PC5 SJCOO	PC8 Pre-Treatment	PC12 Recycled Water Permits	PC15 Coastal	PC17 Regional	PC21 ETM	PC24 ACOO	Total
City of San Juan Capistrano	\$ 1,505,172	\$ 74,716	\$ 14,692	\$ 24,620					\$ 1,619,200
Moulton Niguel Water District	\$ 1,034,700	\$ 75,632	\$ 41,668	\$ 67,800	\$ 275,196	\$ 6,298,376	\$ 11,144	\$ 174,428	\$ 7,978,944
South Coast Water District	\$ 1,311,176	\$ 65,344	\$ 33,684	\$ 27,984	\$ 1,360,664	\$ 358,752		\$ 46,496	\$ 3,204,100
Santa Margarita Water District	\$ 1,838,508	\$ 173,280	\$ 44,136	\$ 74,320					\$ 2,130,244
El Toro Water District			\$ 9,184			\$ 654,264	\$ 26,040	\$ 94,584	\$ 784,072
Irvine Ranch Water District			\$ 18,488	\$ 25,324			\$ 26,040	\$ 92,284	\$ 162,136
City of San Clemente		\$ 86,912	\$ 15,636						\$ 102,548
Trabuco Canyon Water District				\$ 24,824					\$ 24,824
Emerald Bay Service District			\$ 1,956		\$ 55,732	\$ 16,864		\$ 3,080	\$ 77,632
City of Laguna Beach			\$ 12,780		\$ 1,308,796	\$ 521,360		\$ 63,324	\$ 1,906,260
Total PC Budget	\$ 5,689,556	\$ 475,884	\$ 192,224	\$ 244,872	\$ 3,000,388	\$ 7,849,617	\$ 63,224	\$ 474,196	\$ 17,989,961

Table 16 Cost Summary by PC After Apportionment Changes (FY18)

Member Agency	PC2 J.B. Latham	PC5 SJCOO	PC8 Pre-Treatment	PC12 Recycled Water Permits	PC15 Coastal	PC17 Regional	PC21 ETM	PC24 ACOO	Total
City of San Juan Capistrano	\$ 1,507,203	\$ 52,726	\$ 14,684	\$ 24,620					\$ 1,599,233
Moulton Niguel Water District	\$ 1,036,853	\$ 73,807	\$ 41,665	\$ 67,798	\$ 280,447	\$ 6,277,327	\$ 11,143	\$ 207,936	\$ 7,996,975
South Coast Water District	\$ 1,311,795	\$ 59,340	\$ 33,685	\$ 27,992	\$ 1,352,853	\$ 363,633		\$ 58,376	\$ 3,207,674
Santa Margarita Water District	\$ 1,833,652	\$ 210,903	\$ 44,135	\$ 74,330					\$ 2,163,019
El Toro Water District			\$ 9,174			\$ 663,230	\$ 26,044	\$ 77,307	\$ 775,756
Irvine Ranch Water District			\$ 18,484	\$ 25,335			\$ 26,044	\$ 74,735	\$ 144,599
City of San Clemente		\$ 79,089	\$ 15,634						\$ 94,723
Trabuco Canyon Water District				\$ 24,832					\$ 24,832
Emerald Bay Service District			\$ 1,954		\$ 56,226	\$ 17,122		\$ 3,699	\$ 79,002
City of Laguna Beach			\$ 12,784		\$ 1,310,863	\$ 528,252		\$ 52,164	\$ 1,904,063
<i>Rounding</i>	\$ 54	\$ 20	\$ 24	\$ (35)	\$ (2)	\$ 53	\$ (7)	\$ (22)	\$ 85
Total PC Budget	\$ 5,689,556	\$ 475,884	\$ 192,224	\$ 244,872	\$ 3,000,388	\$ 7,849,617	\$ 63,224	\$ 474,196	\$ 17,989,961

*Rounding values from Fiscal Year 2017-18 Total Operating Budget Report, Approved June 14, 2017

Table 17 Total Expense Impact by PC After Apportionment Changes (FY18)

Member Agency	PC2 J.B. Latham	PC5 SJCOO	PC8 Pre-Treatment*	Recycled Water Permits*	PC15 Coastal	PC17 Regional	PC21 ETM*	PC24 ACOO	Total Change
City of San Juan Capistrano	\$ 2,031	\$ (21,990)	\$ (8)	\$ 0					\$ (19,967)
Moulton Niguel Water District	\$ 2,153	\$ (1,825)	\$ (3)	\$ (2)	\$ 5,251	\$ (21,049)	\$ (1)	\$ 33,508	\$ 18,031
South Coast Water District	\$ 619	\$ (6,004)	\$ 1	\$ 8	\$ (7,811)	\$ 4,881		\$ 11,880	\$ 3,574
Santa Margarita Water District	\$ (4,856)	\$ 37,623	\$ (1)	\$ 10					\$ 32,775
El Toro Water District			\$ (10)			\$ 8,966	\$ 4	\$ (17,277)	\$ (8,317)
Irvine Ranch Water District			\$ (4)	\$ 11			\$ 4	\$ (17,549)	\$ (17,537)
City of San Clemente		\$ (7,823)	\$ (2)						\$ (7,825)
Trabuco Canyon Water District				\$ 8					\$ 8
Emerald Bay Service District			\$ (2)		\$ 494	\$ 258		\$ 619	\$ 1,369
City of Laguna Beach			\$ 4		\$ 2,067	\$ 6,891		\$ (11,160)	\$ (2,197)
<i>Rounding</i>	\$ (54)	\$ (20)	\$ (24)	\$ 35	\$ 2	\$ (53)	\$ 7	\$ 22	\$ (85)
Change in Total PC Budget	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

*Rounding may impact these values

Budget Increase / (Budget Decrease)

Appendix A

FY 2017-18 BUDGET ASSUMPTIONS

Exhibits A through H summarize the cost apportionment assumptions from the FY17-18 Budget Book. Each PC has different apportionment methods as described in the FY17-18 Budget Book to apportion costs to the Member Agencies. The applicable functional categories are specific to the processes that occur within each PC.

Exhibit A PC2 (J.B. Latham Treatment Plant) Apportionment Assumptions

		PC2 Latham WWTP				
		FY17-18 Budget Use Projections			FY17-18 Ownership	
Member Agency	Abbrev.	Solids	Liquids	Other	C/Solids	C/Liquids
City of San Juan Capistrano	CSJC	23.82%	27.50%		30.00%	30.77%
Moulton Niguel Water District	MNWD	15.24%	19.49%		21.62%	23.08%
South Coast Water District	SCWD	21.73%	23.91%		20.00%	28.84%
Santa Margarita Water District	SMWD	39.21%	29.10%		28.38%	17.31%
El Toro Water District	ETWD					
Irvine Ranch Water District	IRWD					
City of San Clemente	CSC					
Trabuco Canyon Water District	TCWD					
Emerald Bay Service District	EBSD					
City of Laguna Beach	CLB					
Total		100%	100%		100%	100%

Exhibit B PC5 (SJCOO) Apportionment Assumptions

		PC5 San Juan Creek Ocean Outfall	
		FY17-18 Budget Use	
		Projections	FY17-18 Ownership
Member Agency	Abbrev.	Outfall Flow	Capacity
City of San Juan Capistrano	CSJC	18.56%	11.08%
Moulton Niguel Water District	MNWD	16.13%	15.51%
South Coast Water District	SCWD	14.51%	12.47%
Santa Margarita Water District	SMWD	31.52%	44.32%
El Toro Water District	ETWD		
Irvine Ranch Water District	IRWD		
City of San Clemente	CSC	19.28%	16.62%
Trabuco Canyon Water District	TCWD		
Emerald Bay Service District	EBSD		
City of Laguna Beach	CLB		
Total		100%	100%

Exhibit C PC8 (Pre-Treatment) Apportionment Assumptions

		PC8 Pre-Treatment	
		FY17-18 Ownership	
Member Agency	Abbrev.	Timecard	Insurance
City of San Juan Capistrano	CSJC	7.60%	11.11%
Moulton Niguel Water District	MNWD	21.80%	11.11%
South Coast Water District	SCWD	17.60%	11.11%
Santa Margarita Water District	SMWD	23.10%	11.11%
El Toro Water District	ETWD	4.70%	11.11%
Irvine Ranch Water District	IRWD	9.60%	11.11%
City of San Clemente	CSC	8.10%	11.11%
Trabuco Canyon Water District	TCWD		
Emerald Bay Service District	EBSD	0.90%	11.11%
City of Laguna Beach	CLB	6.60%	11.11%
Total		100%	100%

Exhibit D PC12 (Recycled Water Permits) Apportionment Assumptions

		PC12 Recycled Water Permits	
		FY17-18 Budget Use Projections	FY17-18 Ownership
Member Agency	Abbrev.	Recycled Water Produced in Region 9	Equally
City of San Juan Capistrano	CSJC	3.44%	16.67%
Moulton Niguel Water District	MNWD	38.70%	16.67%
South Coast Water District	SCWD	6.19%	16.67%
Santa Margarita Water District	SMWD	44.03%	16.67%
El Toro Water District	ETWD		
Irvine Ranch Water District	IRWD	4.02%	16.67%
City of San Clemente	CSC		
Trabuco Canyon Water District	TCWD	3.61%	16.67%
Emerald Bay Service District	EBS		
City of Laguna Beach	CLB		
Total		100%	100%

Exhibit E PC 15 (Coastal Treatment Plant) Apportionment Assumptions

		PC15 Coastal WWTP			
		FY17-18 Budget Use Projections		FY17-18 Ownership	
Member Agency	Abbrev.	Solids	Liquids	AWT	C/Liquids
City of San Juan Capistrano	CSJC				
Moulton Niguel Water District	MNWD		-	-	29.2%
South Coast Water District	SCWD		41.8%	100.0%	29.9%
Santa Margarita Water District	SMWD				
El Toro Water District	ETWD				
Irvine Ranch Water District	IRWD				
City of San Clemente	CSC				
Trabuco Canyon Water District	TCWD				
Emerald Bay Service District	EBS		1.6%	-	3.0%
City of Laguna Beach	CLB		56.6%	-	37.9%
Total		100%	100%	100%	100%

Exhibit F PC17 (Regional Treatment Plant) Apportionment Assumptions

		PC17 Regional WWTP				
		FY17-18 Budget Use Projections			FY17-18 Ownership	
Member Agency	Abbrev.	Solids	Liquids	AWT	C/Solids	C/Liquids
City of San Juan Capistrano	CSJC					
Moulton Niguel Water District	MNWD	63.58%	99.54%	100.00%	58.82%	100.00%
South Coast Water District	SCWD	8.53%	0.10%	-	8.96%	-
Santa Margarita Water District	SMWD					
El Toro Water District	ETWD	14.80%	0.19%	-	20.41%	-
Irvine Ranch Water District	IRWD					
City of San Clemente	CSC					
Trabuco Canyon Water District	TCWD					
Emerald Bay Service District	EBS	0.37%	0.01%	-	0.59%	-
City of Laguna Beach	CLB	12.72%	0.16%	-	11.22%	-
Total		100%	100%	100%	100%	100%

Exhibit G PC21 (Effluent Transmission Main) Apportionment Assumptions

		PC21 Effluent Transmission Main FY17-18 Budget Ownership	
Member Agency	Abbrev.	Reach B/C/D	Reach E
City of San Juan Capistrano	CSJC		
Moulton Niguel Water District	MNWD	-	53.4%
South Coast Water District	SCWD		
Santa Margarita Water District	SMWD		
El Toro Water District	ETWD	50.0%	23.3%
Irvine Ranch Water District	IRWD	50.0%	23.3%
City of San Clemente	CSC		
Trabuco Canyon Water District	TCWD		
Emerald Bay Service District	EBSD		
City of Laguna Beach	CLB		
Total		100%	100%

Exhibit H PC24 (ACCO) Apportionment Assumptions

		PC24 Aliso Creek Ocean Outfall FY17-18 Budget Use Projections			FY17-18 Ownership
Member Agency	Abbrev.	Solids	Outfall Flow	AWT	Capacity
City of San Juan Capistrano	CSJC				
Moulton Niguel Water District	MNWD		27.4%		43.8%
South Coast Water District	SCWD		6.5%		12.3%
Santa Margarita Water District	SMWD				
El Toro Water District	ETWD		24.8%		16.3%
Irvine Ranch Water District	IRWD		24.4%		15.8%
City of San Clemente	CSC				
Trabuco Canyon Water District	TCWD				
Emerald Bay Service District	EBSD		0.5%		0.8%
City of Laguna Beach	CLB		16.5%		11.0%
Total			100%		100%

Appendix B

COST APPORTIONMENT BASIS

Exhibits I, J, and K provide the proposed revised cost apportionment basis specific to each PC.

Exhibit I Apportionment Basis for PC2, PC5, and PC8

Apportionment Basis	PC2 Latham WWTP					PC5 San Juan Creek Ocean Outfall				PC8 Pre-Treatment	
	Solids	Liquids	AWT	C/Solids	C/Liquids	Solids	Outfall Flows	AWT	Capacity	Timecard	Insurance
Labor - Actual Use (Dept 1)	42.2%	48.4%		4.7%	4.7%					100.0%	-
Labor - Actual Use (Dept 2)	14.8%	55.0%		15.1%	15.1%					100.0%	-
Labor - Allocation (Dept 1)	42.2%	48.4%		4.7%	4.7%					100.0%	-
Labor - Allocation (Dept 2)	14.8%	55.0%		15.1%	15.1%					100.0%	-
Labor - Overtime (Dept 1)	42.2%	48.4%		4.7%	4.7%					100.0%	-
Labor - Overtime (Dept 2)	14.8%	55.0%		15.1%	15.1%					100.0%	-
Actual Use - Bills Coded	-	-		50.0%	50.0%					100.0%	-
Common	-	-		50.0%	50.0%					100.0%	-
Solids	100.0%	-		-	-					100.0%	-
Liquids	-	100.0%		-	-					100.0%	-
AWT										100.0%	-
Outfall - Fixed									100.0%		
Outfall - Variable						100.0%			-		
ETM											
Electricity	25.0%	65.0%		5.0%	5.0%						
Natural Gas	25.0%	65.0%		5.0%	5.0%						
Potable & Reclaimed Water	50.0%	40.0%		5.0%	5.0%						
Chlorine/Sodium Hypochlorite	-	100.0%		-	-						
Polymer Products	20.0%	80.0%		-	-						
Ferric Chloride	100.0%	-		-	-						
Odor Control Chemicals	46.0%	54.0%		-	-						
Laboratory	25.0%	75.0%		-	-					100.0%	-
Petroleum Products	20.0%	80.0%		-	-						
Recycled Water Permits											
Insurance										-	100.0%

Exhibit J Apportionment Basis for PC12, PC15, and PC17

Apportionment Basis	PC12 Recycled Water Permits		PC15 Coastal WWTP				PC17 Regional WWTP					
	Recycled Water Permits	Equally	Solids	Liquids	AWT	C/Liquids	Solids	Liquids	AWT	C/Solids	C/Liquids	
Labor - Actual Use (Dept 1)	50.0%	50.0%		62.5%	13.0%		24.5%	48.0%	37.5%	8.4%	3.1%	3.1%
Labor - Actual Use (Dept 2)	50.0%	50.0%		54.3%	22.8%		22.9%	11.0%	41.5%	32.7%	7.4%	7.4%
Labor - Allocation (Dept 1)	50.0%	50.0%		62.5%	13.0%		24.5%	48.0%	37.5%	8.4%	3.1%	3.1%
Labor - Allocation (Dept 2)	50.0%	50.0%		54.3%	22.8%		22.9%	11.0%	41.5%	32.7%	7.4%	7.4%
Labor - Overtime (Dept 1)	50.0%	50.0%		62.5%	13.0%		24.5%	48.0%	37.5%	8.4%	3.1%	3.1%
Labor - Overtime (Dept 2)	50.0%	50.0%		54.3%	22.8%		22.9%	11.0%	41.5%	32.7%	7.4%	7.4%
Actual Use - Bills Coded				-	-		100.0%	-	-	-	50.0%	50.0%
Common				-	-		100.0%	-	-	-	50.0%	50.0%
Solids								100.0%	-	-	-	-
Liquids				100.0%	-		-	-	100.0%	-	-	-
AWT				-	100.0%		-	-	-	100.0%	-	-
Outfall - Fixed												
Outfall - Variable												
ETM												
Electricity				100.0%	-		-	32.8%	51.5%	5.0%	5.4%	5.4%
Natural Gas				50.0%	-		50.0%	100.0%	-	-	-	-
Potable & Reclaimed Water				90.0%	-		10.0%	56.5%	37.0%	-	-	6.5%
Chlorine/Sodium Hypochlorite				1.0%	99.0%		-	-	4.0%	96.0%	-	-
Polymer Products				43.0%	57.0%		-	82.2%	17.5%	0.3%	-	-
Ferric Chloride				100.0%	-		-	100.0%	-	-	-	-
Odor Control Chemicals				100.0%	-		-	35.0%	65.0%	-	-	-
Laboratory				50.0%	50.0%		-	25.0%	50.0%	25.0%	-	-
Petroleum Products				100.0%	-		-	92.6%	7.4%	-	-	-
Recycled Water Permits	50.0%	50.0%										
Insurance												

Exhibit K Apportionment Basis for PC21 and PC24

Apportionment Basis	PC21 Effluent Transmission Main		PC24 Aliso Creek Ocean Outfall	
	Reach B/C/D	Reach E	Outfall Flows	Capacity
Labor - Actual Use (Dept 1)	67.0%	33.0%		
Labor - Actual Use (Dept 2)	67.0%	33.0%		
Labor - Allocation (Dept 1)	67.0%	33.0%		
Labor - Allocation (Dept 2)	67.0%	33.0%		
Labor - Overtime (Dept 1)				
Labor - Overtime (Dept 2)				
Actual Use - Bills Coded				
Common				
Solids				
Liquids				
AWT				
Outfall - Fixed			-	100%
Outfall - Variable			100%	-
ETM	67.0%	33.0%		
Electricity				
Natural Gas				
Potable & Reclaimed Water				
Chlorine/Sodium Hypochlorite				
Polymer Products				
Ferric Chloride				
Odor Control Chemicals				
Laboratory				
Petroleum Products				
Recycled Water Permits				
Insurance				

Appendix C

BUDGET BOOK EXPENSE DETAIL

The following pages were extracted from the Fiscal Year 2017-18 Total Operating Budget Report (Approved June 14, 2017). These tables served as the basis for operating expenses used in the model and this report.

**South Orange County Wastewater Authority
FY 2017-18 Total O&M Budget by Project Committee and Member Agency**

	City of Laguna Beach	City of San Clemente	City of San Juan Capistrano	El Toro Water District	Emerald Bay Service District	Irvine Ranch Water District	Moulton Niguel Water District	Santa Margarita Water District	South Coast Water District	Trabuco Canyon Water District	Total
O&M by Project Committee and Member Agency											
PC 2 - Jay B. Latham Plant	-	-	1,505,172	-	-	-	1,034,700	1,838,508	1,311,176	-	5,689,556
PC 5 - San Juan Creek Ocean Outfall	-	86,912	74,716	-	-	-	75,632	173,280	65,344	-	475,884
PC 8 - Pretreatment Program	12,780	15,636	14,692	9,184	1,956	18,488	41,668	44,136	33,684	-	192,224
PC 12 SO- Water Reclamation Permits	-	-	24,620	-	-	25,324	67,800	74,320	27,984	24,824	244,872
PC 15 - Coastal Treatment Plant/AWT	1,308,796	-	-	-	55,732	-	275,196	-	1,360,664	-	3,000,388
PC 17 - Joint Regional Wastewater Reclamation	521,360	-	-	654,264	16,864	-	6,298,376	-	358,752	-	7,849,616
PC 21 Effluent Transmission Main	-	-	-	26,040	-	26,040	11,144	-	-	-	63,224
PC 24 - Aliso Creek Ocean Outfall	63,324	-	-	94,584	3,080	92,284	174,428	-	46,496	-	474,196
Total O&M by Project Committee and Member Agency	1,906,260	102,548	1,619,200	784,072	77,632	162,136	7,978,944	2,130,244	3,204,100	24,824	17,989,960

*Total Administration, General Fund and Residual Engineering Expenses by Member Agency (calculated page 7b)	254,912	48,280	222,026	126,355	45,426	55,106	950,593	280,571	403,591	39,376	2,426,235
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Administration, General Fund and Residual Engineering Expenses Allocation Percentages by Project Committee and Member Agency											
Project Committee											
PC 2 - Jay B. Latham Plant	-	-	93.0%	-	-	-	13.0%	86.3%	40.9%	-	31.6%
PC 5 - San Juan Creek Ocean Outfall	-	84.8%	4.6%	-	-	-	0.9%	8.1%	2.0%	-	2.6%
PC 8 - Pretreatment Program	0.7%	15.2%	0.9%	1.2%	2.5%	11.4%	0.5%	2.1%	1.1%	-	1.1%
PC 12 SO- Water Reclamation Permits	-	-	1.5%	0.0%	-	15.6%	0.8%	3.5%	0.9%	100.0%	1.4%
PC 15 - Coastal Treatment Plant/AWT	68.7%	-	-	-	71.8%	-	3.4%	-	42.5%	-	16.7%
PC 17 - Joint Regional Wastewater Reclamation	27.3%	-	-	83.4%	21.7%	-	78.9%	-	11.2%	-	43.6%
PC 21 Effluent Transmission Main	-	-	-	3.3%	-	16.1%	0.1%	-	-	-	0.4%
PC 24 - Aliso Creek Ocean Outfall	3.3%	-	-	12.1%	4.0%	56.9%	2.2%	-	1.5%	-	2.6%
Total Allocation %'s	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Administration, General Fund and Residual Engineering Expenses by Project Committee and Member Agency											
Project Committee											
PC 2 - Jay B. Latham Plant	-	-	206,391	-	-	-	123,272	242,147	165,157	-	736,966
PC 5 - San Juan Creek Ocean Outfall	-	40,919	10,245	-	-	-	9,011	22,822	8,231	-	91,228
PC 8 - Pretreatment Program	1,709	7,361	2,015	1,480	1,145	6,284	4,964	5,813	4,243	-	35,013
PC 12 SO- Water Reclamation Permits	-	-	3,376	-	-	8,607	8,078	9,789	3,525	39,376	72,750
PC 15 - Coastal Treatment Plant/AWT	175,017	-	-	-	32,611	-	32,786	-	171,390	-	411,804
PC 17 - Joint Regional Wastewater Reclamation	69,718	-	-	105,436	9,868	-	750,374	-	45,189	-	980,584
PC 21 Effluent Transmission Main	-	-	-	4,196	-	8,850	1,328	-	-	-	14,374
PC 24 - Aliso Creek Ocean Outfall	8,468	-	-	15,242	1,802	31,365	20,781	-	5,857	-	83,515
Total Administration, General Fund and Residual Engineering Expenses by Project Committee and Member Agency	254,912	48,280	222,026	126,355	45,426	55,106	950,593	280,571	403,591	39,376	2,426,235

Total O&M Budget by Project Committee and Member Agency											
Project Committee											
PC 2 - Jay B. Latham Plant	-	-	1,711,563	-	-	-	1,157,972	2,080,655	1,476,333	-	6,426,522
PC 5 - San Juan Creek Ocean Outfall	-	127,831	84,961	-	-	-	84,643	196,102	73,575	-	567,112
PC 8 - Pretreatment Program	14,489	22,997	16,707	10,664	3,101	24,772	46,632	49,949	37,927	-	227,237
PC 12 SO- Water Reclamation Permits	-	-	27,996	-	-	33,931	75,878	84,109	31,509	64,200	317,622
PC 15 - Coastal Treatment Plant/AWT	1,483,813	-	-	-	88,343	-	307,982	-	1,532,054	-	3,412,192
PC 17 - Joint Regional Wastewater Reclamation	591,078	-	-	759,700	26,732	-	7,048,750	-	403,941	-	8,830,200
PC 21 Effluent Transmission Main	-	-	-	30,236	-	34,890	12,472	-	-	-	77,598
PC 24 - Aliso Creek Ocean Outfall	71,792	-	-	109,826	4,882	123,649	195,209	-	52,353	-	557,711
Total O&M Budget by Project Committee and Member Agency	2,161,172	150,828	1,841,226	910,427	123,058	217,242	8,929,537	2,410,815	3,607,691	64,200	20,416,195

*Member Agency Administration, Residual Engineering and General Fund expenses are distributed by Member Agency on page 7b.

South Orange County Wastewater Authority
Fiscal Year 2017-18 O&M Project Committee Detail
(Does Not Include Administration, Residual Engineering and General Fund Expenses)

	PC 02	PC 12	PC 05	PC 15	PC 17	PC 21	PC 24	PC 08	SOCWA	
Salary and Fringe										
5000--***	Regular Salaries-O&M	1,391,700	50,192	101,732	847,312	1,804,540	-	92,320	83,504	4,371,300
5001--***	Overtime Salaries-O&M	22,112	-	472	11,108	39,344	-	544	1,412	74,992
5306--***	Scheduled Holiday Work	13,796	392	2,500	4,804	14,996	-	3,216	200	39,904
5401--***	Fringe Benefits IN to PC's & Depts.	1,032,652	37,240	75,484	628,708	1,338,984	-	68,488	61,956	3,243,512
5700--***	Standby Pay	23,328	-	-	23,336	23,332	-	-	-	69,996
	Total Payroll Costs	2,483,588	87,824	180,188	1,515,268	3,221,196	-	164,568	147,072	7,799,704
Other Expenses										
5002--***	Electricity	524,000	-	1,000	283,004	675,000	-	996	-	1,484,000
5003--***	Natural Gas	65,012	-	500	3,000	141,000	-	-	-	209,512
5004--***	Potable & Reclaimed Water	15,004	-	-	13,000	34,004	-	-	-	62,008
5005--***	Co-generation Power Credit	-	-	-	-	(250,000)	-	-	-	(250,000)
5006--***	Chlorine/Sodium Hypochlorite	28,000	-	-	99,996	350,004	-	-	-	478,000
5007--***	Polymer Products	301,004	-	-	2,004	406,008	-	-	-	709,016
5008--***	Ferric Chloride	100,004	-	-	30,004	125,004	-	-	-	255,012
5009--***	Odor Control Chemicals	25,000	-	-	85,000	50,000	-	-	-	160,000
5010--***	Other Chemicals - Misc.	1,000	-	-	-	4,000	-	-	-	5,000
5011--***	Laboratory Services	10,500	-	-	9,500	14,000	-	-	2,500	36,500
5012--***	Grit Hauling - 21A	40,000	-	-	30,004	52,004	-	-	-	122,008
5013--***	Landscaping	48,000	-	-	60,008	74,996	-	-	-	183,004
5014--***	Engineering - Misc.	105,000	-	20,004	55,000	130,004	62,496	20,004	-	392,508
5015--***	Management Support Services	17,996	15,992	27,500	9,500	27,508	-	27,504	2,008	128,008
5016--***	Audit - Environmental	-	-	-	-	-	-	-	500	500
5017--***	Legal Fees	1,200	5,000	2,004	-	-	-	2,004	2,008	12,216
5018--***	Public Notices/ Public Relations	-	-	-	-	-	-	-	500	500
5019--***	Contract Services Misc. - 29	95,000	-	-	67,000	125,000	-	-	-	287,000
5021--***	Small Vehicle Expense - 31A	8,004	-	-	5,996	6,000	-	-	900	20,900
5022--***	Miscellaneous Expense	8,004	-	-	2,996	5,996	-	-	1,496	18,492
5023--***	Office Supplies - All	25,008	-	-	6,996	9,996	-	-	-	42,000
5024--***	Petroleum Products	16,004	-	-	2,000	41,996	-	-	-	60,000
5025--***	Uniforms	12,996	-	-	5,996	17,008	-	-	-	36,000
5026--***	Small Vehicle Fuel - 37A	15,000	-	2,496	5,996	12,996	-	-	1,200	37,688
5027--***	Insurance - Property/Liability	70,448	2,740	5,372	34,640	90,252	728	5,364	2,196	211,740
5028--***	Small Tools & Supplies	40,004	-	-	9,000	25,000	-	-	3,472	77,476
5030--***	Trash Disposal	1,000	-	-	2,996	1,004	-	-	-	5,000
5031--***	Safety Supplies	30,396	-	128	24,000	31,352	-	996	-	86,872
5032--***	Equipment Rental	3,000	-	-	1,000	3,004	-	-	-	7,004
5033--***	Recruitment	1,000	-	-	-	-	-	-	-	1,000
5034--***	Travel Expense/Tech. Conferences	16,976	1,256	2,484	17,156	17,156	-	2,480	3,504	61,012
5035--***	Training Expense	17,020	-	-	17,020	17,028	-	-	1,496	52,564
5036--***	Laboratory Supplies	13,004	-	16,000	10,004	19,020	-	16,996	-	75,024
5037--***	Office Equipment	15,500	-	-	1,000	5,996	-	-	-	22,496
5038--***	Permits	22,000	124,996	145,000	6,504	35,000	-	131,992	10,008	475,500
5039--***	Membership Dues/Fees	3,844	-	-	3,800	3,804	-	-	796	12,244
5044--***	Offshore Monitoring - 20A	-	-	20,004	-	-	-	22,004	-	42,008
5046--***	Effluent Chemistry - 20C	-	-	16,000	-	-	-	29,996	-	45,996
5047--***	Access Road Expenses	-	-	-	46,996	-	-	-	-	46,996
5048--***	Storm Damage	-	-	-	19,000	-	-	-	-	19,000
5049--***	Biosolids Disposal - 21B	550,004	-	-	125,000	866,000	-	-	-	1,541,004
5050--***	Contract Services Generators - 29A	9,004	-	-	4,004	8,000	-	-	-	21,008
5052--***	Janitorial Services	40,004	-	-	20,008	40,004	-	-	-	100,016
5053--***	Contract Serv - Digester Cleaning	-	-	-	-	60,004	-	-	-	60,004
5054--***	Diesel Truck Maint - 31B	20,004	-	-	996	19,000	-	-	-	40,000
5055--***	Diesel Truck Fuel - 37B	6,000	-	-	996	7,000	-	-	-	13,996
5056--***	Maintenance Equip. & Facilities	138,000	-	-	-	190,004	-	-	-	328,004
5057--***	Maintenance Equip. & Facilities	240,000	-	-	170,004	164,996	-	-	-	575,000
5058--***	Maintenance Equip. & Facilities	26,000	-	1,004	20,008	25,000	-	996	-	73,008
5059--***	Maintenance Equip. & Facilities	250,000	-	-	-	250,000	-	-	-	500,000
5060--***	Maintenance Equip. & Facilities	-	-	-	35,000	35,000	-	-	-	70,000
5061--***	Mileage	1,492	-	-	1,196	3,000	-	-	-	5,688
5067--***	Port Cleaning	-	-	-	-	-	-	35,000	-	35,000
17-5068-02-04-22	MNWD Lab Services and Supplies	-	-	-	-	23,996	-	-	-	23,996
5069--***	Misc-Capital-Dilution & Metering Study	-	-	15,004	-	-	-	-	-	15,004
5105--***	Co-Generation Power Credit - Offset	-	-	-	-	250,000	-	-	-	250,000
5301--***	Vehicle Pay	7,196	-	4,200	4,200	12,548	-	-	-	28,144
5303--***	Group Insurance Waiver	3,604	-	-	3,596	3,596	-	-	-	10,796
5305--***	Medicare Tax Payments for Employees	3,812	-	2,352	2,964	1,916	-	-	-	11,044
5309--***	Operating Leases	6,000	-	-	-	6,000	-	-	-	12,000
5705--***	Monthly Car Allowance	-	-	-	-	52	-	-	-	52
5706--***	Effluent Pond Cleaning	-	-	-	-	90,004	-	-	-	90,004
6500--***	IT Allocations in to PC's & Depts.	208,920	7,064	14,644	127,032	271,160	-	13,296	12,568	654,684
	Total Other Expenses	3,205,968	157,048	295,696	1,485,120	4,628,420	63,224	309,628	45,152	10,190,256
Total O&M by Project Committee	5,689,556	244,872	475,884	3,000,388	7,849,616	63,224	474,196	192,224	17,989,960	

South Orange County Wastewater Authority Member Agency Allocations

PC 2 Liquids Allocation FY 17/18

Agency	Liquids Ownership Capacity MGD	Ownership Percentage	2016 Flows MGD	FY 17/18 Projected Flows	FY 17/18 Liquids Allocation %
CSJC	4.000	30.77%	1.975	1.975	27.50
MNWD	3.000	23.08%	1.416	1.400	19.49
SCWD	3.750	28.85%	1.717	1.717	23.91
SMWD	2.250	17.30%	2.090	2.090	29.10
	13.000	100.00%	7.198	7.182	100.00

Agency	Solids Ownership Capacity Pounds/Day	Ownership Percentage	3Yr Average Loading #/Day	FY 17/18 Projected Loading #/Day	FY 17/18 Solids Allocation %
CSJC	11,572	30.00	5,402	5,402	23.82
MNWD	8,340	21.62	3,456	3,456	15.24
SCWD	7,715	20.00	4,926	4,926	21.73
SMWD	10,946	28.38	8,890	8,890	39.21
	38,573	100.00	22,674	22,674	100.00

**South Orange County Wastewater Authority
FY 2017-18 PC 2 O&M Budget Detail and Wastewater Code Allocations**

Description	Account #	Total	Wastewater Allocation %				Total
			Liquids	Solids	C/Liquids	C/Solids	
Regular Salaries-O&M	02-5000-01-00-00	1,228,506	48.4%	42.2%	4.7%	4.7%	100.0%
Regular Salaries-O&M	02-5000-02-00-00	163,194	55.0%	14.8%	15.1%	15.1%	100.0%
Overtime Salaries-O&M	02-5001-01-00-00	21,910	48.4%	42.2%	4.7%	4.7%	100.0%
Overtime Salaries-O&M	02-5001-02-00-00	200	55.0%	14.8%	15.1%	15.1%	100.0%
Electricity	02-5002-01-00-00	524,000	65.0%	25.0%	5.0%	5.0%	100.0%
Natural Gas	02-5003-01-00-00	65,000	65.0%	25.0%	5.0%	5.0%	100.0%
Water	02-5004-01-00-00	15,000	40.0%	50.0%	5.0%	5.0%	100.0%
Chlorine/Sodium Hypochlorite	02-5006-01-00-00	28,000	100.0%				100.0%
Polymer Products	02-5007-01-00-00	301,000		100.0%			100.0%
Ferric Chloride	02-5008-01-00-00	100,000		100.0%			100.0%
Odor Control Chemicals	02-5009-01-00-00	25,000	54.0%	46.0%			100.0%
Other Chemicals - Misc.	02-5010-01-00-00	1,000			50.0%	50.0%	100.0%
Laboratory Services	02-5011-02-00-00	10,500	75.0%	25.0%			100.0%
Grit Hauling - 21A	02-5012-01-00-00	40,000	100.0%				100.0%
Landscaping	02-5013-01-00-00	48,000			50.0%	50.0%	100.0%
Engineering - Misc.	02-5014-01-00-00	5,000			50.0%	50.0%	100.0%
Engineering - Misc.	02-5014-02-00-00	100,000			50.0%	50.0%	100.0%
Management Support Services	02-5015-01-00-00	5,000			50.0%	50.0%	100.0%
Management Support Services	02-5015-02-00-00	13,000			50.0%	50.0%	100.0%
Legal Fees	02-5017-01-03-00	1,200			50.0%	50.0%	100.0%
Contract Services Misc. - 29	02-5019-01-00-00	95,000			50.0%	50.0%	100.0%
Small Vehicle Expense - 31A	02-5021-01-00-00	8,000	48.4%	42.2%	4.7%	4.7%	100.0%
Small Vehicle Expense - 31A	02-5021-02-00-00		55.0%	14.8%	15.1%	15.1%	100.0%
Miscellaneous Expense	02-5022-01-00-00	8,000			50.0%	50.0%	100.0%
Office Supplies - All	02-5023-01-00-00	25,000			50.0%	50.0%	100.0%
Petroleum Products	02-5024-01-00-00	16,000	80.0%	20.0%			100.0%
Uniforms	02-5025-01-00-00	13,000	48.4%	42.2%	4.7%	4.7%	100.0%
Small Vehicle Fuel - 37A	02-5026-01-00-00	15,000	48.4%	42.2%	4.7%	4.7%	100.0%
Insurance - Property/Liability	02-5027-01-00-00	70,448			50.0%	50.0%	100.0%
Insurance - Property/Liability	02-5027-02-00-00				50.0%	50.0%	100.0%
Small Tools & Supplies	02-5028-01-00-00	40,000			50.0%	50.0%	100.0%
Small Tools & Supplies	02-5028-02-00-00				50.0%	50.0%	100.0%
Trash Disposal	02-5030-01-00-00	1,000			50.0%	50.0%	100.0%
Safety Supplies	02-5031-01-00-00				50.0%	50.0%	100.0%
Safety Supplies	02-5031-02-00-00	30,400			50.0%	50.0%	100.0%
Equipment Rental	02-5032-01-00-00	3,000			50.0%	50.0%	100.0%
Recruitment	02-5033-01-00-00	1,000	48.4%	42.2%	4.7%	4.7%	100.0%
Recruitment	02-5033-02-00-00		55.0%	14.8%	15.1%	15.1%	100.0%
Travel Expense/Tech. Conferences	02-5034-01-00-00	13,833			50.0%	50.0%	100.0%
Travel Expense/Tech. Conferences	02-5034-02-00-00	3,138			50.0%	50.0%	100.0%
Training Expense	02-5035-01-00-00	15,900			50.0%	50.0%	100.0%
Training Expense	02-5035-02-00-00	1,118			50.0%	50.0%	100.0%
Laboratory Supplies	02-5036-02-00-00	13,000	75.0%	25.0%			100.0%
Office Equipment	02-5037-01-00-00	15,500			50.0%	50.0%	100.0%
Permits	02-5038-01-00-00				50.0%	50.0%	100.0%
Permits	02-5038-02-00-00	22,000			50.0%	50.0%	100.0%
Membership Dues/Fees	02-5039-01-00-00	3,050			50.0%	50.0%	100.0%
Membership Dues/Fees	02-5039-02-00-00	800			50.0%	50.0%	100.0%
Biosolids Disposal - 21B	02-5049-01-00-00	550,000		100.0%			100.0%
Contract Services Generators - 29A	02-5050-01-00-00	9,000			50.0%	50.0%	100.0%
Janitorial Services	02-5052-01-00-00	40,000			50.0%	50.0%	100.0%
Contract Serv - Digester Cleaning- 29E	02-5053-01-00-00				100.0%		100.0%
Diesel Truck Maint - 31B	02-5054-01-00-00	20,000			100.0%		100.0%
Diesel Truck Fuel - 37B	02-5055-01-00-00	6,000			100.0%		100.0%
Maintenance Equip. & Facilities	02-5056-01-00-00	138,000			100.0%		100.0%
Maintenance Equip. & Facilities	02-5057-01-00-00	240,000	100.0%				100.0%
Maintenance Equip. & Facilities	02-5058-01-00-00	26,000			50.0%	50.0%	100.0%
Maintenance Equip. & Facilities	02-5059-01-00-00	250,000			100.0%	0.0%	100.0%
Mileage	02-5061-01-00-00	1,000	48.4%	42.2%	4.7%	4.7%	100.0%
Mileage	02-5061-02-00-00	500	55.0%	14.8%	15.1%	15.1%	100.0%
IT Direct	02-5077-01-03-00				50.0%	50.0%	100.0%
Non-Capital Engineering	02-5114-01-00-00				50.0%	50.0%	100.0%
Non-Capital Engineering	02-5114-02-01-00				50.0%	50.0%	100.0%
Vehicle Pay	02-5301-01-01-00		48.4%	42.2%	4.7%	4.7%	100.0%
Group Insurance Waiver	02-5303-01-01-00	3,600	48.4%	42.2%	4.7%	4.7%	100.0%
Group Insurance Waiver	02-5303-02-00-00		55.0%	14.8%	15.1%	15.1%	100.0%
Medicare Tax Payments for Employees	02-5305-01-00-00	3,811	48.4%	42.2%	4.7%	4.7%	100.0%
Scheduled Holiday Work	02-5306-01-01-00	12,000	48.4%	42.2%	4.7%	4.7%	100.0%
Scheduled Holiday Work	02-5306-02-00-00	1,800	55.0%	14.8%	15.1%	15.1%	100.0%
Operating Leases	02-5309-01-00-00	6,000			50.0%	50.0%	100.0%
Fringe Benefits IN to PC's & Depts.	02-5401-01-00-00	911,551	48.4%	42.2%	4.7%	4.7%	100.0%
Fringe Benefits IN to PC's & Depts.	02-5401-02-00-00	121,090	55.0%	14.8%	15.1%	15.1%	100.0%
Standby Pay	02-5700-01-00-00	23,333	48.4%	42.2%	4.7%	4.7%	100.0%
Monthly Car Allowance	02-5705-01-00-00	7,200	48.4%	42.2%	4.7%	4.7%	100.0%
Monthly Car Allowance	02-5705-02-00-00		55.0%	14.8%	15.1%	15.1%	100.0%
Sales Tax	02-5801-01-00-00				50.0%	50.0%	100.0%
Sales Tax	02-5801-02-00-00				50.0%	50.0%	100.0%
Shipping/Freight	02-5802-01-00-00				50.0%	50.0%	100.0%
IT Allocations in to PC's & Depts.	02-6500-01-00-00	184,882			50.0%	50.0%	100.0%
IT Allocations in to PC's & Depts.	02-6500-02-00-00	24,038			50.0%	50.0%	100.0%
Rounding		54					
Total		5,689,556					

**South Orange County Wastewater Authority
Member Agency Allocations**

PC 5 Projections		
FY 17/18		
Member Agency	Outfall Flows	Outfall Flows
	MGD	Percent
CSC	2.283	19.28
CSJC	2.198	18.56
MNWD	1.91	16.13
SCWD	1.718	14.51
SMWD	3.732	31.52
Totals	11.841	100.00

South Orange County Wastewater Authority
FY 2017-18 PC 5 O&M Budget Detail and Wastewater Code Allocations

Description	Account #	Total	Wastewater Allocation %				
			Fixed	EPS	Var 5%	Var 95%	Total
Regular Salaries-O&M	05-5000-01-11-00	11,245	0.0%		5.0%	95.0%	100.0%
Regular Salaries-O&M	05-5000-02-00-00	90,484	0.0%	0.0%	5.0%	95.0%	100.0%
Overtime Salaries-O&M	05-5001-01-11-00	370	0.0%	0.0%	5.0%	95.0%	100.0%
Overtime Salaries-O&M	05-5001-02-00-00	100	0.0%	0.0%	5.0%	95.0%	100.0%
Electricity	05-5002-01-00-00	1,000			5.0%	95.0%	100.0%
Electricity	05-5002-02-00-00				5.0%	95.0%	100.0%
Natural Gas	05-5003-01-00-00	500			5.0%	95.0%	100.0%
Natural Gas	05-5003-02-00-00				5.0%	95.0%	100.0%
Engineering - Misc.	05-5014-01-00-00				5.0%	95.0%	100.0%
Engineering - Misc.	05-5014-02-00-00	20,000			5.0%	95.0%	100.0%
Management Support Services	05-5015-02-00-00	27,504			5.0%	95.0%	100.0%
Legal Fees	05-5017-01-00-00				5.0%	95.0%	100.0%
Legal Fees	05-5017-02-00-00	2,000			5.0%	95.0%	100.0%
Small Vehicle Fuel	05-5026-01-00-00	2,500	0.0%	0.0%	5.0%	95.0%	100.0%
Small Vehicle Fuel	05-5026-02-00-00		0.0%	0.0%	5.0%	95.0%	100.0%
Insurance/Property & Liability	05-5027-01-00-00	5,373	100.0%				100.0%
Insurance - Property/Liability	05-5027-02-00-00		100.0%				100.0%
Safety Supplies	05-5031-02-00-00	128			5.0%	95.0%	100.0%
Travel Expense/Tech. Conferences	05-5034-02-00-00	2,484			5.0%	95.0%	100.0%
Laboratory Supplies	05-5036-02-00-00	16,000			5.0%	95.0%	100.0%
Permits	05-5038-02-00-00	145,000	100.0%				100.0%
Natural Gas - 11-EPS - PC 5	05-5040-02-00-00			100.0%			100.0%
Electricity - 10-EPS - PC 5	05-5041-02-00-00			100.0%			100.0%
Contract Services - 29-EPS - PC 5	05-5042-02-00-00			100.0%			100.0%
Offshore Monitoring - 20A	05-5044-02-00-00	20,000			5.0%	95.0%	100.0%
Offshore Biochemistry - 20B	05-5045-02-00-00				5.0%	95.0%	100.0%
Effluent Chemistry - 20C	05-5046-02-00-00	16,000			5.0%	95.0%	100.0%
Maintenance Equip & Facilities (Solids) 41-A	05-5056-01-02-00				5.0%	95.0%	100.0%
Maintenance Equip & Facilities (Common)	05-5058-01-00-00	1,000	100.0%				100.0%
Port Cleaning	05-5067-02-00-00				5.0%	95.0%	100.0%
Misc-Capital-Dilution & Metering Study	05-5069-02-00-00	15,000	100.0%				100.0%
Vehicle Pay	05-5301-02-00-00			0.0%	5.0%	95.0%	100.0%
Medicare Tax Payments to Employees	05-5305-02-00-00	2,348		0.0%	5.0%	95.0%	100.0%
Scheduled Holiday Work	05-5306-01-00-00	100	0.0%	0.0%	5.0%	95.0%	100.0%
Scheduled Holiday Work	05-5306-02-00-00	2,400	0.0%	0.0%	5.0%	95.0%	100.0%
Fringe Benefits IN to PC's & Depts.	05-5401-01-11-00	8,344	0.0%	0.0%	5.0%	95.0%	100.0%
Fringe Benefits IN to PC's & Depts.	05-5401-02-00-00	67,139	0.0%	0.0%	5.0%	95.0%	100.0%
Monthly Car Allowance	05-5705-02-00-00	4,200	0.0%	0.0%	5.0%	95.0%	100.0%
Sales Tax	05-5801-02-00-00						0.0%
IT Allocations in to PC's & Depts.	05-6500-01-00-00	1,692			5.0%	95.0%	100.0%
IT Allocations in to PC's & Depts.	05-6500-02-00-00	12,953			5.0%	95.0%	100.0%
Rounding		20					
Total		475,884					

South Orange County Wastewater Authority
FY 2017-18 PC 8 O&M Budget Detail and Wastewater Code Allocations

Description	Account #	Total	Wastewater Allocation %	
			Timecard	Insurance
Regular Salaries-O&M	08-5000-02-00-00	83,505	100.0%	
Overtime Salaries-O&M	08-5001-02-00-00	1,408	100.0%	
Laboratory Services	08-5011-02-00-00	2,500	100.0%	
Management Support Services	08-5015-02-00-00	2,000	100.0%	
Audit - Environmental	08-5016-02-00-00	500	100.0%	
Legal Fees	08-5017-02-00-00	2,000	100.0%	
Public Notices/ Public Relations	08-5018-02-00-00	500	100.0%	
Small Vehicle Expense - 31A	08-5021-02-00-00	896	100.0%	
Miscellaneous Expense	08-5022-02-00-00	1,496	100.0%	
Small Vehicle Fuel - 37A	08-5026-02-00-00	1,196	100.0%	
Insurance - Property/Liability	08-5027-02-00-00	2,199		100.0%
Small Tools & Supplies	08-5028-02-00-00	3,476	100.0%	
Travel Expense/Tech. Conferences	08-5034-02-00-00	3,500	100.0%	
Training Expense	08-5035-02-00-00	1,496	100.0%	
Permits and Fines	08-5038-02-00-00	10,000	100.0%	
Memberships	08-5039-02-00-00	800	100.0%	
Scheduled Holiday Work	08-5306-02-00-00	200	100.0%	
Fringe Benefits IN to PC's & Depts.	08-5401-02-00-00	61,961	100.0%	
IT Allocation	08-6500-02-08-00	12,567	100.0%	
Rounding		24		
Total		192,224		

**South Orange County Wastewater Authority
Member Agency Allocations**

PC 12 Recycled Water Projections

FY 17/18

Member Agency	Region 9 Recycled Use 2016 acft	% RW Use 2016 %
CSJC	577	3.44%
ETWD	0	0
IRWD	675	4.02%
MNWD	6493	38.70%
SCWD	1039	6.19%
SMWD	7388	44.03%
TCWD	606	3.61%
Total	16778	100.00%

South Orange County Wastewater Authority
FY 2017-18 PC 12 O&M Budget Detail and Wastewater Code Allocations

Description	Account #	Total	Wastewater Allocation %	
			Region 9 (Var)	Equally (Fixed)
Regular Salaries-O&M	12-5000-02-00-00	50,186	50.0%	50.0%
Overtime Salaries-O&M	12-5001-02-00-00		50.0%	50.0%
Management Support Services	12-5015-02-00-00	16,000	50.0%	50.0%
Legal Fees	12-5017-02-00-00	5,000	50.0%	50.0%
Insurance	12-5027-02-00-00	2,748	50.0%	50.0%
Travel Expense/Tech. Conferences	12-5034-02-00-00	1,264	50.0%	50.0%
Permits	12-5038-02-00-00	125,000	50.0%	50.0%
Medicare Tax Payments for Employees	12-5305-02-00-00		50.0%	50.0%
Scheduled Holiday Work	12-5306-02-00-00	400	50.0%	50.0%
Fringe Benefits IN to PC's & Depts.	12-5401-02-00-00	37,238	50.0%	50.0%
Monthly Car Allowance	12-5705-02-00-00		50.0%	50.0%
IT Allocations in to PC's & Depts.	12-6500-02-00-00	7,071	50.0%	50.0%
Rounding		-35		
Total		244,872		

**South Orange County Wastewater Authority
Member Agency Allocations**

PC 15 Projections

FY 17-18

Member Agency	Plant Flows MGD	Plant Flow Percent
CLB	1.727	56.59%
EBSB	0.05	1.64%
SCWD	1.275	41.78%
MNWD	0.000	0.00%
Total	3.052	100.00%

South Orange County Wastewater Authority
FY 2017-18 PC 15 O&M Budget Detail and Wastewater Code Allocations

Description	Account #	Total	Wastewater Allocation %					
			Liquids	Solids	C/Liquids	C/Solids	AWT	Total
Regular Salaries-O&M	15-5000-01-00-00	697,358	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Regular Salaries-O&M	15-5000-02-00-00	149,952	54.3%	0.0%	22.9%	0.0%	22.8%	100.0%
Overtime Salaries-O&M	15-5001-01-00-00	10,921	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Overtime Salaries-O&M	15-5001-02-00-00	200	54.3%	0.0%	22.9%	0.0%	22.8%	100.0%
Electricity	15-5002-01-00-00	283,000	94.0%		3.5%		2.5%	100.0%
Natural Gas	15-5003-01-00-00	3,000	95.0%		5.0%	0.0%	0.0%	100.0%
Water	15-5004-01-00-00	13,000	90.0%		10.0%	0.0%		100.0%
Chlorine/Sodium Hypochlorite	15-5006-01-00-00	100,000	1.0%				99.0%	100.0%
Polymer Products	15-5007-01-00-00	2,000	43.0%				57.0%	100.0%
Ferric Chloride	15-5008-01-00-00	30,000	100.0%					100.0%
Odor Control Chemicals	15-5009-01-00-00	85,000	100.0%					100.0%
Laboratory Services	15-5011-02-00-00	9,500	50.0%				50.0%	100.0%
Grit Hauling - 21A	15-5012-01-00-00	30,000	100.0%					100.0%
Landscaping	15-5013-01-00-00	60,000	0.0%		100.0%	0.0%		100.0%
Engineering - Misc.	15-5014-01-00-00	5,000			100.0%	0.0%		100.0%
Engineering - Misc.	15-5014-02-00-00	50,000			100.0%	0.0%		100.0%
Management Support Services	15-5015-01-00-00	5,000			100.0%	0.0%		100.0%
Management Support Services	15-5015-02-00-00	4,500			100.0%	0.0%		100.0%
Legal Fees	15-5017-01-00-00				100.0%	0.0%		100.0%
Contract Services Misc. - 29	15-5019-01-00-00	67,000			100.0%	0.0%		100.0%
Small Vehicle Expense - 31A	15-5021-01-00-00	6,000	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Small Vehicle Expense - 31A	15-5021-02-00-00		54.3%	0.0%	22.9%	0.0%	22.8%	100.0%
Miscellaneous Expense	15-5022-01-00-00	3,000			100.0%	0.0%		100.0%
Office Supplies - All	15-5023-01-00-00	7,000			100.0%	0.0%		100.0%
Petroleum Products	15-5024-01-00-00	2,000	100.0%					100.0%
Uniforms	15-5025-01-00-00	6,000	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Small Vehicle Fuel - 37A	15-5026-01-00-00	6,000	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Insurance - Property/Liability	15-5027-01-00-00	34,641			100.0%	0.0%		100.0%
Insurance - Property/Liability	15-5027-02-00-00				100.0%	0.0%		100.0%
Small Tools & Supplies	15-5028-01-00-00	9,000			100.0%	0.0%		100.0%
Trash Disposal	15-5030-01-00-00	3,000			100.0%	0.0%		100.0%
Safety Supplies	15-5031-01-00-00				100.0%	0.0%		100.0%
Safety Supplies	15-5031-02-00-00	24,000			100.0%	0.0%		100.0%
Equipment Rental	15-5032-01-00-00	1,000			100.0%	0.0%		100.0%
Travel Expense/Tech. Conferences	15-5034-01-00-00	13,833			100.0%	0.0%		100.0%
Travel Expense/Tech. Conferences	15-5034-02-00-00	3,324			100.0%	0.0%		100.0%
Training Expense	15-5035-01-00-00	15,900			100.0%	0.0%		100.0%
Training Expense	15-5035-02-00-00	1,118			100.0%	0.0%		100.0%
Laboratory Supplies	15-5036-02-00-00	10,004	75.0%				25.0%	100.0%
Office Equipment	15-5037-01-00-00	1,000			100.0%	0.0%		100.0%
Permits	15-5038-01-00-00				100.0%	0.0%		100.0%
Permits	15-5038-02-00-00	6,504			100.0%	0.0%		100.0%
Membership Dues/Fees	15-5039-01-00-00	3,000			100.0%	0.0%		100.0%
Membership Dues/Fees	15-5039-02-00-00	800			100.0%	0.0%		100.0%
Access Road Expenses	15-5047-01-00-00	47,000			100.0%	0.0%		100.0%
Storm Damage	15-5048-01-00-00	19,000			100.0%	0.0%		100.0%
Biosolids Disposal - 21B	15-5049-01-00-00	125,000	100.0%					100.0%
Contract Services Generators	15-5050-01-00-00	4,000			100.0%	0.0%		100.0%
Janitorial Services	15-5052-01-00-00	20,000			100.0%	0.0%		100.0%
Diesel Truck Maint - 31B	15-5054-01-00-00	1,000	100.0%					100.0%
Diesel Truck Maint Fuel	15-5055-01-00-00	1,000	100.0%					100.0%
Maintenance Equip. & Facilities	15-5057-01-00-00	170,000	100.0%					100.0%
Maintenance Equip. & Facilities	15-5058-01-00-00	20,000			100.0%	0.0%		100.0%
Maintenance Equip. & Facilities	15-5060-01-00-00	35,000					100.0%	100.0%
Mileage	15-5061-01-00-00	1,200	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
IT Direct	15-5077-01-00-00				100.0%	0.0%		100.0%
Group Insurance Waiver	15-5303-01-00-00	3,600	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Medicare Tax Payments for Employees	15-5305-01-00-00	2,964	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Scheduled Holiday Work	15-5306-01-00-00	3,000	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Scheduled Holiday Work	15-5306-02-00-00	1,800	54.3%	0.0%	22.9%	0.0%	22.8%	100.0%
Fringe Benefits IN to PC's & Depts.	15-5401-01-00-00	517,440	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Fringe Benefits IN to PC's & Depts.	15-5401-02-00-00	111,264	54.3%	0.0%	22.9%	0.0%	22.8%	100.0%
Standby Pay	15-5700-01-00-00	23,333	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Monthly Car Allowance	15-5705-01-00-00	4,200	62.5%	0.0%	24.5%	0.0%	13.0%	100.0%
Sales Tax	15-5801-01-00-00							0.0%
Sales Tax	15-5801-02-00-00							0.0%
Shipping/Freight	15-5802-01-00-00							0.0%
Shipping/Freight	15-5802-02-00-00							0.0%
IT Allocations in to PC's & Depts.	15-6500-01-00-00	104,819			100.0%	0.0%		100.0%
IT Allocations in to PC's & Depts.	15-6500-02-00-00	22,215			100.0%	0.0%		100.0%
Rounding		(2)						
Total		3,000,388						

**South Orange County Wastewater Authority
Member Agency Allocations**

PC 17 Operations Cost Allocation
FY 2017-18

Agency	Liquids Percentages %	Solids Percentages %	AWT Ownership %
CLB	0.16	12.72	0.00
EBSB	0.01	0.37	0.00
ETWD	0.19	14.80	0.00
MNWD	99.54	63.58	100.00
SCWD	0.10	8.53	0.00
	100.00	100.00	100.00

**South Orange County Wastewater Authority
FY 2017-18 PC 17 O&M Budget Detail and Wastewater Code Allocations**

Description	Account #	Total	Wastewater Allocation %					Total
			Liquids	Solids	C/Liquids	C/Solids	AWT	
Regular Salaries-O&M	17-5000-01-00-00	1,531,656	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Regular Salaries-O&M	17-5000-02-00-00	272,893	41.5%	10.9%	7.4%	7.4%	32.7%	100.0%
Overtime Salaries-O&M	17-5001-01-00-00	39,145	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Overtime Salaries-O&M	17-5001-02-00-00	200	41.5%	10.9%	7.4%	7.4%	32.7%	100.0%
Electricity	17-5002-01-00-00	675,000	51.5%	32.8%	5.4%	5.4%	5.0%	100.0%
Natural Gas	17-5003-01-00-00	141,000		100.0%				100.0%
Water	17-5004-01-00-00	34,000	37.0%	56.5%	6.5%			100.0%
MNWD Potable Water Supplies & Svcs.	17-5004-02-00-00		37.0%	56.5%	6.5%			100.0%
Co-generation Power Credit	17-5005-01-00-00	(250,000)		100.0%				100.0%
Chlorine/Sodium Hypochlorite	17-5006-01-00-00	350,000	4.0%				96.0%	100.0%
Polymer Products	17-5007-01-00-00	406,000	17.5%	82.2%			0.3%	100.0%
Ferric Chloride	17-5008-01-00-00	125,000	20.0%	80.0%				100.0%
Odor Control Chemicals	17-5009-01-00-00	50,000	65.0%	35.0%				100.0%
Other Chemicals - Misc.	17-5010-01-00-00	4,000			50.0%	50.0%		100.0%
Laboratory Services	17-5011-02-00-00	14,000	50.0%	25.0%			25.0%	100.0%
Grit Hauling - 21A	17-5012-01-00-00	52,000	100.0%					100.0%
Landscaping	17-5013-01-00-00	75,000			50.0%	50.0%		100.0%
Engineering - Misc.	17-5014-01-00-00	5,000			50.0%	50.0%		100.0%
Engineering - Misc.	17-5014-02-00-00	125,000			50.0%	50.0%		100.0%
Management Support Services	17-5015-01-00-00	5,000			50.0%	50.0%		100.0%
Management Support Services	17-5015-02-00-00	22,500			50.0%	50.0%		100.0%
Legal Fees	17-5017-01-00-00				50.0%	50.0%		100.0%
Contract Services Misc. - 29	17-5019-01-00-00	125,000			50.0%	50.0%		100.0%
Postage	17-5020-01-00-00				50.0%	50.0%		100.0%
Small Vehicle Expense - 31A	17-5021-01-00-00	6,000	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Miscellaneous Expense	17-5022-01-00-00	6,000			50.0%	50.0%		100.0%
Office Supplies - All	17-5023-01-00-00	10,000			50.0%	50.0%		100.0%
Petroleum Products	17-5024-01-00-00	42,000	7.4%	92.6%				100.0%
Uniforms	17-5025-01-00-00	17,000	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Small Vehicle Fuel - 37A	17-5026-01-00-00	13,000	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Insurance - Property/Liability	17-5027-01-00-00	90,249			50.0%	50.0%		100.0%
Insurance - Property/Liability	17-5027-02-00-00				50.0%	50.0%		100.0%
Small Tools & Supplies	17-5028-01-00-00	25,000			50.0%	50.0%		100.0%
Trash Disposal	17-5030-01-00-00	1,000			50.0%	50.0%		100.0%
Safety Supplies	17-5031-01-00-00				50.0%	50.0%		100.0%
Safety Supplies	17-5031-02-00-00	31,352			50.0%	50.0%		100.0%
Equipment Rental	17-5032-01-00-00	3,000			50.0%	50.0%		100.0%
Recruitment	17-5033-01-00-00		37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Travel Expense/Tech. Conferences	17-5034-01-00-00	13,833			50.0%	50.0%		100.0%
Travel Expense/Tech. Conferences	17-5034-02-00-00	3,325			50.0%	50.0%		100.0%
Training Expense	17-5035-01-00-00	15,900			50.0%	50.0%		100.0%
Training Expense	17-5035-02-00-00	1,118			50.0%	50.0%		100.0%
Laboratory Supplies	17-5036-01-00-00		50.0%	25.0%			25.0%	100.0%
Laboratory Supplies	17-5036-02-00-00	19,020	50.0%	25.0%			25.0%	100.0%
Office Equipment	17-5037-01-00-00	6,000			50.0%	50.0%		100.0%
Permits	17-5038-01-00-00				50.0%	50.0%		100.0%
Permits	17-5038-02-00-00	35,000			50.0%	50.0%		100.0%
Membership Dues/Fees	17-5039-01-00-00	3,000			50.0%	50.0%		100.0%
Membership Dues/Fees	17-5039-02-00-00	800			50.0%	50.0%		100.0%
Biosolids Disposal - 21B	17-5049-01-00-00	866,000		100.0%				100.0%
Contract Services Generators	17-5050-01-00-00	8,000			50.0%	50.0%		100.0%
Janitorial Services	17-5052-01-00-00	40,000			50.0%	50.0%		100.0%
Contract Serv - Digester Cleaning	17-5053-01-00-00	60,000		100.0%				100.0%
Diesel Truck Maint - 31B	17-5054-01-00-00	19,000		100.0%				100.0%
Diesel Truck Fuel - 37B	17-5055-01-00-00	7,000		100.0%				100.0%
Maintenance Equip. & Facilities	17-5056-01-00-00	190,000		100.0%				100.0%
Maintenance Equip. & Facilities	17-5057-01-00-00	165,000	100.0%					100.0%
Maintenance Equip. & Facilities	17-5058-01-00-00	25,000			50.0%	50.0%		100.0%
Maintenance Equip. & Facilities	17-5059-01-00-00	250,000		100.0%				100.0%
Maintenance Equip. & Facilities	17-5060-01-00-00	35,000					100.0%	100.0%
Mileage	17-5061-01-00-00	3,000	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Mileage	17-5061-02-00-00		41.5%	10.9%	7.4%	7.4%	32.7%	100.0%
MNWD Potable Water Supplies & Svcs.	17-5068-02-00-00	23,996					100.0%	100.0%
IT Direct	17-5077-01-00-00				50.0%	50.0%		100.0%
Employee Recognition	17-5101-01-00-00		37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Co-Generation Power Credit - Offset	17-5105-01-00-00	250,000	51.5%	32.8%	5.4%	5.4%	5.0%	100.0%
Group Insurance Waiver	17-5303-02-00-00	3,600	41.5%	10.9%	7.4%	7.4%	32.7%	100.0%
Medicare Tax Payments for Employees	17-5305-01-00-00	1,913	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Scheduled Holiday Work	17-5306-01-00-00	12,000	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Scheduled Holiday Work	17-5306-02-00-00	3,000	41.5%	10.9%	7.4%	7.4%	32.7%	100.0%
Operating Leases	17-5309-01-00-00	6,000	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Fringe Benefits IN to PC's & Depts.	17-5401-01-00-00	1,136,489	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Fringe Benefits IN to PC's & Depts.	17-5401-02-00-00	202,487	41.5%	10.9%	7.4%	7.4%	32.7%	100.0%
Standby Pay	17-5700-01-00-00	23,333	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Monthly Car Allowance	17-5705-01-00-00	8,400	37.5%	48.0%	3.1%	3.1%	8.4%	100.0%
Monthly Car Allowance	17-5705-02-00-00	4,200	41.5%	10.9%	7.4%	7.4%	32.7%	100.0%
Effluent Pond Cleaning	17-5706-01-00-00	90,000	100.0%					100.0%
Sales Tax	17-5801-01-00-00				50.0%	50.0%		100.0%
Sales Tax	17-5801-02-00-00				50.0%	50.0%		100.0%
Shipping/Freight	17-5802-01-00-00				50.0%	50.0%		100.0%
Shipping/Freight	17-5802-02-00-00				50.0%	50.0%		100.0%
IT Allocations in to PC's & Depts.	17-6500-01-00-00	230,502			50.0%	50.0%		100.0%
IT Allocations in to PC's & Depts.	17-6500-02-00-00	40,653			50.0%	50.0%		100.0%
Rounding		53						
Total		7,849,616						

**South Orange County Wastewater Authority
 FY 2017-18 **PC 21** O&M Budget Detail and Wastewater Code Allocations**

Description	Account #	Total	Wastewater Allocation %		
			Reach B/C/D	Reach E	Total
Regular Salaries-O&M	21-5000-02-00-00		67.0%	33.0%	100.0%
Engineering - Misc.	21-5014-02-00-00	62,500	67.0%	33.0%	100.0%
Contract Services Misc. - 29	21-5019-02-00-00		67.0%	33.0%	100.0%
Insurance - Property/Liability	21-5027-02-00-00	731	67.0%	33.0%	100.0%
Small Tools & Supplies	21-5028-01-00-00		67.0%	33.0%	100.0%
Small Tools & Supplies	21-5028-02-00-00		67.0%	33.0%	100.0%
Misc-Capital-Dilution & Metering Study	21-5069-02-00-00		67.0%	33.0%	100.0%
Fringe Benefits IN to PC's & Depts.	21-5401-02-00-00		67.0%	33.0%	100.0%
Rounding		-7			
Total		63,224			

**South Orange County Wastewater Authority
Member Agency Allocations**

PC 24 Projections
FY 2017-18

Member Agency	Outfall Flow MGD	Variable Cost Percent
CLB	1.727	16.5%
EBSD	0.050	0.5%
ETWD	2.597	24.8%
IRWD	2.554	24.4%
MNWD	2.872	27.4%
SCWD	0.679	6.5%
Total	10.479	100.0%

South Orange County Wastewater Authority
FY 2017-18 PC 24 O&M Budget Detail and Wastewater Code Allocations

Description	Account #	Total	Wastewater Allocation %			
			Var 5%	Var 95%	Fixed	Total
Regular Salaries-O&M	24-5000-01-00-00	6,693	5.0%	95.0%		100.0%
Regular Salaries-O&M	24-5000-02-00-00	85,625	5.0%	95.0%		100.0%
Overtime Salaries-O&M	24-5001-01-00-00	346	5.0%	95.0%		100.0%
Overtime Salaries-O&M	24-5001-02-00-00	200	5.0%	95.0%		100.0%
Electricity	24-5002-01-00-00	1,000	5.0%	95.0%		100.0%
Electricity	24-5002-02-00-00		5.0%	95.0%		100.0%
Engineering - Misc.	24-5014-02-00-00	20,000			100.0%	100.0%
Management Support Services	24-5015-02-00-00	27,504			100.0%	100.0%
Legal	24-5017-02-00-00	2,000			100.0%	100.0%
Insurance - Property/Liability	24-5027-02-00-00	5,366			100.0%	100.0%
Safety Supplies	24-5031-02-00-00	1,000	5.0%	95.0%		100.0%
Travel Expense/Tech. Conferences	24-5034-02-00-00	2,484			100.0%	100.0%
Laboratory Supplies	24-5036-02-00-00	17,000	5.0%	95.0%		100.0%
Permits	24-5038-02-00-00	131,992			100.0%	100.0%
Offshore Monitoring - 20A	24-5044-02-00-00	22,000			100.0%	100.0%
Effluent Chemistry - 20C	24-5046-02-00-00	30,000	5.0%	95.0%		100.0%
Maintenance Equip. & Facilities(Common)	24-5058-01-00-00	1,000	5.0%	95.0%		100.0%
Inspections/Port Cleaning	24-5067-02-00-00	35,000			100.0%	100.0%
Misc-Capital-Dilution & Metering Study	24-5069-02-00-00				100.0%	100.0%
Scheduled Holiday Work	24-5306-01-00-00	100	5.0%	95.0%		100.0%
Scheduled Holiday Work	24-5306-02-00-00	3,112	5.0%	95.0%		100.0%
Fringe Benefits IN to PC's & Depts.	24-5401-01-00-00	4,966	5.0%	95.0%		100.0%
Fringe Benefits IN to PC's & Depts.	24-5401-02-00-00	63,534	5.0%	95.0%		100.0%
IT Allocations in to PC's & Depts.	24-6500-01-00-00	1,007			100.0%	100.0%
IT Allocations in to PC's & Depts.	24-6500-02-00-00	12,289			100.0%	100.0%
Rounding		(22)				
Total		474,196				

Appendix D

OUTFALL COST MEMO

The following memo was developed by SOCWA staff to examine potential options for outfall flow capacity costs to meet requests from the SOCWA Board.



South Orange County Wastewater Authority

Memorandum

DATE: March 20, 2019

TO: SOCWA Member Agency Finance and Engineering Managers

FROM: Betty Burnett, General Manager

STAFF CONTACT: Amber Baylor, Director of Environmental Compliance
Jim Burror, Director of Operations

SUBJECT: Fixed Costs Recommendation for the Ocean Outfalls

National Pollutant Discharge Elimination System (NPDES) Permit Flow Requirements

The NPDES permit expires in five-year cycles, and annual costs are determined by the permitted flows. Each discharge that is included in the permit requires submittal of the design flow capacity included in the permit application. SOCWA submits the NPDES permits to the San Diego Regional Water Quality Control Board (SDRWQCB) on behalf of member agencies after input from member agencies through the NPDES Technical Advisory Group. SOCWA manages two NPDES permits: the Aliso Creek Ocean Outfall (ACOO) and the San Juan Creek Ocean Outfall (SJCOO). The monitoring costs to comply with the NPDES permits do not change based on flow.

The following table includes the flows that were approved by the TAG for ACOO & SJCOO in 2015. The Report of Waste Discharge was submitted to the SDRWQCB on October 31, 2016, due to the requirement that the permit application be submitted to the SDRWQCB 180 days prior to the expiration of the permits which were May 31, 2016. The permit is under administrative relief due to the expiration of the permits. The SDRWQCB has projected that the ACOO & SJCOO will be brought to the Board at the December 2019 meeting.

ACOO	SJCOO
<ul style="list-style-type: none"> • Regional Treatment Plant: 12.0mgd • Coastal Treatment Plant: 6.7mgd • Los Alisos Water Recycling Plant: 7.5mgd • El Toro Water Reclamation Plant: 6.0mgd • Irvine Desalter Project: 1.0mgd • Shallow Ground Water Unit: 0.85mgd • Aliso Creek Water Harvesting Unit: 0.32mgd 	<ul style="list-style-type: none"> • JB Latham Treatment Plant: 13.0mgd • Chiquita Water Reclamation Plant: 9.0mgd • 3A Water Reclamation Plant: 6.0mgd • City of San Clemente Water Reclamation Plant: 6.98mgd • City of San Juan Ground Water Plant: 2.2mgd • South Coast Water District Ground Water Recovery Facility: 0.6mgd • City of San Clemente Segunda Deschecha Runoff Plant: 1.0mgd • Lake Mission Viejo Brine: 1.0mgd
Total = 34.37mgd	Total = 39.78mgd

Fee Determination Calculation

The California Code of Regulations, Title 23, Division 3, Chapter 9, Article 1 sets the Fee Structure for the water quality fee structures applied in permits. In FY 16-17 it was identified by the California Department of Finance that the State Water Resources Control Board would need to increase fees due to a pending budget shortfall. However, in the FY 17-18 there was a one-time fee reduction of 12.6% that was not seen in FY17-18 but was applied to FY18-19. The NPDES annual fee now equals \$2,268 plus 4,011 multiplied by the permitted flow, in mgd. If there is no permitted effluent flow specified, the fee shall be based on the design flow of the facility. NPDES permitted industrial discharges with a threat/complexity rating of 1A (SJCOO & ACOO both qualify) require an additional \$15,000 and public wastewater treatment facilities with approved pretreatment programs are subject to a surcharge of \$10,000.

	ACOO	SJCOO
FY	Fee (\$)	Fee (\$)
14-15	\$137,375	\$143,454
15-16	\$137,375	\$143,454
16-17	\$137,375	\$143,454
17-18	\$137,375	\$143,454
18-19	\$165,126	\$172,815

Table 1: Cost of Permitted flows for ACOO & SJCOO FY 14-15 through FY 18-19

Unless there is an increase in fees associated with the permit from the SWRCB fee change, the fee structure should stay consistent as demonstrated in FY 14-15 through FY 17-18. The only way to change the cost of the permit is to adjust the flows associated with each facility in the next ROWD or file an amendment in the current

ROWD for a reduction of flows. Tables 2 & 3 provide an analysis of the average flow at each of the facilities for 2018.

Agency	2017 Avg Annual Daily Flow MGD	2018 Avg Annual Daily Flow MGD	2017 Peak Daily Flow MGD	2018 Peak Daily Flow MGD	Outfall Ownership MGD
CLB	1.677	1.555	3.201	2.245	5.500
EBSD(1)	0.053	0.048	0.060	0.052	0.390
ETWD	2.398	2.330	5.997	7.108	8.151
IRWD	2.290	2.416	7.001	6.337	7.880
MNWD	2.788	2.541	13.680	9.330	21.924
SCWD	0.995	0.320	2.847	1.559	6.155
Total	10.203	9.210	32.786	26.631	50.000

(1) Daily data is not available.

Table 2: ACOO Flows 2017 and 2018 Flows

Agency	2017 Avg Annual Daily Flow MGD	2018 Avg Annual Daily Flow MGD	2017 Peak Daily Flow MGD	2018 Peak Daily Flow MGD	Outfall Ownership MGD
CSC	2.106	2.455	5.550	4.420	13.300
SCJC	2.594	2.486	6.639	3.933	8.860
MNWD	1.400	1.400	3.833	2.292	12.410
SCWD	1.822	1.837	5.625	3.976	9.970
SMWD	2.993	1.169	11.523	5.846	35.460
Total	10.916	9.347	33.170	20.467	80.000

Table 3: SJCOO 2017 and 2018 Flows

Cost Impact

Using the flows with the FY 18-19 water quality fee structure, the annual cost could drop to \$64,446 for ACOO and \$65,381 for SJCOO. However, the regulatory risk associated with using the reduced flows includes high flow years and an anti-back sliding trigger that will not allow for more flow should the facility need it. The regulatory risk associated with the savings is displayed in Table 4 below.

	ACOO		SJCOO
Current Permit Cost	\$165,126		\$172,815
2017 Peak Flow Cost	\$137,929		\$101,606
Difference	\$27,197		\$71,209
Capital Share - Fixed Costs versus Variable			
Agency	Current	2017 Peak Flow	Potential Savings/Cost
CLB	\$18,164	\$13,466	\$4,697
EBSD	\$1,288	\$252	\$1,036
ETWD	\$26,919	\$25,229	\$1,690
IRWD	\$26,024	\$29,453	(\$3,429)
MNWD	\$99,212	\$11,741	\$87,471
SCWD	\$41,864	\$29,208	\$12,656
CSC	\$28,730	\$17,001	\$11,730
CSJC	\$19,139	\$20,336	(\$1,197)
SMWD	\$76,600	\$35,297	\$41,303

Table 4: Permit cost distribution for reduced flows based on fixed cost capacity

Staff Recommendation:

The monitoring costs and labor costs remain fixed as those costs do not change with the changing flows on an annual basis. Staff recommends using the fixed cost methodology for PC 5 & PC24. Staff also recommends not reducing the permitted flows from each treatment plant included in the NPDES permits.

This is because reducing the permitted value will expose the agencies to the following risks:

- 1) An exceedance of the average permitted value over the monthly average result in a permit violation and an unauthorized discharge violation, or spill, with minimum mandatory penalties of \$10 per gallon.
- 2) If the permitted discharge value is lowered, the RWQCB will not allow for the permitted value to be increased, due to anti-degradation prohibitions in the Clean Water Act, without physical modifications to the outfall. This includes the associated design, assessment, permit application, and public hearings required for the approval on an increased permitted flow. The costs would be similar to

the costs incurred every five years to renew the permit, plus the capital costs to modify the outfall system. Past estimates for this work is between \$250,000 to \$500,000, and again the outcome of the process is subject to the approval of the RWQCB.

Agenda Item

16

Budgeted: N/A

Meeting Date: January 22, 2026

TO: Engineering Committee
FROM: Amber Boone, General Manager
SUBJECT: FY 26-27 Capacity vs. Flows Budget Discussion

Summary

The following provides the starting point in the discussion on the budgeted flows for SOCWA Member Agencies. The staff report includes the capacity agreement tables per PC and the calendar flow and solids summaries for Project Committees 2, 12, and 15. The intent of this staff report is to provide a comparison of use versus capacity as part of the overall administrative efficiency and transparent methodology discussion for inclusion in the FY 25-26 O&M budget.

Discussion

Captured herein are the methodologies employed and the results by member agency based on the raw and calculated data distributed to Engineering Committee members for review and comment. Please note that PC5 and PC24 are attributed to fixed costs. Please note that the budget will allocate costs to MNWD, IRWD, and TCWD based on the capacity transfer amounts in the restructuring agreements.

PC2

Table 1 provides the updated percentages used in the budgeting process based on the approved agreements. Please note that the use audit will allocate costs to MNWD based on flows on behalf of SCWD.

Table 1: PC2 Liquids and Solids Summary Table

Member Agency	Liquids (mgd)	Solids (mgd)	Solids (lbs)	Common - S (%)	Common-L (%)
SCWD	6.75	7.7	16,055	41.62	51.92
SMWD	6.25	10.8	22518	58.38	48.08
Total	13.00	18.5	38,573	100.00	100.00

Table 2: PC2 2025 Calendar Year Flows and Solids

PC2 - JB Latham Plant		
2025 Liquids Summary (mgd)		
Member Agency	Total Avg. Flow (mgd)	Total Billing (%)
San Juan Trunkline ⁽¹⁾	2.21	
MNWD ⁽²⁾	1.4	16.50 %
SCWD	1.52	17.90 %
Oso-Trabuco Trunkline/SMWD ^{(1),(2),(3)}	4.75	65.60 %
	9.89	100.00 %
2025 Solids Summary Loading (mgd)		
Member Agency	Total Solids (pounds)	Total Billing (%)
San Juan Trunkline ⁽¹⁾	6542.41	
MNWD ⁽²⁾	4235.00	12.91 %
SCWD	5825.34	17.76 %
Oso-Trabuco Trunkline/SMWD ^{(1),(2),(3)}	16198.99	69.33 %
	32801.74	100.00%
<p>(1) San Juan Trunkline was previously allocated to the City of San Juan Capistrano (CSJC). With the acquisition of CSJC's flow by SMWD, the flows are included in SMWD's total flows and solids loading and included for clarity in total flows and solids contribution due to sharing of the Oso-Trabuco line by SMWD and MNWD.</p> <p>(2) Please refer to the MNWD & SMWD Agreement from 2018 for flow/solids splitting in the Oso-Trabuco line.</p> <p>(3) SMWD Includes Flow from San Juan Creek trunkline flow plus Oso Trabuco flow split minus the 1.4mgd flow constant from MNWD</p>		

Table 3: Combined Capacity Flows, Solids, and Percentage Share

SOCWA Member Agency	Liquids (mgd)	Percent (%)	Solids (pounds)	Percent (%)
SCWD	2.92	29.53%	10060.34	20.36%
SMWD	6.97	70.47%	39344.14	79.64%
Total	9.89	100.00%	49404.48	100.00%

PC12

Past practice has been to budget costs based on calendar year flow. The reorganization agreements indicated SOCWA has agreed to providing the following services:

- a. Recycled Water Permitting Services
- b. Pretreatment Program Services
- c. Laboratory Services
- d. Permitting Services

PC12 represents a portion of the Environmental Technical Services team. Recycled water permitting services, through the form of labor, have been the primary cost driver in this department. SOCWA is evaluating a combined structure of all permit and environmental technical services based on the reorganization agreements. SOCWA staff will present the labor component analysis at the next Finance Committee meeting.

Table 4: Calendar Year Production 2025

PC 12 Recycled Water		
Master Recycled Water Permit		
2025		
Agency	Region 9 Recyled Production acft	% RW Produced %
MNWD	5138.95	41.43%
SCWD	691.52	5.57%
SMWD	6122.92	49.36%
TCWD	450.94	3.64%
Total	12404.33	100%

PC15

Table 5 provides the updated percentages used in the approved agreements and Table 6 provides the actual flows for Calendar Year 2025 for comparison.

Table 5: PC15 Liquids and Solids Summary Table

Agencies	Liquids (mgd)	AWT (%)	Common (%)
CLB	3.64	0	54.3
EBSD	0.2	0	3.00
SCWD	2.86	100	42.7
Total	6.7	100	100.00

Table 6: PC15 Liquids and Solids 2025 Summary Table

PC 15 Actual Flows 2025		
Coastal Treatment Plant		
Member Agency	Plant Flows MGD	Plant Flow Percent
CLB	1.38	55%
EBSD	.06	3%
SCWD	1.06	42%
Total	2.50	100%

Previous Committee Review

This is the first time the CY 2025 flows and solids used for FY 2026-27 will be before the Engineering Committee for discussion and comment.

Recommended Action: Committee Discussion/Direction/Action