

AGENDA
IRVINE RANCH WATER DISTRICT
ENGINEERING AND OPERATIONS COMMITTEE
TUESDAY, JULY 20, 2021

CALL TO ORDER 1:30 p.m.

ATTENDANCE Committee Chair: John Withers _____
Committee Member: Karen McLaughlin _____

<u>ALSO PRESENT</u>	Paul Cook	_____	Kevin Burton	_____	Wendy Chambers	_____
	Jose Zepeda	_____	Paul Weghorst	_____	Cheryl Clary	_____
	Rich Mori	_____	Eric Akiyoshi	_____	Richard Mykitta	_____
	Kelly Lew	_____	Jim Colston	_____	Ken Pfister	_____
	Lars Oldewage	_____	Malcolm Cortez	_____	Scott Toland	_____
	Jacob Moeder	_____	Bruce Newell	_____	Mitch Robinson	_____
	Belisario Rios	_____		_____		_____
		_____		_____		_____
		_____		_____		_____

This meeting will be held in person at the District's headquarters located at 15600 Sand Canyon Avenue, Irvine, California. Members of the public may attend in person. In addition, members of the public may observe the meeting via Webex and may submit comments via the "Chat" function. To observe via Webex, please use the link and information below.

Via Web: <https://irwd.webex.com/irwd/j.php?MTID=m5814487175466132ebd471d17ced4716>
Meeting Number: 146 441 0356
Password: SNe7AqEXa68

After joining the meeting, in order to ensure all persons can participate and observe the meeting, please select the "Call in" option and use a telephone to access the audio for the meeting by using the call-in information and attendee identification number provided.

As courtesy to the other participants, please mute your phone when you are not speaking.

PLEASE NOTE: Webex observers of the meeting will be placed into the Webex lobby when the Committee enters closed session. Participants who remain in the "lobby" will automatically be returned to the open session of the Committee once the closed session has concluded. Observers joining the meeting while the Committee is in closed session will receive a notice that the meeting has been locked. They will be able to observe the meeting once the closed session has concluded.

PUBLIC COMMENT NOTICE

If you wish to address the Committee on any item, please submit a request to speak via the "chat" feature available when joining the meeting virtually. Remarks are limited to three minutes per speaker on each subject. You may also submit a public comment in advance of the meeting by emailing comments@irwd.com before 9:00 a.m. on Tuesday, July 20, 2021.

COMMUNICATIONS

1. Notes: Burton
2. Public Comments
3. Determine the need to discuss and/or take action on item(s) introduced that came to the attention of the District subsequent to the agenda being posted.

INFORMATION

- | | |
|--|--|
| 4. <u>LAWRP MODERNIZATION PROJECT UPDATE – MOEDER / BURTON</u> | |
|--|--|

Recommendation: Receive and file.

ACTION

- | | |
|--|--|
| 5. <u>DISTRICT-WIDE EMERGENCY GENERATOR DIESEL FUEL STORAGE CONSULTANT SELECTION – CHO / CORTEZ / BURTON</u> | |
|--|--|

Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement with Psomas in the amount of \$428,713 for engineering design services for the District-wide Emergency Generator Diesel Fuel Storage, Projects 11536 and 11537.

OTHER BUSINESS


6. Directors' Comments
7. Adjourn

Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the above-named Committee in connection with a matter subject to discussion or consideration at an open meeting of the Committee are available for public inspection in the District's office, 15600 Sand Canyon Avenue, Irvine, California ("District Office"). If such writings are distributed to members of the Committee less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Committee Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available electronically via the Webex meeting noted. Upon request, the District will provide for written agenda materials in appropriate alternative formats, and reasonable disability-related modification or accommodation to enable individuals with disabilities to participate in and provide comments at public meetings. Please submit a request, including your name, phone number and/or email address, and a description of the modification, accommodation, or alternative format requested at least two days before the meeting. Requests should be emailed to comments@irwd.com. Requests made by mail must be received at least two days before the meeting. Requests will be granted whenever possible and resolved in favor of accessibility.

July 20, 2021

Prepared by: J. Moeder / R. Mori

Submitted by: K. Burton

Approved by: Paul A. Cook 

ENGINEERING AND OPERATIONS COMMITTEE

LAWRP MODERNIZATION PROJECT UPDATE

SUMMARY:

In January 2021, staff provided a summary of the completed Sewage Treatment Master Plan (STMP) to the Board. The STMP identified an overall sewage management strategy that identified near-term and long-term recommendations. One of the identified near-term recommendations is to replace the existing Los Alisos Water Recycling Plant (LAWRP) with a new, modernized water recycling plant. During its meeting on January 25, 2021, the Board provided comments on the LAWRP Modernization project and requested staff to provide additional information on some of the considerations discussed during the meeting. At this Committee meeting, staff will provide a presentation that includes the requested information.

BACKGROUND:

The STMP provides the framework for handling IRWD's future ultimate sewage flows. The framework is structured in a manner that identifies an overall strategy, which is organized into near-term recommendations and long-term recommendations. One of the identified near-term recommendations includes replacing LAWRP with a new, modernized water recycling plant.

Based on discussions with the Board in January 2021, staff completed several evaluations prior to proceeding with the LAWRP Modernization project. At this meeting, staff will provide an overview of the completed evaluations and a summary of the next steps in the project. The presentation is provided as Exhibit "A".

FISCAL IMPACTS:

Project 01477 for the LAWRP Modernization is included in the FY 2021-2022 Capital Budget and is funded 100% through Sewer Replacement funds.

ENVIRONMENTAL COMPLIANCE:

This project is subject to the California Environmental Quality Act (CEQA). In conformance with the California Code of Regulations Title 14, Chapter 3, Section 15004, the appropriate environmental document will be prepared when "meaningful information" becomes available.

RECOMMENDATION:

Receive and file.

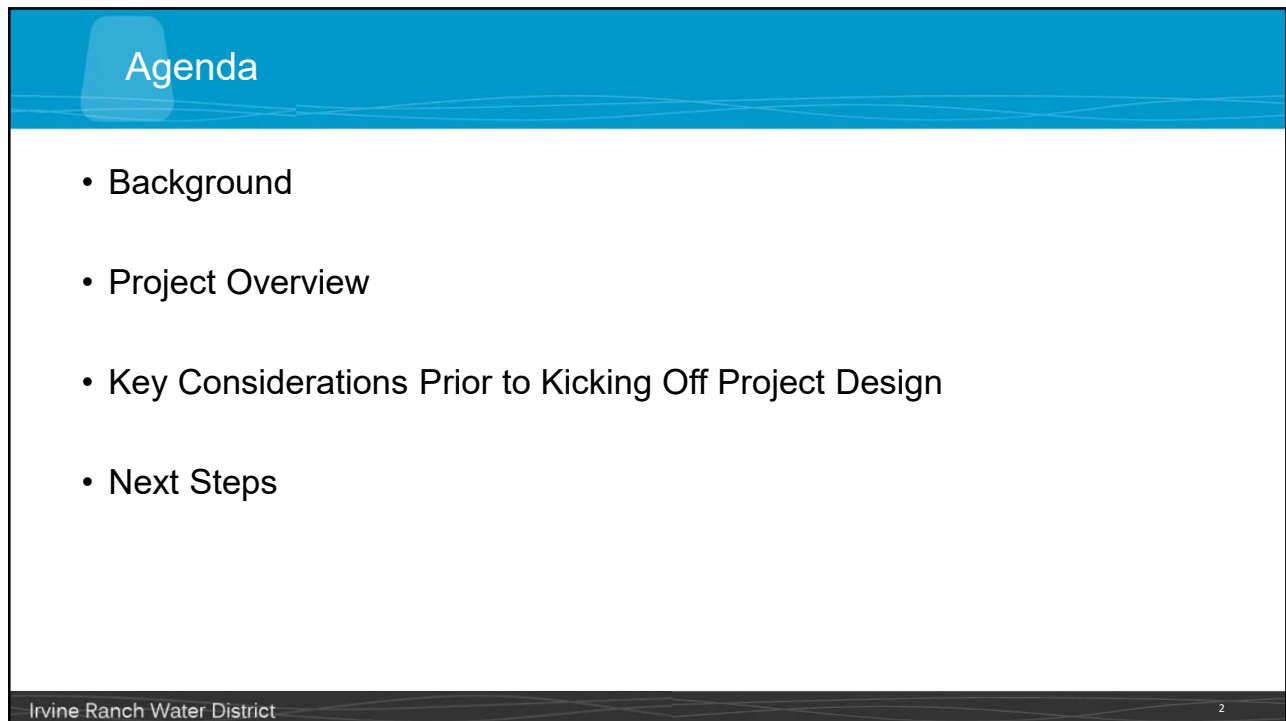
LIST OF EXHIBITS:

Exhibit "A" – LAWRP Modernization Project Update Presentation

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Background

- In January 2021, staff presented a summary of the Final Sewage Treatment Master Plan (STMP) to the Board
 - Key takeaway from STMP is need to replace LAWRP with a modernized treatment process
 - Board requested additional information prior to kicking off the project design



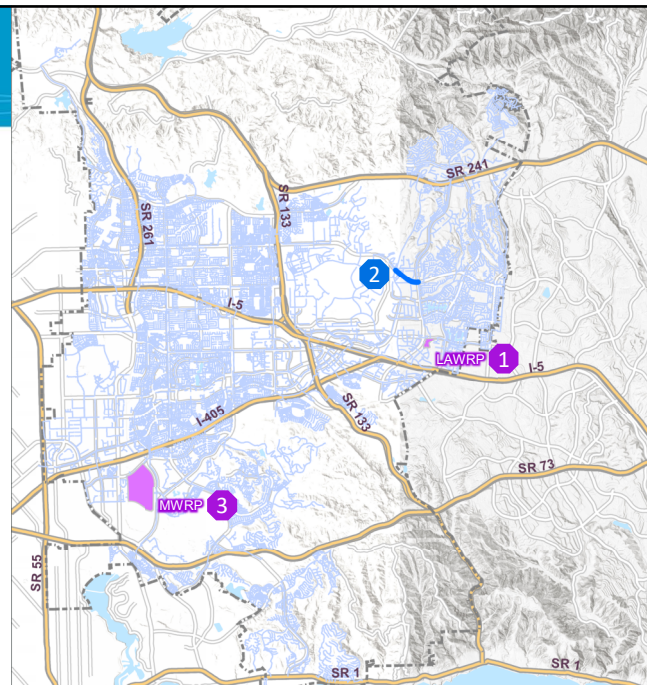
Irvine Ranch
water district
Sewage Treatment Master Plan
VOLUME 1 | REPORT
Nov 2021

IR

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Recommended Near Term Projects

- 1 **LAWRP Phase 1 Modernization** (6.25 mgd)
 - Out-dated treatment technology
 - Elevated ammonia-nitrogen and TDS levels restrict storage of LAWRP RW in IRWD's seasonal storage reservoirs and limit its use to Lake Forest
- 2 **MWRP Tributary Gravity Diversion to LAWRP Tributary** (1.9 mgd)
 - Balance sewer and recycled water demands
 - Allows MWRP to remain at a capacity of 28 mgd
- 3 **MWRP Phase 3 MBR Expansion** (28 mgd)
 - Projected increases in ammonia concentrations and plant influent flows may create loading capacity constraints in the future
 - Future project



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LAWRP Site Overview

Headworks

Ponds 1 and 2: High-Rate Aerated
Ponds for BOD Removal Only

Pond 3 & 4: Solids Stabilization
and Storage

Pond 5: Final Clarification and
Equalization

SOCWA Pump Station

Tertiary Sedimentation &
Filtration

Chlorine Contact Basin &
RW Pump Stations



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LAWRP Site Overview

Demolition all
existing treatment
processes

Protect-in-Place:

SOCWA Pump Station

Chlorine Contact Basin &
RW Pump Stations



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Key Considerations Prior to Kicking Off Project Design

- Treatment process selection
- Temporary sewer flow diversion during construction
- Solids handling
- Other Items
 - Rehabilitation of Effluent Transmission Main – Reach A
 - SMWD Sewer Flows to LAW RP

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Treatment Process Selection

- STMP identified evaluated Aerobic Granular Sludge (AGS) and Membrane Bioreactor (MBR) as the two highest rated treatment processes.
- Staff evaluated both technologies in detail including holding multiple technology-focused workshops with several consultants
- Staff selected MBR for the following major reasons:
 - Consistent and reliable high-quality effluent
 - Familiarity with MWRP treatment process
 - Membranes provide a physical barrier that prevent microorganisms from passing through, which allows continuous treatment during process upsets
 - Proven track record with numerous installations



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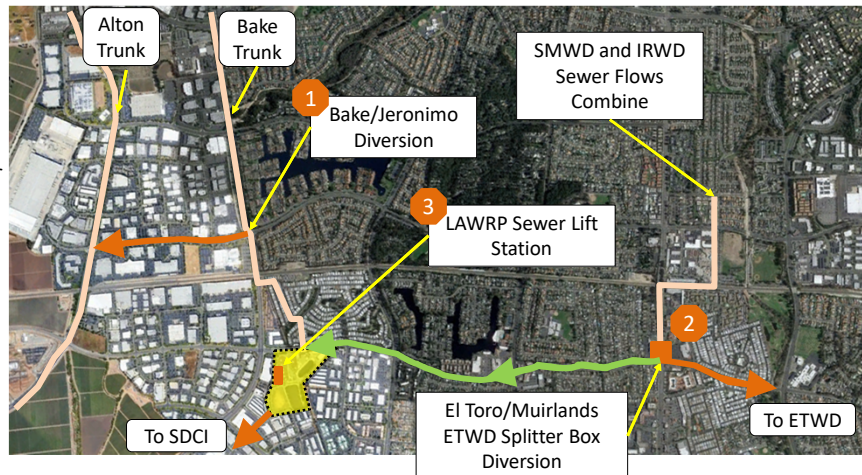
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Sewer Flow Diversions During Construction

Three separate diversions will occur:

- 1 Gravity Diversion on Jeronimo Road between Bake Parkway and Alton Parkway
 - 3,300-ft of 15-inch sewer
 - 1.4 mgd diversion to MWRP
- 2 Diversion to El Toro Water District (ETWD) from splitter box on El Toro Road
 - Up to 1.7 mgd to ETWD
- 3 Sewer Lift Station to pump remaining influent LAWRP sewer flows to MWRP
 - Up to 2.4 mgd lift station



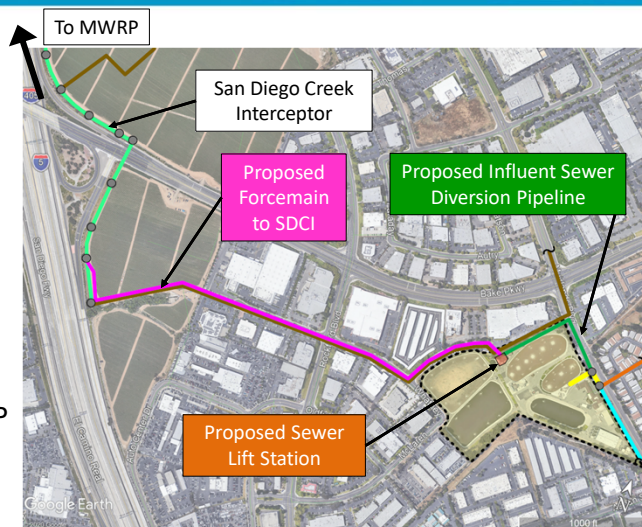
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LAWRP Sewer Lift Station

- Lift station designed for average flow of up to 2.4 mgd
- Approximately 3,900-ft of 14-inch forcemain
- Approximately 70,000-gallon wetwell
- Other Lift Station Uses:
 - Emergency sewer bypasses from LAWRP to MWRP
 - Convey thin sludge from LAWRP to MWRP
 - Dewatering lagoons prior to demolition



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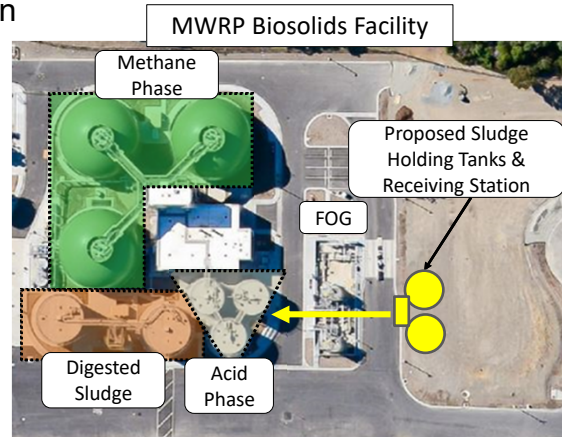
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LAWRP Solids Handling Strategy

- Two modes of handling sludge from LAWRP Primary Sedimentation Basins and MBRs will be integrated into the design

- Pump thin sludge from LAWRP Sewer Lift Station to SDCI for treatment at MWRP
 - Integrate design features into lift station design with anticipation of future sludge conveyance
 - Sending thin sludge to MWRP reduces available treatment capacities at MWRP
- Truck thickened sludge to MWRP Biosolids Facility
 - Integrate sludge receiving station into existing FOG receiving station
 - 8-12 sludge truck trips per day anticipated



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Other Concurrent Projects

- Rehabilitation of Effluent Transmission Main (ETM) - Reach A
 - 100% Owned by IRWD
 - Constructed in 1979 with Reinforced Plastic Mortar Pipe (RPMP) also called techite pipe
 - Failures of techite pipeline over the years
 - Tetra Tech completed rehabilitation evaluation in 2003 for SOCWA
 - Bypass pumping is large part of rehab cost
 - Update rehabilitation evaluation, design improvements, and rehabilitate Reach A during LAWRP construction



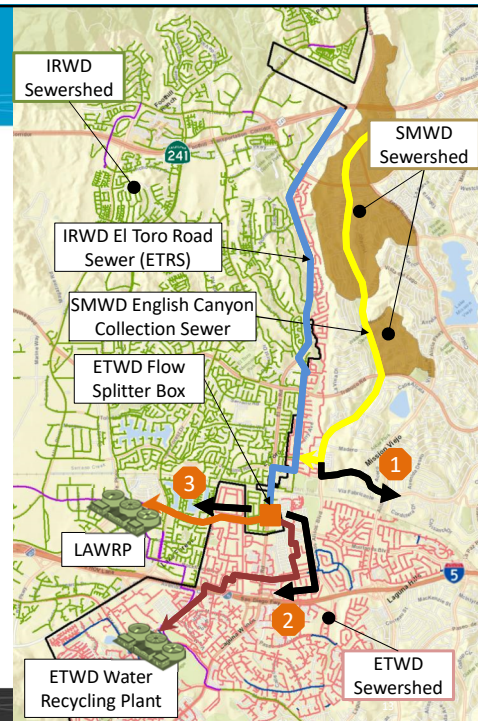
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SMWD Sewage Flows to LAWRP

- Santa Margarita Water District (SMWD) currently sends about 0.5 mgd of sewage to LAWRP
- SMWD is evaluating options for treatment of its English Canyon flows. SMWD's order of preference is as follows:
 - 1 Moulton Niguel Water District's Plant 3A
 - SMWD already has excess capacity, and they get RW back
 - 2 ETWD's Water Recycling Plant
 - Capital buy-in cost at ETWD is less expensive than treatment at LAWRP
 - 3 LAWRP
- SMWD will make its final decision by later this year



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Next Steps

- Prepare and issue RFP for LAWRP Modernization Design Services, Sept 2021
- After consultant selection for LAWRP Modernization Project, prepare and issue RFP's for design of the following projects
 - Jeronimo Gravity Diversion
 - Forcemain from LAWRP to SDCI
 - MWRP Sludge Receiving Station
 - ETM Reach A Rehabilitation



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Questions/Discussion

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Terms Sheet

Abbreviation	Definition
AGS	Aerobic Granular Sludge
ETWD	El Toro Water District
FOG	Fats, Oils, and Grease
LAWRP	Los Alisos Water Recycling Plant
MBR	Membrane Bioreactor
MNWD	Moulton Niguel Water District
MWRP	Michelson Water Recycling Plant
RPMP	Reinforced Plastic Mortar Pipe
SDCI	San Diego Creek Interceptor
SMWD	Santa Margarita Water District
SOCWA	South Orange County Wastewater Authority
STMP	Sewage Treatment Master Plan
TDS	Total Dissolved Solids

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July 20, 2021

Prepared by: H. Cho / M. Cortez

Submitted by: K. Burton

Approved by: Paul A. Cook *P.A.C.*

ENGINEERING AND OPERATIONS COMMITTEE

DISTRICT-WIDE EMERGENCY GENERATOR DIESEL FUEL STORAGE CONSULTANT SELECTION

SUMMARY:

The District-wide Emergency Generator Diesel Fuel Storage project will increase the capacity of diesel fuel storage for emergency generators serving 11 domestic water pump stations and sewage lift stations to allow for 72 hours of operation in emergency situations. The project will also replace the emergency generators at three domestic water pump stations with new generators and diesel fuel storage tanks sized to provide an operational supply for 72-hours. Staff recommends the Board authorize the General Manager to execute a Professional Services Agreement with Psomas in the amount of \$428,713 for engineering design services for the District-wide Emergency Generator Diesel Fuel Storage project.

BACKGROUND:

IRWD operates many of its important water and sewer facilities with onsite emergency generators to provide electricity during power outages. Currently, these generators generally have enough fuel to power each facility for approximately 24 hours. This project will increase the amount of diesel fuel stored at 11 domestic water pump stations and sewage lift stations to provide 72 hours of operation. The 11 domestic water pump stations and sewage lift stations are:

- Foothill Zone 4-6 Pump Station
- Coastal Zone 6-7 Pump Station
- Portola Zone 8-9 Pump Station
- Portola Zone 6-8 Pump Station
- Lake Forest Zone 5-6 West (2-3 West) Pump Station
- Lake Forest Zone 5-6 East (2-3 East) Pump Station
- Michelson Lift Station
- University Lift Station
- Newport Coast Lift Station
- Coyote Canyon Lift Station
- Cañada Lift Station

This project will also replace the existing emergency generators with new generators and fuel tanks sized to provide the 72 hours of operational storage at the Santiago Zone 5-6 Pump Station, Cabinland Pump Station, and Coastal Ridge Lift Station. A replacement generator is needed at Santiago Zone 5-6 Pump Station since the generator at this pump station operates the most frequently of all the sites due to the occurrences of red-flag winds, fires and power outages in this area. In addition, the generator is the least fuel-efficient generator located at pump stations, is nearly 30 years old, and has reached the end of its service life. The generators at Cabinland Pump Station and Coastal Ridge Lift Station require replacement as the generators need frequent

maintenance and do not start when remotely called to operate requiring staff to manually start the generator when needed.

A location map of these 14 project sites is provided as Exhibit “A”.

Separate capital projects are currently in design or will shortly begin design to upgrade the fuel storage at other facilities in the District not included in this project, e.g., MWRP Operations Center, Baker Water Treatment Plant, and Sand Canyon Headquarters.

Consultant Selection:

Staff issued a request for proposal for the design to four consultants: Arcadis, Dudek, GHD and Psomas. All four firms were responsive and submitted proposals. Staff evaluated the proposals based on each consultant’s project approach, project team and relevant experience. Staff recommends the selection of Psomas.

While all firms provided proposals that reflected a good understanding of the scope of work, Dudek’s and Psomas’ proposals reflected a more efficient work effort and commensurate fees required to complete the design. Staff recommends the selection of Psomas as it completed the Santiago Canyon Domestic Water Pump Station Emergency Generators engineering design several years ago on time and within budget. Additionally, Psomas’ project manager is Nancy Baker, who is well qualified and has managed engineering designs on previous IRWD projects including the San Joaquin Marsh Improvements and the Rattlesnake and Irvine Lake Pipeline Strainer Replacement. The consultant evaluation matrix and Psomas’ proposal are provided as Exhibits “B” and “C”, respectively.

FISCAL IMPACTS:

Projects 11536 and 11537 are included in the FY 2021-22 Capital Budget. The current budgets are sufficient for the engineering design work.

ENVIRONMENTAL COMPLIANCE:

This project is subject to the California Environmental Quality Act (CEQA). In conformance with the California Code of Regulations Title 14, Chapter 3, Section 15004, the appropriate environmental document will be prepared when meaningful information becomes available.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement with Psomas in the amount of \$428,713 for engineering design services for the District-wide Emergency Generator Diesel Fuel Storage, Projects 11536 and 11537.

LIST OF EXHIBITS:

- Exhibit “A” – Location Map
- Exhibit “B” – Consultant Selection Evaluation Matrix
- Exhibit “C” – Psomas Proposal

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Legend

- Domestic Water Pump Station
- Sanitary Sewer Lift Station
- IRWD Boundary

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

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EXHIBIT "B"

District Wide Emergency Generators Diesel Fuel Storage - Design Engineering Services

	Weights	Arcadis	Dudek	GHD	Psomas
TECHNICAL APPROACH	50%				
Project Approach	50%	3	2	4	1
Scope of Work & Sheet Count	50%	4	2	3	1
Weighted Score (Technical Approach)		3.50	2.00	3.50	1.00
EXPERIENCE	50%				
Team	20%	3	2	4	1
Project Manager	40%	3	2	4	1
Mechanical Engineer	20%	1	2	4	3
Electrical Engineer	20%	3	2	4	1
Weighted Score (Experience)		2.60	2.00	4.00	1.40
Principal-in-Charge/Technical Advisor Project Manager		Ufuk Erdal Dan Ryan Alex Duchon, Ludwig Perez Harmik Aghanian	Bob Ohlund Mike Metts Brandon Lacap, Kasey Harvey Bob Ohlund	Greg Watanabe Ulysses Fandino Francisco Gutierrez Dan Reiter	Joe Boyle Nancy Baker Krista Kausen Joe Boyle
Project Engineer QA/QC					
Electrical		Justin Lee, Jeff Sokol	Alan Carrie	Mehdi Mardi	Casey Cushman
I&C		Raluca Constantinescu, Youssef Al-shanti	Alan Carrie	Mehdi Mardi	Casey Cushman
Mechanical		Dan Ryan Kevin Clinch, Stephanie Holst	-	Terry Wong	-
Structural		Carolina Valliacis, Shivani Shrotriya	-	Jessica Napier	Hernan Montoya
Permitting			Jennifer Reed	-	-
Civil		-	-	Pedro Alvarez	-
Constructability Survey		-	-	Jim Winter	-
					Christopher Riehle
COMBINED WEIGHTED SCORE		3.05	2.00	3.75	1.20
Sheet Count					
General		2	3	4	3
Civil		44	16	14	34
Mechanical		15	3	14	
Electrical		17	16	17	18
Instrumentation		14	16		
Total		92	54	49	55
		Man-hours	Man-hours	Man-hours	Man-hours
Task 1 Project Management		322	112	183	164
Task 2 Preliminary Design		858	406	439	584
Task 3 Final Design		2,663	1,272	961	1,860
TOTAL HOURS		3,843	1,790	1,583	2,608
FEE					
Task 1 Project Management		\$79,354	\$27,320	\$44,725	\$33,170
Task 2 PDR		\$169,050	\$83,290	\$92,974	\$100,120
Task 3 Final Design		\$475,256	\$248,560	\$197,232	\$295,423
Total		\$723,660	\$359,170	\$334,931	\$428,713
Average \$/manhrs		188	201	212	164
FORCED RANKINGS:		3	2	4	1
1 - First					
2 - Second					
3 - Third					
4 - Fourth					

Professional Liability Insurance	Yes	Yes	Yes	Yes
Comm. General Liability Insurance	Yes	Yes	Yes	Yes

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EXHIBIT "C"

ENGINEERING DESIGN SERVICES FOR THE DISTRICT-WIDE GENERATOR FUEL STORAGE PROJECT

Irvine Ranch Water District



Proposal | 06.18.21

Submitted To:
Harry Cho, Project Manager
Engineering Department, 3512 Michelson Drive, Irvine, CA, 92618

C - 1



June 18, 2021

Harry Cho, PE, Project Manager
Irvine Ranch Water District
Engineering Department
3512 Michelson Drive
Irvine, CA 92618

Subject: Proposal for Engineering Design Services for the District-Wide Generator Fuel Storage Project

Dear Mr. Cho:

We sincerely appreciate the opportunity to submit a proposal to the Irvine Ranch Water District (IRWD) to provide engineering design services for the District-Wide Generator Fuel Storage Project. The project includes preliminary and final design, preparation of construction documents, and bidding assistance to increase diesel fuel storage for emergency generators at 14 District facilities.

Psomas has thoroughly reviewed your RFP and related reports, drawings, and photos, and offers a highly qualified team to provide engineering design services for this important project. Our proposed Project Manager, Nancy Baker, PE, ENV SP, will work closely with team members to ensure we provide precise, thorough, and detailed construction documents. For over 30 years, Nancy has managed, designed, and delivered numerous pump station/generator improvement projects throughout California. Krista Kausen, PE, ENV, SP, our Project Engineer, also has significant recent experience in the design of pump station and generator projects. Joe Boyle, PE, will provide quality assurance and control and will work closely with Nancy and the team to ensure we provide clear, concise, and accurate project information.

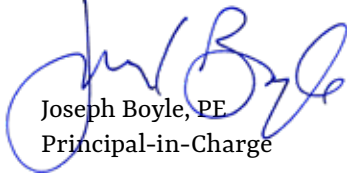
You have our commitment that, if Psomas is selected for this assignment, it will be executed by those individuals listed herein and completed on schedule and within budget. Please note that our proposal is valid for a period of 90 days.

Thank you for the opportunity to propose on this exciting project. We look forward to working with IRWD staff and the opportunity to provide engineering services once again to the Irvine Ranch Water District.

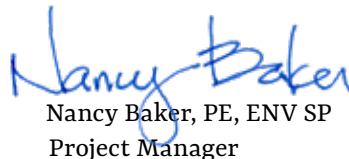
If you have any questions or require additional information, please do not hesitate to contact Joe at (714) 481-8060 or Nancy at (714) 481-8059.

Respectfully submitted,

P S O M A S



Joseph Boyle, PE
Principal-in-Charge



Nancy Baker, PE, ENV SP
Project Manager

5 Hutton Centre Drive
Suite 300
Santa Ana, CA 92707
Tel 714.751.7373
www.Psomas.com

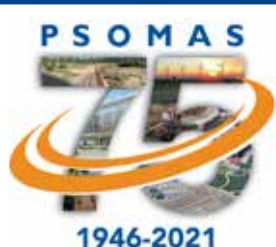


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Fee Proposal (*provided under separate cover*)

SCOPE OF SERVICES



Project Understanding

The Irvine Ranch Water District (IRWD) operates many of its facilities with emergency generators located onsite to provide electric power in the event of a power outage. These sites include water pump stations, sewage lift stations, and water treatment plants.

IRWD is increasing its fuel storage capacity requirement for the emergency generators to provide power for three days (72 hours) of operation at each of the facilities. Currently, the generators have existing diesel fuel storage of varying amounts, and IRWD Operations will top off the tanks when they are down to 75% full. Additionally, based on previous power outages at pump stations and sewage lift stations, the loading on those generators was 50% during operations without SCE power.

IRWD Planning compiled a list of the existing emergency generators, manufacturer and model information, fuel tank size, generator fuel use rates based on 100% and 50% loads, and the fuel storage required to provide 72 hours of operation with 100% and 50% loads. Based on the previous power outages at pump stations and sewer lift stations, fuel storage based on 50% loading was used to determine which facilities require additional fuel storage for 72 hours of operation.

The following table summarizes our understanding of the scope of the improvements at each facility as presented in the Fuel Solutions, Inc. Preliminary Design Memorandum (PDR Memo) and RFP.

Table 1 –Existing Facility Information and Proposed Improvements		
Site	Generator Existing Size	Proposed Improvements
Foothill Zone 4-6 PS	900 kW	Install new 3,000 gallon fuel tank and associated improvements.
Coastal Zone 6-7 PS	150 kW	Install new 300 gallon fuel tank and associated improvements.
Portola Zone 8-9 PS	200 kW	Install new 600 gallon fuel tank and associated improvements.
Portola Zone 6-8 PS	750 kW	Install new 900 gallon fuel tank and associated improvements.
Lake Forest Zone 5-6 West (2-3 West) PS	300 kW	Install new 1,000 gallon fuel tank and associated improvements.
Lake Forest Zone 5-6 East (2-3 East) PS	300 kW	Install new 300 gallon fuel tank and associated improvements.

Table 1 –Existing Facility Information and Proposed Improvements		
Site	Generator Existing Size	Proposed Improvements
Santiago Zone 5-6 PS	350 kW	Replace 350 kW generator with a new 350 kW generator and diesel fuel for 72 hours of facility operation at 50% loading.
Cabinland PS	29.8 kW	Replace 30 kW generator with a new 30 kW generator and diesel fuel for 72 hours of facility operation at 50% loading.
Michelson LS	125 kW	Install new 500 gallon fuel tank and associated improvements.
University LS	150 kW	Install new 300 gallon fuel tank and associated improvements.
Newport Coast LS	150 kW	Install new 500 gallon fuel tank and associated improvements.
Coyote Canyon LS	125 kW	Install new 300 gallon fuel tank and associated improvements.
Canada LS	150 kW	Install new 500 gallon fuel tank and associated improvements.
Coastal Ridge LS	160 kW	Replace 160 kW generator with a new 160 kW generator and diesel fuel for 72 hours of facility operation at 50% loading.

Project Approach

A successful project begins with a comprehensive work plan and proven strategy. Psomas' approach to this project is based on:

- ▶ Thorough understanding of the key design objectives of the project
- ▶ Clear communication with the District Engineering and Operations personnel
- ▶ Design and construction considerations
- ▶ Preparation of thorough and accurate construction documents incorporating best engineering practices and methods
- ▶ Preview of submittal meetings to present the submittal contents and “workshop” the proposed design solutions

Key Design Objectives

The following summarizes our understanding of the key project objectives based on review of the RFP and our considerable experience with similar projects.

- ▶ Upgrade and increase diesel fuel storage capacity at 14 pumping facilities.
- ▶ Upgrade the diesel stored at each generator by replacing the existing fuel tank with a larger tank, installing an additional fuel tank for the required amount, or other means, to provide the additional fuel storage.
- ▶ Replace existing generators at three (3) pumping facilities.

- ▶ Demolish and remove existing fuel tank, generator and concrete pad where required.
- ▶ Provide civil, structural, and electrical improvements required for installation of new equipment.
- ▶ Provide fuel tanks with low level switch, an overfill alarm, leak sensor and alarm, manual/clock gauge.
- ▶ Install a transfer pump if a second fuel tank is installed.
- ▶ Provide instrumentation improvements as required for installation of new equipment and for integration into existing IRWD SCADA facilities.

Communications

Clear and concise communications between the Psomas Team and IRWD's engineering and operations team is an important element of the design for the project. Psomas will work closely with IRWD to keep you informed on the progress of the project and any issues affecting the design. At the final preliminary design submittal workshop, Psomas will present the basis of design used for the selection and location of the new equipment.

Design and Construction Considerations

There are numerous parameters that must be considered when locating the proposed equipment on an existing site. Psomas will evaluate the existing sites and use the following criteria to determine the optimum location of the new equipment:

- ▶ Comply with local code requirements, restrictions, and regulations.
- ▶ Comply with NFPA 820 requirements at the lift station sites.
- ▶ Minimize effort required to bring new equipment onsite.
- ▶ Provide space for operation and maintenance.
- ▶ Minimize required site improvements including electrical and civil.
- ▶ Locate new fuel tanks close to existing generators.
- ▶ Locate new generators so operation of existing generators can be maintained until new generator is commissioned.
- ▶ Accurate Base Maps - Psomas has reviewed the as-builts for each site provided in the RFP. Based on this review we have determined the need for survey at three (3) of the sites.

Table 2 summarizes our findings based on the above criteria, review of the PDR Memo, and RFP. Table 2 also indicates the sites recommended to be surveyed based on our assessment of the record drawings included as part of the RFP.

Table 2 – Summary of Design and Construction Considerations

Site	Proposed Improvements	Survey Recommended	Construction Considerations
Foothill Zone 4-6 PS	Install new 3,000 gallon fuel tank and associated improvements.	Yes	There appears to be adequate space for the new tank adjacent to the pump station building and south of the existing generator.
Coastal Zone 6-7 PS	Install new 300 gallon fuel tank and associated improvements.	No	Proposed location of new tank is located in the below grade pump station. Installation of the new tank will be challenging and require further evaluation during the preliminary design.
Portola Zone 8-9 PS	Install new 600 gallon fuel tank and associated improvements.	No	There appears to be adequate space for the new tank adjacent to the existing generator.
Portola Zone 6-8 PS	Install new 900 gallon fuel tank and associated improvements.	No	There appears to be adequate space for the new tank adjacent to the existing generator.
Lake Forest Zone 5-6 West (2-3 West) PS	Install new 1,000 gallon fuel tank and associated improvements.	Yes	There appears to be adequate space for the new tank adjacent to the pump station building.
Lake Forest Zone 5-6 East (2-3 East) PS	Install new 300 gallon fuel tank and associated improvements.	Yes	There appears to be adequate space for the new tank adjacent to the pump station building.
Santiago Zone 5-6 PS	Replace 350 kW generator with a new 350 kW generator and diesel fuel for 72 hours of facility operation at 50% loading.	No	There appears to be adequate space for the new generator in the existing generator room.
Cabinland PS	Replace 30 kW generator with a new 30 kW generator and diesel fuel for 72 hours of facility operation at 50% loading.	No	There appears to be adequate space for the new generator adjacent to the existing pump station building and generator.
Michelson LS	Install new 500 gallon fuel tank and associated improvements.	No	There appears to be adequate space for the new tank adjacent to the MCC and generator building.
University LS	Install new 300 gallon fuel tank and associated improvements.	No	There appears to be adequate space for the new tank adjacent to the existing generator.
Newport Coast LS	Install new 500 gallon fuel tank and associated improvements.	No	There appears to be adequate space for the new tank adjacent to the existing generator.
Coyote Canyon LS	Install new 300 gallon fuel tank and associated improvements.	No	There appears to be adequate space for the new tank adjacent to the existing generator.
Canada LS	Install new 500 gallon fuel tank and associated improvements.	No	There appears to be adequate space for the new tank adjacent to the existing generator.
Coastal Ridge LS	Replace 160 kW generator with a new 160 kW generator and diesel fuel for 72 hours of facility operation at 50% loading.	No	There appears to be adequate space for the new generator within the existing site. Efforts will be made to locate the new generator to allow the existing generator to remain in operation during construction.

Permitting

Timely procurement of the South Coast Air Quality Management District (SCAQMD) permit is a priority when installing a new generator. Psomas will specify the replacement emergency generators to be pre-certified by SCAQMD which will streamline the SCAQMD permitting process. When a SCAQMD pre-certified generator is selected, the SCAQMD permit is applied for and pulled by the Contractor during construction.

Psomas will comply with OCFA permitting requirements for installation of the diesel storage tanks and will assist in procuring permits as required.

Preview of Submittal Meetings

Preview submittal meetings are scheduled when the documents and plans are ready for review. At the meetings, the submittal contents are presented to provide explanations or clarifications for specific areas where IRWD's input is required before moving to the next phase of the project. We approach this meeting as a workshop to exchange thoughts and ideas to help achieve the ultimate design. Review meetings are recommended after your review to discuss your comments.

QA/QC Procedures



At Psomas, our staff undergo continuous quality control training, have clearly written quality performance standards, and do not release deliverables until they are checked and corrected. This approach to quality control is applied at all staff levels and on all projects. Our project staff visits each project site and takes measurements and photographs so that our design will represent actual site conditions. We do not depend on as-builts alone to reflect field conditions. We will use our quality assurance program to conduct design and constructability reviews to provide IRWD with a quality project. This approach has led to minimal change orders on our projects. For items of major importance that may affect the direction of the project, or for major decisions involving the final appearance and presentation of the work, we often call for meetings with key project staff. Agreement is reached early on, thus minimizing the impact of such changes on schedule, budget and, most importantly, the quality of the final product. In addition to our routine progress checks and work quality, we conduct a formal quality control review prior to each submittal.

Scope of Work

Psomas' proposed Scope of Work includes the following tasks.

Task 1 Project Management

Psomas will conduct project management activities to ensure adherence to scope, schedule, and budget; promote efficient communication between Psomas, IRWD, and others, as required; and implement an effective QA/QC program.

- A. Preparation of Project Status Reports:** Prepare weekly and monthly status reports. Each weekly status report will be submitted on Monday and consist of a brief e-mail summarizing the activities completed the previous week, the activities planned for the upcoming week, and critical decisions that need to be made by team members. Each monthly status report will be submitted along

with the billing invoice for that month and provide more detail, summarizing the work completed and reviewing work status relative to budget and schedule. The project schedule will also be updated on a monthly basis for inclusion in the monthly status report.

- B. Meetings:** Organize, attend, and conduct meetings as required. Prepare and submit meeting agenda for IRWD review and concurrence at least five (5) days prior to the meeting. Prepare draft and final minutes for all meetings and workshops and submit them to IRWD within one (1) week of the meeting.

We have budgeted for the following meetings:

Meeting	Description
Kickoff Meeting	One (1) two-hour meeting
Site Visits to all 14 Sites	Two (2) eight-hour days (16 hours total)
Draft Technical Memorandum Submittal Meeting – Basis of Design	One (1) two-hour meeting
Final Technical Memorandum Submittal Meeting – Basis of Design	One (1) two-hour meeting
Present the 75% design and record IRWD's comments	One (1) two-hour meeting
Present the 100% design, discuss IRWD's comments, and discuss how the comments were addressed	One (1) two-hour meeting
Final design plan signing	One (1) one-hour meeting
Notes: The Civil, Mechanical, Electrical, and other key staff will plan to visit each site at least once during the design.	

- C. Quality Assurance/Quality Control:** Psomas will develop and implement proven QA/QC measures throughout the project to ensure ongoing and consistent quality control throughout all project phases.

Task 2 Preliminary Design Memorandum

The preliminary design phase includes preparation of a Preliminary Design Memorandum (PDM) that will be used as the basis for final design. IRWD Planning retained Fuel Solutions, Inc., to complete a PDR Memo describing fuel storage upgrades for many of the sites listed in this project scope. Although the list of sites in the PDR Memo does not match this project scope, it does document the equipment that could be used for fuel storage upgrades and was, therefore, provided, as background for Task 2. Psomas will submit one searchable PDF file for the draft and final PDM

- A. Utility Research:** Perform utility research to locate utilities or other physical features including all IRWD utilities and any other utilities owned by other agencies at each site. Utility research to include completing a desktop evaluation of available record drawings.
- B. Survey:** Psomas will review the existing record drawings and determine if any survey work is required to prepare the site layout and perform any surveys as needed to prepare the design drawings. Based on our initial review, we have determined three (3) sites may require survey. For budgeting purposes, we are proposing survey for four (4) project sites, if necessary.

- C. Geotechnical:** IRWD will provide any geotechnical reports for the sites as available. We will review the documents to determine the soil conditions for use in the design. If soils information is not available for a site, we will make conservative assumptions about the soil conditions for the design. We have, therefore, not included any geotechnical work in our scope of services.
- D. Site Layout:** Prepare a site layout for each generator including location of the generator and existing fuel tanks, existing buildings, structures, equipment, underground pipes, and conduits. The layout will also include the location of the new or replacement fuel tank or replacement generator.
- E. Electrical:** Review the electric power available at the site and determine if there is sufficient power at each site to power any new equipment or if any electric power upgrades are required. Our electrical engineer will design power feed to any new equipment and any new conduits and wires/cables required to connect the new equipment to the MCC in the event the existing generator is modified or replaced.
- F. Instrumentation:** Review the existing PLC and instrumentation conduits and determine what modifications and new construction will be required for the new equipment, alarms, and signals. Our electrical engineer will design the instrumentation upgrades as part of the project, determine if the existing PLC needs to be upgraded or replaced, and provide a design for upgrade or replacement as required and design any new conduit runs. We will prepare an operational scheme including P&IDs, single line diagrams, control equipment list, control loop descriptions, I/O and method of integrating the proposed permanent facilities into IRWD's existing SCADA system. Prior to this process, our electrical engineer will meet with IRWD staff to incorporate IRWD's standard operations, programming, and tagging requirements into the design.
- G. Permitting:** We will identify all permits and their controlling agencies required during the construction phase, including but not limited to the Orange County Fire Authority (OCFA) and South Coast Air Quality Management District (SCAQMD). We will prepare applications and secure permits with appropriate agencies. IRWD will reimburse Psomas for actual permit fees without surcharge.
- H. Construction Schedule:** We will prepare a construction schedule for the project for the draft and final PDM.
- I. Engineer's Estimate:** Prepare an engineer's estimate for the project for the draft and final PDM.

All work is anticipated to occur on IRWD property or easement areas. No new easements will be required for this project. IRWD will also file the CEQA document for the project, and no work from the consultant will be required for this task.

Task 3 Final Design

The final design will result in preparation of the Contract Documents. In the final design phase, the following items will be addressed as discussed below:

- A. Project Manual:** We will prepare a Project Manual in standard IRWD format for the Contract Documents. IRWD's front end documents will be utilized, and we will assess IRWD's documents to determine any needed supplemental special provisions that should be added to comply with IRWD's general provisions and front-end requirements. The Project Manual will describe the allowable shutdown durations and sequencing associated with construction activities. The

Project Manual will also include the IRWD General Technical Specifications, modifications thereto, and any project specific technical specifications.

B. Construction Plans: We will prepare detailed construction drawings in the latest version of AutoCAD and using NCS V4.0 layering standards, on 24-inch x 36-inch sheets, utilizing IRWD's standard border template. Sheet index/location map/legend, general notes, construction notes, and details will be included. Construction notes will be used on all construction drawings.

The following sheet list is anticipated for the final design.

IRWD District-Wide Generator Fuel Storage Improvement Project Anticipated Sheet Index		
Sheet No.	Dwg No.	Title Sheet
1	G-1	Title Sheet
2	G-2	Location Map, Vicinity Map, Drawing Index, Symbols and Legends, and Abbreviations
3	G-3	General and Construction Notes
4	C-1	Foothill Zone 4-6 PS Site Plan
5	C-2	Foothill Zone 4-6 PS Civil and Mechanical Details
6	C-3	Coastal Zone 6-7 PS Pump Room Floor Plan
7	C-4	Coastal Zone 6-7 PS Mechanical Details
8	C-5	Portola Zone 8-9 PS Site Plan
9	C-6	Portola Zone 8-9 PS Civil and Mechanical Details
10	C-7	Portola Zone 6-8 PS Site Plan
11	C-8	Portola Zone 6-8 PS Civil and Mechanical Details
12	C-9	Lake Forest Zone 5-6 West (2-3 West) PS Site Plan
13	C-10	Lake Forest Zone 5-6 West (2-3 West) PS Civil and Mechanical Details
14	C-11	Lake Forest Zone 5-6 East (2-3 East) PS Site Plan
15	C-12	Lake Forest Zone 5-6 East (2-3 East) PS Civil and Mechanical Details
16	C-13	Santiago Zone 5-6 PS Generator Room Floor Plan and Section
17	C-14	Santiago Zone 5-6 PS Civil and Mechanical Details
18	C-15	Cabinland PS Site Plan
19	C-16	Cabinland PS Civil and Mechanical Details
20	C-17	Michelson Lift Station Site Plan
21	C-18	Michelson Lift Station Civil and Mechanical Details
22	C-19	University Lift Station Site Plan
23	C-20	University Lift Station Civil and Mechanical Details
24	C-21	Newport Coast Lift Station Site Plan
25	C-22	Newport Coast Lift Station Civil and Mechanical Details
26	C-23	Coyote Canyon Lift Station Site Plan
27	C-24	Coyote Canyon Lift Station Civil and Mechanical Details
28	C-25	Canada Lift Station Site Plan
29	C-26	Canada Lift Station Civil and Mechanical Details
30	C-27	Coastal Ridge Lift Station Site Plan
31	C-28	Coastal Ridge Lift Station Civil and Mechanical Details
32	S-1	Structural General Notes
33	S-2	300 Ga., 500 Gal., 600 Gal., and 900 Gal. Fuel Tank Concrete Pad Plan and Details
34	S-3	1,000 Ga., and 3,000 Gal. Fuel Tank Concrete Pad Plan and Details
35	S-4	Santiago Zone 5-6 PS Generator Structural Plan and Section
36	S-5	Cabinland PS and Coastal Ridge PS Generator Concrete Pad Plans and Sections
37	S-6	Structural Details
38	E-1	Electrical and Instrumentation Legend and Symbols

IRWD District-Wide Generator Fuel Storage Improvement Project Anticipated Sheet Index		
Sheet No.	Dwg No.	Title Sheet
39	E-2	Foothill Zone 4-6 Pump Station Electrical and Instrumentation Details
40	E-3	Coastal Zone 6-7 Pump Station Electrical and Instrumentation Details
41	E-4	Portola Zone 8-9 Pump Station Electrical and Instrumentation Details
42	E-5	Portola Zone 6-8 Pump Station Electrical and Instrumentation Details
43	E-6	Lake Forest Zone 5-6 West (2-3 West) Pump Station Electrical and Instrumentation Details
44	E-7	Lake Forest Zone 5-6 East (2-3 East) Pump Station Electrical and Instrumentation Details
45	E-8	Santiago Zone 5-6 Pump Station Electrical Plan
46	E-9	Santiago Zone 5-6 Pump Station Electrical and Instrumentation Details
47	E-10	Cabinland PS Electrical Plan
48	E-11	Cabinland PS Electrical and Instrumentation Details
49	E-12	Michelson Lift Station Electrical and Instrumentation Details
50	E-13	University Lift Station Electrical and Instrumentation Details
51	E-14	Newport Coast Lift Station Electrical and Instrumentation Details
52	E-15	Coyote Canyon Lift Station Electrical Plan
53	E-16	Canada Lift Station Electrical and Instrumentation Details
54	E-17	Coastal Ridge Lift Station Electrical Plan
55	E-18	Coastal Ridge Lift Station Electrical and Instrumentation Details

C. Project Schedule: Psomas will maintain and consistently update the project schedule, which will include detailed schedules for both design and construction activities. The schedule will be updated and submitted with each of the design deliverables described below. The schedule will include all critical factors impacting the project schedule, including implementation, permitting, and coordination activities to ensure the project is completed in accordance with the proposed schedule. The schedule will be prepared in Microsoft Project. A preliminary schedule outlining the preliminary and final design phase activities have been included in Section D of this proposal.

D. Liquidated Damages Calculations: We will assist in calculating liquidated damages value for each construction project should the contract time be exceeded. IRWD's standard liquidated damage calculation form will be provided.

E. Opinion of Probable Construction Cost: We will prepare a detailed and itemized opinion of probable construction cost for the proposed upgrades, which will be updated and submitted with each of the design deliverables described below.

F. Design Deliverables.

- 1. 75% Design:** Psomas will provide a single searchable PDF file of the 75 percent plan set and Project Manual. The project manual will include all sections including any project specific specifications sections or modifications to the IRWD General Technical Specifications Sections and relevant technical specifications.
- 2. 100% Draft:** Psomas will provide a searchable PDF file of the plan set. The plan set will include all revisions per IRWD comments. We will provide a

single searchable PDF file of the 100 percent Project Manual; all sections shall be included.

3. **Final Design Deliverable:** Psomas will provide one (1) full size, final set of plans in a single PDF with the Engineer's electronic stamp and signature, including IRWD's signatures on the design sheets. We will provide a single searchable PDF file of the Project Manual including the Engineer's electronic stamp and signature on the signature page. This submittal will be backchecked for inclusion of all previous comments prior to adding the Executive Director's electronic signature on the cover sheets of the plans and Project Manual. Once the submittal is reviewed and signed by IRWD, we will provide AutoCAD files for the entire plan set and provide Microsoft Word files used in the preparation of the Project Manual.

G. Addenda Preparation and Pre-Bid Meeting: During the bidding period, we will assist with providing information and clarification of bid documents to prospective bidders. This will include preparation of up to three (3) addenda including revisions to the design plans and specifications and assistance with addressing bidder questions. At a minimum, addenda preparation activities will include:

1. **Plan Revisions:** We have budgeted 16 hours of appropriate staff time for plan revisions to the construction drawings.
2. **Specification Revisions:** We have budgeted 16 hours of appropriate staff time for revisions or additions to the project specifications.
3. **Bidder Questions:** We have budgeted 16 hours of appropriate staff time to address and respond to bidder questions.
4. **Pre-Bid Meeting:** During the bidding period, we will attend a two-hour pre-bid meeting. We have also budgeted for a four (4)-hour site visit with potential bidding contractors, as needed.

Project Team

Nancy Baker, PE, ENV SP | Psomas | Project Manager

Nancy Baker will oversee the project design, manage the day-to-day activities, team assignments, and subconsultants, and communicate regularly with IRWD throughout the project. She will manage and bring the same detailed approach for execution of this project. Nancy has over 32 years of experience in planning, design, and construction of water and wastewater facilities, including transmission and distribution pipelines, pump stations, reservoirs, gravity sewers, force mains, and lift stations. Ms. Baker has been responsible for the successful design of several IRWD projects, including San Joaquin Marsh Improvements, Michelson Lift Station Generator Replacement, and Rattlesnake and Irvine Lake Pipeline Strainer Replacement. She has been responsible for the management of water facility design projects with annual budgets of over \$20 million.

Joseph Boyle, PE | Psomas Principal-in-Charge and QA/QC Manager

Joe Boyle is Principal-in-Charge and will serve as QA/QC Manager for this project. He will work closely with Nancy and assist in providing constructability and quality assurance reviews for all project deliverables. His qualifications include 37 years of experience in planning and design of wastewater facilities and he has direct knowledge of IRWD's facilities, design guidelines and ordinances. Mr. Boyle has been responsible for the design of numerous IRWD projects, including the Santiago Canyon Booster Pump Station Upgrades project to add emergency generators at six (6) pump station locations.

Krista Kausen, PE, ENV SP | Psomas | Project Engineer

Krista Kausen has 10 years of engineering experience in the water and wastewater industry involving design and construction of pump stations, wells, pipelines, and treatment plants. Her background includes environmental analysis, hydrology, hydraulics, water quality and treatment, and construction support services. She also has on-site field and inspection experience for various projects in Orange and Los Angeles counties. Krista will provide support during design and bidding.

Chris Riehle, PLS | Psomas | Survey

Chris Riehle has 19 years of experience in a wide array of survey and mapping disciplines, including topographic mapping, boundary analysis, ALTA/NSPS Land Title Surveys, geodetic control, preparation and review of parcel maps, final maps and Records of Survey, lot line adjustments, legal description preparation and GPS post-processing, and right-of-way mapping throughout California and Nevada. Chris will lead the surveying efforts for this project.

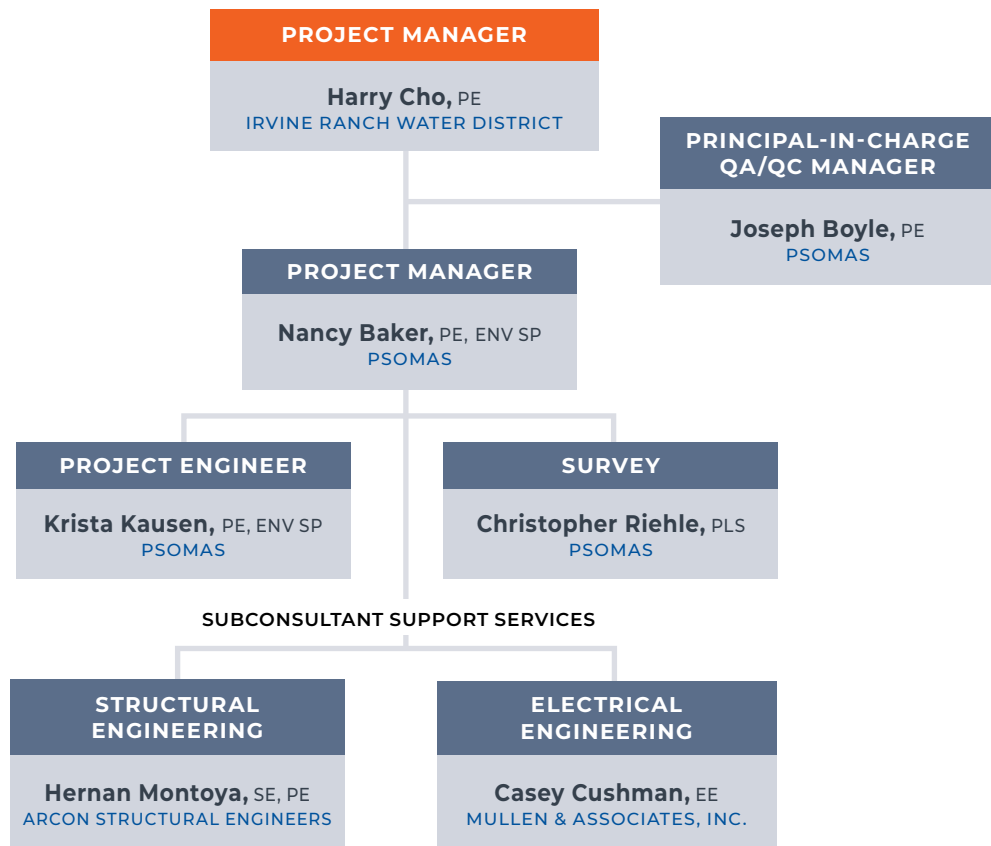
Casey Cushman, EE | Mullen & Associates, Inc. | Electrical Engineering

Casey Cushman is an electrical engineer with over 30 years of experience in power distribution and control system design. Casey has designed over 18 lift stations, pump stations, and pressure reducing stations over the past 20 years. Additional projects include water pump stations, correctional and institutional buildings, distribution fault coordination and protection, and large site distribution. Casey will be responsible for all electrical and control design services.

Hernan Montoya, SE, PE | Arcon Structural Engineers, Inc. Structural Engineering

Hernan Montoya has over 40 years of experience as a structural engineer designing a wide variety of projects. He has been in charge of engineering, quality assurance, and field support for various commercial, residential, industrial, civil and public works projects. Municipal, local agency, and public sector experience include the design of bridges, sewage lift and water pump stations, earth retaining structures, channels, culverts, towers for wireless communications, refuse transfer stations, and landfill gas to energy project structures.

Organization Chart



Psomas Team Contribution Table

The table below shows the percentage of time each team member will contribute to the project. The table also includes the home office and location of each project team member on the organization chart.

Name Home Office Location	Office Address	Role	Contribution
Nancy Baker, PE, ENV SP Psomas Santa Ana Office	5 Hutton Centre Drive, Suite 300, Santa Ana, CA 92707	Project Manager	15%
Joseph Boyle, PE Psomas Santa Ana Office	5 Hutton Centre Drive, Suite 300, Santa Ana, CA 92707	Principal-in-Charge QA/QC Manager	5%
Krista Kausen, PE, ENV SP Psomas Santa Ana Office	5 Hutton Centre Drive, Suite 300, Santa Ana, CA 92707	Project Engineer	20%
Christopher Riehle, PLS Psomas Santa Ana Office	5 Hutton Centre Drive, Suite 300, Santa Ana, CA 92707	Survey	5%
Hernan Montoya, SE, PE Arcon Rancho Santa Margarita Office	22391 Gilberto, Rancho Santa Margarita, CA 92688	Structural Engineering	10%
Casey Cushman, EE Mullen Anaheim Office	1200 N Jefferson Street # D Anaheim, CA 92807	Electrical Engineering	25%

Resumes

Resumes for each team member shown on the Organization Chart are included on the following pages.

IRVINE RANCH WATER DISTRICT

Request for Proposal (RFP) to Provide Engineering Design Services
for the District Wide Generator Fuel Storage Project

PSOMAS - FEE SCHEDULE

Scope of Work Tasks		Psomas Work Hours												Total Hours	Labor Cost	Sub		Sub		Total Hours	Direct Costs	Total Fee
		QA/QC		PM		PE		PD		Survey		Admin				Electrical		Structural				
																Avg. Hourly Rate:		\$155				
		Wk-Hrs	Amount	Wk-Hrs	Amount	Wk-Hrs	Amount	Wk-Hrs	Amount	Wk-Hrs	Amount	Wk-Hrs	Amount			Wk-Hrs	Amount	Wk-Hrs	Amount			
SCOPE OF WORK TASKS																						
Task 1 - Project Management																						
A.	Project Status Reports	0	\$ -	40	\$ 9,000	0	\$ -	0	\$ -	0	\$ -	0	\$ -	40	\$ 9,000	0	\$ -	0	\$ -	40	\$ -	\$ 9,000
B.	Meetings	0	\$ -	40	\$ 9,000	20	\$ 3,400	0	\$ -	0	\$ -	14	\$ 1,400	74	\$ 13,800	24	\$ 3,720	0	\$ -	98	\$ 500	\$ 18,020
C.	Quality Control/Quality Assurance	12	\$ 3,000	14	\$ 3,150	0	\$ -	0	\$ -	0	\$ -	0	\$ -	26	\$ 6,150	0	\$ -	0	\$ -	26	\$ -	\$ 6,150
Sub-total Task 1 - Project Management		12	\$ 3,000	94	\$ 21,150	20	\$ 3,400	0	\$ -	0	\$ -	14	\$ 1,400	140	\$ 28,950	24	\$ 3,720	0	\$ -	164	\$ 500	\$ 33,170
Task 2 - Preliminary Design Memorandum																						
A.	Utility Research	0	\$ -	2	\$ 450	12	\$ 2,040	0	\$ -	0	\$ -	30	\$ 3,000	44	\$ 5,490	0	\$ -	0	\$ -	44	\$ -	\$ 5,490
B.	Survey	0	\$ -	4	\$ 900	8	\$ 1,360	0	\$ -	94	\$ 20,210	0	\$ -	106	\$ 22,470	0	\$ -	0	\$ -	106	\$ -	\$ 22,470
C.	Review Geotechnical Reports	0	\$ -	12	\$ 2,700	0	\$ -	0	\$ -	0	\$ -	0	\$ -	12	\$ 2,700	0	\$ -	0	\$ -	12	\$ -	\$ 2,700
D.	Site Layout	7	\$ 1,750	30	\$ 6,750	40	\$ 6,800	120	\$ 14,400	0	\$ -	0	\$ -	197	\$ 29,700	0	\$ -	0	\$ -	197	\$ -	\$ 29,700
E.	Electrical	0	\$ -	4	\$ 900	0	\$ -	0	\$ -	0	\$ -	0	\$ -	4	\$ 900	82	\$ 12,710	0	\$ -	86	\$ -	\$ 13,610
F.	Instrumentation	0	\$ -	4	\$ 900	0	\$ -	0	\$ -	0	\$ -	0	\$ -	4	\$ 900	28	\$ 4,340	0	\$ -	32	\$ -	\$ 5,240
G.	Permitting	0	\$ -	4	\$ 900	32	\$ 5,440	0	\$ -	0	\$ -	20	\$ 2,000	56	\$ 8,340	0	\$ -	0	\$ -	56	\$ 3,000	\$ 11,340
H.	Construction Schedule	1	\$ 250	4	\$ 900	16	\$ 2,720	0	\$ -	0	\$ -	0	\$ -	21	\$ 3,870	0	\$ -	0	\$ -	21	\$ -	\$ 3,870
I.	Engineer's Estimate	2	\$ 500	8	\$ 1,800	20	\$ 3,400	0	\$ -	0	\$ -	0	\$ -	30	\$ 5,700	0	\$ -	0	\$ -	30	\$ -	\$ 5,700
Sub-total Task 2 - Preliminary Design Memorandum		10	\$ 2,500	72	\$ 16,200	128	\$ 21,760	120	\$ 14,400	94	\$ 20,210	50	\$ 5,000	474	\$ 80,070	110	\$ 17,050	0	\$ -	584	\$ 3,000	\$ 100,120
Task 3 - Final Design																						
A.	Project Manual	1	\$ 250	24	\$ 5,400	30	\$ 5,100	0	\$ -	0	\$ -	12	\$ 1,200	67	\$ 11,950	0	\$ -	0	\$ -	67	\$ -	\$ 11,950
B.	Construction Plans	40	\$ 10,000	96	\$ 21,600	245	\$ 41,650	360	\$ 43,200	0	\$ -	40	\$ 4,000	781	\$ 120,450	392	\$ 60,760	82	\$ 13,530	1255	\$ -	\$ 194,740
C.	Project Schedule	1	\$ 250	4	\$ 900	6	\$ 1,020	0	\$ -	0	\$ -	0	\$ -	11	\$ 2,170	0	\$ -	0	\$ -	11	\$ -	\$ 2,170
D.	Liquidated Damage Calculations	1	\$ 250	4	\$ 900	0	\$ -	0	\$ -	0	\$ -	0	\$ -	5	\$ 1,150	0	\$ -	0	\$ -	5	\$ -	\$ 1,150
E.	Opinion of Probable Costs	2	\$ 500	16	\$ 3,600	20	\$ 3,400	0	\$ -	0	\$ -	0	\$ -	38	\$ 7,500	20	\$ 3,100	10	\$ 1,650	68	\$ -	\$ 12,250
F.	Design Deliverables (75%, 100%, and Final)	20	\$ 5,000	34	\$ 7,560	86	\$ 14,578	126	\$ 15,120	0	\$ -	0	\$ -	265	\$ 42,258	85	\$ 13,175	22	\$ 3,630	372	\$ -	\$ 59,063
I.	Addenda Preparation and Pre-bid Meeting	2	\$ 500	16	\$ 3,600	26	\$ 4,420	16	\$ 1,920	0	\$ -	0	\$ -	60	\$ 10,440	22	\$ 3,410	0	\$ -	82	\$ 250	\$ 14,100
Sub-total Task 3 - Final Design		67	\$ 16,750	194	\$ 43,560	413	\$ 70,168	502	\$ 60,240	0	\$ -	52	\$ 5,200	1227	\$ 195,918	519	\$ 80,445	114	\$ 18,810	1860	\$ 250	\$ 295,423
Total Estimated Work		89	\$ 22,250	360	\$ 80,910	561	\$ 95,328	622	\$ 74,640	94	\$ 20,210	116	\$ 11,600	1841	\$ 304,938	653	\$ 101,215	114	\$ 18,810	2608	\$ 3,750	\$ 428,713

Legend

In-House Staff and Billing Rate

QA/QC - QA/QC Manager (Joe Boyle \$250/hr)
PM - Project Manager (Nancy Baker \$225/hr)
PE - Project Engineer (Krista Kausen \$170/hr)
PD - Project Designer (Joseph Barrera \$120/hr)
SUE - Professional Land Surveyor (Chris Riehle \$215/hr)
Admin - Administrative Assistant (Daisy Cayetano \$100/hr)

Subconsultants

Electrical Engineering - Mullen and Associates
Structural Engineering - Arcon Structural Engineers