



PROPOSAL

J.B. Latham Treatment Plant
Plant 2 Headworks
Rehabilitation Final Design

RFP No. SOC006 / February 2024



3150 Bristol Street, Suite 500
Costa Mesa, California 92626
714-593-5100
carollo.com

February 29, 2024

Jeanette Cotinola
South Orange County Wastewater Authority
34156 Del Obispo Street
Dana Point, CA 92629

**Subject: Proposal for J.B. Latham Treatment Plant (JBL) Plant 2 Headworks Rehabilitation
Final Design Engineering Services**

Dear Ms. Cotinola:

The South Orange County Wastewater Authority (SOCWA) continues to move forward rehabilitation and upgrade projects to the JBL. SOCWA has made a significant commitment to protect the assets installed at the JBL in order to maintain a safe working environment while providing high quality effluent. The Plant 2 Headworks Facility is the next area for upgrades.

This project is critical as the headworks process area serves as the first line of odor capture and treatment, trash removal, and equipment protection for the facility. Having completed a similar rehabilitation project at SOCWA's Regional Treatment Plant, we understand the challenge and unique approach required to maintaining an operating treatment facility while replacing structural roof components and minimizing nuisance odors. You need a design team that understands these implications and can produce a timely and effective design that will last. **We are that team.**

The Carollo team, led by Jeff Weishaar, has significant knowledge of the JBL operations, staff, and preferences. We are also intimately familiar with the cost and risk associated with bypassing pumping and SOCWA's preference to minimize bypass pumping as much as possible. Our approach will focus on limited shutdowns that can be achieved with gravity flow bypassing of the headworks. Our team includes structural and infrastructure experts who have worked on your projects in the past.

As your project manager for this Headworks Rehabilitation Final Design project, please contact me at any time at 858-245-6081 or jweishaar@carollo.com, if you have any questions regarding this proposal or if you need any additional information.

Sincerely,
CAROLLO ENGINEERS, INC.

A handwritten signature in black ink that reads "Jeff A. Weishaar".

Jeff Weishaar, PE
Project Manager / Vice President

Identification of Responder

Carollo is dedicated to providing exceptional services to our clients. Our single focus on water allows us to develop best-in-class solutions for the rehabilitation of plants like the JBL.

Firm Overview

Throughout our 90-year history, Carollo has earned a reputation for applying sound, proven engineering principles to advance the application of drinking water, wastewater, recycled water, and stormwater technologies and engineering excellence. For SOCWA, this means expertise and experience that deliver enhanced performance, increased reliability, minimized risk, and value-added improvements—helping you stay ahead of potential issues

As a result, we are known to provide outstanding “nuts and bolts” designs that deliver robust, cost-effective, and easy to operate and maintain facilities. We currently maintain 50+ offices in North America and our staff numbers exceed 1,400 employees, which includes more than 850 registered engineers and specialists.

Proven Headworks Technical Expertise

Carollo’s headworks experience is unmatched, with more than 200 new or improved facilities, with peak flows ranging from less than 1 mgd to more than 300 mgd. Our overall firm experience rehabilitating substantial headworks facilities is largely held by the same team we are proposing for your project. **This provides SOCWA with the following benefits:**

- Customized innovative solutions specific to your needs.
- Valuable lessons learned to increase reliability and reduce project risk.
- An understanding of how to incorporate the latest and most robust technology.
- Operations and maintenance (O&M)-focus resulting in improved safety, O&M friendly work environment, and lower long-term costs.
- Complete information provided to SOCWA staff that will expedite consensus building and decision making.

CAROLLO ENGINEERS, INC.

CORPORATE ADDRESS

2795 Mitchell Dr.
Walnut Creek, California 94598

ADDRESS OF PRINCIPAL PLACE OF BUSINESS

3150 Bristol Street, Suite 500
Costa Mesa, California 92626

FORM OF COMPANY

Corporation

PARENT COMPANIES

NA

CONTACT PERSON

Jeff Weishaar, PE

Project Manager

Ph: 858-245-6081

Email: jweishaar@carollo.com

BY THE NUMBERS



1
singular focus
—water is all
we do!



91
year
history



30K+
wastewater/
water projects



50+
offices in
North America



1,400+
nationwide
employees



60+
headworks and
clarifier projects in
the last 10 years

Approach to the Work

Project Approach

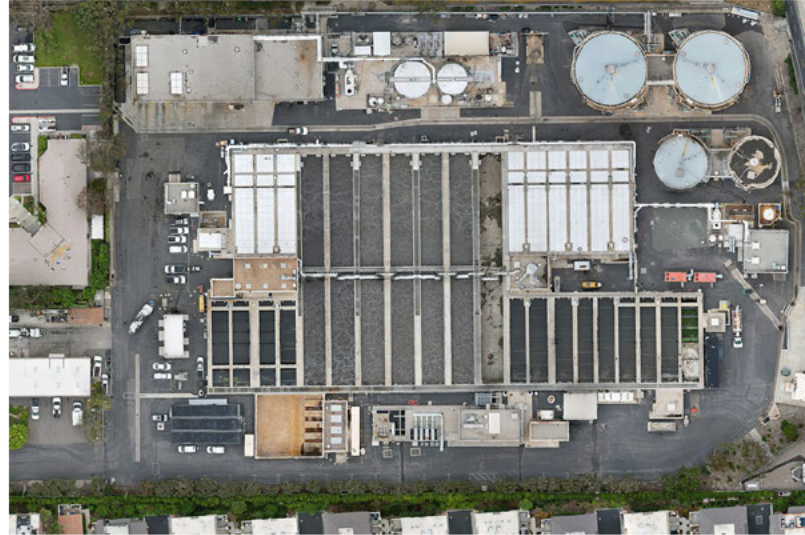
The headworks at a wastewater treatment facility sees one of the harshest environments in the whole plant and can be one of the most maintenance intensive processes. Your existing Plant 2 Headworks is nearly 25 years old. The existing roof system has shown signs of deterioration and is in need of replacement. Additionally, the bar screen channel concrete, covers, and gates are in need of replacement. Improving reliability of the system provides a good opportunity to look at the existing process, facility, and equipment, and make improvements.

We have identified **three major objectives** for this rehabilitation project:

- ① **Increase reliability**
- ② **Optimize existing treatment systems**
- ③ **Improve safety**

Our approach will address these goals in a practical and efficient manner to maximize your investment.

One of the key components of our approach will be to continue the collaborative process with SOCWA staff that has been so successful. We know from experience that the most successful projects are those that involve all stakeholders, especially O&M staff, in the decision-making process, as it fosters a feeling of ownership in the final product. This is especially true for rehabilitation projects that seek to solve problems with the existing systems. Who knows better than the plant O&M staff what the problems are and what changes would help them most? For this project, we will engage staff to speak directly about the Plant 2 Headworks, which is particularly important when considering how to maintain plant operations.



Technical Approach

Our technical approach centers around applying our team's vast knowledge of headworks facilities to address problems and identify potential areas of improvement. We will work closely with staff to identify and address your specific headworks issues at each of the following steps of this rehabilitation project:

- Evaluate condition of existing facility.
- Identify O&M problems with existing system.
- Develop and evaluate improvement alternatives.
- Identify recommended improvements.

Our team members bring the knowledge and background that can only be acquired from recently completed headworks design and retrofit projects. Like the Plant 2 Headworks project, the common design goals of all of Carollo's projects are to increase reliability, reduce O&M requirements and odors, and improve safety. We understand the benefits of working closely with plant staff to address their concerns and provide a more operator friendly facility. Your project will benefit from the extensive knowledge we have gained from recent evaluations and projects.

Roof Replacement

The harsh environment of a headworks facility can take its toll on structural members over time. Protection of the newly installed roof system will be critical to a long lasting solution. The roof itself will be a standard built-up roof with a support system underneath that is exposed to the headwork's environment. Selecting the appropriate materials to support the roof and prevent corrosion will help to safeguard the new system. Options for roof structural support materials include:

- Fiberglass reinforced plastic (FRP).
- Aluminum.
- Galvanized steel.
- Coated galvanized steel.
- 316 Stainless steel.

FRP beams have excellent corrosion resistance however require larger beams compared to steel. Higher grade steel options are available at a significant cost. Finding the correct balance of cost, maintenance and spatial impact is critical to providing the best option for the new roof.

Concrete Channel and Covers

Structural repair details will be developed to identify various conditions that may be encountered depending on the depth of concrete corrosion that has occurred. The various conditions are tabulated below along with the repair approach. Repair materials will include a structural concrete repair material, a high-solids epoxy polyurethane coating, and occasional crack injection and reinforcing steel replacement. High quality and durable coatings will be specified along with high strength concrete repair materials. Construction sequencing will make sure that materials are cured and tested for proper sealing to limit future deterioration.

ROOF STRUCTURAL SUPPORT MATERIAL OPTIONS

Material	Corrosion Resistance	Cost
FRP	Excellent	\$ \$
Aluminum	Good	\$ \$
Galvanized Steel	Good	\$ \$
Coated Galvanized Steel	Excellent	\$ \$ \$
316 Stainless Steel	Excellent	\$ \$ \$

We went above and beyond to provide coated galvanized steel at the Regional Treatment Plant!

CONCRETE REPAIR APPROACH

Concrete Condition (After Power Washing)	Repair Approach
Concrete corrosion less than 1/4-inch depth	<ul style="list-style-type: none"> ▪ Use coating material to fill voids.
Concrete corrosion greater than 1/4-inch but less than 3 inches	<ul style="list-style-type: none"> ▪ Fill voids with structural concrete repair materials ▪ Apply coating.
Concrete corrosion greater than 3 inches	<ul style="list-style-type: none"> ▪ Fill voids with fast set concrete mix. ▪ Apply coating.
Exposed to rebar, minimal steel corrosion	<ul style="list-style-type: none"> ▪ Chip out all around bar. ▪ Coat bar with anti-corrosion material. ▪ Repair and coat concrete per above.
Exposed rebar, loss of steel greater than 15 percent	<ul style="list-style-type: none"> ▪ Chip out concrete to expose unaffected steel on each end. ▪ Remove corroded steel. ▪ Lap splice new rebar over exposed healthy steel. ▪ Repair and coat concrete per above.

Additional Improvements

While the focus of this proposal has been on the roof replacement and the channel concrete and covers, we recognize that the scope of the project extends throughout the Plant 2 Headworks. Although the existing odor control system is not due for replacement, we consider this an area that could be improved with minimal investment. SOCWA noted an imbalance between the supply air flow and the foul air collection causing issues. Dampeners and/or duct modifications can be evaluated to improve the air balance of the facility. Additionally, foul air suction piping should be evaluated to extend across the room from the existing location and pull directly from the channels or directly above the screenings bin. Lighting with the new roof can also be reviewed for improvements with a possibility of adding more natural light. Additional improvements will also be identified as a result of any planned modification to the Plant 2 Headworks.

Construction Sequencing

Any rehabilitation to a treatment facility is hampered by the fact that the plant cannot shut down for an extended period of time to allow for construction. The JBL is no different and it will be important to identify construction sequencing and restrictions early on. Work within the channels will require a bypass. Our initial thought is to break the construction sequencing into two phases



At SOCWA's Regional Treatment Plant we thought outside the box to develop a creative approach to keep the facility running.

Our initial thoughts are to follow the approach used at the SOCWA Regional Treatment Plant where the roof was replaced at the headworks facility. With the use of a cable and tarp system to encapsulate the building, odor control measures can be employed to lessen potential nuisance odors. Clear contract requirements for an odor control plan will guide the contractor towards success and Carollo's experience with this approach will help streamline the design process.

of work. A bypass could potentially be done using the existing diversion structure. The Plant 2 Headworks can be isolated and flow in the 36-inch influent piping can accumulate until the level is high enough to backflow to the diversion structure and ultimately to Plant 1 Headworks. A pump would only be required during periods of high flow and the pump capacity and piping can be sized only for the additional flow capacity required reducing cost.

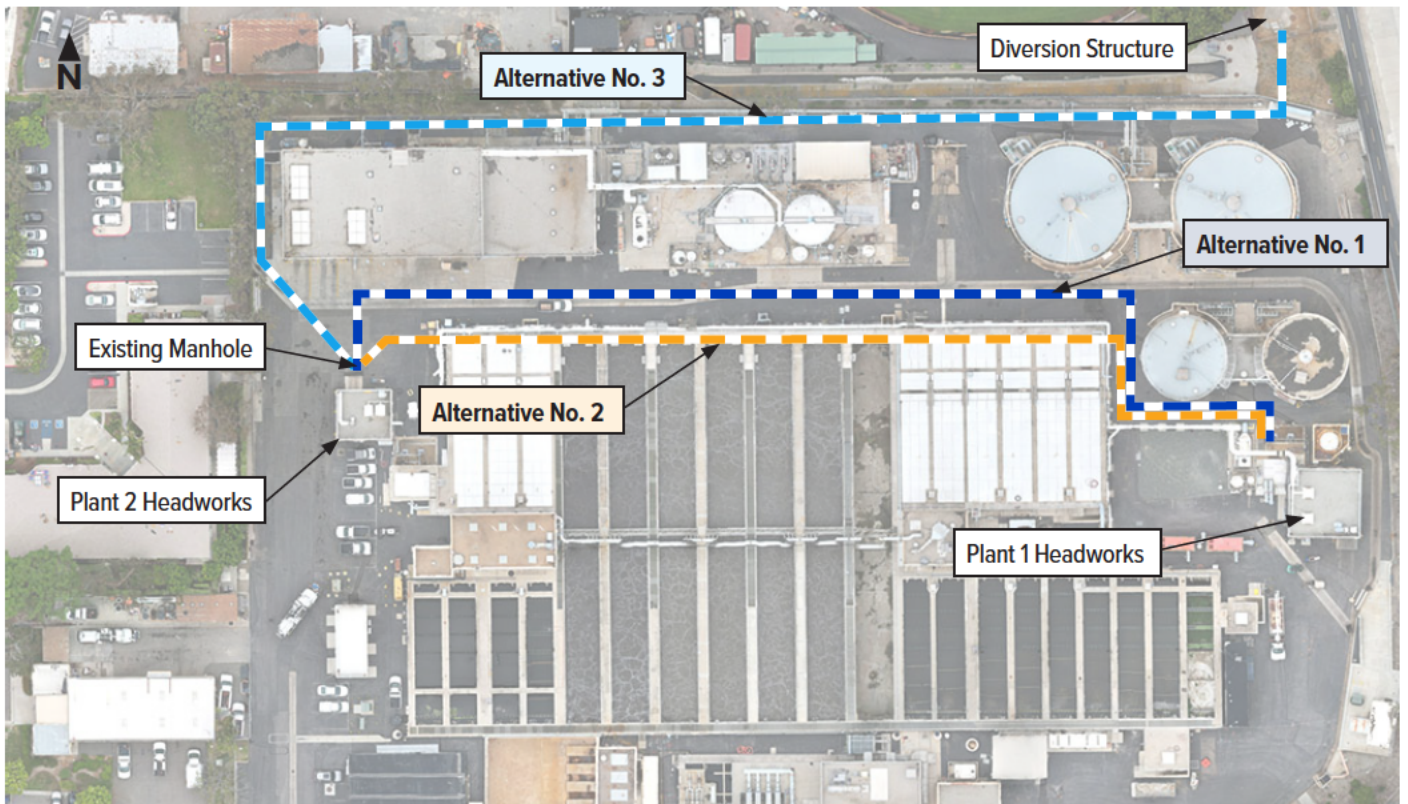
A possible sequence of work could include:

Phase 1: Roof Rehabilitation - Plant 2 Headworks in Operation:

1. Protect existing facilities and set up temporary utilities.
2. Install temporary odor control collection and treatment measures.
3. Relocate electrical equipment or wiring support from existing roof structure.
4. Salvage and remove existing headworks roof and associated equipment.
5. Install new roofing system and reinstallation of existing roof equipment.
6. Remove temporary odor control system.

Phase 2: Concrete Channel Rehabilitation - Plant 2 Headworks Shutdown:

1. Install new bypass pumping and piping system for high flow periods.
2. Shutdown and isolate Plant 2 Headworks with high pressure plug.
3. Remove and store existing screen.
4. Clean channel and repairs.
5. Reinstall new screen.
6. Startup Plant 2 Headworks.



JBL Bypass Alternatives

The main mechanism to divert flow from Plant 2 is the use of the gravity bypass previously discussed. However, during periods of high flow a pump may be required to reroute the additional flow that cannot gravity flow back to the diversion structure. Three different alternatives have been identified for potential pipe routing.

	PROS	CONS
<p>Alternative 1 Bypass along roadway to Plant 1</p>	<ol style="list-style-type: none"> 1. Accessible piping. 2. Simple installation. 3. Piping within fence line. 	<ol style="list-style-type: none"> 1. Block vehicle or pedestrian traffic.
<p>Alternative 2 Bypass along basin deck to Plant 1</p>	<ol style="list-style-type: none"> 1. Avoid vehicle traffic. 2. Piping within fence line. 3. Most Direct Route. 	<ol style="list-style-type: none"> 1. Potential to impair foot traffic. 2. Requires complicated layout.
<p>Alternative 3 Bypass to diversion structure</p>	<ol style="list-style-type: none"> 1. Accessible piping. 2. Simple installation. 3. Minimize access issues along boundary. 	<ol style="list-style-type: none"> 1. Longest pipe run. 2. Outside fence line. 3. Ramp required for vehicle crossing.

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY / J.B. LATHAM TREATMENT PLANT-PLANT 2 HEADWORKS REHABILITATION FINAL DESIGN

Plan for Organizing the Work

The key feature of our approach is to involve all the stakeholders in the decision-making process. We recommend that the stakeholders include O&M staff. They are the actual “client” in the process, and the success of the project will be judged with respect to ease of O&M during and after the work. We can build on past and current communications with staff to add this work with the most efficient use of your time.

The kick-off meeting will be a key early step in formalizing the project’s goal. The meeting has two objectives:

1. Review and discuss material options available for roof rehabilitation and temporary odor control measures.
2. Review sequencing of construction to identify SOCWA's preferred level of comfort and discuss how the JBL might be affected.

The meetings will be led by our project manager, **Jeff Weishaar**, and key team members will attend and present their portion of the work. The meetings will serve as the primary means of presenting information and creating dialogue between the stakeholders to build consensus and make informed decisions. We will present our experience with various approaches and latest available solutions and discuss potential implementation at the JBL.

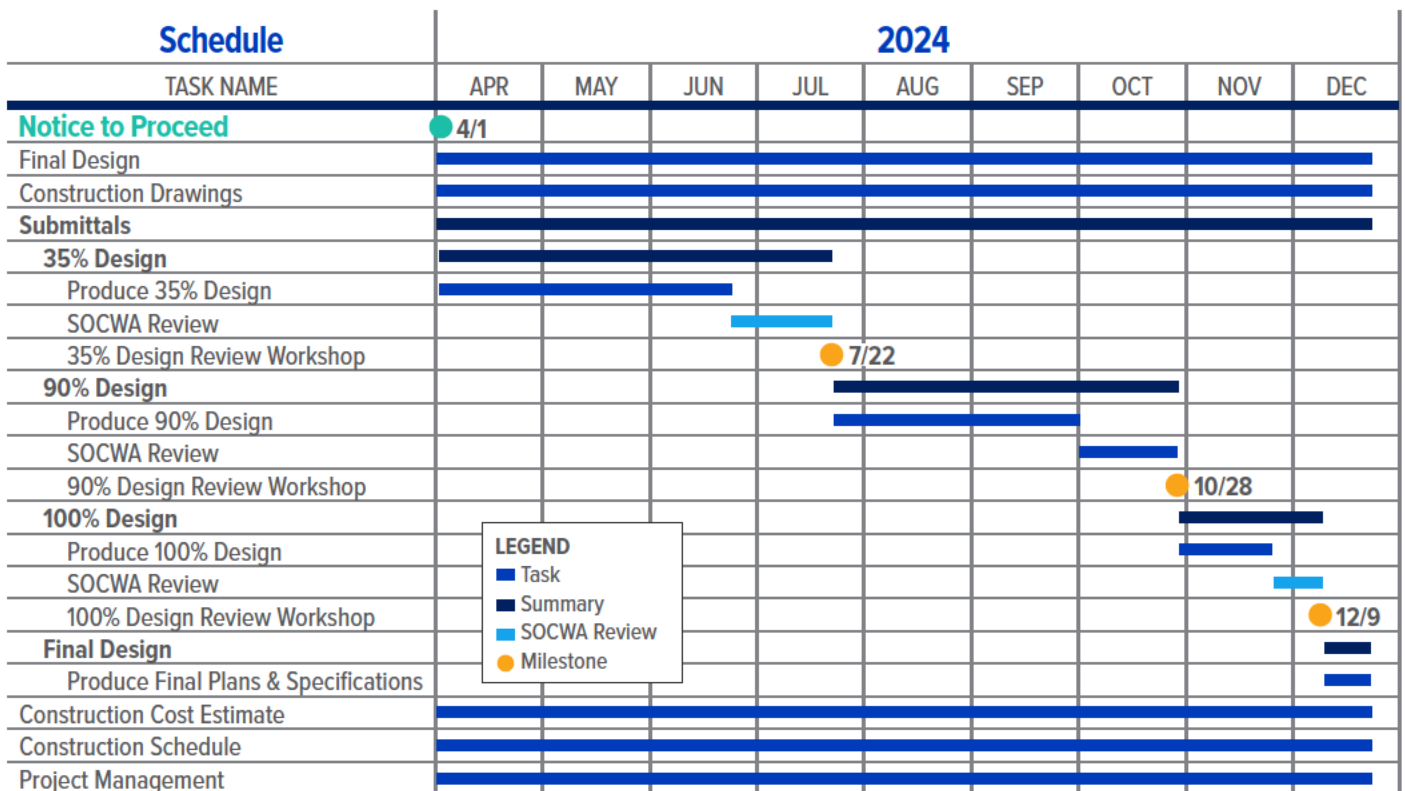
The goal of each meeting is a list of decisions and action items to guide our team’s work in preparation of the final design. Decisions and action items will be recorded in conference memoranda and issued within one week of the meeting.



Stakeholder Meetings

We will conduct stakeholder meetings to facilitate efficient and effective stakeholder input and involvement. Each meeting will be held at crucial milestones:

- Meeting No.1 - Design Kickoff
- Meeting No.2 - Review of 35% Design
- Meeting No.3 - Review of 60% Design
- Meeting No.4 - Review of 100% Design



SOUTH ORANGE COUNTY WASTEWATER AUTHORITY / J.B. LATHAM TREATMENT PLANT-2 HEADWORKS REHABILITATION FINAL DESIGN

Experience and Technical Competence

Carollo has experience in rehabilitation across California. The following pages include a few examples of our expertise.



Regional Treatment Plant Headworks Upgrade

South Orange County Wastewater Authority, Dana Point, CA

Carollo provided evaluation and design for the rehabilitation of SOCWA's aging headworks and performed significant mechanical and structural improvements, including modifications to the bar screens, screenings conveyor, compactor, electrical, instrumentation and controls (EI&C), concrete lining, roof, influent screening layout, and influent channels covers.

In an effort to increase cost-effectiveness, the project included analysis of screening alternatives and a screen rehabilitation life-cycle cost against replacement life-cycle cost to determine the most beneficial screening alternatives recommendations for SOCWA. The alternative selected was the most economical and practical solution for the client and maintained a high degree of performance. After evaluation, screenings conveyance and compaction were significantly improved with the addition of new belt conveyors and screenings compactor, which reduced operator work time in the facility.

Odors were reduced through careful planning and new layout of the duct system within the facility, as well as new intake and exhaust fans.

CONTACT

Brian Peck
P: 949-246-8338

DATE INITIATED/DATE COMPLETE

Jan 2008/Dec 2010

CONTRACT VALUE

\$300K

TEAM MEMBERS

Jeff Weishaar, Project Engineer
James Doering, Structural Engineer

WORK PERFORMED

- Structural improvements
- Evaluation of screening alternatives
- Odor control
- EI&C
- Screenings conveyance
- Compaction improvements



Cogeneration Building Wall Structural Repair

Encina Wastewater Authority, CA

In 2018, corrosion was discovered along the westerly wall of the cogeneration building that houses critical aeration blowers, cogeneration engines, and the electrical gear providing power to the blowers, digesters, dryer building, and other critical processes at the Encina Water Pollution Control Facility.

Carollo was brought on for initial investigations into the extent of corrosion to assist in determining the proper steps for rehabilitation of the wall. Subsequently, the wall was found to be in a state of corrosion so that replacement was required. Carollo provided engineering design and construction management (CM) services to work with EWA's emergency contractor. Using a phased and cautionary approach, the building was shored and the wall was successfully replaced. The project was completed successfully, with the wall returned to like-new condition, no safety accidents, and with minimal change orders.

CONTACT

James Kearns
P: 760-268-9114

DATE INITIATED/DATE COMPLETE

November 2018/November 2021

CONTRACT VALUE

\$3M

TEAM MEMBERS

Jeff Weishaar, Project Manager
James Doering, Structural Engineer

WORK PERFORMED

- Investigation of corrosion for rehabilitation
- Design and CM services



Primary Effluent Conveyance System Rehabilitation

Encina Wastewater Authority, CA

Carollo was selected to provide design and CM services for Encina's Primary Effluent (PE) Conveyance System Rehabilitation. Cured-in-place pipe (CIPP) was selected for pipe repair based on the overall strength of the repair, the useful life of the pipe after the repair, and cost. The bypass plan considered where and how to place pumps and piping to allow access for construction and to minimize effects to plant processes. The plan was installed and operated with a zero-leakage policy. Construction of the CIPP occurred over three days. Due to size and weight of the liner, it was necessary to perform the resin injection wet-out onsite. The wet-out facility was constructed at the location of liner insertion. Water was used to invert the liner into the host pipe and then heat-cure the liner into a hardened pipe.

During bypass operations, significant concrete repair and coating occurred throughout the PE conveyance system. Rebar replacement occurred in areas where it was found to have rotted away, and unsound concrete was replaced prior to coating. A 30-foot-long section of wall was replaced completely using quick-set, high early strength concrete to achieve strength in less than three days. This limited the impacts to the bypass pump operation. Epoxy polyurethane coating was applied to protect the repaired areas and limit future corrosion. The project was completed within the scheduled 18 months with the pump bypass duration completed in 43 days. The project was completed with no spills, no process impacts, no noise complaints, and no odor complaints.

CONTACT

James Kearns
P: 760-268-9114

DATE INITIATED/DATE COMPLETE

December 2017/December 2019

CONTRACT VALUE

\$4.65M

TEAM MEMBERS

Jeff Weishaar, Project Manager
James Doering, Structural Engineer

WORK PERFORMED

- Design and CM services for rehabilitation
- Various repairs and replacements
- Limited impacts to bypass pumping operations



This project was awarded the 2020 Outstanding Wastewater Project from San Diego ASCE and the 2020 Award of Excellence for Innovation and Resiliency from the California Association of Sanitation Agencies!



Plant No. 2 Headworks Replacement

Orange County Sanitation District,
Fountain Valley, CA

Carollo provided design of 183,000-cfm foul air odor control facilities that include two-stage treatment systems consisting of biotowers followed by chemical scrubbers with associated sodium hypochlorite and caustic feed equipment. This \$192 million project included a preliminary engineering report and preliminary and final design for a new headworks facility at Plant No. 2. The new headworks has a rated capacity of 340 mgd.

Carollo implemented an extensive two-phase odor control system using biotowers followed by chemical scrubbers, in addition to covering channels and equipment to contain odor at the source. Transportation and disposal costs were reduced with the ability to dispose of washed and dewatered screenings at a closer landfill compared to the unwashed/under-watered screenings from the existing headworks.

We also evaluated screening alternatives including impacts of smaller bar spacing including capacity, hydraulics, screening removal rates, and screen performance; and various screenings handling alternatives for conveyance (belt conveyors, shaftless screw conveyors, hydraulic conveyance), and washing/dewatering equipment. The screenings handling system was improved to provide reliable, clean conveyance of screenings to reduce odor generation and housekeeping requirements.

CONTACT

James Herberg
P: 714-962-2411

DATE INITIATED/DATE COMPLETE

Oct 2001/Jan 2013

CONTRACT VALUE

\$15.1M

TEAM MEMBERS

Walid Karam, Project Manager
Mary-Ellen Esquer, Design Manager
James Doering, Structural Engineer

WORK PERFORMED

- Screenings alternatives and screenings handling alternatives for conveyance evaluation
- Odor improvements
- Construction sequencing plan



Headworks Screening Replacement

City of Santa Barbara, CA

Carollo was retained to retrofit an existing headworks with a combination of modern equipment and upgrades to existing electrical infrastructure, while improving system reliability, reducing maintenance, and implementing process automation. Grinder/auger screens were replaced with new chain-and-rake bar screens and existing gates at the headworks that had reached the end of their useful life were also replaced. Carollo carefully navigated existing facility constraints that impacted equipment selection and configuration. The bar screen opening size was selected to increase screenings removal without affecting collection system hydraulics and a new screenings handling system increased reliability and reduced O&M requirements.

Due to extremely high organic content in the screenings, screenings washer/compactors were selected to provide a high-degree of washing and that also reduces odor. Carollo completed a comprehensive construction sequencing plan, developed in collaboration with plant staff, to maintain operations during construction.

CONTACT

Todd Heldoom
P: 805-568-1003

DATE INITIATED/DATE COMPLETE

Apr 2010/Jul 2013

CONTRACT VALUE

\$660K

TEAM MEMBERS

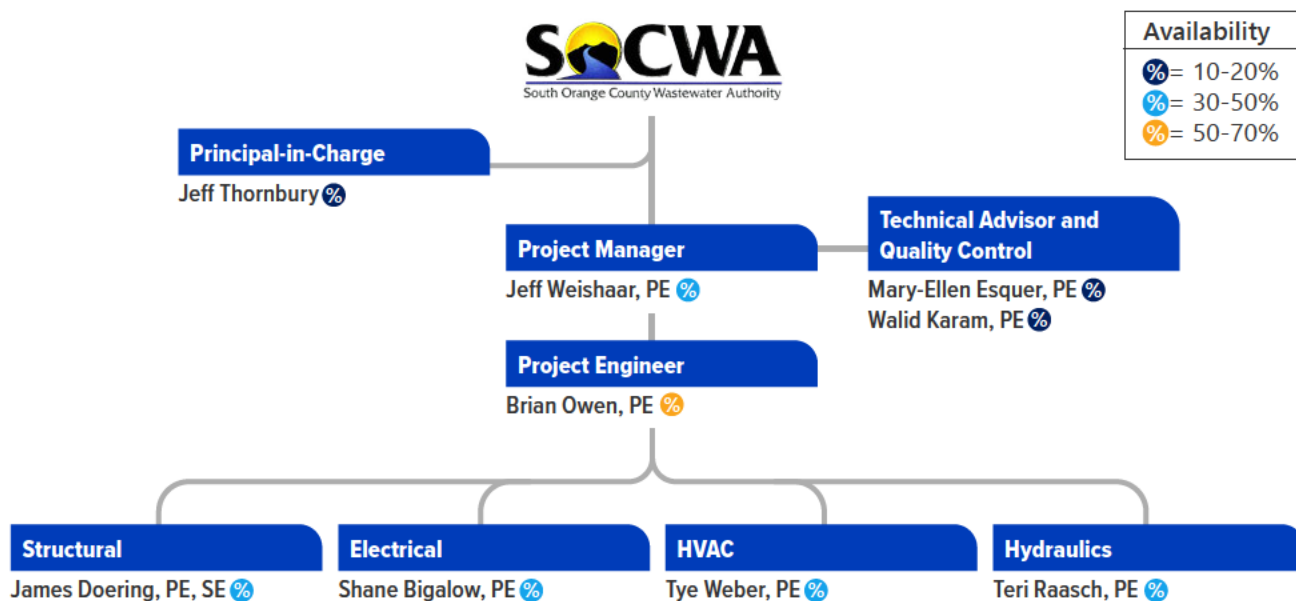
Walid Karam, Technical Advisor/OA
Mary-Ellen Esquer, Technical Advisor/OA
James Doering, Structural Engineer
Jeff Weishaar, Staff Engineer

WORK PERFORMED

- Equipment selection
- New screening handling system
- Odor control
- Construction sequencing

Key Personnel and Sub-Consultants

The Carollo team was hand-selected by project manager, Jeff Weishaar, to provide you with a team of experts who know and understand the needs of this project.



Carollo does not expect to use of subconsultants to complete this work.

Proposed Key Team Members



Jeff Weishaar, PE

PROJECT MANAGER

★ Jeff is a proven project manager and a senior wastewater treatment planning and design engineer with 20 years of experience. He has held a leadership role in projects involving nearly all aspects of wastewater treatment processes and facilities. As project manager, he will be responsible for maintaining the overall schedule, directing and supporting the activities of the engineering specialists, and will serve as your primary point of contact throughout the project.

EXPERIENCE

- Project engineer for the JBL Facility Plan for the SOCWA.
- Project engineer for the JBL Digester 3 Repairs for SOCWA.
- Project engineer for the Regional Treatment Plant Headworks Upgrade for SOCWA.

Proposed Key Team Members (continued)



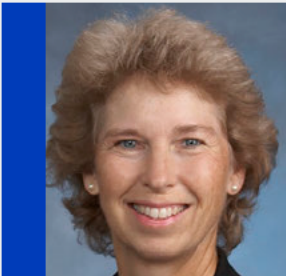
Jeff Thornbury

PRINCIPAL-IN-CHARGE

★ Jeff's 40 years of civil engineering and environmental experience allows him to anticipate challenges that arise during any project. As principal-in-charge, his role will be to provide cost-effective solutions by taking on a proactive role in the completion of project on time and within budget.

EXPERIENCE

- Project director for the Preliminary and Final Design of the Secondary Aeration Basin Rehabilitation project, Encina Wastewater Authority, CA.
- Principal-in-charge at the Water Pollution Control Facility for the Fiscal Year 2012 Major Plant Rehabilitation, Encina Wastewater Authority, CA.



Mary-Ellen Esquer, PE

TECHNICAL ADVISOR/QUALITY CONTROL

★ Mary-Ellen has 37 years of experience in process engineering related to headworks design for WWTPs. As one of Carollo's process leaders for influent screening and screenings handling Mary-Ellen will be available to review decisions and work products at critical stages to maintain project continuity and technical quality.

EXPERIENCE

- Project engineer for Headworks Rehabilitation at Moreno Valley and Temecula Valley Regional Water Reclamation Facilities for the Eastern Municipal Water District, CA.
- Project engineer for the Plant No. 1 Headworks Assessments for the Orange County Sanitation District, CA.



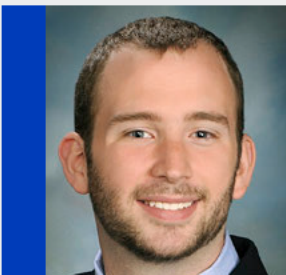
Walid Karam, PE

TECHNICAL ADVISOR/QUALITY CONTROL

★ Over the past 35 years, Walid has engineered and managed headworks upgrade projects that included screening and grit removal systems of various technologies for the highest profile headworks projects in the West. Having led the preliminary and final design of over 15 headworks projects of all sizes, Walid brings a wealth of experience and understanding of the technologies, options, and issues particular to systems at WWTPs.

EXPERIENCE

- Project/design manager for the Southeast Plant's new 250-mgd Headworks Project Conceptual Engineering Report and Preliminary and Final Design, San Francisco Public Utilities Commission, CA.
- Design technical advisor for the Water Pollution Control Plant Headworks Primary Replacement Facility, City of Sunnyvale, CA.



Brian Owen, PE

PROJECT ENGINEER

★ Brian has 10 years of experience in wastewater treatment design, construction management, and providing multi-disciplinary services for municipal clients. As project engineer Brian will be working on this project day-to-day alongside Jeff.

EXPERIENCE

- Project engineer for the Ralph W. Chapman Water Reclamation Facility Disinfection Improvements, Otay Water District, CA.
- Project engineer for Owners Agent for Horsetheif Canyon Water Reclamation Facility Expansion Project City of Lake Elsinore, CA.

Proposed Key Team Members (continued)



James Doering, PE, SE

STRUCTURAL ENGINEER

★ James, a registered structural and civil engineer, has experience performing structural design and evaluations for large and small wastewater projects. He has 30 years of experience in structural analysis, design, seismic retrofit, rehabilitation, review, and assessment for a variety of structures, such as wastewater treatment facilities. James will focus on the structural aspects of this headworks project.

EXPERIENCE

- Structural engineer for the JBL Digester No. 3 Upgrades for the SOCWA.
- Structural engineer for the JBL Facility Improvements Package B, SOCWA.



Tye Weber, PE

HVAC ENGINEER

★ Tye has 10 years of experience in evaluating and designing mechanical, plumbing, HVAC, odor control, and fire protection systems at wastewater treatment facilities. Tye will lead the evaluation and design of HVAC improvements that may be required to comply with NFPA 820 standards for air changes in a the headworks facility.

EXPERIENCE

- Mechanical engineer for Final Design and Construction Support Services for the Headworks Bar Screen Project, City of Hayward, CA.
- Staff professional for the Water Pollution Control Facility Headworks Rehabilitation, City of Hayward, CA.



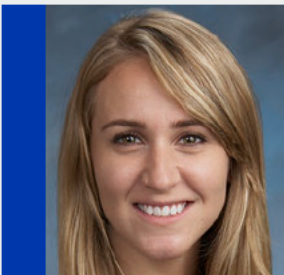
Shane Bigelow, PE

EI&C

★ Shane is a senior electrical engineer with 20 years of experience in the water and wastewater industry. His expertise is in medium- and low-voltage power distribution systems including power generation facilities, developing process and instrumentation diagrams, motor control centers, lighting, and instrumentation.

EXPERIENCE

- Instrumentation and controls engineer for the Veolia Water West Operating Services Headworks and Primary Clarifier Upgrade Project in Palm Springs, CA.
- Lighting design for PAR 1225 South Headworks & Grease Process Improvements Project, Metro Water Recovery, CO.



Teri Raasch, PE

HYDRAULICS

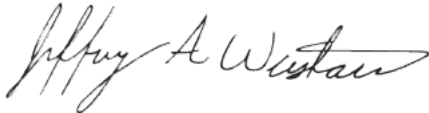
★ Teri has experience planning, designing, rehabilitating, and improving many headworks facilities with specific focus on design of headworks and solids handling systems, and screening. Teri provides extensive experience working on more than six large headworks facility projects—both new and retrofit—throughout her career.

EXPERIENCE

- Hydraulics engineer for the JBL Facility Plan, SOCWA.
- Project manager for the Headworks Conceptual Design Study and the Grit Rehabilitation Project for El Toro Water District, California.

Certifications

1. Carollo 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 Request for Proposals (RFP).
2. Carollo certifies that it is willing and able to obtain all insurance required by the form contract included as Attachment C on the RFP.
3. Carollo 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 the RFP and certifies that the proposed pricing includes funds sufficient to allow Carollo to comply with all applicable local, state, and federal laws or regulations governing the labor or services to be provided.
4. Carollo acknowledges and agrees with all terms and conditions stated in the RFP.
5. Carollo certifies that all information provided in connection with its proposal is true, complete, and correct.



Jeff Weishaar, PE
Project Manager / Vice President

Contract Comments

Carollo will maintain the required insurance during the life of the project. We agree to the contract language with the changes previously requested and accepted for the Regional Treatment Plant (RTP) AWT No. 2 Reconstruction Design and Construction Support Services contract dated August 4, 2022. We would be happy to re-submit those previously requested changes, if needed, and discuss further with SOCWA.

Appendix

Resumes
Form



Jeffrey A. Weishaar, PE

Jeff Weishaar, a civil and environmental engineer with Carollo Engineers, has worked on various wastewater projects, including elements of analysis, design, and construction.

Education

MS Environmental Engineering, University of Missouri, Rolla, 2006

BS Civil Engineering, University of Missouri, Rolla, 2004

Licenses

Civil Engineer, California

Professional Affiliations

American Society of Civil Engineers

Society of American Military Engineers

Water Environment Federation

Relevant Experience

→ Project engineer for the J.B. Latham Wastewater Treatment Plant Digester 3 Repairs for the South Orange County Wastewater Authority, California. The project included delivery of a preliminary design report analyzing the necessary repairs to the digester's mechanical appurtenances and instrumentation to improve safety and operations reliability. Drawings and specifications were prepared for concrete repair and recoating, piping and valve modifications, and instrumentation upgrades.

→ Project engineer for the Regional Treatment Plant Headworks Upgrade for the South Orange County Wastewater Authority, California. The project involved production of drawings and contract documents for replacement of the headworks building roof; rehabilitation of the existing mechanical bar screens; installation of new conveyors, screenings dewatering equipment, level measurement equipment in the existing channels for bar screen controls, and gas analyzers; channel concrete repair; odor control; and electrical and instrumentation modifications and upgrades. Roof replacement also incorporated a temporary odor control system with focus on the contractor's responsibility in capturing odors. He provided construction management services, submittal review, and responses to contractor requests for information.

→ Project engineer for the J.B. Latham Wastewater Treatment Plant Digester Capacity Evaluation for the South Orange County Wastewater Authority, California. The project included analysis of digester performance and operations to determine digester capacity for select goals. These included Class B biosolids, gas production for cogeneration, process stability, and emergency storage.

→ Project engineer for the J.B. Latham Treatment Plant Facility Plan for the South Orange County Wastewater Authority, California. The Facility Plan provided a 20-year planning window for liquid and solids treatment, flow analysis, odor control, energy management, site planning, and regulatory issues. Project duties included flow and plant capacity analysis, solids treatment analysis for thickening and digestion, site planning, cost estimating, and report preparation.

→ Project engineer for the Coastal Treatment Plant Return Activated Sludge Flow Control Analysis for the South Orange County Wastewater Authority, California. The plant operates two sets of aeration basins, with different depths and no automatic control for adjusting the flow split and flow rate of return activated sludge (RAS). The analysis evaluated methods of improving the existing RAS system. The project also included recommendations for six improvement projects with various degrees of cost and difficulty. The client approved three of these for design.

→ Project engineer for the Coastal Treatment Plant Return Activated Sludge (RAS) System and Headworks Upgrades for the South Orange County Wastewater Authority, California. Preliminary design included identification of reliable rotary drum screen manufacturers for raw wastewater screening including customer surveys, site visits, cost estimating, and detailed review of manufacturer specifications. Plans and specifications were prepared for replacement of the existing drum screens, replacement of the headworks influent force main knife gate valves, and other minor modifications to the headworks building. The plans and specifications also included design improvements to the return activated sludge system as previously identified in the RAS Flow Control Analysis. He provided construction management services, submittal review, and responses to contractor requests for information.

Jeffrey A. Weishaar, PE

→ Project engineer for the Coastal Treatment Plant Aeration Blower Capacity Analysis for the South Orange County Wastewater Authority, California. The plant operates two sets of aeration basins with different depths, air demands, and blower discharge pressures. The study involved analysis of the existing blowers, plant flows, aeration basin loading, and dissolved oxygen levels to determine the air demands for the various configurations of aeration basin operation. Blower upgrade alternatives were developed and analyzed for life-cycle costs based on capital and annual costs for power and cooling water consumption. Installation of turbine blowers was recommended to allow better control of air delivery to the aeration basins.

→ Project manager for the Coastal Treatment Plant Export Sludge Equalization Basin Design-Build Project for the South Orange County Wastewater Authority, California. The project included preliminary design of a sludge holding tank, export pumping station, and electrical building for storage and pumping of the Coastal Plant's primary and thickened sludges. The sludges are pumped approximately 4 miles to a nearby facility for processing. Preparation of the design-build procurement package included development of plans and specifications to a 60-percent completion level, preparation of the design-build agreement, agreement forms, and the request for proposals. Bids were received and evaluated from multiple design-build teams. Carollo is currently operating as the Owner's representative in overseeing the final design and construction and providing inspection services.

→ Project engineer for the Digester Gas Alternative Uses Evaluation for the South Orange County Wastewater Authority, California. Two treatment plants currently use engine generators to provide beneficial use of digester gas. This project evaluated existing and new technologies that would allow the plants to continue to utilize biogas under new, more stringent air quality emissions standards. The project recommended installation of new low emissions engine generators.

→ Project engineer for the Water Reclamation Plant Headworks Upgrades for the City of San Clemente, California. The design included drawings and contract documents for concrete repair and relining of the headworks influent channels and grit basins and replacement of mechanical bar screens. Relineing of channels required design of a temporary bypass facility, including manual bar screens and odor control, with focus on the contractor's responsibility to maintain and operate the facility. He provided construction management services, submittal review, and responses to contractor requests for information.

→ Project engineer for the City of Barstow, California. Wastewater Treatment Plant Improvements Phase 1 Project. This project covered multiple subtasks including condition assessment of the wastewater treatment plant, project development and ranking, process modeling, preliminary design and final design. The Phase 1 construction project includes rehabilitation of the aeration basins, secondary clarifiers, and gravity thickener, as well as SCADA upgrades, a new dewatering facility and new standby generator and additional miscellaneous site piping, electrical and instrumentation upgrades. The Phase 2 construction project will include upgrades to the primary clarifiers and aerobic digesters as well as a new influent pump station, a new electrical control building and additional SCADA, electrical, and instrumentation upgrades.

→ Project engineer for the El Estero Wastewater Treatment Plant Screening Evaluation for the City of Santa Barbara, California. The project evaluated screening technologies to replace the existing grinder and auger system at the influent pump station facility. Over a dozen screens were evaluated to fit into a high-flow, low-head loss environment with limited installation requirements. Use of multi-rake climber screens, over 20 feet in height, was recommended to remove debris from the incoming flow. The recommendations came after extensive evaluations including interviews of existing facilities that have the screens in service.



Jeffrey R. Thornbury

Jeff Thornbury's 37 years of civil engineering and environmental experience allows him to anticipate challenges that arise during the course of any project. His commitment to providing cost-effective solutions by taking on a proactive role in projects will result in the completion of projects on time and within budget. He encourages an open line of communication between the client and project manager in order to create innovative solutions to challenges.

Education

BS Civil Engineering,
University of Arkansas,
1983

Professional Affiliations

American Society of Civil
Engineers

National Society of
Professional Engineers

His experience ranges from water and wastewater engineering design, permitting, water resources and stormwater management, facility design, water and wastewater process, to construction design build. He has been project manager and principal in charge throughout the southwestern United States on more than 120 environmental management projects, 150 wastewater and civil/environmental projects, and 80 hazardous and solid waste management projects.

Relevant Experience

→ Project director for the Encina Wastewater Authority, California, preliminary and final design of the Secondary Aeration Basin Rehabilitation project at the Encina Water Pollution Control Facility. This project adds anaerobic selectors to the activated sludge process to improve secondary sludge settling for a capacity of 40.5 mgd. Baffle walls and mixers are added to the existing aeration basins to create anaerobic zones. The project also includes rehabilitation of the basins influent channels and washdown water system, gate replacement, and addition of a new standby RAS pump. Aeration basin covers are modified to provide improved access and safety provisions. Carollo's WASAC process was evaluated to identify potential energy and chemical savings and overall feasibility.

→ Principal-in-charge for the 2015 Major Plant Rehabilitation at Encina Wastewater Authority, Carollo is providing engineering services for the EWA to design repairs and rehabilitation to the Influent Junction Structure (IJS). The design includes a new bypass structure and bypass pumping of more than an average of 20-mgd of raw wastewater to provide access to the structure. The structural repairs include demolition of the concrete roof deck, removal of the existing liner, deteriorated concrete, and exposed and corroded rebar.

→ Principal-in-charge at the Encina Water Pollution Control Facility for the Fiscal Year 2012 Major Plant Rehabilitation for the Encina Wastewater Authority, California. The FY 2012 project consists of replacement of existing agitation air piping and diffusers, installing temporary bypass pumping system capable of approximately 70-mgd to allow structural repair work on the influent junction structure, cure in place lining of four 48-inch influent lines, new slide gates with electric actuators, foul air axial fan and piping, constructing vector truck dump station, rehabilitating existing plant drainage pump station, replacement of existing grit separating equipment, site grading drainage v-ditches, replacement of concrete sidewalks, asphalt pavement, curbs, and gutters.

→ Principal-in-charge for the design of the North City Pure Water Facility, City of San Diego, California. This fast-track design project was successfully managed and completed for construction bidding of this \$250 million project within 11-months. The project required extensive coordination with City departments, permitting agencies and stakeholders.

→ Principal-in-charge for the Stormwater Recovery for Pure Water Facilities, City of San Diego, California. Provided planning and preliminary design of combined sewer systems, and evaluation of treatment alternatives at wastewater reclamation plants to provide additional source water for the City's Pure Water Program.

Jeffrey R. Thornbury

- Principal-in-charge for the Encina Wastewater Authority, California, Process Master Plan for the Encina Water Pollution Control Facility. Carollo prepared a process master plan to evaluate existing process operations, recommend necessary enhancements, and ensure the Encina Wastewater Authority continued operation with up-to-date technologies while maintaining effective reuse of Encina's water, biofuel, and biosolid resources.
- Project director for the Wastewater Treatment and Stormwater Investigation and Design for United Airlines at San Francisco International Airport, California. The project included planning, investigations, design, and construction efforts related to stormwater collection, detention, and treatment at the San Francisco International Airport Aircraft Maintenance Facilities. The study area totaled 300 acres, covering onsite and offsite airport properties.
- Principal-in-charge for the Irvine Ranch Water District, California, Rattlesnake Reservoir Chlorine Gas System Replacement. Carollo is providing engineering services to replace the existing chlorine gas system with a bulk sodium hypochlorite system. Developed and evaluated alternative layouts for the new sodium hypochlorite storage and feed system, including three initial layouts for tank and pumping configurations.
- Principal-in-charge for North City Renewable Energy Pipeline Design, City of San Diego, California. Provided planning and design of the City's landfill gas pipeline from the existing Miramar Landfill to the North City Water Reclamation Plant as a component of the North City Renewable Energy Project.
- Principal-in-charge for the RP-4 Pump Station Design project for the Inland Empire Utilities Agency, California. The project consisted of upgrading an existing pump station by adding three 300-hp vertical turbine pumps and constructing a new booster pump station with five 300-hp horizontal split case pumps and approximately 800 feet of 36- and 48-inch diameter discharge pipeline.
- Principal-in-charge for the Rincon del Diablo Municipal Water District, California, Rockhoff Pump Station Replacement. This project consisted of the replacement of a pump station building and station modification to replace vertical turbine pump units with centrifugal skid-mounted pumps.
- Principal-in-charge for the Otay Water District, California, 870-2 Pump Station Replacement. Carollo designed a pump station facility that feeds two separate pressure zones one of which serves as a recirculation line for a 37 MG reservoir. An extensive cost analysis of life cycle costs and system reliability was performed looking at gas vs. electric drive pumps. Site constraints required special attention to keep all facilities within the property limits yet also plan for a future build-out phase that would double the facility's pumping capacity and accommodate future transmission mains crossing the site.
- Principal-in-charge for the Miramar Pump Station Condition Assessment project for the San Diego County Water Authority, California. The project included condition assessment and renewal decision analysis for the pump station.
- Client services manager for the Carlsbad Desalination Conveyance Pipeline and Flow Control Facility for the San Diego County Water Authority, California.
- Principal-in-charge for the Sweetwater Authority, California, Robert A. Perdue Water Treatment Plant Facilities Master Plan Update. Carollo completed a detailed condition assessment plan and investigation to create an overall asset list for installed equipment at the plant, including structural, mechanical, electrical, and instrumentation assets. The project also includes process improvement evaluations to explore safer use of chemicals on site; replaces the aging clearwell facility; improves chemical handling, conveyance, and mixing; upgrades the intake structure to reduce manpower needed for operational tasks; and assesses potential regulatory requirements that could alter the treatment process at the plant.



Mary-Ellen Esquer, PE

Mary-Ellen Esquer, an associate, has provided process engineering on water and wastewater projects involving planning, design, and construction management services.

Education

BS Civil Engineering,
California State
University, Long Beach,
1987

Licenses

Civil Engineer, California

Professional Affiliations

California Water
Environment Association

Water Environment
Federation

Relevant Experience

→ Project engineer for the Plant No. 1 Headworks Assessments for the Orange County Sanitation District, California. The study identified rehabilitation and improvement needs of the 24-year-old, 320-mgd headworks facility. Process improvements included replacement of the existing climber bar screens and screenings handling system; improvements to grit removal and grit handling systems; increasing influent pumping capacity; improving primary flow metering, odor control; and electrical upgrades. An important part of the study was to modernize the grit removal and handling facilities and identify construction sequencing requirements to keep existing facilities in operation during inspection and construction of needed repairs and modifications.

→ Project engineer on the Orange County Sanitation District, California, Plant No. 1 Secondary Treatment Expansion project. This project included a retrofit of the existing aeration basins with internal baffles for operation with "selectors," new fine bubble diffusers, an automated dissolved oxygen control system, and provisions for step-feed operation. The project also included new and retrofit rectangular secondary clarifiers, RAS and WAS pumping, DAF thickeners, and aeration blowers. Her responsibilities included design of new secondary clarifiers with automatic sludge withdrawal and scum collection systems; modifications to existing secondary clarifiers, RAS collection system, and flow distribution channels and structures; and analysis of plant hydraulics. She also designed a programmable logic controller-based flow distribution and control system consisting of splitter boxes, flowmeters, and control valves to control influent flow to the secondary plant.

→ Prepared the preliminary design report for a 60-mgd primary clarifier expansion project for the Orange County Sanitation District, California. This included refining design criteria; preliminary design and layout of rectangular clarifier basins, flow splitting and distribution structures; and analysis of influent and effluent hydraulics. The hydraulic analysis included future plant expansions for a total capacity of 180 mgd.

→ Project engineer for Headworks Rehabilitation at Moreno Valley and Temecula Valley Regional Water Reclamation Facilities for the Eastern Municipal Water District, California. The project included final design, construction services, and start-up assistance to replace existing screens and screenings conveyors and adding new screenings washing/dewatering equipment at the Temecula Valley and Moreno Valley Regional Water Reclamation Facilities. New bar screens replaced existing unreliable and maintenance-intensive equipment. At the Moreno plant, which removes an extremely high amount of fecal matter with the screenings, the existing belt conveyor was replaced with a covered shaftless screw conveyor that transports the screenings to a new washer/compactor that produces a much cleaner and less odorous product for disposal. The design addressed space constraints in existing facilities and sequencing requirements to keep existing facilities in operation during construction. The control system provided full automation of equipment for unattended operation and integration with the existing plant-wide process control system.

→ Design technical advisor for the City of San Leandro, California, WPCP Rehabilitation Project. This project included design of new screens, compactors, screw conveyors, grit removal, influent pump station, primary clarifiers, and fixed film reactors. Retrofitted project elements included secondary clarifiers, digesters, corroded concrete, and the 12 KV electrical distribution system.

Awards

Outstanding Private Sector Civil Engineering Project - Honorable Mention, American Society of Civil Engineers, Los Angeles Section, 2013, City of Santa Barbara El Estero Wastewater Treatment Plant Headworks Screening Replacement

Project of the Year, American Society of Civil Engineers, Santa Barbara/Ventura Branch, 2012, City of Santa Barbara El Estero Wastewater Treatment Plant Head-works Screening Replacement Project

Engineering Research Achievement Award, Santa Ana River Basin Section of the California Water Environment Association, 2005, Orange County Sanitation District Plant No. 2 Headworks Replacement Project, P2 66

Engineering Research Achievement Award, California Water Environment Association, 2005, Orange County Sanitation District Plant No. 2 Headworks Replacement Project, P2 66

Mary-ellen Esquer, PE

→ Project engineer for the conceptual engineering report and the preliminary and final design of San Francisco Public Utilities Commission (SFPUC), California, Southeast Plant's new 250-mgd Headworks project. The project replaces two existing headworks facilities with a single new headworks to significantly increase screening and grit removal and to provide plant staff and the surrounding community with the highest level of standards for reliability, aesthetics, odor control, and noise abatement. The project addresses major challenges including very tight site space, high groundwater, poor soils, heavy urban setting, extremely high influent grit loads from this combined sewer system, and protecting SFPUC's major investment in state-of-the art solids treatment and handling facilities. Headworks facilities include an influent junction/metering structure, bar screen facility, screenings handling, grit basins, grit handling, flow splitting/distribution structures, odor control scrubbers, chemical addition, and electrical/control buildings. The design employs innovative solutions to optimize process performance and hydraulics, confirmed through computational fluid dynamic (CFD) and physical modeling of various hydraulic structures.

→ Design technical advisor on the Water Pollution Control Plant Headworks Primary Replacement Facility for the City of Sunnyvale, California. The state-of-the-art \$100 million headworks facility is designed to meet very stringent goals for screening, grit removal, and odor control. The design also includes a complete retrofit and extension of the plant tunnel system. Additional project details include a fully automated, operation and maintenance (O&M)-friendly, screening and screenings handling facility using multi-rake screens with 3/8-inch bar spacing; shaftless screw conveyors and high-performance screenings washers compactors; new HeadCell® grit basins and COANDA fine grit washers; a 60-mgd influent pump station; a foul air bioscrubber system; and retrofit/extension of the existing plant tunnel system.

→ Design technical advisor for the Sewerage Agency of Southern Marin, California, Five-Year CIP Upgrades Project. This project includes predesign and final design of facility improvements for headworks, primary clarifiers, primary sludge/scum pumps, trickling filters, secondary clarifiers, and digester improvements.

→ Project engineer for the Water Recycling Plant Reconstruction project for El Toro Water District, California. The project included replacement and upgrade of various components of the existing 6-mgd plant to meet Title 22 reliability requirements. The project included influent equalization basins, influent pump station, aeration basins, standby power engine generator, aeration blowers, flow distribution structures, odor control facilities, modifications to existing secondary clarifiers to improve sludge removal, and replacement of sludge pumps and irrigation pumps. The new activated sludge facilities were designed for future denitrification and operation using selectors. The aeration basins included internal tank baffles, provisions for step feed, and operation using an anoxic zone. An important part of the design involved developing a sequence of construction to allow construction and start-up of the new facilities without compromising plant operations. The project also involved assisting the District with an application for low-interest financing under the State of California's Revolving Loan Fund program.

→ Process engineer on the Camrosa Water District, California, Water Reclamation Facility Expansion Project. Ms. Esquer developed the facility layout and completed preliminary design of the new influent pump station, oxidation ditches with anoxic basins, sludge pump station, tertiary filters, and a sodium hypochlorite disinfection system to replace an existing gaseous chlorine system. She also completed final design of the tertiary treatment facilities including continuous backwash filters, flocculation basins, and flow distribution facilities.



Walid T. Karam, PE

Walid Karam, a senior project manager and senior vice president with Carollo Engineers, has 35 years of experience as a sanitary engineer in areas such as preliminary, primary, secondary, and tertiary treatment. For the past 25 years, he has worked extensively on planning and designing large and complex headworks facilities throughout the Western United States that involve screening, grit removal, and pumping systems. Walid is Carollo's technical practice leader for all headworks projects, and is a Subject Matter Expert for grit removal, grit washing/degritting, and grit handling systems.

Education

MS Sanitary Engineering,
University of California,
Berkeley, 1988

BS Civil Engineering,
American University of
Beirut, Lebanon, 1987

Licenses

Civil Engineer, California,
Oregon

Professional Affiliations

American Society of Civil
Engineers (ASCE)

California Water
Environment Association
(CWEA)

Water Environment
Federation

Relevant Experience

→ Project/design manager for the conceptual engineering report and the preliminary and final design of San Francisco Public Utilities Commission (SFPUC), California, Southeast Plant's new 250-mgd Headworks project. The project replaces two existing headworks facilities with a single new headworks to significantly increase screening and grit removal and to provide plant staff and the surrounding community with the highest level of standards for reliability, aesthetics, odor control, and noise abatement. This project received an Envision Gold Award in 2019 for its innovation in supporting sustainability. Headworks facilities include an influent junction/metering structure, bar screen facility, screenings handling, grit basins, grit handling, flow splitting/distribution structures, odor control scrubbers, chemical addition, and electrical/control buildings.

→ Design technical advisor on the Water Pollution Control Plant Headworks Primary Replacement Facility for the City of Sunnyvale, California. The state-of-the-art headworks facility was designed to meet very stringent goals for screening, grit removal, and odor control. The design also included a complete retrofit and extension of the plant tunnel system. Additional project details include a fully automated, operation and maintenance (O&M)-friendly, screening and screenings handling facility using multi-rake screens with 3/8-inch bar spacing; shaftless screw conveyors and high-performance screenings washers/compactors; new HeadCell® grit basins and COANDA fine grit washers; a 60-mgd influent pump station; a foul air bioscrubber system; and retrofit/extension of the existing plant tunnel system.

→ Design manager for the County of Hawaii, Hawaii, Hilo WWTP Phase 1 Improve-

ments. Managed the design of a new headworks, rehabilitated solids thickening and dewatering facilities, and new digesters for the Hilo WWTP.

→ Project/design manager for the Plant No. 1 Headworks Assessments for the Orange County Sanitation District, California. The study identified rehabilitation and improvement needs of the 24-year-old, 320-mgd headworks facility. Process improvements included replacement of the existing climber bar screens and screenings handling system; improvements to grit removal and grit handling systems; increasing influent pumping capacity; improving primary flow metering, odor control; and electrical upgrades. An important part of the study was to modernize the grit removal and handling facilities and identify construction sequencing requirements to keep existing facilities in operation during inspection and construction of needed repairs and modifications.

→ Design advisor/quality manager for the El Estero WWTP Headworks Screening Replacement for the City of Santa Barbara, California. On this award-winning project, he was part of the solution to the complex replacement located in a 35-foot-deep basement. As part of the team, he introduced five-section, 90-degree vertical screens to overcome constraints to the existing structure and extremely compact footprint. The project also involved installing new mechanical bar screens, a screenings conveyor, screenings washer/compactors, a smart motor control center, and replacing all existing cast-iron sluice gates. The new control system provides full automatic control of the new screening system.

→ Project director for the Plant 1 Headworks Rehabilitation and Expansion for the Orange County Sanitation District, California. The project provides major upgrades to

Walid T. Karam, PE

the 25-year-old, 320-mgd headworks facility. Improvements include structural repairs for the plant's influent metering and diversion structures, replacement of the existing climber bar screens and screenings handling system; improvements to both the grit removal and grit handling systems; increasing influent pumping capacity; replacement of primary influent flow metering, a new 100,000-cfm odor scrubber system; and major electrical and controls upgrades.

→ Lead engineer on the Grit and Screenings Handling Study for the Encina Wastewater Authority, California. He provided a condition assessment of the 40.5-mgd plant headworks including screening and grit removal, evaluation of alternative equipment and process technologies, and recommendation of rehabilitation improvements. He developed and evaluated alternatives for improving grit removal and handling within the limits of the existing facilities. The selected alternative included upgrades to the existing aerated grit chambers and complete replacement of the grit pumping and handling system.

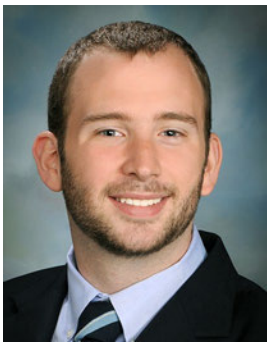
→ Grit process lead for the South Headworks and Grease Processing Improvements at the Robert W. Hite Treatment Facility for the Metro Wastewater Reclamation District, Denver, Colorado. This 145-mgd headworks retrofit and grease processing improvements project involved preliminary design, final design, and bidding phase services for the existing structure expansion, including the addition of two new bar screen channels and a new electrical system. Key project elements where his decisions were instrumental include construction sequencing, overseeing the existing facilities phased installations, maximizing operation and maintenance (O&M) elements on the project through standardization in equipment configuration, and operational strategies throughout client facilities.

→ Design engineer on the Columbia Boulevard WWTP Headworks Replacement for the City of Portland, Oregon. His primary responsibility was focused on the hydraulic design of this project, which involved a new 300-mgd headworks to replace the existing facilities. Project elements included an influ-

ent pump station, climber bar screens, screenings washer/compactor for each bar screen, belt conveyor, vortex-type grit basins, SlurryCup™/Grit Snail® grit washer, bin loading facility, packed bed scrubbers for odor control, and chemical facilities. Monitoring and automatic control of all equipment was provided through a SCADA system.

→ Lead design engineer for the Clark County Water Reclamation District, Nevada, Central Plant Bar Screen Facility Conceptual and Final Design. The new headworks and chemical feed (ferric chloride) facilities were designed for a peak capacity of 260-mgd to supplement and replace existing headworks facilities. The project involved unit processes that included bar screens, screenings washing/dewatering and conveyance, aerated grit basins, grit dewatering, ferric chloride and sodium hypochlorite chemical feed systems, and foul air treatment by soil bed scrubbers. During predesign, he completed hydraulic modeling through the existing and new facilities to fit the new headworks "hydraulically" between existing upstream and downstream limits. He also managed the pilot testing program to select site specific BAT which included testing of screenings washing/compactor, shaftless screw conveyors, and grit washing equipment. He completed design of metering and diversion facilities, conveyor systems for screenings transport and truck loading, a fully automated grit pumping system for new and existing grit basins, grit washing/dewatering, and a truck loading facility.

→ Project manager for the preliminary engineering report and final design of the Replacement Headworks at Orange County Sanitation District, California, Plant No. 2. His duties included managing a large multi-discipline design team and 10 subconsultants. The replacement headworks design has a capacity of 340-mgd and includes influent flow metering and diversion, bar screens, screenings handling, influent pumping, grit basins, grit handling, primary influent flow splitting and metering, odor control scrubbers, chemical facilities, and an electrical building.



Brian R. Owen, PE

Brian Owen joined Carollo in June 2017. His experience includes water and wastewater treatment design, as well as construction management providing multi-disciplinary services for municipal clients.

Education

MS Civil Engineering with emphasis on Environmental Engineering, University of Wisconsin, Madison, 2016

BS Civil Engineering with emphasis on Environmental Engineering, University of Wisconsin, Madison, 2014

Licenses

Civil Engineer, California

Professional Affiliations

American Water Works Association

Relevant Experience

→ Project engineer for City of Twentynine Palms, Owners agent for Septic to Sewer conversion. Carollo was tasked with developing a conceptual design report to be used for the basis of bridging documents for a design-build of a new water reclamation facility. Responsibility included data analysis for flow requirements and peaking factors, raw water quality development, potential plant layout, comparison of membrane bioreactor treatment with conventional clarifiers and development of hydraulic profile.

→ Project engineer for the evaluation and replacement of reclaimed water UV disinfection for the Olivenhain Municipal Water District, California, 4S Ranch Water Reclamation Plant. Carollo was tasked with replacement of existing UV system. Work efforts included equipment preselection coordination and packaging, detail design including equipment layout, discipline coordination, authoring of specifications, startup & commissioning to meeting Title 22 requirements, and permitting of a new UV system for Title 22 water reuse.

→ Project engineer for disinfection improvement for Otay Water District, California, Ralph W. Chapman Water Reclamation Facility. The work included replacing existing chlorine contact tank disinfection for Title 22 system with new UV disinfection system. Ancillary components included conversion from chlorine gas system to sodium hypochlorite and replacement of backwash supply pumping. Responsibilities included data analysis for UV system sizing, authoring preselection package, authoring preliminary engineering report, detailed design for layout, discipline coordination and authoring of specifications to meet Title 22 requirements.

→ Project engineer for City of Lake Elsinore, Owners agent for Horsetheif Canyon Water Reclamation Facility expansion Project. Carollo was tasked with developing request for proposal documents for the design-build to expand the existing facility. Responsibly included review of design builder qualifications and checking references, authoring of bridging document design criteria for secondary treatment, tertiary treatment, site civil, odor control and chemical systems.

→ Project engineer for City of Solvang California, aeration improvements project. Work efforts included replacement of existing jet aeration system in sequencing batch reactors to fine bubble diffusion. Responsibilities included flow and loading analysis for sizing of blower system, design and layout of blowers, large bubble mixing system and tube style diffusers. Detailed design included ability to build on upgrades for future flow expansion to meet additional treatment capacity or further treatment.

→ Project engineer for City of Los Angeles, California, Hyperion MBR Pilot Facility Design. Project consisted of design services for MBR to RO pilot system to explore full scale expansion of potential reuse for client. Work efforts included design and test plan for pilot system with MBR treatment followed by RO treatment. Responsibility included test plan for different RO recovery set points, RO projections for multiple operating scenarios, flexible RO skid design to accomplish range of testing parameters, development of monitoring system, layout and pumping requirements.

→ Project engineer for Sweet Water Authority, Robert A. Perdue Water Treatment Plant Master Plan Update. Carollo was asked to perform a condition assessment of the existing surface water treatment facility to estimate remaining useful life, provide recommendations for repairs and prioritization of equipment replacements. Plant regulations and population projections were reviewed to provide recommendations for

Brian R. Owen, P E

future treatment requirements and capacity. Efficiency of the treatment system and improvements, along with specific project evaluations were analyzed to recommend future CIP project with planning level budgets.

→ Project engineer for Sweet Water Authority, Robert A. Perdue Water Treatment Plant Hydro Mechanical Evaluation. Carollo was asked to perform a condition assessment for the hydro-electric turbine system to investigate causes for piping failure. Visual assessment and potential causes were evaluated with recommendations for repair along with opinion of cost.

→ Project engineer for the City of San Diego, California, Alvarado Water Treatment Plant Chemical Piping Condition Assessment. Carollo was tasked with performing a condition assessment for the City to determine the any rehabilitation required and estimate remaining useful life. 1,300 feet of chemical trench was inspected with multiple chemical service and line sizes assessed. Piping type was mainly PVC and condition of the concrete trench along with piping was assessed. The result of the condition assessment provided recommendations for fixing pipe supports, double containment and identification and repair for chemical leaks, as well as concrete structural cracks. Based on the conclusions of the condition assessment, minor repairs were needed for pipe supports to prevent future stresses on the existing pipe.

→ Project engineer for the City of San Diego, California, Alvarado Water Treatment Plant Stainless Steel Piping Condition Assessment. Carollo was asked to perform a condition assessment for the City to determine the condition of all the gallery piping and estimate useful remaining life. However, only the wash water supply piping was assessed due to hydraulic issues with valving not holding flow and limited shutdown time. The wash water supply piping is 30 inches in nominal diameter and is constructed of Type 304L stainless steel. The results of the condition assessment will be used to determine if rehabilitation or replacement of the Type 304L stainless steel piping is recommended. Based on the conclusions of the

condition assessment rehabilitation and replacements options considered, rehabilitation of the piping was determined not feasible.

→ Assistant project engineer for the City of San Diego, California, \$367M North City Pure Water Facility Project. This facility will treat tertiary, filtered effluent from the North City Water Reclamation Plant, in compliance with Title 22 regulations for surface water augmentation indirect potable reuse (IPR), to discharge into the Miramar Reservoir. The new advanced water treatment plant will produce 34 mgd of safe, high-quality drinking water using a proven five-step water purification process of ozonation, BAC filters, membrane filtration, RO, and UV disinfection with sodium hypochlorite advanced oxidation. When complete, the AWTP will be California's first surface water augmentation project. Responsibilities included preliminary engineering and design of reverse osmosis treatment process. Responsibilities included selecting pumps to meet flow, service and pressure requirements, routing chemical pipes through yard and process areas, designing safety features around corrosive chemicals, coordinating with different processes for appropriate chemical usage.

Project engineer for South Adams, Colorado. Carollo was tasked with developed softening treatment process with up flow pellet reactors followed by chemical conditioning and filtration. Responsibilities included chemical usage calculation, chemical pump metering hydraulics, chemical bulk storage design and layout of chemical facility. Chemicals included were sodium hypochlorite for disinfection, carbon dioxide for ph adjustment and caustic soda for use in pellet generation.



James A. Doering, PE, SE

James Doering, a registered structural and civil engineer, is Carollo's structural lead engineer in Southern California. He manages structural design and evaluations for large and small projects. He has 30 years of experience in structural analysis, design, seismic retrofit, rehabilitation, review, and assessment for a variety of structures, such as wastewater and water treatment facilities, pump stations, reservoirs, tanks, clarifiers, large pipe supports, retaining walls, operations and maintenance facilities, office buildings, parking structures, post tensioned concrete structures, retail shopping centers, and warehouses.

Education

MS Civil Engineering,
University of California,
Berkeley, 1994

BS Civil Engineering,
University of California,
Irvine, 1993

Licenses

Structural Engineer,
California, Oregon, Utah,
Washington

Civil/Structural Engineer,
South Dakota

Civil Engineer, California,
Colorado

Professional Affiliations

American Concrete
Institute

American Institute of
Steel Construction

Relevant Experience

→ Structural engineer for the J.B. Latham Wastewater Treatment Plant Digester No. 3 Upgrades for the South Orange County Wastewater Authority, California. The project included rebuilding of the interior concrete surface at the upper walls and bottom of the roof slab with shotcrete and the provision of a protective liner.

→ Structural engineer for the JB Latham Treatment Plant Facility Improvements Package B, South Orange County Wastewater Authority, California. This project included capacity and condition assessment of the existing liquid treatment trains, evaluation of effluent management options, cost modeling, process modeling, hydraulic modeling, and capacity analyses of solids thickening and digestion processes. Improvements included repair of damaged concrete surfaces at influent and effluent channels with application of a protective coating. Work was sequenced and included bypass pumping to maintain plant operations.

→ Structural engineer for the J.B. Latham Treatment Plant Strategic Plan for South Orange County Wastewater Authority, California. The scope of work included a visual concrete condition assessment and a seismic risk evaluation of the existing plant structures that included aeration basins, primary and secondary clarifiers, solids-handling building, and digesters. Finite element analysis was used to evaluate the aeration basins walls at areas of high-stress concentration. Findings and recommendations were presented to the client in a workshop and a comprehensive technical memorandum.

→ Structural engineer for the RP-4 Primary Clarifier and Process Rehabilitation Project, Inland Empire Utilities Agency, Rancho Cucamonga, California. This project included condition assessment and repair of the existing influent pump station, grit chambers, primary clarifiers 1 and 2, primary influent diversion structure, and aeration basins. Improvements included repair of damaged concrete surfaces with a high-strength cementitious mortar and application of a protective coating. Work was sequenced and included bypass pumping to maintain plant operations.

→ Structural engineer for the P1-105 Headworks Rehabilitation and Expansion at Plant No. 1 Project for the Orange County Sanitation District, California. Serving as the lead structural engineer for 320-mgd headworks facilities, he oversaw development of over 277 structural drawings for a \$222 million CIP Project, which is now in construction. The scope includes several new buildings and rehabilitation to existing M&D, IPS, bar screen building, grit chambers, and utility tunnels. Concrete repairs were also specified for the M&D influent box and downstream channels. Bypass pumping was designed to accommodate work on existing structures. Additionally, a Tier 1/2 seismic evaluation was prepared during pre-design for the existing structures in the scope per ASCE 41-13. Findings were used for project planning and development of mitigation strategies.

→ Structural engineer for the design of Encina WPCF 2012 Major Plant Rehabilitation Project for Encina Wastewater Authority, San Diego County, California. The project included the rehabilitation of the plant's influent junction structure that involved concrete repair, coating, and the replacement of the top concrete slab with a new

Open for Quote

"Without a doubt James Doering added a tremendous value to the Carollo team and was absolutely a contributing factor to the overall success of these critical projects at the EWPCF."

- James Kearns, Capital Projects Manager, Encina Wastewater Authority, referring to the EWPCF Influent Junction Structure Rehab and Ocean Outfall-Landfall Inspection projects

James A. Doering, PE, SE

aluminum cover, which required regrading of an adjacent slope to reduce the loading. The work required a full plant bypass that included construction of a permanent bypass vault and hot-tap into a 60-inch diameter HOBAS influent sewer line.

→ Structural engineer for the La Salina Wastewater Treatment Plant Upgrades for the City of Oceanside, California. The project included rehabilitation and upgrades to the following facilities: headworks, primary clarifiers, aeration basin/secondary clarifier, digestion, dissolved air flotation thickener, and administration building.

→ Structural engineer for the design of Primary Effluent Conveyance System Rehabilitation Project for Encina Wastewater Authority, California. The project included the rehabilitation of the concrete primary effluent channels, junction boxes, and associated piping, which had experienced hydrogen sulfide corrosion with severe structural damage. Facilities were provided with structural repair mortars, new protective coatings, and concrete replacement using high-early strength solutions to limit bypass pumping costs.

→ Structural engineer for the preliminary and final design of the Secondary Aeration Basin Rehabilitation project at the Encina Water Pollution Control Facility for the Encina Wastewater Authority, California. The project included rehabilitation of the basins' influent channels and washdown water system, and gate replacement. Aeration basin covers were replaced with new aluminum flat covers and designed to provide improved anchorage of the equipment.

→ Structural engineer for El Estero Wastewater Treatment Plant Digester Nos. 1 and 2 Rehabilitation for the City of Santa Barbara, California. The project included identification of cracks at the interior of the digesters requiring repairs/sealing and preparation of associated details and repair procedures. The interior concrete was also repaired and coated with a polyurethane spray-on liner.

→ Structural engineer for the La Salina Wastewater Treatment Plant Upgrades for the City of Oceanside, California. The project included rehabilitation and upgrades to the following facilities: headworks, primary clarifiers, aeration basin/secondary clarifier, digestion, dissolved air flotation thickener, and administration building.

→ Structural engineer for the Seismic Evaluation of Sunset Reservoir No. 1 for Pasadena Water and Power, California. The project involved the seismic/structural evaluation of a 5.6 million gallon, elliptical-shaped reservoir with a hopper bottom and wood-framed roof originally constructed in 1888. Operational strategies, rehabilitation/retrofit, and replacement alternatives were considered. Findings and recommendations were presented in a report with conceptual level cost estimates.

→ Structural engineer for the Plant 1 Headworks Channel Internal Repairs for the Orange County Sanitation District, California. Work involved providing new stainless steel waterstops around the interior perimeter of two existing headworks effluent channels to stop leakage between the channels at an existing expansion joint. Repair work also included packing the existing expansion joints with Oakum and polyurethane resin grout to serve as a joint filler.

→ Structural engineer for the PS15-06 Seismic Evaluation of Plant 1 and 2 Facilities for Orange County Sanitation District in Orange County, California. The scope of work included evaluating more than 60 structures following ASCE 41 and ACI 350 procedures. Structures included single and multi-story process and admin/service buildings, as well as, digesters, aeration basins, surge towers, and gas holders. Both ground shaking and the response to ground deformations due to liquefaction were evaluated to identify vulnerabilities. Conceptual structural and geotechnical mitigation strategies were then developed and prioritized to assist the District with implementation into their Master Plan.



Shane K. Bigelow, PE

Shane Bigelow is a Senior Electrical Engineer at Carollo and has 20 years of experience in electrical, instrumentation, and controls engineering for water and wastewater projects and engineering services during construction. Experience includes electrical system studies in ETAP and Paladin DesignBase, medium- and low-voltage power distribution systems including standby power generators, developing process and instrumentation diagrams (P&IDs), motor controls, lighting, and instrumentation. He is experienced in the coordination of electrical work with civil, structural, and mechanical work, during both design and construction phases of a project.

Education

MS Engineering (with Electrical Specialty), Colorado School of Mines, 2008

BS Electrical and Mechanical Engineering, Colorado School of Mines, 2004

Licenses

Professional Engineer, Colorado

Professional Affiliations

Institute of Electrical and Electronics Engineers

Relevant Experience

→ Instrumentation and controls engineer for the Veolia Water West Operating Services Headworks and Primary Clarifier Upgrade project in Palm Springs, California. Responsibilities included developing P&IDs, network block diagram, and control schematics, developed around using Rockwell Automation intelligent motor control centers with EtherNet/IP communication and Device Level Ring technology.

→ Lighting design for the Metro Water Recovery PAR 1225 South Headworks & Grease Process Improvements project in Commerce City, Colorado. Responsibilities included selecting LED luminaires, creating lighting models for multiple buildings and outdoor areas.

→ Senior electrical engineer for the City of Turlock Regional Water Quality Control Facility Secondary Clarifier No. 5 and Denitrification Project in Turlock, California. Responsibilities included new motor control centers, VFDs, and pre-fabricated electrical building to power new mixers and MLR pumps in existing aerations basins, a new RAS Pump Station, and a new secondary clarifier. VFD cables and VFD output filters were used for long cable lengths to motors.

→ Senior electrical engineer for the Metropolitan Water District of Southern California MWDSC Advanced Water Treatment Demonstration Facility in Carson, California. Responsibilities included design for a pre-fabricated electrical building with 480 V switchboard, motor control center, and panelboards to support reverse osmosis, ultraviolet, microfiltration, and chemical systems through an elevated cable tray system. The design included an intelligent motor control center, fiber optic, copper Ethernet, and Profibus network cabling, and lighting.

→ Electrical engineer for the Sedona Wastewater Reclamation Plant A+ Upgrades Project in Sedona, Arizona. Design included secondary improvements and aerobic digester upgrades including aeration basin instrumentation, aeration blower facility, RAS/WAS pump station improvements, digester blower facility, and new electrical building. New switchboards and motor control centers were added, and existing motor control centers were modified.

→ Lead electrical, instrumentation, and controls engineer for the California Men's Colony Wastewater Treatment Plant Disinfection Upgrade Project in San Luis Obispo, California. Design elements included modifications to controls for existing VFDs, power distribution and conduit routing for new fine screens, effluent pumping and metering, tertiary filter pump station, and UV disinfection basin, and lighting and grounding. Construction support included shop drawing submittal review, factory acceptance testing witnessing for the UV control panel, and review of the SCADA system and assistance with fine-tuning the control system.

→ Electrical system modeler for the EchoWater Tertiary Treatment Facilities (TTF) project for Sacramento Regional City Sanitation District, Sacramento, California using Paladin DesignBase. Tasks included modeling new medium voltage distribution, new medium- and low-voltage SWGR, MCCs, panelboards, transformers, VFDs, and motors.

Shane K. Bigelow, PE

- Electrical system modeler for the EchoWater Heavy Equipment Maintenance Building (HEMB) project for Sacramento Regional City Sanitation District, Sacramento, California using Paladin DesignBase. Tasks included modeling medium voltage distribution, new SWBD, panelboards, transformers, and motors, and producing a protective device coordination study.
- Electrical system modeler for the EchoWater Return Activated Sludge Pumping (RAS) project for Sacramento Regional City Sanitation District, Sacramento, California using Paladin DesignBase. Tasks included modeling existing and new MCCs, panelboards, transformers, VFDs, and motors, and producing a protective device coordination study.
- Electrical system modeler for the EchoWater Nitrifying Sidestream Treatment Plant (NST) project for Sacramento Regional City Sanitation District, Sacramento, California using Paladin DesignBase. Tasks included modeling new medium voltage distribution, new SWGR, MCCs, panelboards, transformers, VFDs, and motors, and producing a protective device coordination study.
- Electrical system modeler for the EchoWater Flow Equalization (FEQ) project for Sacramento Regional City Sanitation District, Sacramento, California using Paladin DesignBase. Tasks included modeling existing MCCs, panelboards, transformers, and motors, and producing a protective device coordination study.
- Lead electrical, instrumentation, and controls engineer for the Laughlin Water Reclamation Facility Aeration Piping Replacement & Sodium Hypochlorite Building Relocation Project in Laughlin, Nevada. Electrical design responsibilities included modifications to an existing load center, electrical distribution for a new motor control center, chemical building for sodium hypochlorite and sodium bisulfite, and standby generator with automatic transfer switch. Instrumentation and control design responsibilities included new instruments for the chemical building and an existing chlorine contact basin, new PLC, interfacing the control system with vendor supplied packaged equipment, and existing network panels. Construction support responsibilities included reviewing shop drawing submittals and requests for information.
- Electrical engineer for the Phase 2 South Secondary Treatment Facility expansion for the Clark County Water Reclamation District (CCWRD), Las Vegas, Nevada. The electrical design involved new medium- and low-voltage liquid filled transformers, 5-kV switchgear and motor control centers, 480-V switchgear, 480-V motor control centers, 480-V power distribution, lighting, and grounding.
- Electrical engineer for the Albuquerque Bernalillo County Water Utility Authority Southside Water Reclamation Plant 2 MG Digested Sludge Storage Tanks and Solids Dewatering Facility Biofilter project in Albuquerque, New Mexico.
- Electrical and instrumentation engineer for the Municipal Water District of Orange County South Orange Costal Desalination Project Pilot Plant Testing Facility in Dana Point, California. Responsibilities included coordinating with an RO system supplier and slant well driller, and providing power and controls for an experimental desalination process.
- Performed electrical system studies including short circuit, protective device coordination and arc flash hazard analysis for the City of Oxnard Water Blending Stations, Oxnard, California. The project involved evaluating six blending stations, including existing low voltage switchboards, MCCs, panelboards, and standby generators. Tasks included coordinating with a sub-consultant to obtain information for the existing equipment. This information included electrical equipment ratings, protective device settings, motor information, and other required data.



Tye C. Weber, PE

Tye Weber joined Carollo in 2015. His experience includes mechanical design, construction services, and code review in HVAC, plumbing, odor control, and fire protection. He is also versed in International Codes, NFPA Codes, ASHRAE standards, and ASPE standards.

Education

BS Mechanical Engineering, University of Texas at Tyler, 2015

Licenses

Professional Engineer, Colorado, Utah, Texas, Arizona

Professional Affiliations

American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE)

Water Environment Federation (WEF)

Relevant Experience

→ Staff professional for the Water Pollution Control Facility Headworks Rehabilitation, City of Hayward, California. Performed and completed HVAC design, calculations, code reviews, drawings, specifications, and construction services related to the project.

Scope included designing a new ventilation system for the headworks facility to resolve corrosion problems and meet NFPA 820 requirements.

→ Staff professional for the Water Pollution Control Plant Rehabilitation Electrical Improvements, West County Wastewater District, Richmond, California.

Responsibilities included HVAC calculations, designs, demolition, NFPA and Title 24 code reviews, drawings, and construction services related to the plant. Scope included the existing south headworks building, EQ emergency pump station, primary sludge pump station no. 2, thickener building, and a new switchgear building.

→ Staff professional for the Coffee Creek Water Resources Recovery Facility Expansion, City of Edmond, Oklahoma. Provided HVAC/plumbing/odor control designs, calculations, code reviews, drawings, specifications, and construction services related to the project. Scope included a lift station, headworks, blower building, recycle pump station, disinfection building, digester thickening building, digester pumping building, digester blower building, dewatering building, and maintenance building. Geothermal ground source heat pumps were utilized on this project for all cooling and heating of facilities. Odor control was provided for the headworks building with a 60,000 cfm radial carbon adsorption system.

→ Mechanical engineer for final design and construction support services for the City of Hayward's Headworks Bar Screens Project. This project included replacement of two grinders with new fine screens, addition of a

new screenings conveyor and washer/compactor, addition of new motorized inlet and outlet gates for the screening channels, addition of new supply and exhaust fans and ducting, replacement of two biofilter scrubber beds, and addition of a new ferric chloride facility. During design, Tye performed mechanical and HVAC design of a new 3,300 scfm supply fan and a new 15,250 scfm exhaust fan and associated FRP ducting for the headworks facility. He also designed improvements to the relocated air scrubber and FRP ducting for an existing West Trickling Filter. During construction, Tye has reviewed various RFIs and submittals concerning the headworks exhaust fan, FRP ducting, and West Trickling Filter tower discharge pipe.

→ Staff professional for the Oak Harbor Wastewater Treatment Plant design, City of Oak Harbor, Washington. Assisted in providing HVAC calculations, designs, drawings, and construction services for the headworks, secondary treatment, aeration blowers, biosolids, and electrical/control rooms and areas within the plant.

→ Staff professional for the Riverbend Water Reclamation Plant Expansion, Upper Trinity Regional Water District, Aubrey, Texas. Provided Odor Control, HVAC, plumbing calculations designs, code reviews, drawings, and construction services for the newly constructed influent pump station, headworks, blower building, RAS/WAS, and magnetite building structures. The odor control design consisted of a new carbon adsorption system for the existing dewatering building and a new bio-trickling filter system pulling foul air from the influent pump station and headworks structures.

Tye C. Weber, PE

→ Staff professional for the Belton Wastewater Treatment Facility Improvements, City of Belton, Missouri. Provided HVAC/plumbing construction services related to the wastewater treatment facility. Scope included a headworks and influent pump station.

→ Mechanical engineer for Fargo Wastewater Treatment Facility Phase IIB Expansion Project, City of Fargo, Fargo, North Dakota. The project involved final design of solids treatment upgrades including a new primary digester, a new thickening facility, updates to the existing digester facility. It also included the design of a new influent pump station and headworks building, blower building, RAS/WAS pump station, and administration building. Performed mechanical, HVAC, and plumbing design for all buildings within the project scope with a main focus on the design of the hot water system for the plant. The hot water system consisted of a dual fuel boiler system, natural gas and digester gas fed, that provides 27 MMbtu/hr of hot water heating for the digesters and the plantwide HVAC systems.

→ Staff professional for the Coffee Creek Water Resources Recovery Facility Expansion, City of Edmond, Oklahoma. Provided HVAC/plumbing/odor control designs, calculations, code reviews, drawings, specifications, and construction services related to the project. Scope included a lift station, headworks, blower building, recycle pump station, disinfection building, digester thickening building, digester pumping building, digester blower building, dewatering building, and maintenance building. Geothermal ground source heat pumps were utilized on this project for all cooling and heating of facilities. Odor control was provided for the headworks building with a 60,000 cfm radial carbon adsorption system.

→ Staff professional for the 2018 Treatment Plant Improvements, Napa Sanitation District, California. Performed and completed HVAC calculations, code reviews, drawings, specifications, and construction services related to the project. Scope included a two story operations building. An initial condition assessment was performed to analyze

what improvements were needed. The design included replacing existing packaged air conditioning equipment and re-zoning the building for optimal temperature control. In addition, several dedicated mini-split air conditioning systems were installed in areas that required independent temperature control. The laboratory renovation included replacing the existing outside air and exhaust systems to comply with current code requirements. The existing fume hoods were replaced along with the dedicated exhaust systems serving the fume hoods.

→ Staff professional for the Valencia Water Reclamation Plant Advanced Water Treatment Facility, Los Angeles County Sanitation District, California. Performed and completed HVAC/plumbing designs, calculations, code reviews, drawings, specifications, and construction services related to the project. Scope included a membrane building consisting of an EMS RO system room, MF/NF system room, electrical room, and control room.

→ Staff professional for the Mel Leong Treatment Plant Industrial Wastewater and Recycled Water Upgrades, San Francisco International Airport, California. Performed and completed HVAC/plumbing designs, calculations, code reviews, drawings, specifications, and construction services related to the project. Scope included an ozone building and an 8,000 square foot administration and laboratory building. The laboratory included lab storage, bioassay, analysis, microbiology, sample receiving, solids, and instrumentation spaces. In addition, specialized fume and canopy hoods were designed for various lab spaces. The design included a new variable refrigerant flow system along with a building management system for optimized control of the HVAC system. The laboratory included a pre-conditioned outside air and exhaust system for optimal air quality control. The admin/lab building was designed to California Title 24 requirements as well as to local green building requirements. The building was also designed for LEED compliance.



Theresa L. Raasch, PE

Teri Raasch is a design engineer with experience leading detailed design of new or retrofit wastewater treatment facilities. She has provided planning, design, and construction services for numerous headworks projects and has expertise in complex hydraulic analysis. She has developed hydraulic models and cost-saving hydraulic solutions for complex treatment plants across the nation, including her work developing SOCWA's plant-wide hydraulics model for J.B. Latham.

Education

BS (Hons) Environmental Engineering, Florida Gulf Coast University, 2012

Licenses

Civil Engineer, California

Professional Affiliations

California Water Environment Association

Relevant Experience

→ Hydraulics engineering for the J.B.L Hydraulic Modeling and Flow Management Study, South Orange County Wastewater Authority, California. Her duties included building the complete hydraulic model for SOCWA's Plant 1 and Plant 2, and developing a report for capacity analysis, hydraulic constraints, and recommendations.

→ Hydraulics engineer for the J.B. Latham Treatment Plant Facility Plan, South Orange County Wastewater Authority, California. The Facility Plan provided a 20-year planning window for liquid and solids treatment, flow analysis, odor control, energy management, site planning, and regulatory issues. Project duties included flow and plant capacity analysis, development and calibration of hydraulic profile, and report preparation.

→ Construction services engineer for the \$192 million replacement headworks at Plant No. 2 for the Orange County Sanitation District, California. The replacement headworks design has a capacity of 340 mgd and includes influent flow metering and diversion, bar screens, screenings handling, influent pumping, grit basins, grit handling, primary influent flow splitting and metering, odor control scrubbers, chemical facilities, and an electrical building. Her duties included hydraulics analyses associated with construction sequencing and optimization of the odor control/chemical facility.

→ Project Manager for the Headworks Conceptual Design Study and the Grit Rehabilitation Project for El Toro Water District, California. The headworks study developed and analyzed alternatives for the coarse screening and fine screening systems. Recommendations and costs were provided. The grit rehabilitation project implements the study's recommended improvements into an ongoing construction project at the grit facility. Close collaboration with District

staff and the contractor allows this expedited design to be consolidated with other grit improvements and streamline construction in this area.

→ Design manager for Hilo Wastewater Treatment Plant Rehabilitation and Replacement Project – Phase 1 for the County of Hawaii. This urgent project will address failing infrastructure and restore the plant to its original condition and capacity of 13 mgd in two phases. The project's expedited design includes new headworks facility, digesters, solids handling facilities, and improvements to the primary, secondary, and disinfection processes. The Phase 1 design team recently received individual certificates from the County of Hawaii's Mayor "for your outstanding professionalism, quality of service, and adherence to deadlines."

→ Hydraulics Engineer and Assistant Project Engineer for the Primary Treatment Facility Headworks for the City of Sunnyvale, California. This project replaces aging headworks and primary sedimentation tanks with 60 mgd capacity. She led the design of a new screening facility, grit removal basins, and a grit and screenings handling and loading facility. She also assisted with design of the new influent pump station, performed hydraulic profile calculations, and developed the engineer's construction cost estimate for those areas.

→ Hydraulics Engineer and Grit System Project Engineer for the Southeast Plant's New 250-mgd Headworks, San Francisco Public Utilities Commission (SFPUC), California. The project replaces two existing headworks facilities with a single new headworks to significantly increase screening and grit removal. Her responsibilities included design of new grit basins, grit handling, and primary influent distribution structures, hydraulic profile development and cost estimation. She also oversaw the computational

Awards

Florida Gulf Coast
University Alumni Soaring
Eagle Award, 2021

Kenneth J. Miller
Founders' Award 2018-
Water For People

Theresa L. Raasch, PE

fluid dynamic (CFD) and physical modeling of various hydraulic structures that confirms the innovative solutions which optimize process performance and hydraulics of the new facilities.

→ Hydraulics Engineer for 120-Inch Diameter Ocean Outfall Condition Assessment and Scoping Study (PS18-09). She led low flow hydraulics evaluation of the diffuser and identified mitigation measures for seawater intrusion and marine biofouling.

→ Hydraulics engineer for the PAR 1225 South Headworks and Grease Processing Facility Improvements Project, Metro Wastewater Reclamation District, Denver. This work involves extensive modifications to the existing screening, grit removal, and grease processing facilities for the 145-mgd South plant. She analyzed the hydraulics of the existing plant and developed a complete hydraulic profile for the preliminary design phase of the project.

→ Hydraulics Engineer for the RP-1 Solids and Liquids Capacity Improvements project. She was responsible for developing hydraulic profile of plant at increased capacity of 80 mgd. She was also responsible for identifying solutions for improving influent plant metering, improving screen capture, achieving primary splitting, and simplifying plant operation.

→ Hydraulics engineer for Roberto R. Bustamante Wastewater Treatment Plant Headworks Improvements, El Paso Water, Texas. She developed the hydraulic profile of the treatment plant at increased capacity of 120 mgd. She was also responsible for developing ideas to increase hydraulic flexibility for operations and identify hydraulic risks during construction.

→ Hydraulics engineer and design engineer for the Wastewater Treatment Plant Upgrade Project for the City of Palm Springs and Veolia Water West Operating Services, California. The project's tight budget incorporated necessary upgrades of the plant's headworks screenings and grit removal, primary clarifiers, primary sludge pump station, primary influent pump station, digester dome replacement, odor control, and sludge dewatering. During predesign, she

assisted in developing cost-saving alternatives and configurations for the primary influent pump station, digester dome replacement, odor control, and sludge dewatering facilities.

→ Hydraulics Engineer for Valencia Water Reclamation Plant ECM, Schneider Electric, CA. She developed plant wide hydraulic model for exploring feasibility to expand plant flow to 48 mgd and manage flow splits to meet process goals under various conditions. She identified hydraulic constraints and developed cost-saving solutions to junction boxes which simplified plant hydraulics and resulted in desired flow splits.

→ Hydraulics Engineer for San Jacinto Valley Water Reclamation Facility Plant 1 Rehabilitation, Eastern Municipal Water District, CA. Her duties included analyzing influent flow data and developing the 23 mgd plant-wide hydraulic model to evaluate various rehabilitation alternatives.

→ Hydraulics Engineer for Equipping of Plant 2B at Moreno Valley Regional Water Reclamation Facility, Eastern Municipal Water District, CA. Her duties included analyzing influent flow data and developing the 28 mgd plant-wide hydraulic model to evaluate new splitter box locations and option for upgraded secondary treatment processes.

**ATTACHMENT B
NON-COLLUSION AFFIDAVIT**

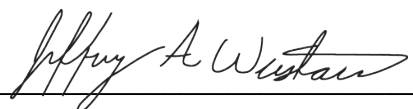
The undersigned declares:

I am the Vice President of Carollo Engineers, 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 29 [date], at Orange County [city], CA [state].

Signature: 

Title: Vice President

carollo.com

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**South Orange County Wastewater Authority
J.B Latham Treatment Plant Plant 2 Headworks Rehab Final Design
Level of Effort and Fee Estimate**



Tasks	Role:	Carollo Engineers Labor								Total Hours
		PIC/QC	PM	Odor Spcl.	Engr	EI&C Engr.	Struc. Engr.	CAD	Clerical	
		Billing Rate (\$/hr):	\$310	\$310	\$274	\$180	\$242	\$204	\$172	
1	Project Management									
1.1	Project Management Plan		4		2				2	8
1.2	Progress Meetings (5)		10	4	10	4	4		5	37
1.3	Project Schedule		4		8					12
1.4	Progress Monitoring, Reporting & Invoicing		10						8	18
1.5	Quality Management	24	12						8	44
	Subtotal Task 1	24	40	4	20	4	4	0	23	119
2	Contract Document Preparation									
2.1	Record Drawing Review				8	4	4			16
#REF!	Submittals:									
	35% Plans & Specifications		6	20	40	24	40	130	16	276
	90% Plans & Specifications		6	8	40	40	30	136	12	272
	100% Plans & Specifications		4	2	24	24	12	80	8	154
	Bid Set Plans & Specifications		2	2	16	8	8	48	8	92
2.4	Construction Cost Estimate		4		20					24
	Subtotal Task 2	0	22	32	148	100	94	394	44	834
	Totals:	24	62	36	168	104	98	394	67	953