



PROPOSAL

J.B. LATHAM TREATMENT PLANT (JBL) PLANT 2 HEADWORKS REHABILITATION FINAL DESIGN

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

FEBRUARY 29, 2024

27271 Las Ramblas, Suite 340 / Mission Viejo, CA 92691 / 949.450.2525

DUDEK

Cover Letter

February 29, 2024

Jeanette Cotinola, CPCM
Procurement/Contracts Manager
South Orange County Wastewater Authority
34156 Del Obispo Street
Dana Point, CA 92629

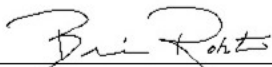
Subject: Proposal for J.B. Latham Treatment Plant (JBL) Plant 2 Headworks Rehabilitation Final Design

Dear Jeanette Cotinola:

Dudek is pleased to submit this proposal for the above-referenced project. Our proposal demonstrates our team's informed approach to the SOCWA JBL Plant 2 Headworks Rehabilitation Final Design project. Led by Michael Metts and Brian Robertson, with support from Phil Giori, internal staff, and subconsultant specialists, our team includes industry leaders with project-specific engineering knowledge related to headworks rehabilitation, structural improvements, plant operations, and more.

Should you have any questions or require additional information, please do not hesitate to contact Project Manager Brian Robertson at 760.479.4845 or brobertson@dudek.com. We value our relationship with SOCWA and look forward to assisting you with this project.

Sincerely,



Brian Robertson, P.E., QSD
Project Manager



Bob Ohlund, P.E.
Vice President

Bob Ohlund is authorized to sign on behalf of Dudek.

DUDEK AT A GLANCE



*Multidisciplinary design,
planning, engineering, and
environmental services*

800+
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Founded in
1980

Employee-owned
CALIFORNIA CORPORATION

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1.2.1 Identification of Responder

Dudek

Table 1 presents the SOCWA-requested responder information.

Table 1. Dudek Information

Legal name, address and form (e.g., Corporation, LLP, etc.) of company	Dudek Main Office 605 Third Street, Encinitas, CA 92024 A proud California Corporation since 1980 C1210012
Identify any parent companies	Dudek has no parent company
Addresses of principal place of business and, if different, any local office	Main Office 605 Third Street, Encinitas, CA 92024 Orange County 27271 Las Ramblas, Suite 340, Mission Viejo, CA 92691
Name, title, phone, and email address of person to contact about the proposal	Contact Brian Robertson, PE, QSD, Project Manager Address 605 Third Street, Encinitas, CA 92024 Phone 760.479.4845 Email brobertson@dudek.com

DUDEK SERVICES

<ul style="list-style-type: none"> Agency Permitting Biological Surveys and Monitoring CEQA/NEPA Compliance Climate Action/Adaptation Plans Coastal Planning/Permitting Cultural Resources Civil Engineering Construction Management 	<ul style="list-style-type: none"> Environmental Planning Grant Management and Writing Habitat Restoration and Management Hazardous Materials Testing Hydrogeology Hydrology Mapping and Surveying 	<ul style="list-style-type: none"> Public Outreach Urban Design and Planning Urban Forestry Wildfire Protection Planning Water Conservation Planning Water Infrastructure Planning and Design Visual Simulations
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1.2.2 Approach to the Work

Project Understanding

We understand that the Plant 2 (4-side) headworks at the J.B. Latham Treatment Plant (JBL) need various improvements related to the facility's condition, odor conditions, and structural integrity. The existing Plant 2 Headworks Building was constructed in 1999 and is now in need of rehabilitation in several key areas:

1. **Building Roof.** The existing coated steel roof structure has experienced coating failures and corrosion to the structural I-beams and corrugated steel decking. The corrosion is caused by hydrogen sulfide gas released from the wastewater that condensates and forms sulfuric acid on the material, which, over time, can cause coating failures and degradation of the metal structural elements. This corrosion is visible within the building, and the roof structure is noticeably soft when walked on, indicating a loss of structural strength and integrity.
2. **Wastewater Channels.** The existing headworks channels are concrete with a protective liner for hydrogen sulfide / sulfuric acid corrosion protection. Where visible during Dudek's site visit, it appears that the existing protective liner is failing and in need of replacement. Where liner failure exists, the corrosion often affects the concrete structure. Therefore, concrete rehabilitation and the application of a new protective liner are required to convey the raw wastewater through the channels safely.
3. **Channel Covers.** The existing headworks channels are covered with steel diamond plate covers, which need replacement. New channel covers should consider corrosion protection, weight, and ease of removal.
4. **Bypassing During Construction.** We understand that the existing facility is plumbed such that the Plant 2 Headworks influent line can be plugged at the junction box, and flows will be bypassed passively to the Plant 1 Headworks without a spill until flows reach a certain threshold. That threshold will be confirmed with SOCWA during the preliminary design process. At a minimum, bypass pumps must be staged on-site to bypass the headworks while it is offline during construction and avoid a potential spill.
5. **Odor Control.** The existing building's odor control system is ineffective, and the corrosion in the building and channels demonstrates its relatively poor performance. We understand that as part of the project, SOCWA expects the project team to consider and provide for both construction phase odor control measures, if applicable, and provide a better permanent odor control system to slow the pace of corrosion within the building after the facility has been rehabilitated.
6. **Electrical.** Currently, numerous conduits and lighting fixtures are supported by the existing corroded roof structure inside the building. These conduits and their associated conductors will need to be replaced along with the roof. Once the new roof is complete, the existing lighting fixtures will be salvaged and reused in the headworks building. Conduits and conductors for equipment on the roof will also be removed and replaced as required.

APPROACH

The following sections summarize our approach to addressing the six key scope elements for the project.

Structural Improvements

Given the nature of the Headworks environment, a concrete roof would have been a more robust approach for the original building construction. However, retrofitting the existing building to implement a new concrete roof would likely require extensive gravity and seismic retrofits to the wall and foundation elements, which are costly and may adversely affect adjacent structures due to surcharge loading from the increased weight of the structure. Similarly, more corrosion-resistant materials such as fiber-reinforced polymer or aluminum are unsuitable for the roof span lengths and diaphragm requirements of the building roof. They are, therefore, not feasible for implementation as a roof replacement. Smaller pipe support structures with simple hot-dipped galvanized finishes appear to have performed better than the coated roof steel and metal deck, suggesting that the roof framing and metal deck were coated with a paint system not designed for the harsh sulfides environment of a headworks building and likely did not implement a galvanizing primer. Based on these observations, a structural steel and metal deck system similar to the existing roof construction is likely to be the most cost-effective approach to roof replacement, with a focus on proper coating systems designed for the harsh wastewater environment, selective detailing that minimizes or eliminates uncoated surfaces, precoating structural members prior to erection and increased member thicknesses for longevity. The weight of the new roof system will be kept at or below the existing weights to prevent triggering California Building Code gravity or seismic retrofit requirements to the existing building walls and foundation. These improvements, improved odor control, and continued structure monitoring and maintenance will increase the facility's remaining useful life.

The headworks channel rehabilitation will likely consist of various concrete surface repairs and may require equipment frame replacement or repairs and replacement of existing anchor bolts. The extent of channel deterioration and required repairs will be determined during a site investigation to the extent possible while the channels operate. Anticipated repairs include concrete resurfacing utilizing epoxy repair mortar, corrosion inhibitors on exposed and/or corroding reinforcement, replacement of nonstructural frames and supports with 316 stainless steel construction, an epoxy coating system on all concrete surfaces within the channels, and, if necessary, new 316 stainless steel anchor bolts for all equipment.

Channel Covers

Dudek will evaluate suitable replacements for the existing headworks channel covers. This process will consider factors such as safety, strength, durability, and costs. Our team has been reviewing contractor designs and recent installations of Fibergrate and EDGENG fiberglass reinforced plastic (FRP) covers for primary and secondary wastewater treatment channels. We believe FRP covers could be an effective alternative to the current diamond-plated steel covers.

The advantages of FRP covers include good resistance to corrosion, slip resistance due to friction factors and diamond plating options, and lightweight materials. These features could reduce safety risks and accommodate easier channel access. Our approach will include a conceptual design for FRP replacement that considers anchoring the grating flush with the finished floor to avoid tripping hazards, sealing for odor control, access features such as recessed handles, and identification of anticipated routine maintenance tasks and repair procedures.

Another option is to replace the current diamond-plated steel covers in kind. This approach is anticipated to minimize impacts to the existing concrete channels, provide flexibility due to the availability and workability of

materials, prevent tripping hazards due to low profile, and provide simplicity in maintaining existing maintenance schedules and utilizing existing equipment and skilled staff for repairs.

We will summarize the advantages and disadvantages of each option and facilitate a workshop with SOCWA staff to discuss options in detail and obtain consensus on the appropriate covers for the plant's needs.

Bypassing During Construction

Maintaining plant operations during construction is a key element of any project at a wastewater plant where 24/7 operation is required. In SOCWA's case, the JBL plant has two separate headworks facilities, which is advantageous for the proposed project. Our understanding is that if the Plant 2 headworks influent line is plugged at the junction box, flows will passively bypass to the Plant 1 headworks without the need to bypass pump. However, to avoid a spill, Dudek recommends that the contractor stage diesel-driven bypass pumps at the junction box on standby in the event that flows get high enough to risk a spill in the collection system. Staging of bypass pumping equipment, flow setpoints, suction, and discharge connection locations for the standby bypass pumping equipment will be workshopped with plant O&M staff during the preliminary design, and requirements, limitations, or constraints on the contractor will be written into the construction bid documents as a specification titled "Maintenance of Plant Operation." This spec will allow Dudek and SOCWA to outline specific work restrictions such as allowable shutdown limitations to certain facilities, requirements for bypassing, notification requirements, and more.



Temporary Bypass Pumps at SOCWA Regional Treatment Plant

Odor Control

Improvements in the odor control system provide SOCWA with a unique opportunity to address a poor-performing, inefficient system with a new optimized system to mitigate the potential for future corrosion within the building and improve the working environment for staff. Dudek is partnering with Don King, an industry expert in odor control at wastewater treatment plants who has previously worked with SOCWA at the facility to improve odor control systems, on the proposed project. Based on our review of the existing system, facility, and discussions with Don, we identified several deficiencies with the existing system.

- Configuration of the supply and exhaust registers. The existing odor control system has supply registers on one side of the building and exhaust registers on the other. As a result, the corrosion is noticeably better on the supply side of the building and worse toward the exhaust side of the building. This is due to the supplied air pushing the corrosive gases to the exhaust. The result is a higher potential for odors, corrosion, and short-circuiting of the ventilation system.
- Oversized Supply Fan. The existing system has an oversized supply fan based on the exhaust flow rates from the system. When the supply fan provides too much supply air to the building, it creates a positive pressure environment, pushing odors out of the building and potentially into neighboring properties. Due to the size of the supply fan, operation staff have justifiably shut the fan off to allow a negative pressure environment within the building.
- Register placement. Both the existing supply and exhaust registers are not strategically placed to provide fresh air ventilation and foul air exhaust for the areas with the highest potential for sulfide gases. As a

result, the system is not efficiently removing sulfide gases from the building, allowing them to sustain in the building for long periods and contributing to foul odors and corrosion.

Our proposed approach for odor control improvements of the Plant 2 headworks building includes the following to address the key needs of the facility:

- Optimize exhaust locations where sulfides are most present. The odor control system currently provides approximately 4,500 to 5,000 cfm of ventilation to the building, which is sufficient flow for odor control of a building and facility of this size. However, the ventilation locations should be strategically placed to mitigate odors and corrosion potential. Approximately 1/3 of the overall ventilation rate (approximately 1,600 cfm) will be provided to the headworks channels to pull exhaust from below the cover plates and aggressively ventilate this area, the primary source of sulfide gases within the building. Exhaust locations will be located at the screenings and bypass channel convergences upstream and downstream of the screens. The remaining 2/3 of the overall ventilation rate (approximately 3,400 cfm) will be provided above the screenings and grit dumpster, the secondary source of sulfide gases and odors within the building. Exhaust locations will be located directly above the dumpster to reduce the likelihood of odors and gases lingering in the building from this location.
- Optimize fresh air supply locations and considerations for supply fans vs. mixing. Fresh air supply sources can be provided through passive louvers or supply fans. In our experience, we prefer passive louvers as they are not maintenance items and eliminate the risk of positive pressure within the building. Supply fans provide an advantage relative to a passive louver system in that the fresh air supply provides a mixing of the air within the building, reducing the likelihood of dead zones and corrosion pockets where the ventilation is not active. We think that a design combination that includes passive louvers for fresh air supply paired with ceiling or wall fans for air mixing in the building provides the optimal design for managing odors and sulfide gases that have been a problem in the Plant 2 Headworks building for many years.

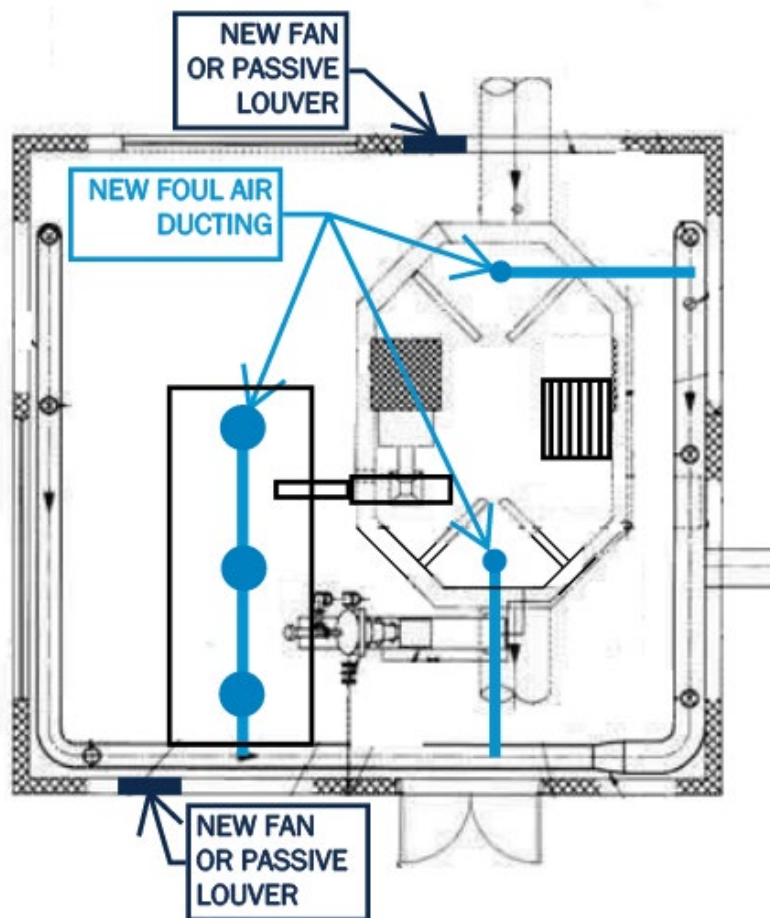


Figure 1. Odor Control Concept Design

Electrical

Currently, numerous conduits and lighting fixtures are supported by the existing corroded roof structure. These conduits will need to be replaced along with the roof. We propose replacing only the conduit along the roof, down to the nearest joint. For equipment, conductors in each removed conduit will be replaced altogether. For lighting, conductors will be replaced at the nearest junction box on the wall. The existing lighting fixtures will be salvaged and reused in the headworks building, as they appear to be hazardous area-rated Light Emitting Diode (LED) type and in good working order. The fixture type will be confirmed during the detailed design. Conductors, conduit, and motor controllers supporting the existing roof-mounted supply fan will be removed. The electrical design will include new PVC-coated galvanized rigid conduit, conductors, and motor controllers for the new wall-mounted supply fans.

SCOPE OF SERVICES

Tasks are to include the following per the RFP requirements. Dudek's assumptions, clarifications, and recommendations to enhance the scope of work are included below each scope item *In blue italics*:

- I. Progress Meetings. FIRM shall conduct monthly progress meetings at SOCWA's Dana Point Administration Building. FIRM shall prepare the agenda, the action item list and the decision log for each meeting. FIRM shall plan for a maximum of 9 progress meetings including one kickoff meeting.
- II. Document Review. FIRM shall review all planning documentations available.
- III. FIRM shall also review facility drawings and visit the field to determine the correctness of existing as-built drawings. FIRM shall review project needs with Operations and Maintenance staff. FIRM shall note that SOCWA does not have CAD drawings for any of the as-built drawings. SOCWA can provide CAD drawings for the following: (a) aerial topography and (b) field survey.
 - *Complete record drawings and associated documents (i.e., specifications; contractor submittals) for the Headworks Building Modifications (1999) and bar screen replacement and miscellaneous improvements (2012) will be provided, reviewed, and used as a basis of design.*
 - *Structural field investigation will include gathering information on the condition and dimensions of the headworks building. Field measurements and photographs of the facility's structural elements will be obtained for the rehabilitation design. Condition assessment will be conducted using nondestructive methods and tools such as a ball peen hammer for concrete sounding, a pit depth gauge to determine metallic and concrete cover loss, an ultrasonic thickness gauge, calipers, tape measure, and similar hand tools. All investigations will be performed in accordance with current California Building Code (CBC) recommendations for assessment work and will adhere to the suggested assessment approach and techniques as detailed in the following code and standard comments:*
 - *ACI 201.R-08 "Guide for Conducting a Visual Inspection of Concrete in Service"*
 - *ACI 364.1R-19 "Guide for Assessment of Concrete Structures Before Rehabilitation"*
 - *ACI 562-19 "Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete"*

- *We assume previous geotechnical reports will be provided to Dudek for reference for structural design.*
- IV. 35% Submittal. This submittal shall include plans, specifications, and cost estimate. SOCWA will take four weeks to review the submittal and return comments. FIRM shall prepare an implementation plan showing how work can be done while maintain the facility in service. The 35% submittal shall also include outage/construction plan. SOCWA will perform an asbestos survey and provide the result of the survey to the consultant.
- *A technical memorandum will be prepared to document the following:*
 - *Key findings from data review, field investigations, workshop discussions, and vendor coordination*
 - *Summary of basis of design criteria*
 - *Conceptual design and outage/construction plans*
 - *Preliminary construction cost estimate*
 - *Recommendations for the final design approach.*
 - *We assume the Headworks building roof replacement includes demolition of the existing roof structure and structural design of a new structural steel roof system. The new roof structure will consist of structural steel framing, metal deck, and retrofit connections to the existing building walls. Wide-flange beams with an 18-gauge metal deck are anticipated. Where appropriate and deemed acceptable per site investigation findings, existing roof framing wall beam pockets and anchorage will be reused if deterioration is minimal. Otherwise, new beam and ledger connections will be constructed flush with the existing CMU walls with post-installed epoxy anchorage. A robust coating system consisting of galvanizing primer and compatible topcoats will be specified for corrosion protection in the wastewater environment.*
 - *Ladder and hatch improvements include designing and detailing a new OSHA-compliant roof access ladder, roof hatch, and attachment to the building structure. Corrosion-resistant materials such as FRP will be specified where appropriate.*
 - *Nonstructural support and anchorage include structural design and detailing for various piping/ducting/equipment supports suspended from the roof structure, such as pipe hangers, Unistrut systems, lateral bracing, and connections to the roof and walls. Consideration will be given to material finishes to minimize corrosion and will be coordinated with the structure design and specifications.*
 - *Structural design for rehabilitation and retrofit of the existing Bar Screen Channels includes various concrete repairs, coating, covers, and screening equipment anchorage. Concrete repairs anticipated include epoxy injection crack repair, concrete spall mortar repair, concrete resurfacing, corroded rebar repair, epoxy dowels, corrosion inhibitors, and anchor bolt replacement. New covers may be steel diamond plate (replace-in-kind), or FRP covers with retrofit ledger supports and post-installed stainless steel anchorage to the existing channel walls.*

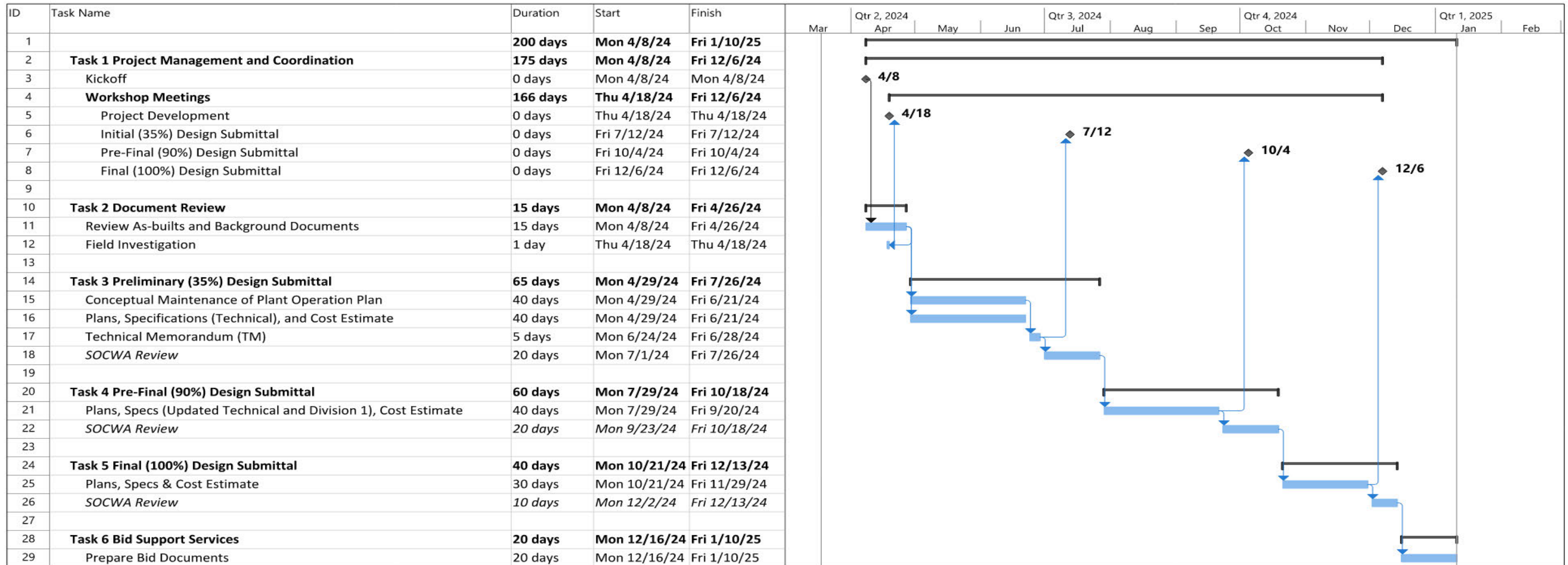
- *We assume modifications to controls and PLC programming are not required. Single-line diagrams and panel schedules are not required.*
- *Lighting design is included. Existing light fixtures will be reused.*
- *We assume only conduits impacted by the roof replacement will be replaced.*
- *We assume existing electrical facilities comply with applicable codes.*
- *The estimated drawing list is summarized in the table below. Some sheets or details that do not significantly impact the 90% and 100% submittals may be omitted from the 35% submittal.*

Table 2. Estimated Drawing List

No.	Sheet No.	Sheet Name
1	G-1	Title Sheet, Vicinity Map
2	G-2	General Notes and Drawing Index
3	G-3	Symbols, Abbreviations, and Schedules
4	G-4	Overall Site Plan and Contractor Staging Area
5	G-5	Construction Phasing and Bypassing
6	S-1	Structural General Notes - 1
7	S-2	Structural General Notes - 2
8	S-3	Structural General Notes - 3
9	S-4	Special Inspections and Notes
10	S-5	Headworks Building Structural Demolition Plan
11	S-6	Headworks Building Structural Demolition Sections
12	S-7	Headworks Building Foundation Plan
13	S-8	Headworks Building Roof Framing Plan
14	S-9	Headworks Building Sections
15	S-10	Structural Typical Details - 1
16	S-11	Structural Typical Details - 2
17	S-12	Structural Typical Details - 3
18	S-13	Structural Typical Details - 4
19	S-14	Structural Details - 1
20	S-15	Structural Details - 2
21	S-16	Structural Details - 3
22	M-1	Mechanical Symbols, Legend & Abbreviations
23	M-2	Mechanical Demolition Plan
24	M-3	Mechanical Demolition Details
25	M-4	Headworks Building Plan
26	M-5	Headworks Building Section
27	M-6	Mechanical Details
28	E-1	Electrical Symbols, Legend & Abbreviations
29	E-2	Headworks Building Demolition Plan & Photos
30	E-3	Headworks Building Roof Demolition & Roof Power Plans
31	E-4	Headworks Building Power Plan
32	E-5	Headworks Building Lighting Plan
33	E-6	Conduit Schedule
34	E-7	Electrical Details

- 90% Submittal. The 90% submittal shall address all SOCWA's comments from the 35% submittal. This submittal shall also include the same elements as the 35% submittal with the completed plans, specifications, and cost estimate. SOCWA will take four weeks to review the submittal and return comments.
 - *Refer to assumptions for 35% submittal.*
- 100% Submittal. The 100% submittal shall address all SOCWA's comments from the 90% submittal. This submittal shall also include the same elements as the 90% submittal with the completed plans, specifications, and cost estimate. SOCWA will take two weeks to review the submittal and return comments.
 - *Refer to assumptions for 35% submittal.*
- Bid Set. FIRM shall provide complete bid set with the completed plans, specifications, and cost estimate.
 - *A complete set of plans and specifications will be provided for bidding, along with an engineer's opinion of probable cost for reference. Bid support services and preparation of a conformed set of drawings and specifications will be provided separately if needed. Construction support services will be provided separately if needed.*
- Technical Specifications. SOCWA will provide the FIRM with the listing of standard specifications from Division 1 to be used for the project after the 35% submittals review. FIRM is responsible for preparing Section 01010, Summary of Work and Section 01014, Work Restrictions and Sequence. FIRM shall meet with SOCWA to discuss coordination of specifications sections referenced in the technical specifications. FIRM shall submit required information for review at the 90% submittal.

Figure 2. Proposed Project Schedule



Project Management and Quality Control

Regular Project Meetings. We utilize regularly scheduled meetings with the project team, SOCWA staff, and subconsultants to keep all parties apprised of the project's status. All meetings include an agenda prepared by the Dudek project manager and are documented through meeting minutes, with action items clearly identified.

In-Person Meetings, Collaboration, and Technology. The Dudek team offers many tools for efficient and productive in-person and virtual collaboration with the Authority. These include in-person and virtual meetings using Microsoft Teams or Zoom, file sharing/storage via ShareFile, document coauthoring through SharePoint, and client web portals.

Our project teams also utilize collaborative PM software tools that provide real-time task tracking, updates, and communication to reduce the risk of tasks slipping through the cracks, being overlooked, or falling behind schedule.

Scope Definition, Budget, and Schedule. We will work with the Authority to develop the appropriate scope of services to accomplish project goals and objectives, schedules, budgets, and work products. In particular, Dudek understands and appreciates the importance of managing project scope changes and the schedule. Where project changes may disrupt the scope and/or schedule, Dudek documents these changes in a change management log, which is shared with the Authority each month if changes materialize. The change management log includes a summary of the change, the driver for the change, documentation of the date and correspondence for the change, and an estimation of how the change will impact the project's scope, schedule and/or budget.

Proactively managing the project scope, budget, and schedule is critical to the success of any project. Dudek consistently evaluates our project manager's performance based on measurable criteria and provides training, coaching, and mentorship programs to support our project managers. Your success is our success, and our commitment to providing the best training, tools, and resources to our project managers is a key reason our projects outperform other firms in the industry.



Subconsultant Agreements. A well-managed project benefits from frequent, documented communication between all project team members, including subconsultants. We initiate this process with insurance certificates and detailed written scopes of services, schedules, and budgets.

Quality Assurance and Quality Control. Quality assurance is the responsibility of **ensuring the conduct of proper** quality control reviews. Quality assurance is a project management responsibility conducted **following** either the standard quality control practice or a specifically documented quality control plan. For major milestone deliverables, Dudek project managers assign the quality control review to a principal-level engineer who is familiar with the unique aspects or technology related to the project. For this project, the Dudek project manager will assign each deliverable for QC review with an appropriate principal-level engineer to perform review and comment to be incorporated **before** submittal to the Authority.



COMMUNICATIONS

- » Single point of contact
- » Kickoff meeting to set project course
- » Responsive, consistent communication

PROJECT WORKFLOW

- » Master deliverables list
- » Schedule tracking
- » Budget tracking
- » Quality assurance process

COLLABORATION TOOLS

- » Secure project portals
- » Custom websites
- » Virtual meetings
- » Mobile data collection

1.2.3 Experience and Technical Competence

Dudek engineers are recognized experts in the design of wastewater treatment facilities. Our referenced engineering projects are chosen specifically for project similarities and team member involvement. Similarities to the Authority's project include:

- Design of treatment plant screenings removal and management
- Treatment headworks and plant hydraulics
- Bypass pumping and in-situ rehabilitation
- Concrete restoration and modifications
- Scheduling and sequencing of construction to avoid impacts on ongoing operations

SANTA MARIA WASTEWATER TREATMENT PLANT HEADWORKS UPGRADE PROJECT

Client: Ramona Municipal Water District

Client Reference: Erica Wolski, General Manager;
760.789.1330

Dudek Team Members: Michael Metts, Phil Giori,
Brian Robertson

Project Dates: 2020 - 2022

In 1981, the Ramona Municipal Water District (District) took ownership of the Santa Maria Wastewater Treatment Plant (SMWWTP) from the County of San Diego. In 1995, the Regional Water Quality Control Board approved the expansion of the SMWWTP to a capacity of 1.0 mgd. Since construction, the SMWWTP has not included

preliminary treatment. Influent flow is lifted into influent equalization basins before conveyance to the secondary treatment process. The influent pump station has experienced significant ragging challenges, and the equalization basins are regularly taken offline to remove grit accumulation. Dudek designed a new influent lift station utilizing Archimedes-style screw pumps to eliminate ragging concerns, a new headworks structure with channels, gates, mechanical screening with sluice and wash/press, a vortex grit chamber with grit pumps and classifier, and an influent flow meter. The design also included relocating the main influent trunk sewer and influent force main to the new headworks facility. Also, a standby generator was designed to provide critical backup power for reliability and uninterrupted operation.



4S RANCH WRF HEADWORKS SCREENING SYSTEM IMPROVEMENTS

Client: Olivenhain Municipal Water District
Client Reference: Lindsey Stephenson, Engineering Manager, 760.753.6466
Dudek Contact: Phil Giori, Michael Metts, Greg Guillen, Agata Bugala, Brian Robertson
Dates of Project: 2022 - Ongoing



OMWD contracted with Dudek to provide design services for the headworks screening system improvements project. The project will replace the aging mechanical band screen and bypass bar rack with two new Parkson AquaGuard mechanical screens, wash-presses, and associated instrumentation and control systems. The scope also includes rehabilitating influent channels and new epoxy liners, new slide gates, odor control improvements, building modifications and access improvements, a new grit classifier, and more. Key project challenges include the existing building's tight space and working conditions and the need for raw influent bypass pumping. During the design, the District also added scope for miscellaneous improvements in the WRF, such as high flow and off-spec diversion pumping and yard piping, to improve operational reliability and emergency contingency measures. The design is currently 90% complete and is scheduled for construction in FY 2024-2025.

FINAL DESIGN OF SAN ELIJO WRF HEADWORKS AND ODOR CONTROL IMPROVEMENTS

Client: San Elijo Joint Powers Authority
Client Reference: Chris Trees, Project Manager, 760.753.6203 Ext. 70, treesc@sejpa.org
Proposed Key Personnel: Michael Metts; Greg Guillen
Project Dates: 11/9/2015 – 6/30/2016



The Headworks at the San Elijo Water Reclamation Facility are over 50 years old with multiple deficiencies, including insufficient peak wet weather hydraulic capacity and an absence of backup equipment. Dudek was contracted by the San Elijo Joint Powers Authority (SEJPA) for the preliminary and final design of the headworks upgrade. The project consisted of constructing new Headworks screenings channels with higher hydraulic capacity just north of the existing Headworks; the existing Headworks channels remained in operation during construction to reduce bypassing costs. New screenings equipment with full redundancy was installed, and the existing concrete channels were rehabilitated and reused for overflow and bypass purposes. New odor control covers for the equipment and channels were installed, and the existing odor control system was balanced and optimized to eliminate odors. The project provided reliable headworks for SEJPA with backup equipment, the capability to handle future peak wet weather flows, and improved odor control while minimizing construction costs and risk.

LA SALINA WWTP DIGESTER IMPROVEMENTS

Client: City of Oceanside

Client Reference: Sarita Lemons, Project Manager; 760.435.5873; slemons@oceanside.org

Dudek Contact: Russ Bergholz, Brian Robertson; Phil Giori; Agata Bugala

Project Dates: 2021 - 2023

Dudek provided mechanical, structural, and other miscellaneous design services to facilitate rehabilitating and cleaning the primary and secondary digesters at the La Salina Wastewater Treatment Plant. Services comprised of design for new overhead heated sludge circulation and overflow piping, structural spot repairs and coating, manway cover replacements, and gas piping and safety equipment replacements on the tank domes. Dudek worked closely with City engineering and operations staff to establish parameters to maintain plant operations and manage odor and dust during construction activities. Dudek and Kelsey Structural also provided expedited design based on findings from structural condition assessment during the construction phase.



COASTAL TREATMENT PLANT TERTIARY SYSTEM UPGRADES ENGINEERING SERVICES

Client: SOCWA

Client Reference: Roni Young Grant, 949.234.5400, ryoung@socwa.com

Dudek Contact: Amanda Combs; Phil Giori

Project Dates: 1/2018 - 12/2018

SOCWA contracted Dudek for the design of upgrades to the 2.5 MGD Advanced Water Treatment facility, including repairs and recoating of the steel filter tanks and supports, replacement of filter media, pneumatic valves, and level transmitters for the Evoqua sand filters, a new horizontal centrifugal filter supply pump, the addition of an ultrasonic level sensor and VFDs for enhanced pumping control, replacement of chlorine contact tank vertical mixers, and replacement of the motor control center for the tertiary treatment system. The design phase was accelerated to meet a narrow plant shutdown window during the low water demand winter months.



1.2.4 Key Personnel and Sub-Consultants

Dudek will serve as the prime consultant providing overall management and engineering services. **Brian Robertson, PE, QSD**, will serve as your dedicated project manager and the main point of contact for SOCWA. He is a successful project manager with sixteen years of experience providing wastewater infrastructure design and rehabilitation to similar clients. Mr. Robertson will oversee the development and execution of the tasks / projects, tracking budgets and schedules. He understands the importance of good communication, being solution-oriented, and efficient multitasking. He will facilitate the flow of information among the team and with the District's project manager. Supporting Mr. Robertson will be **Michael Metts, PE**, serving as principal in charge. Mr. Metts has 40 years of experience managing, planning, and designing water infrastructure projects throughout California and serves as Dudek's Chief Engineer. **Phil Giori, PE**, will provide expert project quality control. He will thoroughly review all deliverables before delivery to the Authority, including those of our sub-consultants.

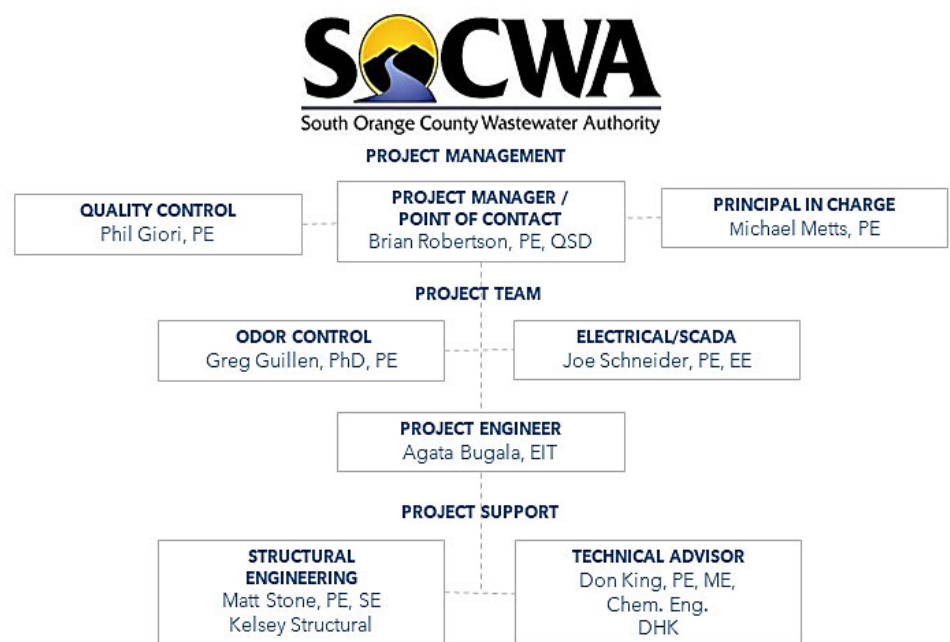
For this project, Dudek will supplement our team with the services of two sub-consultants - trusted firms with whom we have long-term relationships; they have significantly contributed to successful projects. Matt Stone, PE, SE, will provide structural engineering services, and Don King (DHK) will be a technical advisor. Mr. King is well known to SOCWA staff, and Matt Stone recently provided structural services for SOCWA's JBL Digester 1 and 2 Manway Access Improvements Design.

We understand that the Authority is considering the Dudek team in its entirety; therefore, we will not make changes in team composition, including the Project Manager, without prior consultation and written approval from the Authority.

Figure 3 illustrates the team organization and lines of communication. Brief biographies for key personnel follow. Focused resumes are provided in **Appendix A**.

Figure 3. Project Organization Chart

Current and Future Workload of Key Staff. We have reviewed the scope of work requirements and have carefully selected a talented, collaborative project team personnel with the capabilities and perseverance to satisfy the needs of the District's contract while meeting the performance schedule. Dudek routinely works on projects of similar scope and scale with public agencies, and we are experts in effectively balancing staff resources and workloads to service your contract. Michael Metts and Brian Robertson will ensure the availability and allocation of staff resources to this contract.





Michael Metts, PE
Principal in Charge

Qualifications

- 40 years of experience in water, wastewater, and recycled water engineering design, permitting, water resources planning, and construction management and assistance
- Project experience encompasses the evaluation and expansion of existing facilities as well as the design of new facilities
- 20+ years serving as District Engineer for various water/wastewater districts
- Strong skills and proven history of tracking, monitoring, team delegation, deliverable quality assurance, engineering guidance, accounting, and subconsultant coordination

Related Experience

- District Engineer, Ramona Santa Maria WRF Headworks
- Principal Engineer, SEJPA WRF Headworks Upgrade
- Principal Engineer, Corona WRF1 and WRF 2 Headworks Upgrades
- Principal, CIP Engineering Services, South Orange County Wastewater Authority

Education & License

BS Civil Engineering
Civil Engineer, CA No. 42586



Brian Robertson, PE, QSD
Project Manager

Qualifications

- Project manager with 16 years' extensive experience in water, wastewater and drainage conveyance systems for cities and districts throughout Southern California
- Received recognition for his work preparing detailed analysis, reports, and PS&E
- Seamless coordination with team members, utilities, and essential governmental agencies.

Related Experience

- Project Manager, Digester Tank Improvements for La Salina Wastewater Treatment Plant, Oceanside Water Department
- Project Manager, WRF 1 Aeration System Improvements, City of Corona
- Lead Engineer, Huston Creek WWTP Dewatering Building and Primary Clarifier, Crestline Sanitation District
- Lead Engineer, Santa Maria WRF Headworks, Ramona Municipal Water District
- Senior Engineer, 4S Ranch WRF Headworks Screening System Improvements, Olivenhain MWD

Education & License

BS Civil Engineering
CA PE C77990
Certified QSD



Phil Giori, PE
Quality Control

Qualifications

- Experienced project manager with a focus on water and wastewater treatment facilities throughout California
- Leader in improving planning and design mechanisms to construct more reliable facilities with integrated operations and maintenance support
- Experience in planning, design, and construction provides him with unique insight and knowledge, which he employs to drive projects toward successful completion

Related Experience

- Project Manager, Ramona Santa Maria WRF Headworks
- Project Manager, Huston Creek WWTP Dewatering Building and Primary Clarifier, Crestline Sanitation District
- Project Manager, OMWD Headworks Improvements
- Lead Engineer, SEJPA WRF Headworks Upgrade
- Project Manager, Separate Industrial Wastewater Reclamation Facility, City of Gonzales
- Project Engineer, Corona WRF1 and WRF 2 Headworks Upgrades

Education & License

BS Civil Engineering
Civil Engineer, CA No. 87516

Table 3. Project Team Overview

Name/Role	Education /License	Profile	Relevant Experience
<p>Greg Guillen, PhD, PE Process Design and Odor Control</p>	<p>University of California, LA PhD, Civil Engineering MS, Civil Engineering University of California, Riverside BS, Environmental Engineering CA PE No. 83897</p>	<p>Gregory Guillen is a chemical and environmental engineer focused on water and wastewater treatment. Dr. Guillen has 11 years of experience designing water and wastewater treatment processes and odor control systems. He has lectured in the Department of Civil and Environmental Engineering at the University of California, Los Angeles.</p>	<ul style="list-style-type: none"> ▪ Santa Maria WRF Headworks, Ramona Municipal Water District ▪ Final Design WRF Headworks, San Elijo Joint Powers Authority ▪ As Needed Process Design and Odor Control, Orange County Sanitation District
<p>Joe Schneider, PE, EE Electrical/I&C Lead</p>	<p>Keller Graduate School of Management, DeVry University, MBA, Project Management Arizona State University, BSE, Electrical Engineering CA EE No. 19636</p>	<p>Mr. Schneider is a principal electrical engineer with 25 years' experience as an electrical, instrumentation, and controls engineer and 17 years' experience specializing in instrumentation and control system design and electrical distribution system design for wastewater treatment and wastewater collection facilities.</p>	<ul style="list-style-type: none"> ▪ San Vicente WRP Headworks Rehabilitation Project, Ramona Municipal Water District ▪ Temporary Headworks Facility Design, City of Watsonville ▪ Centrifuge Gate Improvements at P1, OC San
<p>Agata Bugala, EIT, ENV SP Project Engineer</p>	<p>The City College of New York BE, Environmental Engineering Engineer-in-Training No. 173501 Envision Sustainability Professional (ENV SP) No. 47181</p>	<p>Ms. Bugala has 3 years' professional experience as a water/wastewater engineer specializing in the design of water and wastewater treatment systems, including planning and process engineering.</p>	<ul style="list-style-type: none"> ▪ 4S Ranch WRF Headworks Screening System Improvements, Olivenhain MWD ▪ Various Projects, Orange County Sanitation District ▪ Separate Industrial Wastewater Reclamation Facility, City of Gonzales
<p>Matt Stone, PE, SE Structural Engineering Kelsey Structural Group</p>	<p>University of California San Diego MS & BS, Structural Engineering CA PE No. 78488 CA SE No. 6183</p>	<p>Matt Stone has over 13 years of project management and structural design work encompassing infrastructure, water, wastewater, and military projects. He specializes in assessing, designing, and retrofitting water and wastewater treatment, storage, and conveyance facilities.</p>	<ul style="list-style-type: none"> ▪ Dudek_City of Gonzales Industrial Water Reclamation Facility ▪ Dudek_Westside Water Reclamation Plant; Victor Valley WRA ▪ Dudek_City of Corona WRF-1A Aeration Improvements
<p>Don King, PE, ME, Chem. Eng. DHK Technical Advisor</p>	<p>University of Toledo BS, Chemical Engineering CA Mechanical Engineer, No. M 24995 CA Civil Engineer, No. C45875 CA Chemical Engineer, No. CH 4865</p>	<p>Mr. King's educational background is in chemical engineering with emphasis in odor control, air quality, environmental and regulatory issues, hazardous materials/waste, and chemical process. Mr. King has over 30 years of experience in odor control, systems certification and testing, air quality permitting, air dispersion modeling, and regulatory interface. Trusted SOCWA Advisor .</p>	<ul style="list-style-type: none"> ▪ Dudek_4S Ranch WRF Headworks Screening System Improvements, Olivenhain MWD ▪ Dudek_Odor Control Improvement Program; San Elijo WPCF ▪ Dudek_Moonlight Pump Station Odor Control Study; San Elijo JPA

KELSEY STRUCTURAL FEE SCHEDULE

STRUCTURAL ENGINEERING SERVICE PROPOSAL

APPENDIX C

RATE SCHEDULE

SOCWA JBL Plant 2 Headworks Rehabilitation Final Design

February 2024

HOURLY RATES

Principal	\$235.00
Project Manager	\$210.00
Senior Engineer	\$190.00
Project Engineer	\$170.00
Assistant Engineer	\$150.00
CAD Technician	\$140.00
Administration	\$105.00

Hourly rates include provisions for normal overhead costs such as fringe benefits, office rental, utilities, insurance, clerical services, equipment, normal supplies and materials, and in-house reproduction services. Mileage shall be reimbursed at a rate equivalent to the current calendar year's IRS standard mileage rate. Rates shown are valid through December 31, 2024.

1.2.6 Conflicts of Interest

Dudek states that the firm has no financial or legal issues that would impede our ability to provide services to the South Orange County Wastewater Authority.

1.2.7 Non-Collusion Affidavit

ATTACHMENT B NON-COLLUSION AFFIDAVIT

The undersigned declares:

I am the Vice President _____ of Dudek _____, 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 February 21, 2024 _____ [date], at Encinitas _____ [city], California _____ [state].

Signature: _____

Bob Ohlund, P.E.

Title: Vice President _____

1.2.8 Certifications

Each respondent must include the following signed certifications with its proposal:

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

Dudek respectfully requests the Authority's consideration of the following *exceptions* to the SOCWA Agreement for Engineering Services.

Section 4.3: *Add a performance standard after the first sentence: "Consultant shall perform the services with the skill and care ordinarily exercised by members of the same profession operating under similar circumstances."*

Section 6.1: *Add the following after paragraph 6.1.3: "Notwithstanding the foregoing, with respect to any professional liability claim or lawsuit, this indemnity does not include providing the primary defense of SOCWA Indemnitees, provided, however, Engineer shall be responsible for SOCWA Indemnitees' defense costs to the extent such costs are incurred as a result of Engineer's negligence, recklessness or willful misconduct."*

Appendix A

Resumes

Brian Robertson, PE, QSD

PROJECT MANAGER

Brian Robertson has 16 years' project engineering experience in planning and design of infrastructure projects. Mr. Robertson has developed a reputation for delivering high-quality work on time and within budget. He has extensive experience in water, wastewater and drainage conveyance systems for cities and districts throughout Southern California and has received recognition for his work preparing detailed analysis, reports, drawings, specifications, and cost estimates. Mr. Robertson has developed an excellent rapport for seamless coordination with team members, various utilities, and essential governmental agencies. He brings a high level of professionalism while delivering project design packages with other services, including development review and staff augmentation.

Project Experience

Digester Tank Improvements for La Salina Wastewater Treatment Plant, Oceanside Water Department, Oceanside, California. Project Manager for improvements and rehabilitation of the primary and secondary digester tank. Design was prepared for new heater circulation lines from the heat exchangers to the digesters to address the clogging in the existing buried lines and resolve the leaking issues in the digester overflow lines. Design also included digester tank rehabilitation and upgrades the gas over-pressurization system to increase the system reliability and safety. Current responsibilities include engineering support during construction.

Huston Creek WWTP Dewatering Building and Primary Clarifier, Crestline Sanitation District, Crestline, California. Project Engineer for the final design of a new two-story biosolids dewatering building, sludge holding tank, and primary clarifier for the District's 1 MGD Huston Creek WWTP. Project includes new structures, pumps, polymer feed system, odor control system, channels, electrical systems, and new emergency generator. Project site conditions required careful structural, civil, and mechanical design to support new facilities in challenging topographic conditions and other requirements to maintain plant operation during construction. His services included preparation of final design packages and engineering services during bidding and construction.

Santa Maria WWTP Headworks Upgrade, Ramona Municipal Water District, Ramona, California. Lead engineer for the design of a new headworks facility at the Santa Maria WWTP. The plant's existing influent lift station and downstream processes have been affected by rags and grit due to a lack of headworks screening and grit removal for the plant. Project includes relocation of influent truck sewer, new headworks structure with influent screw pumps, mechanical screenings equipment, grit removal, and new emergency generator. Various project challenges include construction phasing, large equipment and structures, utility relocation, and connections to existing facilities.

Trickling Filter Valve Replacement at Plant No. 1, Orange County Sanitation District, Fountain, California. Project Manager for the design of a valve replacement for the piping system that connects the trickling filter clarifiers to the sludge and scum pump station. The valve is buried deep and surrounded by a net of utilities which required extensive alternatives development and evaluation, constructability reviews, and other design considerations to



Education

*Cal Poly State University,
San Luis Obispo
BS, Civil Engineering,
2006*

Certifications

*California PE 77990
Certified QSD*

protect existing structures from settlement due to deep excavation, shallow groundwater conditions, and minimize impacts to operations during construction.

WRF 1 Aeration System Improvements, City of Corona, California. Project Manager for a new air piping supply system and new diffuser grid in aeration basins 1, 2, and 3 at WRF-1A. The improvements include relocation of the existing air headers with a new overhead alignment, including a pipe bridge and other overhead structural support systems. Design plans and sequence of construction specifications were developed to minimize construction cost and maintain plant operation and performance during installation of the new diffusers.

Headworks Screening System Improvements, Olivenhain Municipal Water District, Encinitas, California. Serves as a project engineer for condition assessment and improvements of the existing headworks facility including installation of new mechanical bar screen units, grit classifiers, odor control system, slide gates and influent channel improvements and lining. He has guided bypassing approach and will support through completion of the project.

Edinger Pump Station Rehabilitation Study, Orange County Sanitation District, Huntington Beach, California. Project Engineer responsible for assessment and development of planning studies to determine feasible options for the rehabilitation, replacement, relocation, or abandonment of the Edinger Pump Station. Project elements included assessment of geotechnical, structural, hydraulic, and mechanical conditions. Multiple alternative pump station sites and configurations were developed and evaluated extensively with engineering and operations staff.

Highbury Pump Station Rehabilitation, Bureau of Engineering, Wastewater Conveyance Engineering Division, Los Angeles, California. Project Engineer for the rehabilitation design of the existing pump station. Tasks included utility research, site design, pump system hydraulics, evaluation of new pumping and equipment options, preparation of the preliminary design report, workshop presentations, and preparation of the Plans, Specifications, and Estimates (PS&E) package.

Final Effluent Sampler and Building Area Upgrades (J-110), Orange County Sanitation District, Huntington Beach, California. Project Engineer for a new final effluent water quality sampler facility; improvements to the ocean outfall system; and other miscellaneous mechanical, electrical, and instrumentation improvements for Plant No. 2. Responsibilities included development of a work plan to implement inspection of the 120-inch Short Ocean Outfall and other associated large diameter yard piping. Coordinated with subconsultants and operations staff, evaluated sampling and metering equipment options, evaluated pipeline rehabilitation alternatives, prepared civil site design, and prepared the preliminary design report, and PS&E.

Farmersville Wastewater Treatment Plant Design, City of Farmersville, California. Project Engineer for a new wastewater treatment plant, including the following elements: headworks, mixing chamber, aeration basins, clarifiers, holding tanks, return activated sludge pump station, digester tanks, and a solids handling building. Responsibilities included the design and preparation of drawings for the influent pump station, yard piping, and other conveyance design elements.

Planning Area 18 North Capital Improvement Facilities, Irvine Community Development Company (ICDC), Irvine, CA. Project engineer for the capital facilities associated with the ICDC Planning Area 18 North development project, in coordination with the Irvine Ranch Water District (IRWD). Facilities design included 12-inch domestic water pipelines; 6-inch, 8-inch, 24-inch, and 36-inch reclaimed water pipelines; and turnout improvements. This project included close coordination with IRWD and ICDC to accomplish the tight project schedule and maintain the budget.

Michael Metts, PE

PRINCIPAL IN CHARGE

Michael Metts is a principal engineer and manager of Dudek's engineering services with 40 years' experience in civil engineering and is a registered engineer in the State of California. Mr. Metts' engineering experience encompasses water, wastewater and recycled water engineering design, permitting, water resources planning, facility design, and construction management and assistance. He has provided project management and principal in charge services throughout the southwestern United States. Mr. Metts' project experience encompasses the evaluation and expansion of existing facilities as well as the design of new facilities, allowing him to anticipate project challenges, to the benefit of his clients. He is committed to maintaining clear and open communication with the client, while maintaining control of the project budget and schedule, as well as proactively delivering cost-effective and innovative project solutions.

Project Experience

Ramona Municipal Water District, Ramona, California. (14 years) Provides district engineering and engineering department management services under the direction of the general manager. Services include evaluating and recommending improvements to the District's Engineering Department operations to maximize efficiency and streamline daily functions; and providing day-to-day management of RMWD engineering operations, including capital budget, water resources planning, support facilities planning, environmental services, quality control, construction, developer designed and constructed facilities, negotiating developer funded improvements and agreements, managing Legislative Code revisions, coordination with other RMWD departments and outside agencies, rate and fee studies assistance, urban water and stormwater management plans, mitigation programs, assessment district formation, evaluation and assistance with grant and loan applications, and attendance at board meetings.

Wastewater Treatment

Coastal Treatment Plant Tertiary System Upgrades, South Orange County Wastewater Authority, Laguna Niguel, California. Principal engineer for design of upgrades to the 2.5 MGD Advanced Water Treatment facility, including repairs and recoating of the steel filter tanks and supports, replacement of filter media, pneumatic valves, and level transmitters for the Evoqua sand filters, a new horizontal centrifugal filter supply pump, the addition of an ultrasonic level sensor and VFDs for enhanced pumping control, replacement of chlorine contact tank vertical mixers, and replacement of the motor control center for the tertiary treatment system. The design phases was accelerated to meet a narrow plant shutdown window during the low water demand winter months.



Education

*University of Kentucky
BS, Civil Engineering,
1983*

Certifications

*Professional Civil
Engineer (PE),
CA No. 42586*

Professional Affiliations

*American Public Works
Association (APWA)
American Society of Civil
Engineers
American Water Works
Association
California Water
Environment Association
National Society of
Professional Engineers
Water Environment
Federation*

Influent Sewer Line Collapse – Emergency Services, South Orange County Wastewater Authority, Dana Point, California. Served as the project manager and Principal in Charge for an emergency project where two force mains, 20-inch and 16-inch, collapsed due to extensive corrosion damage. Dudek evaluated the situation and quickly developed innovative solutions for reinstatement of the force mains. We coordinated with SOCWA and MNWD to correlate pump station constraints with need to shut down the force mains for repair. The solution involved transferring all flow from one force main to the other during limited duration low flow conditions in the middle of the night. Each force main was repaired in consecutive night periods to reinstate the force mains without damage to other portions of the Techite force mains due to increased pressure. The project also involved coordination of excavating the plant roadway to maintain scheduled deliveries of biosolids to the plant, operations that required extremely heavy truck transport within the construction zone.

Design Services Emergency Replacement of Export Pipeline, South Orange County Wastewater Authority, Dana Point, California. Served as project manager and provided field evaluation of emergency conditions, provided engineered solution to emergency situation, coordinated closely with client and contractor to develop engineering solution in limited schedule, provided quality control review of deliverables and engineering efforts, assisted in field during construction, acted as primary contact for client. The project involved the emergency repair of two 4-inch sludge transport pipelines within an ecologically sensitive area of Orange County. Development of the engineering repair documents was required under a very short time schedule. Dudek developed the repair document and worked closely with the contractor to get the repair completed within time constraints to avoid trucking of sludge through the adjacent heavily used park.

Santa Maria WWTP Headworks Upgrade, Ramona Municipal Water District, California. Principal in Charge for the design of a new headworks facility at the Santa Maria WWTP. The plant's existing influent lift station and downstream processes have been affected by rags and grit due to a lack of headworks screening and grit removal for the plant. The project included relocation of the influent truck sewer, a new headworks structure with influent screw pumps, mechanical screenings equipment, grit removal, and a new emergency generator. Various project challenges included construction phasing, large equipment and structures, utility relocation, and connections to existing facilities.

4S Ranch WRF Digester Support and Oxidation Ditch Optimization, Olivenhain Municipal Water District, Encinitas, California. Served as project principal engineer for engineering and operational support services at the 4S Ranch WRF to support ongoing efforts to optimize the oxidation ditch biological treatment process and digester performance. The District faced process upset conditions after transitioning from aerobic to facultative digestion and turned to Dudek for process support. With the Dudek team performed microscopic examination of the activated sludge, analyzed water quality, operational, and process control data, and developed interim operational recommendations to improve biological and digester performance, reduce sulfide off-gassing during dewatering, and maintain plant operations during upset conditions. Currently, Dudek is assisting the District in implementing process instrumentation and control improvements to optimize the oxidation ditch performance in an effort to reduce operating costs while producing higher quality treated effluent.

Concept Level Facility and Process Review of 3A Wastewater Treatment Plant, Moulton Niguel Water District, Laguna Niguel, California. Served as project principal engineer for the preparation of a concept-level facility and process review report for the plant to define the current and future capacity and process capabilities for the facility after the District assumed operations of the facility. Scope of work includes the review and consolidation of previous reports and studies, review and comments on the waste discharge requirements, and treatment process evaluation and facility constraints analysis.

Phil Giori, PE

QUALITY CONTROL

Phil Giori (*FILL JOR-ee; he/him*) is a civil engineer and project manager with 9 years' experience specializing primarily in water and wastewater treatment facilities and in collection systems, pipelines, wells, pump stations, and other related facilities. Mr. Giori is an industry leader with demonstrated skills in improving engineering planning and design processes to improve reliability and reduce long-term life cycle cost for treatment facilities by leveraging operations and maintenance (O&M) input within a collaborative design approach. Mr. Giori's experience in planning, design, and construction provide him with unique insight and knowledge that he employs to drive projects toward successful completion.

Project Experience

Treatment Design

Huston Creek WWTP Dewatering Building and Primary Clarifier, Crestline Sanitation District, California. Project manager for the design of a new 2-story biosolids dewatering building and primary clarifier for the Crestline Sanitation District's 0.7-million-gallons-per-day (mgd) Huston Creek WWTP. The project included new structures, dewatering system equipment, clarifier equipment, mixing systems, pumps, channels, electrical systems, a new emergency generator, and more. Managed the preparation of a funding application for the Clean Water State Revolving Fund and successfully secured \$12 million in low-interest financing for the project. Project topography required careful structural design and retaining-wall construction to support new facilities, in addition to challenging maintenance of plant operation during construction.

Santa Maria WWTP Headworks Upgrade, Ramona Municipal Water District, California. Project manager for the design of a new headworks facility at the Santa Maria WWTP. The plant's existing influent lift station and downstream processes have been affected by rags and grit due to a lack of headworks screening and grit removal for the plant. The project included relocation of the influent truck sewer, a new headworks structure with influent screw pumps, mechanical screenings equipment, grit removal, and a new emergency generator. Various project challenges included construction phasing, large equipment and structures, utility relocation, and connections to existing facilities.

4S Ranch Water Reclamation Facility Headworks Screenings System Improvements, Olivenhain Municipal Water District, Encinitas, California. Project manager for the design of a new headworks improvements project, including replacement of mechanical screens, a grit classifier, odor control system improvements, channel rehabilitation, slide gate replacements, building structural modifications, and new instrumentation and controls. Key design considerations included working around a tight building and working space, which led to maintenance of plant operation and construction phasing challenges. The result is an improvement in screenings performance and reliability, as well as the replacement of corroded and obsolete process equipment.



Education

San Diego
State University
BS, Civil Engineering, 2014

Certifications

Professional Civil Engineer,
CA No. 87516

Professional Awards

California Water
Environment Association,
Outstanding Young
Professional of the
Year, 2017

Headworks Design, San Elijo Joint Powers Authority, Cardiff, California. Project engineer for the design of a headworks upgrade at the San Elijo water reclamation facility (WRF). Performed hydraulic calculations, condition assessments, and field measurements and designed the chemical feed system, which included sodium hypochlorite and sodium hydroxide storage and pumping systems, as well as odor control ventilation.

Industrial Wastewater Treatment Facility, City of Gonzales, California. Project manager for the design of a brand-new, \$27 million industrial wastewater collection system and treatment facility to convey and treat 1 mgd of fruit and vegetable processing industrial wastewater. The new plant includes an influent pump station, headworks with screenings and grit removal, aerated treatment ponds, and effluent infiltration basins. The collection system consists of approximately 2.5 miles of 24-inch to 27-inch gravity industrial wastewater trunk sewers. Managed the design and supported the project from start to finish, including preparing and securing low-interest funding through the Clean Water State Revolving Fund, coordinating approvals and permits from the Regional Water Quality Control Board (RWQCB), groundwater infiltration testing, and verifying that the appropriate environmental documentation (environmental impact report) was completed and approved.

Chemical System Upgrade, City of Petaluma, California. Project manager for the design of chemical system upgrades at their 6.7 MGD Ellis Creek Water Reclamation Facility (ECWRF) oxidation ponds site in a two-phased approach. Phase 1 consists of a new sodium hypochlorite storage and dosing facility consisting of three 6,500 gallon storage tanks within a containment area along with associated metering pumps, piping, controls, and safety features. Phase 1 is being completed according to an accelerated project schedule with a requirement to complete design and construction within 19 months of notice to proceed. Phase 2 will consist of new sodium bisulfite and sulfuric acid storage and dosing facilities as well as new operations building at the oxidation ponds site, equipped with operations terminals, lab benches, a restroom, MCC/electrical room, and storage area.

ECWRF Oxidation Ponds Transfer Structure Rehab & Storage Expansion Feasibility, City of Petaluma, California. Project manager for the feasibility study and subsequent design of rehabilitation and upgrades to 17 oxidation ponds hydraulic transfer structures and piping which provide storage and operational control of 11 oxidation ponds at the WRF. The project initially evaluates the feasibility of expansion of storage capacity in the oxidation ponds and identifies the recommended improvements for the design portion. The second phase of the project is the design of recommended improvements to rehabilitate and improve the transfer structures and piping connecting the oxidation ponds.

La Salina WWTP Digester Rehabilitation, City of Oceanside, California. Project manager for the design of anaerobic digester cleaning and rehabilitation for both the primary and secondary digesters at the La Salina WWTP in Oceanside. The scope of work included digester cleaning specifications; replacement of blocked heat exchanger piping and valves; replacement of leaking overflow piping; replacement of corroded access manway, cover, bolts, and nuts on the digester roof; and replacement of gas protection equipment, including all piping, pressure safety valves, the flame arrestor, the flame trap, valves, and so on.

Water Reclamation Plant 7 Biosolids Upgrade Project, Coachella Valley Water District, Palm Desert, California. Senior engineer tasked with engineering services during construction for the WRP 7 Biosolids Upgrade Project that included new structures; a dewatering building; and dewatering equipment, including gravity belt thickeners and centrifuges, polymer feed systems, mixing systems, pumps, electrical systems, and more. The project included a life-cycle cost evaluation of dewatering equipment using pilot testing results from qualified equipment manufacturers, whose results were used to develop a performance specification for the selected equipment.

Gregory Guillen, PhD, PE

ODOR CONTROL

Gregory Guillen is a chemical and environmental engineer with 11 years' experience focusing on water and wastewater treatment. Dr. Guillen's education covered the fundamentals of chemical and environmental engineering, with an emphasis on water and wastewater treatment. His graduate work focused on advanced membrane materials and processes for separations, including those found in water and wastewater treatment. Dr. Guillen has authored several peer-reviewed papers in the field of desalination and membrane filtration, holds multiple patents for membrane formation, and has lectured in the Department of Civil and Environmental Engineering at University of California, Los Angeles.

Project Experience

Bay Bridge Pump Station Replacement Odor Control Facility, Orange County Sanitation District, Newport Beach, California. Dr. Guillen evaluated multiple gas- and liquid-phase hydrogen sulfide (odor) treatment technologies for implementation at the new Bay Bridge Pump Station. Calcium nitrate, magnesium hydroxide, and carbon scrubbers were selected for on-site and downstream odor control based on the results of a life-cycle model analysis. Dr. Guillen provided preliminary design of the odor control facility, including chemical demands, storage requirements, preliminary site layouts, and construction cost estimates.

Pressurization and Odor Control Study, Orange County Sanitation District, Newport Beach, California. Dr. Guillen investigated the causes of odor, pressurization events, and explosive gases in seven Orange County Sanitation District pump station wet wells in Newport Beach. Dr. Guillen developed protocols and performed field monitoring of hydrogen sulfide and differential pressure in these wet wells. A technical memorandum was developed that identified the causes of the observed issues and made recommendations on wet-well improvements.

Pump Station Pressurization Improvements, Orange County Sanitation District, Newport Beach, California. Dr. Guillen provided preliminary design of odor and pressurization mitigation improvements at six Newport Beach pump stations. The improvements included adding passive carbon scrubbers at each pump station. The scrubbers allowed treated air to exit and enter the wet wells without emitting odors or causing pressurization of the wet wells. A ferrous chloride storage and dosing facility was also designed at 15th Street Pump Station to provide downstream liquid phase hydrogen sulfide removal.

Odor Control Analysis, Olivenhain MWD, Encinitas, California. Dr. Guillen helped evaluate multiple liquid- and gas-phase hydrogen sulfide treatment systems for Olivenhain MWD's Del Dios force main. Recommendations were made to the District based on treatment efficacy and a life-cycle cost analysis.



Education

*University of California,
Los Angeles*

*PhD, Civil Engineering
MS, Civil Engineering*

*University of California,
Riverside*

*BS, Environmental
Engineering*

Certifications

*Professional Civil
Engineer, CA No. 83897*

Professional Affiliations

*California Water
Environment Association*

WateReuse Association

Santa Maria WWTP Headworks Upgrade, Ramona Municipal Water District, California. Lead process engineer for the design of a new headworks facility at the Santa Maria WWTP. The plant's existing influent lift station and downstream processes have been affected by rags and grit due to a lack of headworks screening and grit removal for the plant. The project included relocation of the influent truck sewer, a new headworks structure with influent screw pumps, mechanical screenings equipment, grit removal, and a new emergency generator. Various project challenges included construction phasing, large equipment and structures, utility relocation, and connections to existing facilities.

4S Ranch Water Reclamation Facility Headworks Screenings System Improvements, Olivenhain Municipal Water District, Encinitas, California. Lead process engineer for the design of a new headworks improvements project, including replacement of mechanical screens, a grit classifier, odor control system improvements, channel rehabilitation, slide gate replacements, building structural modifications, and new instrumentation and controls. Key design considerations included working around a tight building and working space, which led to maintenance of plant operation and construction phasing challenges. The result is an improvement in screenings performance and reliability, as well as the replacement of corroded and obsolete process equipment.

Woods Valley Ranch Water Reclamation Facility Phase 2, Valley Center MWD, California. Dr. Guillen designed secondary, tertiary, and disinfection processes for the Woods Valley Ranch Water Reclamation Facility Phase 2 expansion. Secondary wastewater treatment consists of an Aero-Mod extended aeration system capable of full nitrification and denitrification. Tertiary treatment consists of coagulation, flocculation, and cloth disk filters. Dr. Guillen developed a tracer study protocol in coordination with the California Department of Public Health that will be used to recertify the existing chlorine contact basins to determine their ultimate capacities. The water reclamation facility will continue to produce Title 22 quality effluent.

Separate Industrial Treatment Concept Alternatives Project, City of Gonzales, California. Dr. Guillen served as lead treatment engineer in the evaluation of industrial treatment alternatives. Projected industrial wastewater flow generation and water quality, water reuse opportunities, and effluent water quality requirements. Provided conceptual industrial WWTP locations, layouts, and cost estimates.

Wastewater Treatment and Collection System Master Plan, Crestline Sanitation District, California. Dr. Guillen served as lead treatment engineer for the Wastewater Master Plan for the Crestline Sanitation District. Utilized a series of workshops to facilitate a COFA to identify the most critical and high-risk failure scenarios at all three of the District's WWTPs and two lift stations, as well as the root cause of those failures. Additionally, Dr. Guillen performed a thorough process evaluation on each unit process of all three of the District's WWTPs to determine individual process capacity and performance in comparison to design criteria and industry standard ranges. The project culminated in a comprehensive list of capital improvement projects, prioritized by risk and paired with available funding opportunities.

Ventura Water Reclamation Facility Process Evaluation and Capital Improvement Plan, City of San Buenaventura, California. Dr. Guillen assisted in the Failure Mode and Effects Analysis workshops with Ventura Water Reclamation Facility staff. The workshops identified unit processes within the water reclamation facility, identified their modes of failure, and scored the criticality of those failures. The Failure Mode and Effects Analysis process, in conjunction with the water reclamation facility treatment process analysis, identified constraints within the facility and helped develop the City's Capital Improvement Plan.

Joseph A. Schneider, PE

ELECTRICAL ENGINEERING / I&C

Joseph (Joe) A. Schneider is a principal electrical engineer with 25 years' professional experience as an electrical, instrumentation, and controls engineer and 17 years' experience specializing in instrumentation and control system design and electrical distribution system design for water treatment, wastewater treatment, water distribution facilities, and wastewater collection facilities.

Mr. Schneider's instrumentation and control system design experience consists of the design of programmable logic controllers (PLC) based plant control systems and instrumentation, specification creation, and construction administration duties. His electrical design experience includes evaluation of site-wide electrical systems and medium and low-voltage electrical distribution system design up to 12.47 kilovolts (kV). These designs include redundant power options and emergency generators, lighting design, grounding system design, specification creation, construction administration duties, and start-up.

Mr. Schneider is experienced in managing multiple concurrent projects and meeting multiple deadlines. He utilizes his experience as an electrical system owner to understand client operations and concerns and provide design solutions to meet their needs.

Project Experience

Jomax Water Reclamation Facility Phase 3 Expansion (3 to 4.5 MGD), Vistancia Development LLC, Peoria, Arizona. Served as the lead electrical and controls engineer in the design of electrical, instrumentation, and controls to expand the wastewater plant capacity from 3 MGD to 4.5 MGD. The existing 12 kV electrical distribution system and standby generator system was analyzed and modified to accommodate the expansion. Phase 3 design was completed through 60% to allow the city to modify their Arizona Department of Environmental Quality permit for Phase 2B and Phase 3 expansions at the same time. Electrical, LED lighting, ground, and controls design added the expanded plant processes to the existing electrical system at the 480 V and 12.47 kV levels, added a 12 kV diesel standby generator, and added PLCs and fiber network to the existing plant control system. Processes included modification of the existing influent pump station, new aeration basins, new secondary clarifiers, new scum pump station, new tank drain pump station, new UV disinfection system, new sludge holding tank, and replacing a dewatering centrifuge and conveyor. Design included drawings, specifications, and engineer's estimate of probable construction cost.

23rd Avenue WWTP JOC, City of Phoenix, Arizona. Served as the lead electrical and controls engineer managing and designing the electrical and controls for projects with an engineering fee up to \$100,000 per task. Experience includes approximately five JOC projects at the 63 MGD plant. JOC projects include solids handling facility centrifuges control panels and VFDs replacement, aeration basin tunnels and primary pump station tunnels lighting replacement projects, and a laboratory upgrade project.



Education

Keller Graduate School of Management of DeVry University,
MBA, Project Management, 2005
Arizona State University,
BSE, Electrical Engineering, 1999

Certifications

Registered Electrical Engineer, CA 19636
Registered Electrical Engineer, AZ No. 43868

Hyperion Treatment Plant Primary Sludge Thickening, Los Angeles Department of Public Works, Los Angeles, California. Served as an electrical project engineer assisting the project's lead electrical and control system engineer with the preliminary and detailed electrical design of solids conveyance and thickening facilities in existing buildings. Electrical design included 12 kV and low voltage power distribution additions and modifications including the addition of medium and low voltage motor controllers, medium and low voltage variable frequency drives, and a medium voltage motor control center.

SROG 91st Avenue WWTP Electrical Reliability Improvements, City of Phoenix, Tolleson, Arizona. Served as an electrical and controls project engineer assisting the project's lead electrical and control system engineer with the electrical design of upgrade of portions of the plant's existing medium and low voltage power distribution system, which provided redundant power feeders from the 5 kV distribution system down to the 480 V MCC level for plant processes, including solids and digester facilities. Design included site 5 kV distribution, 480 V substation replacements, 480 V main-tie-main draw-out switchgear, and redundant 480 V distribution throughout the site. Performed construction administration, including shop drawing review.

Jomax Water Reclamation Facility Phase 2B Expansion (2.25 to 3 MGD), Vistancia Development LLC, Peoria, Arizona. Served as the lead electrical and controls engineer in the design of electrical, instrumentation, and controls to expand the wastewater plant capacity from 2.25 MGD to 3 MGD. The existing 12 kV electrical distribution system and standby generator system was analyzed and modified to accommodate the expansion. The existing Modicon PLC control system was modified to accommodate the expansion. Phase 2B expansion design included the addition of new process facilities to increase plant capacity from 2.25 MGD to 3 MGD. Electrical, LED lighting, ground, and controls design added the expanded plant processes to the existing electrical system at the 480 V level and to the existing plant control system. Processes included modification of the existing influent pump station; replacement of existing bar screen; and addition of new bar screen, grit classifier, grit pump, aeration basin, sludge holding tank, and dewatering centrifuge and conveyors. Design included drawings, specifications, and engineer's estimate of probable construction cost.

Biosolids Pasteurization Project, City of Oxnard, California. Served as the electrical and controls project engineer assisting the project's lead electrical and control system engineer in the design of the instrumentation and control system for the pasteurization facility at the Oxnard WWTP. This project included new instrumentation, the addition of a new PLC into the existing PLC-based control system, design of a local control panel which allows local control of the entire pasteurization facility, and the addition of the pasteurization facility to the existing SCADA system graphics for monitoring purposes.

Festival Ranch Water Reclamation Facility Phase 2A Expansion, Pulte Homes, Buckeye, Arizona. Served as the lead electrical and controls engineer for the Phase 2A expansion EI&C detailed design and for planning for future Phase 2B expansion electrical capacity. The existing plant uses a sequencing batch reactor process, with a 480 V electrical service, standby diesel generator, automatic transfer switch, and PLC-based plant control system. The existing electrical service, electrical system, and standby generator were evaluated. The service entrance section (SES) was evaluated and determined to have the capacity for the expansion; however, the design required an additional automatic transfer switch (ATS), generator, generator paralleling gear, motor control center, and electrical equipment to power the expanded facilities. Additional network, PLCs, LED lighting, and grounding were also designed. The challenge in this design was the client's constraint that the existing plant and the expansion must share the same existing electrical service from the utility. Design, including drawings and specifications, was completed up to the agency review design submittal.

Agata Bugala, EIT, ENV SP

TREATMENT ENGINEER

Agata Bugala (*ah-GATA boo-GA-LA; she/her*) is a project engineer with 3 years' professional experience as a water/wastewater engineer specializing in the design of water and wastewater treatment systems, including planning and process engineering. Ms. Bugala's technical skills include aeration process modeling and energy optimization in BioWin, report and proposal preparation, drawing preparation in AutoCAD, and bench-scale and pilot-scale studies.

Relevant Previous Experience

Industrial Wastewater Treatment Facility, City of Gonzales, California. Project engineer for the design of a new 1-million-gallon-per-day industrial wastewater treatment facility. The new plant includes an influent pump station, headworks with screenings and grit removal, aerated treatment ponds, and effluent infiltration basins. Performed process calculations, wastewater treatment plant design (e.g., process flow diagrams), and cost estimates.

4S Ranch Water Reclamation Facility Headworks Screenings System Improvements, Olivenhain Municipal Water District, Encinitas, California. Project engineer for the design of a new headworks improvements project, including replacement of mechanical screens, grit classifier, odor control system improvements, channel rehabilitation, and slide gate replacements.

Consequence of Failure Analysis, Moulton Niguel Water District, Laguna Niguel, California. Project engineer for the preparation of a Consequence of Failure Analysis for the Moulton Niguel Water District. Assisted in site visits and workshops to identify the most critical and high-risk failure scenarios at the city's WWTP. Evaluated and prepared a report describing short-term and long-term WWTP upgrades, maintenance, and replacement components.

La Salina Wastewater Treatment Plant Digester Rehabilitation, City of Oceanside, California. Project engineer for the design of anaerobic digester cleaning and rehabilitation for both the primary and secondary digesters at the La Salina Wastewater Treatment Plant (WWTP) in Oceanside. The scope of work included digester cleaning specifications; replacement of blocked heat exchanger piping and valves; replacement of leaking overflow piping; replacement of corroded access manway, cover, bolts, and nuts on the digester roof; and replacement of gas protection equipment, including all piping, pressure safety valves, flame arrestor, flame trap, and valves.

City of Redlands Master Plan, Redlands, California. As project engineer, performed full-scale capacity assessment of the existing equipment of major unit operation processes. Evaluated the existing system to identify key performance parameters of the WWTP and recommend potential ways to increase operations efficiency while reducing electrical costs of the facility, including power costs associated with pumps, blowers, and cogeneration.



Education

The City College of New York
BE, Environmental Engineering, 2018

Certifications

Engineer-in-Training (EIT), No. 173501

Envision Sustainability Professional (ENV SP) No. 47181

Professional Affiliations

Santa Ana River Basin Section, Director

Water Environment Association, Active Member

Nano-Aeration Demonstration Testing, Municipal Wastewater Treatment Plant, City of Gonzales, California.

Assisted in the evaluation of nano-aeration technology (NanO2) at the City of Gonzales WWTP. Prepared a conceptual design for a NanO2 system on how to remove nitrogen in the efficient and cost-effective way rather than traditional biological treatment processes.

Consequence of Failure Analysis, South Orange County Wastewater Authority, Dana Point, California. Project engineer for the preparation of a Consequence of Failure Analysis for the South Orange County Wastewater 6.7-million-gallon-per-day coastal treatment plant. Assisted in site visits and workshops to identify the most critical and high-risk failure scenarios at the city's WWTP. Evaluated and prepared a report describing short-term and long-term WWTP upgrades, maintenance, and replacement components.

WWTP Capacity and Condition Assessment, City of Banning, California. Performed full-scale field condition and capacity assessment of the existing equipment of major unit operation processes (i.e., pumps) and pipes throughout the WWTP using a portable ultrasonic flow meter. Evaluated and prepared a report describing short-term and long-term WWTP upgrades, maintenance, and replacement components.

Nitrogen Removal Feasibility Study, City of Banning, California. Assisted with the design and evaluation of the wastewater treatment systems for nitrogen removal to achieve California Code of Regulations Title 22 requirements. Performed cost analysis for the secondary treatment including trickling filters, conventional activated sludge, MBR, moving bed biofilm reactor, and integrated fixed-film activated sludge.

Food and Beverage Facility, Wastewater Treatment Feasibility Study, Anaheim, California. Assisted with evaluation, design (process flow diagrams and site layouts), preparation of life cycle cost estimates, and recommendation of wastewater treatment systems to reduce surcharge fees. Evaluated liquid and solid treatment components such as sequencing batch reactor, upflow anaerobic sludge blanket, anaerobic membrane bioreactor, dissolved air floatation, centrifuge, screw press, and belt filter press.

Wastewater Treatment Feasibility Study, Manufacturing Wastewater Facility, Ohio. Assisted in improving performance of an existing dewatering system for high total dissolved solids and high pH. Evaluated the feasibility of various solid and liquid separation treatment alternatives. Assisted in performing process calculations, preliminary construction and annual operations and maintenance costs of equalization, and evaluating filtration, dewatering, and pH adjustment systems.

Wastewater Treatment Feasibility Study, Danone Facility, Virginia. Assisted with the evaluation of treatment alternatives and preliminary design to improve an on-site wastewater treatment system and reduce incoming high organic loading rates generated from a dairy production line. Drafted process flow diagrams and site layouts for dissolved air floatation system and upflow anaerobic sludge blanket system. Prepared sections of the final technical memorandum.

Plant Optimization, Water-Energy-Food Nexus Project, Germany and New York. Assessed the feasibility of implementing demand response strategies and integrating on-site renewable energy sources as an alternative to grid-supplied electricity for the operation of WWTP in Germany and New York. Modeled and optimized energy consumption at the Haldenmühle Water Resource Recovery Facility, Stuttgart, Germany.

Co-Digestion Evaluation, Newtown Creek Water Resource Recovery Facility, New York. Evaluated how including additional solid-waste streams impacted digester egg performance. Performed biomethane potential tests to evaluate production rates.



Matt Stone, PE, SE

Senior Project Manager

Mr. Stone is a currently licensed California SE with over 13 years of project management and structural design work encompassing commercial, infrastructure, water, wastewater and military projects. He has performed many complex structural and seismic designs for new and existing buildings utilizing the latest design standards and philosophies. His work has included the preparation of structural drawings, specifications, and calculation packages, project coordination and management, technical report writing, cost estimating and construction support services. He specializes in the assessment, design and retrofit of water and wastewater treatment, storage and conveyance facilities.

Education/Professional Registration

BS, Structural Engineering, 2008, UCSD
MS, Structural Engineering, 2009, UCSD
Civil Engineer in California, 2011, No. 78488
Structural Engineer in California, 2014, No. 6183

calculation packages, project coordination and management, technical report writing, cost estimating and construction support services. He specializes in the assessment, design and retrofit of water and wastewater treatment, storage and conveyance facilities.

Relevant Project Experience

VVWRA Septage Receiving Stations – Victorville, CA – Project Manager – Kelsey Structural – 2023

Mr. Stone is currently providing the structural design of two new septage receiving stations to be constructed at the Victor Valley Wastewater Reclamation Authority's (VVWRA) Westside Water Reclamation Plant (WWRP). Due to long lead times in the procurement of precast concrete structures, VVWRA has requested the buried vault structures be constructed from cast-in-place concrete to accelerate the overall schedule. Structural design consists of two 50'L x 8'W x 8'H buried rectangular concrete vaults to be utilized for unloading of septic vehicles into the WWRP treatment system. The structures are designed to resist H-20 vehicular loading on the roof slab and associated wall surcharge pressures and include interior weir walls with debris screening to capture any large debris prior to conveyance to the existing Septic Equalization Tank. Engineering services being provided as part of the project include the development of structural drawings, specifications, calculations and opinion of probable construction cost.

WMWD Magnolia Avenue Interconnection – Riverside, CA – Project Manager – Kelsey Structural – 2023

Mr. Stone provided the structural design of the new Magnolia Avenue Interconnection Vault for Western Municipal Water District. The vault consisted of a below-grade, cast-in-place rectangular concrete vault with stairway and custom hatch access located in a roadway median along Magnolia Avenue. The structure was designed for H20 vehicular loading, lateral wall surcharge, high seismic forces and required precise reinforcing layout in the top slab to accommodate the oversized access hatch and pump hatch penetrations. The design required minimized foundation bearing pressures and small foundation slab footprint to prevent surcharge and disturbance of adjacent storm drain vaults and pipelines. Tight reinforcing spacing was utilized to minimize temperature, shrinkage and service loading cracking to help ensure the longevity of the vault structure.

CVWD Lift Station 55-11 Capacity Upgrade – Mecca, CA – Project Manager – Kelsey Structural – 2023

Mr. Stone provided the structural design for the Coachella Valley Water District Lift Station Capacity Upgrade project located in Mecca, CA. The project included preliminary and final design for the complete replacement and upgrade of the lift station's mechanical and electrical systems and utilized the existing wet well at the site for emergency storage. Structural design included a new 16' diameter x 35' deep precast concrete wet well, new premanufactured electrical building and foundation, odor reducing station with dry-media bed concrete basin, and an emergency generator with custom aluminum platform access. The precast wet well utilized the largest diameter precast sections available in the United States and require two semi-circular precast sections to be joined in-field with a grouted connection. Additional considerations for shallow groundwater and flood plain elevations required the design of a large cast-in-place mat foundation for the wet well to resist buoyancy and uplift forces.

City of Corona WRF-1A Aeration Improvements – Corona, CA – Project Manager – Kelsey Structural – 2023

Mr. Stone provided the structural design for a series of aeration pipe supports at the City of Corona's existing WRF-1A treatment plant. Design includes various custom pipe supports for 20" and 12" diameter stainless steel air piping including cantilever frames and kicker supports at the existing Aeration Basins and a 25' long pipe bridge spanning over an existing access road. Modifications at the existing Blower Building were required to accommodate the new piping penetrations through the CMU walls. Design considerations for expansion couplers, large thrust loads, existing structure loading and anchorage required detailed coordination with the client and design team to help ensure minimal impacts to the existing facility and operations.

USIBWC SBIWTP Assessment and Facility Planning – San Diego, CA – Structural Engineer – Kelsey Structural – 2023

Mr. Stone served as the Lead Structural Engineer for the condition assessment of over 120 structures at the USIBWC South Bay International Wastewater Treatment Plant (SBIWTP) located in San Diego, CA. The assessment involved fast-paced field investigations, which documented the structural conditions of various primary, secondary and support facilities throughout the plant.



Condition scores were assigned to each structural asset with associated improvement recommendations, prioritization and cost-estimate review documented in a structural technical memorandum. The assessment identified several key structures with severe deterioration requiring repairs in the immediate future to facilitate the future expansion of the plant.

EMWD Ellis Tank Assessment and Repair – Perris, CA – Project Manager – Kelsey Structural – 2022

Mr. Stone provided the structural assessment and repair design for Eastern Municipal Water District's (EMWD) existing 0.26 MG Ellis Tank. The reservoir is an AWWA D100 welded steel reservoir that was in the process of being recoated when Kelsey Structural was brought in to perform an assessment of the existing structure once old coatings were removed. Mr. Stone discovered severe deterioration of the roof framing system and column supports, which halted construction work and required an emergency repair design of a new roof framing system and strengthening of the existing structure. Expedited design work helped minimize construction delays and efficient detailing allowed for quick repair of the tank roof structure.

City of Poway Clearwell Bypass, Poway, CA – Project Manager – Kelsey Structural – 2022

Mr. Stone provided the structural design of a new pump station, pipe gallery retrofits and AWWA D103 bolted steel tank review for the City of Poway's Clearwell Bypass project. Recent failures of the existing clearwell have prompted replacement of the aging concrete storage basin, requiring temporary bypass of all treatment plant water while the new clearwells are constructed. To implement this bypass, Kelsey Structural has provided a new slab-on-grade pump station design and retrofits to an existing pipe gallery structure to facilitate bypass pumping and new piping to the temporary steel storage tanks. Structural design has included reinforced concrete slab-on-grade with deepened perimeter footings to accommodate the site slope, concrete pedestal pipe supports, and retrofit concrete wall construction requiring demo and replacement of an existing below-grade vault wall.

City of Gonzales Industrial Water Reclamation Facility – Gonzales, CA – Project Manager – Kelsey Structural – 2022

Mr. Stone is provided the structural design of a new Industrial Water Reclamation Facility for the City of Gonzales. Structural design is being provided for multiple treatment facilities including an 1,800 sqft. concrete-masonry unit Operations Building, below grade reinforced concrete Wet Well and Pump Station, Headworks facility, Grit Chamber, Blower Building and miscellaneous site structures and equipment foundations. Extremely poor soil conditions at the site coupled with high groundwater and flood plain required all structures to be supported on mat foundations capable of spanning voids beneath the structures and resisting large differential settlements that may occur due to liquefaction during seismic events.

OMWD Neighborhood No.1 Sewer Pump Station – 4S Ranch, CA – Structural Engineer – Kelsey Structural – 2021

Mr. Stone provided structural engineering design services for a new pump station and electrical building to be constructed in the 4S Ranch neighborhood of San Diego, CA. The project included structural design of a below-grade, rectangular reinforced concrete pump station and an above grade CMU electrical building with steel framed roof structure. The pump station measured approximately 28'x27' and is buried approximately 25' below grade. Design challenges included HS-20 vehicular loading at the long-span roof slab which also supported one of the walls of the CMU electrical building. A heavily reinforced concrete beam was required to support the roof structure and required loads.

JBLTP Digester 1 And 2 Manway Improvement Project – Dana Point, CA – Project Manager – Kelsey Structural – 2021

Mr. Stone provided the structural design of four retrofit access manway doors and strengthening of existing Digesters at the existing SOCWA J.B. Latham Treatment Plant. The retrofit design required sawcutting the existing circular reinforced concrete Digester walls to provide new and enlarged access penetrations to improve ventilation and accessibility during maintenance. Fiber wrap strengthening of the existing structure was required to accommodate the new penetrations and resist hydrostatic and seismic hoop forces in the walls concentrated around the openings.

EVWD 18 Reservoir Structural and Seismic Analysis – San Bernardino, CA – Project Manager – Kelsey Structural – 2021

Mr. Stone performed the structural and seismic analysis of a total of 18 existing reservoirs including AWWA D110 prestressed concrete and AWWA D100 welded steel reservoirs for East Valley Water District. Analysis of the reservoirs' essential structural elements was performed to identify critical code deficiencies and vulnerabilities. Critical steel reservoir analysis included tank shell thickness, anchorage and stability, ringwall foundations and sloshing/freeboard requirements. Critical prestressed reservoir analysis included concrete core walls, vertical and horizontal prestressing, seismic cables, two-way concrete roof slab, columns and foundations. A summary report was developed for each of the reservoirs identifying notable deficiencies with recommendations for possible retrofits, strengthening and lowered operating water levels, which would mitigate the code deficiencies and improve structural performance and reliability.

EDUCATION

B.S., Chemical Engineering, University of Toledo, 1979

REGISTRATIONS

Registered Mechanical Engineer, California, 1987, #M 24995

Registered Civil Engineer, California, 1990, #C 45875

Registered Chemical Engineer, California, 1993, #CH 4865

SUMMARY OF EXPERIENCE

Mr. King's educational background is in chemical engineering with emphasis on odor control, air quality, environmental, wastewater, water and regulatory issues. Mr. King has over 40 years of experience in odor control, systems certification and testing, air quality permitting, air emission inventory, air dispersion modeling, and regulatory interface for municipal and industrial projects and is registered as a Civil, Mechanical and Chemical Engineer in the State of California.

DETAILED EXPERIENCE- AIR QUALITY/ ODOR CONTROL

- **South Orange County Wastewater Authority (SOCWA)- Odor Control Design, Certification, AQMD Permitting, HVAC Design, Compliance Plans, Greenhouse Gas Inventory, Ventilation and Special Projects;** DHK Engineers has and continues to provide a wide array of odor control, ventilation, design, HVAC, environmental, compliance and training services to all SOCWA facilities. Since 2005, DHK has provided foul air/odor control air balancing and certification services, design upgrades for RTP ORS#1 Headworks, team member for RTP, JBL cogeneration assessments and upgrades, facility planning, Health and Safety training, environmental compliance (Spill Prevention Control and Countermeasure Plans), all air permitting and annual AQMD reports. DHK has also been the go to firm for energy auditing and development and implementation of energy efficiency strategies as well as technical support with SDGE and SCE utility issues. Successful execution of design projects includes RTP Administration HVAC Upgrades, RTP Headworks ORS#1 upgrades, Emergency Fuel Storage Facility at JBL and Fire Hardening Upgrades at CTP.
- **City of Laguna Beach – Odor Control Upgrades and Improvement Program.** In 2014, DHK Engineers was selected as the City of Laguna Beach Odor Expert to assist the City in the development and implementation of a comprehensive odor control program. Several successful and on-going odor mitigation projects including the North Coast interceptor – Magnesium Hydroxide Pilot Program has greatly improved the difficult circumstances the City has to manage including long residence time in the collection and conveyance system, wastewater seasonal variations for flow and the density of residences and sensitive receptors. DHK was instrumental in quickly resolving a transient odor issue downtown and permanent odor control resources (scrubber technology and foul air ventilation) are in the implementation phase. As part of the comprehensive program, DHK was tasked with technology evaluation including treatment, ventilation methods, chemical addition, and source control. DHK was instrumental in working with the City's team as well as SOCWA Coastal Treatment Plant in determining the potential beneficial impacts of improvements made with the City and CTP.
- **Santa Margarita Water District- Odor Assessment and Control Program-Chiquita Water Reclamation Facility** Comprehensive odor control program for the Chiquita Water Reclamation Plant including all aspects of the process areas, process adjustments, point source evaluations, conveyance/ductwork configurations, air dispersion, chemical injection and bundling of types of odors and development of odor/ventilation monitoring program.

- **El Toro Water District- Northline Lift Station Odor Control Investigation and Implementation Program** Northline Lift Station Odor Assessment and Implementation Program; El Toro Water District and DHK developed a comprehensive odor/ collection system pressure monitoring program at the Northline LS to determine the reach of the existing odor control system into the collection system. Odor characterization and pressure profiles identified specific times of the day resulting in excessive odor issue. Using field information identified possible conditions which could result in transient odors. Long residence time in the collection system and one of the remote upstream LS contributed to the transient excursions. A comprehensive review of technologies and chemical alternative focused in on addition of a flow paced magnesium hydroxide. The program greatly improved the conditions and helped manage the Northline odor issue.
- **Orange County Sanitation District- Multiple Odor Control**
 - Santa Ana Trunkline Sewer Replacement Project (1-23). Technical odor consultant and testing company for sewer replacement project with OCSD. The projects included comprehensive testing vapor and liquid phase to determine baseline conditions and develop design criteria to ensure compliance with OCSD environmental requirements during construction.
 - Newhope-Placentia Trunkline Sewer Replacement Project (2-72A). Technical odor consultant and testing company for sewer replacement project with OCSD. The projects included comprehensive testing vapor and liquid phase to determine baseline conditions and develop design criteria to ensure compliance with OCSD environmental requirements during construction.
 - Dover Drive Sewer Rehabilitation Odor Control Assessment (5-63), OCSD, CA. Technical odor consultant for development of baseline odor/pressure profiles along of Dover Drive Sewer Line. Ventilation and safety strategies were developed, as well as specifications and drawings, to ensure the OCSD odor and nuisance requirements were met.
 - Coast Trunk Sewer Rehabilitation Odor Control Design (11-26), OCSD, CA. Technical odor consultant and design engineer for ventilation and treatment of Coast Trunk Sewer Line. Ventilation and safety strategies were developed, as well as specifications and drawings, to ensure the OCSD odor and nuisance requirements were met.
 - Westside (3/52), College (7-47) and MacArthur (7-49) Pump Stations Upgrade Projects Odor Control Assessments, OCSD, CA. Technical odor consultant and testing company for three pump stations with OCSD. The projects included comprehensive testing vapor and liquid phase to determine baseline conditions and develop design criteria to ensure compliance with OCSD environmental requirements.
- **SOCWA Pump Station, City of Laguna Beach, CA.** Principal Consultant for odor control retrofit alternatives for the SOCWA Pump Station in downtown setting. The assessment included consideration for pre-treatment, point source treatment, ventilation strategies and corrosion control with the downtown collection system.
- **County of San Diego Administration Building- The Waterfront Park Project, San Diego, CA.** Principal engineer for odor evaluation of City of San Diego PUD trunk sewer adjacent to new park. Conducted odor and sewer main pressure assessments, calculations and alternative analyses.



Matt Stone, PE, SE
Senior Project Manager

Education/Professional Registration
BS, Structural Engineering, 2008, UCSD
MS, Structural Engineering, 2009, UCSD
Civil Engineer in California, 2011, No. 78488
Structural Engineer in California, 2014, No. 6183

Mr. Stone is a currently licensed California Structural Engineer with over 14 years of project management and structural design work encompassing commercial, infrastructure, water, wastewater and military projects. He has performed many complex structural and seismic designs for new and existing buildings utilizing the latest design standards and philosophies. His work has included the preparation of structural drawings, specifications, and calculation packages, project coordination and management, technical report writing, cost estimating and construction support services. He specializes in the assessment, design and retrofit of water and wastewater treatment, storage and conveyance facilities.

Relevant Project Experience

SOCWA JBLTP Digester 1 And 2 Manway Improvements – Dana Point, CA – Project Manager – Kelsey Structural – 2021
Mr. Stone provided the structural design of four retrofit access manway doors and strengthening of existing Digesters at the existing SOCWA J.B. Latham Treatment Plant. The retrofit design required sawcutting the existing circular reinforced concrete Digester walls to provide new and enlarged access penetrations to improve ventilation and accessibility during maintenance. Fiber wrap strengthening of the existing structure was required to accommodate the new penetrations and resist hydrostatic and seismic hoop forces in the walls concentrated around the openings.

City of Petaluma ECWRF Sodium Hypochlorite Replacement and Relocation – Petaluma, CA – Project Manager – Kelsey Structural – Ongoing

Mr. Stone is currently providing the structural design of a new Sodium Hypochlorite Chemical Storage Area for the City of Petaluma, CA. The new facility consists of a concrete containment area supporting three new 6,600-gallon sodium hypochlorite storage tanks, constructed as part of the City’s Ellis Creek Water Recycling Facility upgrades. The new containment area consists of a 1,200 square-foot basin with 2’-6” tall containment walls capable of providing emergency storage for all three tanks in case of leaks. The containment area has been designed with integral structural column pedestals, which are intended to be utilized in the future for a structural canopy cover and screening walls, which were part of the original design but were elected to be removed from the project by the City after the 90% submittal. Additionally, 18” diameter drilled pier foundations have been utilized per geotechnical recommendations to provide sufficient support for the structure due to the poor Bay Mud layers of soil below, which pose the risk of differential settlements of up to 12” across the structure if not mitigated.

City of Corona WRF-1A Aeration Improvements – Corona, CA – Project Manager – Kelsey Structural – 2023

Mr. Stone provided the structural design for a series of aeration pipe supports at the City of Corona’s existing WRF-1A treatment plant. Design includes various custom pipe supports for 20” and 12” diameter stainless steel air piping including cantilever frames and kicker supports at the existing Aeration Basins and a 25’ long pipe bridge spanning over an existing access road. Modifications at the existing Blower Building were required to accommodate the new piping penetrations through the CMU walls. Design considerations for expansion couplers, large thrust loads, existing structure loading and anchorage required detailed coordination with the client and design team to help ensure minimal impacts to the existing facility and operations.

City of Oxnard Chemical Storage Facility Roof Repairs – Oxnard, CA – Project Manager – Kelsey Structural – 2023

Mr. Stone performed a field investigation and structural repair of a deteriorated roof structure for the City of Oxnard’s Chemical Storage Facility. The existing structure was constructed with a partially-open roof canopy structure with wood framing that had sustained significant dry-rot damage due to moisture exposure and the damp marine environment. As part of the investigation, Kelsey Structural identified the extents and severity of the roof damage and were able to salvage the majority of the roof structure, recommending and designed repairs and retrofit to the lower overhang of the structure where deterioration was most severe. New flashing and protective sealants were detailed to inhibit future deterioration of the structure.

City of San Diego Kearny Mesa Repair Facility – San Diego, CA – Project Manager – Kelsey Structural – 2023

Mr. Stone provided the structural design for the City of San Diego Kearny Mesa Repair Facility for Fleet Services maintenance. Design included the retrofit of an existing concrete building as well as new steel canopy structures and equipment foundations. The existing building is a single-story concrete tilt-up building with two interior wood-framed

mezzanine structures that will be removed as part of the project and replaced with new steel moment frame lateral force resisting systems. Additional work at the existing building included a new rollup-door at an existing concrete shear wall that required strengthening of the existing lateral system as well as new metal stud and wood-framed partitions and curtain wall systems.

City of Gonzales Industrial Water Reclamation Facility – Gonzales, CA – Project Manager – Kelsey Structural – 2022

Mr. Stone is provided the structural design of a new Industrial Water Reclamation Facility for the City of Gonzales. Structural design is being provided for multiple treatment facilities including an 1,800 sqft. concrete-masonry unit Operations Building, below grade reinforced concrete Wet Well and Pump Station, Headworks facility, Grit Chamber, Blower Building and miscellaneous site structures and equipment foundations. Extremely poor soil conditions at the site coupled with high groundwater and flood plain required all structures to be supported on mat foundations capable of spanning voids beneath the structures and resisting large differential settlements that may occur due to liquefaction during seismic events.

City of Glendora Bluebird Booster Station Upgrade – Glendora, CA – QA/QC – Kelsey Structural – 2021

Mr. Stone provided the structural QA/QC review for a booster pump station, equipment upgrades and modifications of two existing steel reservoirs at the Bluebird site for the City of Glendora. The project consisted of a new 1,500 sqft CMU building with a hip shaped steel framed roof that included sky lights for pump removal and a 1-ton monorail crane beam at the underside of the steel roof framing. Foundation designs were performed for a new emergency generator, transformer and switchboard, and vertical surge tank. Structural design was also provided for the strengthening around new penetrations at two existing steel tanks per AWWA D100 and AWWA D103.

City of Poway Clearwell Bypass, Poway, CA – Project Manager – Kelsey Structural – 2021

Mr. Stone provided the structural design of a new pump station, pipe gallery retrofits and AWWA D103 bolted steel tank review for the City of Poway's Clearwell Bypass project. Recent failures of the existing clearwell have prompted replacement of the aging concrete storage basin, requiring temporary bypass of all treatment plant water while the new clearwells are constructed. To implement this bypass, Kelsey Structural has provided a new slab-on-grade pump station design and retrofits to an existing pipe gallery structure to facilitate bypass pumping and new piping to the temporary steel storage tanks. Structural design has included reinforced concrete slab-on-grade with deepened perimeter footings to accommodate the site slope, concrete pedestal pipe supports, and retrofit concrete wall construction requiring demo and replacement of an existing below-grade vault wall.

LWD Encinitas Estates Pump Station – Encinitas, CA – Structural Engineer – Kelsey Structural – 2021

Mr. Stone provided structural engineering design services for the Leucadia Wastewater District (LWD) Encinitas Estates Pump Station project in Encinitas, CA. The project consisted of a new precast below grade pump station and various site structures. Structural design included a new CMU freestanding site wall, emergency generator foundation, and multiple electrical equipment foundations. The electrical MCC equipment foundation required a steel canopy for weather protection and consisted of metal deck over HSS tube steel beams supported by HSS columns and was connected to both the foundation and top of the CMU site wall due to limited space and site constraints. Mr. Stone also provided the design criteria and submittal review of the precast pump station structure.

RMWD Weese Filtration Plant Interconnect – Oceanside, CA – Project Manager – Kelsey Structural – 2021

Mr. Stone provided the structural design of a new single-story interconnect structure at the Weese Filtration Plant in Oceanside, CA for Rainbow Municipal Water District. Design includes a new partially-buried CMU building with steel framed roof and concrete foundations housing pumping and piping equipment. The structure is located in a sloped grade and retains approximately 8' of soil with roadways surrounding the structure and was designed to resist all soil and surcharge lateral loads. A large rollup door was required in the exposed front wall to allow for pump removal and maintenance.

FPUD Overland Trail Lift Station Rehabilitation – Fallbrook, CA – Project Manager – Kelsey Structural – 2020

Mr. Stone provided the structural design and retrofit for the Overland Trail Lift Station Rehabilitation Project for Fallbrook Public Utility District. Structural design services included retrofit of an existing below-grade lift station which consisted of widening the existing drywell in order to allow for larger pumps and new piping penetrations to accommodate increased flow through the station. Construction sequencing was critical to minimize system downtime and bypassing while also limiting damage to the existing portions of the lift station to remain as well as the adjacent clarifier structure. Concrete retrofit and repair details were provided and tailored to the project to allow for quick material cure times to help minimize the duration of system bypassing.



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SOCWA

Regional Treatment Plant Primary and Aeration Area Grating and Gates Replacement

DUDEK FEE ESTIMATE

4/10/2024

		QA/QC Process Engineer	Project Manager	Electrical Engineer	Project Engineer	CAD Designer	Admin	TOTAL DUDEK HOURS
Project Team Role:		P. Giori	B. Robertson G. Guillen	J. Schneider	A. Bugala	N. Hunter	M. Kinney	
Team Member:								
Billable Rate :		\$280	\$255	\$290	\$210	\$200	\$150	
Task 1	Project Management and Coordination							
	Project Management							
	Monthly Progress Reports, Invoices, Administration		20				20	40
	Monthly Progress Meetings (3 In-Person) Meetings		24					24
	Kickoff Meeting		2	2	4			8
	Preliminary Design (35%) Submittal Review/Workshop Meeting		2	2	4			8
	Pre-Final Design (90%) Submittal Review/Workshop Meeting		2	2	4			8
	Final Design (100%) Submittal Review/Workshop Meeting	24	2	2	4			32
	Quality Assurance/Quality Control Activities							
	Subtotal Task 1	24	52	8	16		20	120
Task 2	Document Review							
	Review As-builts and Background Documents		2		8			10
	Field Investigation		4	8	8	8		28
	Subtotal Task 2		6	8	16	8		38
Task 3	Preliminary (35%) Design							
	Conceptual Maintenance of Plant Operation Plan		4		8			12
	Plans		4	16	40	72		132
	Specifications (Technical)		4	4	16			24
	Cost Estimate		2	2	4			8
	Preliminary Design Tech Memo		4	8	16			28
	Subtotal Task 3		18	30	84	72		204
Task 4	Pre-Final (90%) Design							
	Plans		8	16	40	92		156
	Specifications (Updated Technical and Division 1)		4	8	16		2	30
	Cost Estimate		1	1	4			6
	Subtotal Task 4		13	25	60	92	2	192
Task 5	Final (100%) Design Submittal							
	Drawings		8	12	24	40		84
	Specifications		4	4	12		4	24
	Cost Estimate		1	1	2			4
	Subtotal Task 5		13	17	38	40	4	112
Task 6	Bid Support Services							
	Prepare Bid Package		2	2	2	8		14
	Subtotal Task 6		2	2	2	8		14
Total Hours and Fee		24	104	90	216	220	26	680
Percent of Hours:		4%	15%	13%	32%	32%	4%	100%