CITY OF SANTA ANA
CONTRACTOR AGREEMENT FOR
ON-CALL ENGINEERING SERVICES WITH
TETRA TECH, INC.

THIS AGREEMENT is made and entered into on this 16th day of August 2022 by and between Tetra Tech, Inc. ("Contractor"), and the City of Santa Ana, a charter city and municipal corporation organized and existing under the Constitution and laws of the State of California ("City").

RECITALS

A. The City desires to retain a Contractor having special skill and knowledge in the field of on-call water resources engineering services pursuant to RFP 22-002.

B. Contractor represents that Contractor is able and willing to provide such services to the City.

C. On April 21, 2020, City Council approved agreements with Tetra Tech, Inc., Michael Baker International, Inc., Psomas, Stantec Consulting Services, Inc., NV5, Inc., Huitt-Zollars, Inc., Kimley-Horn and Associates, Inc., and TAIT & Associates, Inc. ("2020 Agreements") to provide on-call engineering services for the Public Works Agency, Water Resources Division.

D. On March 16, 2021, the City amended the 2020 Agreements to increase the funding amount by $950,000 for the remainder of the term to allow these services to be utilized for additional civil works projects included in the current and future fiscal years' Capital Improvement Programs (CIPs). These agreements remain in full force and effect.

E. The City finds that new agreements under RFP 22-002 are required for additional services for new civil works projects as the funding capacity has been reached under the 2020 Agreements.

F. In undertaking the performance of this Agreement, Contractor represents that it is knowledgeable in its field and that any services performed by Contractor under this Agreement will be performed in compliance with such standards as may reasonably be expected from a professional consulting firm in the field.

NOW THEREFORE, in consideration of the mutual and respective promises, and subject to the terms and conditions hereinafter set forth, the parties agree as follows:

1. SCOPE OF SERVICES

Contractor shall perform during the term of this agreement, the services described in the scope of work that was included in RFP No. 22-002 and that is attached as **Exhibit A**, and as further delineated in Contractor's proposal, which is attached as **Exhibit B** and incorporated in full. The Scope of Work under this Agreement is not intended to cover any civil works projects assigned to the 2020 Agreements.

2. COMPENSATION

a. Contractor under this Agreement. Contractor shall be paid only for services performed under the Agreement at the rates and charges identified in **Exhibit C**. Contractor is one of six Contractors selected to provide on-call engineering services. The total aggregate amount, among the six contractors, shall not exceed the shared aggregate amount of $2,000,000 during the term of this agreement, including any extension periods. All reimbursable expenses must be approved in writing by the City before they are incurred by Contractor. City shall not be responsible for any reimbursable costs incurred by Contractor without the advance written approval of City.

b. Payment by City shall be made within 45 days (forty-five) days following receipt of proper invoice evidencing work performed, subject to City accounting procedures. City shall not be assessed any late fees for payments rendered after forty-five (45) days. Payment need not be made for work which fails to meet the standards of performance set forth in the Recitals which may reasonably be expected by City.

3. TERM

This Agreement shall commence on the date first written above for a three (3) year term with the option for the City to grant up to two (2) one (1) year renewals, exercisable by a writing by the City Manager and the City Attorney, unless terminated earlier in accordance with Section 16, below.

4. PREVAILING WAGES

Contractor is aware of the requirements of California Labor Code Section 1720, et seq., and 1770, et seq., as well as California Code of Regulations, Title 8, Section 16000, et seq., ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on "public works" and "maintenance" projects. If the services being performed are part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and the total compensation is $1,000 or more, Contractor agrees to fully comply with such Prevailing Wage Laws. Contractor shall defend, indemnify and hold the City, its elected officials, officers, employees and agents free and harmless from any claim or liability arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.

5. INDEPENDENT CONTRACTOR

Contractor shall, during the entire term of this Agreement, be construed to be an independent contractor and not an employee of the City. This Agreement is not intended nor shall it be construed to create an employer-employee relationship, a joint venture relationship, or to allow the City to exercise discretion or control over the professional manner in which Contractor performs the services which are the subject matter of this Agreement; however, the services to be provided by Contractor shall be provided in a manner consistent with all applicable standards and regulations governing such services. Contractor shall pay all salaries and wages, employer's social

security taxes, unemployment insurance and similar taxes relating to employees and shall be responsible for all applicable withholding taxes.

6. OWNERSHIP OF MATERIALS

This Agreement creates a non-exclusive and perpetual license for City to copy, use, modify, reuse, or sublicense any and all copyrights, designs, and other intellectual property embodied in plans, specifications, studies, drawings, estimates, and other documents or works of authorship fixed in any tangible medium of expression, including but not limited to, physical drawings or data magnetically or otherwise recorded on computer diskettes, which are prepared or caused to be prepared by Contractor under this Agreement ("Documents & Data"). Contractor shall require all subcontractors to agree in writing that City is granted a non-exclusive and perpetual license for any Documents & Data the subcontractor prepares under this Agreement. Contractor represents and warrants that Contractor has the legal right to license any and all Documents & Data. Contractor makes no such representation and warranty in regard to Documents & Data which were provided to Contractor by the City. City shall not be limited in any way in its use of the Documents and Data at any time, provided that any such use not within the purposes intended by this Agreement shall be at City's sole risk.

7. INSURANCE

Coverage shall be at least as broad as:

1. **Commercial General Liability** (CGL): Insurance Services Office Form CG 00 01 covering CGL on an "occurrence" basis, including products and completed operations, property damage, bodily injury and personal & advertising injury with limits no less than **$1,000,000** per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (ISO CG 25 03 or 25 04) or the generalaggregate limit shall be twice the required occurrence limit.
2. **Automobile Liability:** Insurance Services Office Form Number CA 0001 covering, Code1 (any auto), or if Consultant has no owned autos, Code 8 (hired) and 9 (non-owned), withlimit no less than **$1,000,000** per accident for bodily injury and property damage.
3. **Workers' Compensation** insurance as required by the State of California, with StatutoryLimits, and Employer's Liability Insurance with limit of no less than **$1,000,000** per accident for bodily injury or disease.
4. **Professional Liability** (Errors and Omissions) Insurance appropriates to the Consultant'sprofession, with limit no less than **$1,000,000** per occurrence or claim.

If the Consultant maintains broader coverage and/or higher limits than the minimums shown above, the Entity requires and shall be entitled to the broader coverage and/or the higher limits maintained by the contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the Entity.

Other Insurance Provisions
The insurance policies are to contain, or be endorsed to contain, the following provisions:

Additional Insured Status
The Entity, its officers, officials, employees, and volunteers are to be covered as additional insureds on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Consultant including materials, parts, or equipment furnished in connectionwith such work or operations. General liability coverage can be provided in the form of an endorsement to the Consultant's insurance (at least as broad as ISO Form CG 20 10 11 85 or **both**CG 20 10, CG 20 26, CG 20 33, or CG 20 38; **and** CG 20 37 forms if later revisions used).

Primary Coverage
For any claims related to this contract, the **Consultant's insurance coverage shall be primary** insurance primary coverage at least as broad as ISO CG 20 01 04 13 as respects the Entity, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the Entity, its officers, officials, employees, or volunteers shall be excess of the Consultant's insuranceand shall not contribute with it.

Notice of Cancellation
Each insurance policy required above shall state that **coverage shall not be canceled, except withnotice to the Entity**.

Waiver of Subrogation
Consultant hereby grants to Entity a waiver of any right to subrogation which any insurer of said Consultant may acquire against the Entity by virtue of the payment of any loss under such insurance. Consultant agrees to obtain any endorsement that may be necessary to affect this waiverof subrogation, but this provision applies regardless of whether or not the Entity has received a waiver of subrogation endorsement from the insurer.

Self-Insured Retentions
Self-insured retentions must be declared to and approved by the Entity. The Entity may require theConsultant to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or Entity.

Acceptability of Insurers
Insurance is to be placed with insurers authorized to conduct business in the state with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the Entity.

Claims Made Policies
If any of the required policies provide coverage on a claims-made basis:

1. The Retroactive Date must be shown and must be before the date of the contract or the beginning of contract work.
2. Insurance must be maintained and evidence of insurance must be provided ***for at least five (5) years after completion of the contract of work.***
3. If coverage is canceled or non-renewed, and not ***replaced with another claims-made policyform with a Retroactive Dat***e prior to the contract effective date, the Consultant must purchase "extended reporting" coverage for a minimum of ***five (5)*** years after completion of contract work.

Verification of Coverage
Consultant shall furnish the Entity with original Certificates of Insurance including all required amendatory endorsements (or copies of the applicable policy language effecting coverage requiredby this clause) and a copy of the Declarations and Endorsement Page of the CGL policy listing all policy endorsements to Entity before work begins. However, failure to obtain the required documents prior to the work beginning shall not waive the Consultant's obligation to provide them. The Entity reserves the right to require complete, certified copies of all required insurance policies, including endorsements required by these specifications, at any time.

Subcontractors
Consultant shall require and verify that all subcontractors maintain insurance meeting all the requirements stated herein, and Contractor shall ensure that Entity is an additional insured on insurance required from subcontractors.

Special Risks or Circumstances
Entity reserves the right to modify these requirements, including limits, based on the nature of therisk, prior experience, insurer, coverage, or other special circumstances.

8. INDEMNIFICATION

Contractor agrees to defend, and shall indemnify and hold harmless the City, its officers, agents, employees, contractors, special counsel, and representatives from liability: (1) for personal injury, damages, just compensation, restitution, judicial or equitable relief arising out of claims for personal injury, including death, and claims for property damage, which may arise from the negligent operations of the Contractor, its subcontractors, agents, employees, or other persons acting on its behalf which relates to the services described in section 1 of this Agreement; and (2) from any claim that personal injury, damages, just compensation, restitution, judicial or equitable relief is due by reason of the terms of or effects arising from this Agreement. This indemnity and hold harmless agreement applies to all claims for damages, just compensation, restitution, judicial or equitable relief suffered, or alleged to have been suffered, by reason of the events referred to in this Section or by reason of the terms of, or effects, arising from this Agreement. The Contractor

further agrees to indemnify, hold harmless, and pay all costs for the defense of the City, including fees and costs for special counsel to be selected by the City, regarding any action by a third party challenging the validity of this Agreement, or asserting that personal injury, damages, just compensation, restitution, judicial or equitable relief due to personal or property rights arises by reason of the terms of, or effects arising from this Agreement. City may make all reasonable decisions with respect to its representation in any legal proceeding. Notwithstanding the foregoing, to the extent Contractor's services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Contractor.

9. INTELLECTUAL PROPERTY INDEMNIFICATION

Contractor shall defend and indemnify the City, its officers, agents, representatives, and employees against any and all liability, including costs, for infringement of any United States' letters patent, trademark, or copyright infringement, including costs, contained in the work product or documents provided by Contractor to the City pursuant to this Agreement.

10. RECORDS

Contractor shall keep records and invoices in connection with the work to be performed under this Agreement. Contractor shall maintain complete and accurate records with respect to the costs incurred under this Agreement and any services, expenditures, and disbursements charged to the City for a minimum period of three (3) years, or for any longer period required by law, from the date of final payment to Contractor under this Agreement. All such records and invoices shall be clearly identifiable. Contractor shall allow a representative of the City to examine, audit, and make transcripts or copies of such records and any other documents created pursuant to this Agreement during regular business hours. Contractor shall allow inspection of all work, data, documents, proceedings, and activities related to this Agreement for a period of three (3) years from the date of final payment to Contractor under this Agreement.

11. CONFIDENTIALITY

If Contractor receives from the City information which due to the nature of such information is reasonably understood to be confidential and/or proprietary, Contractor agrees that it shall not use or disclose such information except in the performance of this Agreement, and further agrees to exercise the same degree of care it uses to protect its own information of like importance, but in no event less than reasonable care. "Confidential Information" shall include all nonpublic information. Confidential information includes not only written information, but also information transferred orally, visually, electronically, or by other means. Confidential information disclosed to either party by any subsidiary and/or agent of the other party is covered by this Agreement. The foregoing obligations of non-use and nondisclosure shall not apply to any information that (a) has been disclosed in publicly available sources; (b) is, through no fault of the Contractor disclosed in a publicly available source; (c) is in rightful possession of the Contractor without an obligation of confidentiality; (d) is required to be disclosed by operation of law; or (e) is independently developed by the Contractor without reference to information disclosed by the City.

12. CONFLICT OF INTEREST CLAUSE

Contractor covenants that it presently has no interests and shall not have interests, direct or indirect, which would conflict in any manner with performance of services specified under this Agreement.

13. DISCRIMINATION

Contractor shall not discriminate because of race, color, creed, religion, sex, marital status, sexual orientation, age, national origin, ancestry, or disability, as defined and prohibited by applicable law, in the recruitment, selection, training, utilization, promotion, termination or other employment related activities. Contractor affirms that it is an equal opportunity employer and shall comply with all applicable federal, state and local laws and regulations.

14. EXCLUSIVITY AND AMENDMENT

This Agreement represents the complete and exclusive statement between the City and Contractor, and supersedes any and all other agreements, oral or written, between the parties. In the event of a conflict between the terms of this Agreement and any attachments hereto, the terms of this Agreement shall prevail. This Agreement may not be modified except by written instrument signed by the City and by an authorized representative of Contractor. The parties agree that any terms or conditions of any purchase order or other instrument that are inconsistent with, or in addition to, the terms and conditions hereof, shall not bind or obligate Contractor or the City. Each party to this Agreement acknowledges that no representations, inducements, promises or agreements, orally or otherwise, have been made by any party, or anyone acting on behalf of any party, which is not embodied herein.

15. ASSIGNMENT

Inasmuch as this Agreement is intended to secure the specialized services of Contractor, Contractor may not assign, transfer, delegate, or subcontract any interest herein without the prior written consent of the City and any such assignment, transfer, delegation or subcontract without the City's prior written consent shall be considered null and void. Nothing in this Agreement shall be construed to limit the City's ability to have any of the services which are the subject to this Agreement performed by City personnel or by other contractors retained by City.

16. TERMINATION

This Agreement may be terminated by the City upon thirty (30) days written notice of termination. In such event, Contractor shall be entitled to receive and the City shall pay Contractor compensation for all services performed by Contractor prior to receipt of such notice of termination, subject to the following conditions:

a. As a condition of such payment, the Executive Director may require Contractor to deliver to the City all work product(s) completed as of such date, and in such case such work product shall be the property of the City unless prohibited by law, and

Contractor consents to the City's use thereof for such purposes as the City deems appropriate.

b. Payment need not be made for work which fails to meet the standard of performance specified in the Recitals of this Agreement.

17. WAIVER

No waiver of breach, failure of any condition, or any right or remedy contained in or granted by the provisions of this Agreement shall be effective unless it is in writing and signed by the party waiving the breach, failure, right or remedy. No waiver of any breach, failure or right, or remedy shall be deemed a waiver of any other breach, failure, right or remedy, whether or not similar, nor shall any waiver constitute a continuing waiver unless the writing so specifies.

18. JURISDICTION - VENUE

This Agreement has been executed and delivered in the State of California and the validity, interpretation, performance, and enforcement of any of the clauses of this Agreement shall be determined and governed by the laws of the State of California. Both parties further agree that Orange County, California, shall be the venue for any action or proceeding that may be brought or arise out of, in connection with or by reason of this Agreement.

19. PROFESSIONAL LICENSES

Contractor shall, throughout the term of this Agreement, maintain all necessary licenses, permits, approvals, waivers, and exemptions necessary for the provision of the services hereunder and required by the laws and regulations of the United States, the State of California, the City of Santa Ana and all other governmental agencies. Contractor shall notify the City immediately and in writing of its inability to obtain or maintain such permits, licenses, approvals, waivers, and exemptions. Said inability shall be cause for termination of this Agreement.

20. NOTICE

Any notice, tender, demand, delivery, or other communication pursuant to this Agreement shall be in writing and shall be deemed to be properly given if delivered in person or mailed by first class or certified mail, postage prepaid, or sent by fax or other telegraphic communication in the manner provided in this Section, to the following persons:

To City:

Clerk of the City Council
City of Santa Ana
20 Civic Center Plaza (M-30)
P.O. Box 1988
Santa Ana, CA 92702-1988
Fax: 714- 647-6956

With courtesy copies to:

Executive Director, Public Works Agency City of Santa Ana 20 Civic Center Plaza (M-21) P.O. Box 1988 Santa Ana, California 92702 Fax: 714- 647-5635	

To Contractor:

Tetra Tech, Inc.,
Tom Epperson, PE
Vice President
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614

A party may change its address by giving notice in writing to the other party. Thereafter, any communication shall be addressed and transmitted to the new address. If sent by mail, communication shall be effective or deemed to have been given three (3) days after it has been deposited in the United States mail, duly registered or certified, with postage prepaid, and addressed as set forth above. If sent by fax, communication shall be effective or deemed to have been given twenty-four (24) hours after the time set forth on the transmission report issued by the transmitting facsimile machine, addressed as set forth above. For purposes of calculating these time frames, weekends, federal, state, County or City holidays shall be excluded.

21. MISCELLANEOUS PROVISIONS

a. Each undersigned represents and warrants that its signature herein below has the power, authority and right to bind their respective parties to each of the terms of this Agreement, and shall indemnify City fully, including reasonable costs and attorney's fees, for any injuries or damages to City in the event that such authority or power is not, in fact, held by the signatory or is withdrawn.

b. All Exhibits referenced herein and attached hereto shall be incorporated as if fully set forth in the body of this Agreement.

[Signatures on the following page]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the date and year first above written.

ATTEST:

Daisy Gomez
Clerk of the Council

CITY OF SANTA ANA

Kristine Ridge
City Manager

APPROVED AS TO FORM:

SONIA R. CARVALHO
City Attorney

By: Jose Montoya
Jose Montoya
Assistant City Attorney

CONTRACTOR: Tetra Tech, Inc.

Tom Epperson
Name: Tom Epperson, P.E.
Title: Vice President

RECOMMENDED FOR APPROVAL:

Nabil Saba, P.E.
Executive Director
Public Works Agency

EXHIBIT A

CITY OF SANTA ANA

REQUEST FOR PROPOSALS
FOR
ON-CALL WATER RESOURCES ENGINEERING SERVICES
RFP NO. 22-002

INTRODUCTION/BACKGROUND

The City of Santa Ana intends (City) to select several qualified firms to provide professional services for a variety of projects and programs on an as-needed or "on-call" basis. Each firm selected will enter into a Professional Services Agreement to provide such services. Throughout the term of the Professional Services Agreement, the City may request task order proposals for individual projects and/or programs as the need for such services arises. The task order proposal fee shall be based on the hourly rates provided by the firm in response to this RFP.

If a task order proposal is selected, a Notice-to-Proceed will be issued based on an agreed-upon specific scope of services and fee for that task order. The firm may utilize in-house staff and/or sub-consultants to complete each task order. **For specialized work for which the prime consultant shall require a sub-consultant, the prime consultant shall serve as an administrative liaison between the City and the sub-consultant, and include these administrative costs in their proposed project management fees.**

Prime consultant mark-ups for sub-consultant work will not be allowed.

SCOPE OF SERVICES

Provide professional engineering services for planning, design, and construction support for domestic water, recycled water, sanitary sewer, storm sewer, and related facility projects.

In general, each task order shall include, at minimum, the following project management services:

- Project Schedule

  Create schedules with the critical milestones for the major tasks involved in a project. Update the schedule monthly, or more often, as required by the City. Schedules shall be submitted in PDF format unless other format is requested by the City.

- Meetings

  Attend meetings and/or job walks, as requested by the City. Prepare meeting agendas and meeting minutes.

- Monthly Project Status Report

  Prepare Monthly Project Status Reports that show an accurate accountability of work effort rendered and a continuous appraising and monitoring of both work progress and financial conditions on a project.

The fee for project management services, including time and related expenses, shall be included in each task order proposal.

CITY OF SANTA ANA

REQUEST FOR PROPOSALS
FOR
ON-CALL WATER RESOURCES ENGINEERING SERVICES
RFP NO. 22-002

Firms may propose on any category listed below (1-5). The services to be performed may include, but shall not be limited to, the following:

1. PLANNING, RESOURCES, AND DESIGN

Provide water engineering services to conduct water capital improvement projects, which may involve one or multiple disciplines, including planning studies, hydraulic modeling, feasibility studies, design of pipelines, wells, pump stations, pressure regulating stations, reservoirs, water quality and water treatment, waste and recycled water quality and treatment, hydrogeology, engineering support during construction, and encompassing associated services such as Architecture, Structural, Civil, Mechanical, HVAC, Landscape Architecture, Geotechnical, Environmental, Electrical, Instrumentation, and Control.

a. Planning Studies and Feasibility Studies

Provide engineering, financial, and planning services to perform pipeline alignment and facility siting studies, water system planning studies, recycled water system planning and feasibility studies, water demand and supply studies, rate studies, asset management, and other studies that may be required in water system planning. Provide consulting services related to water resources and conservation. Studies may include water supply assessments, water supply verifications, urban water management plans, water use surveys and others studies that may be required for water resources and conservation programs

b. Hydraulic Modeling

Perform Water System Master Planning including Comprehensive Studies, Hydraulic Analysis, Transient Analysis, Fire Flow Analysis, and Flow Optimization.

c. Condition Assessment

Provide comprehensive condition assessment of the City's water system, including seismic, structural, security and vulnerability. Assessment of the structural integrity of the pipe shall include identifying leaks, pipe damage, pipe defect, loss of pipe wall thickness due to corrosion or erosion, etc., along the length of the pipe. Provide reports and memorandums with maps and exhibits as required to detail results of the study including likelihood of failure, risk and consequence of failure. Reports and/or technical memorandums shall also include detailed explanation of data collected and used for the study, any assumptions made as well as recommendations for short-term and long-term risk mitigation strategies.

d. Design Services

Provide consulting services for the design of water facilities, including water wells, pump stations, pressure regulating stations, reservoirs, water quality and treatment, water mains,

recycled water supply and distribution facilities, associated appurtenances, as well as other related components of the facilities such as buildings, landscape, grading, drainage, etc. for a complete and operative project.

e. Other Related Services

Provide other related services including, but not limited to, the following:

i. Architecture

Provide consulting services for architectural design, architectural renderings, line-of-sight analyses, building sections, code interpretation issues and other architectural related issue.

ii. Structural

Provide consulting services for structural investigations of the City's existing facilities, seismic analysis, miscellaneous structural calculations, and design on the City's existing and proposed systems and structures.

iii. Civil

Provide consulting services for general engineering services as required for the project. Scope of work may include but is not limited to site design, street improvements, grading, drainage, preparation of Water Quality Management, Erosion Control, and Stormwater Pollution Prevention Plans, and related calculations and reports as necessary.

iv. Mechanical, HVAC

Provide consultation, engineering, and design services on modification, upgrade, and replacement of existing mechanical and HVAC systems, including piping, plumbing, support systems, controls, code interpretation, and related calculations as necessary.

v. Landscape Architecture

Provide consulting services for landscape architecture design, including landscape planting plans, renderings and views of proposed landscape plantings, and landscape installation inspection services. Provide consultation for irrigation system design and inspection.

vi. Geotechnical Engineering Services

Conduct geotechnical investigations, including field explorations and tests, laboratory tests, and seismic investigations, to assess the general conditions of a project site area and prepare geotechnical reports of final design and construction recommendations. Field explorations may require drilling plans and classification of underlying soils and must be done under the supervision of a licensed geotechnical engineer or registered geologist. Investigations may include slope stability analysis of reservoir embankments, foundations, retaining walls, and dams and earthen dam monitoring and inspection to comply with California Department of Water Resources, Division of Safety of Dams (DSOD) and other City requirements. Provide seismic hazard analyses and site-specific seismic criteria, as needed, for project design.

vii. Hydrogeology

Provide consulting services on groundwater issues related to and including rehabilitation of existing potable water production wells, siting and design of new potable water production wells, destruction of inactive wells, evaluation of contamination plumes, and groundwater modeling. Evaluate the hydrogeology of proposed potable water production well sites and investigate proposed wells. Determine design parameters and requirements necessary to drill, operate, and maintain proposed wells; proposed well construction (casing diameter, locations of perforated intervals); and proposed operation of wells. Prepare Drinking Water Source Assessment and Protection (DWSAP) plans for proposed potable water production wells.

Provide inspection, hydrogeologic analysis and recommendations during new potable water production well drilling and existing well destruction activities, including, but not limited to, on site consulting geologists, geological sampling and formation analysis, geophysical logging and interpretation, sieve analyses, final well construction recommendations, and quality assurance and assistance in achieving conformance with the construction specifications and applicable codes and standards.

viii. Environmental Compliance Services

Provide consulting services for the preparation of environmental documents and support studies to comply with California Environmental Quality Act (CEQA), which may include an Initial Study, Negative Declaration, Mitigated Negative Declaration, Addendum, or Environmental Impact Report, or Supplement or Subsequent EIR, National Environmental Policy Act (NEPA) when complying

with federal grants, permit applications with support studies, aesthetic simulations, and other environmental compliance tasks that may be needed.

ix. Recycled Water Compliance

Provide assistance with compliance requirements for recycled water treatment and distribution system monitoring and reporting.

x. Electrical, Instrumentation & Control Services

Provide consultation, engineering, and design services on modification, upgrade, troubleshooting, restarting, adjusting control settings, and replacement of existing electrical systems, including motor control centers, motor starters, electrical panels, and instrumentation and control systems, including SCADA systems.

xi. Engineering Support During Bidding and Construction

Review and respond to RFI's and review and approve shop drawings submitted by contractor for conformance with the contract documents. Review progress reports and payments as required. Prepare supplementary sketches and details, as required, to resolve field construction problems that may be encountered. Provide project inspection as needed. Provide assistance in ensuring regulatory compliance, as needed. Prepare the "as constructed" corrections to the original drawings and specifications. Attend meetings on behalf of the City and assist in Public Relations, as needed.

xii. Plan Check Services

Provide consulting services for plan checking improvement plans to determine compliance with applicable standards, guidelines, policies, rules, ordinances, and codes.

2. CONSTRUCTION MANAGEMENT

Provide construction management and inspection services during construction. The tasks of construction management and inspection shall include, but not be limited to:

a. Construction Management and Coordination with Contractor

Provide construction management and coordinate as needed for the project. Review and coordinate construction schedule and activities; conduct and attend meetings on behalf of the City. Provide permit compliance documentation, follow up, and support for all permits and clearances required on a project. The construction management team may also be asked to attend meetings and assist in maintaining public relations as needed.

b. Project Administration

Provide review of, recommend, and prepare change order(s) and/or extra work order(s) as needed on construction project. Coordinate and process RFI's and shop drawings submittals, and ensure construction conformance with the contract documents. Review and adjust progress pay estimates prepared and submitted by the contractor for conformance with the contract documents.

c. Construction Inspection

Provide construction inspection by qualified inspectors and maintain daily inspection reports, construction progress reports, and project logs, etc., of the progress of the construction work. Secure record drawing information from the construction contractor. Provide start-up support for a Project, including final acceptance testing, support, and final completion sign off. Prepare the Final Construction Report.

3. PIPELINE DESIGN

Provide consulting services for the design of water mains, transmission mains, siphons and associated appurtenances. Provide preliminary and final design services including the preparation of plans, specifications, and cost estimates. Provide bidding assistance, construction support, and final as-builts as needed for projects.

4. ELECTRICAL, INSTRUMENTATION & CONTROL SERVICES

Provide consultation, engineering, and design services on modification, upgrade, troubleshooting, restarting, adjusting control settings, and replacement of existing electrical systems, including motor control centers, motor starters, electrical panels, and instrumentation and control systems, including SCADA systems components, instrumentation, communication system components, security cameras, door/gate access controls, information technology for SCADA system and cybersecurity support for PLC/HMI/OIT software and custom applications for the City Water System.

5. GEOTECHNICAL ENGINEERING SERVICES

Conduct geotechnical investigations, including field explorations and tests, laboratory tests, and seismic investigations, to assess the general conditions of a project site area and prepare geotechnical reports of final design and construction recommendations. Field explorations may require drilling plans and classification of underlying soils and must be done under the supervision of a licensed geotechnical engineer or registered geologist. Investigations may include slope stability analysis of reservoir embankments, foundations, retaining walls, and dams and earthen dam monitoring and inspection to comply with California Department of Water Resources, Division of Safety of Dams (DSOD) and other City requirements. Provide seismic hazard analyses and site-specific seismic criteria, as needed, for project design.

Proposals shall explicitly state which category listed above (1-5) is being proposing on. If there are any exceptions to the core of requested services above, proposers shall list said exceptions in their proposal (matrix form).

GENERAL REQUIREMENTS AND PROJECT DELIVERABLES

The Consultant's services for plans specifications and estimates (PS&E) for engineering projects and special studies/investigations shall be in conformance, if applicable, with the following: Title 24 of the California Code of Regulations (California Building Standards Code), American Water Works Association, California Department of Transportation, Americans with Disabilities Act, City of Santa Ana Municipal Code (SAMC), professional Standards established by the City, and any other federal, state, or local guidelines required in the project.

As part of the PS&E package, the Consultant shall prepare the special provisions pertaining to the items of work included in the plans that are not addressed on the latest editions of the applicable standards.

The Consultant shall have complete responsibility for the accuracy and completeness of all documents and plans prepared. The plans will be reviewed by the City of Santa Ana for conformity with the requirements of the Agreement. Reviews by the City of Santa Ana DO NOT include detailed review or checking of design for the accuracy with which such designs are depicted in the documents and the plans. The documents and plans furnished under the Agreement shall be of a quality acceptable to the City of Santa Ana. The criteria for acceptance shall be a product of neat appearance, well organized, technically and grammatically correct, checked and dated, and having the maker and checker identified.

The Consultant shall have project management control procedures in effect during the entire time work is being performed under the Agreement. This task shall include the following:

- Project Management Plan- the consultant shall provide a detail management plan including information and coordination with other agencies to ensure compliance and completion of the (PS&E) packages. This plan shall include all milestones and task breakdown for each of the tasks and subtasks included therein. The project management shall be submitted to the Project Manager for review and within 15 calendar days of the issued Notice to Proceed

- Deliverables

- Quality Control/Quality Assurance (QA/QC) Plan

- Project Schedule/Invoicing

- Project Correspondence

In case of conflict, ambiguities, discrepancies, errors, or omissions, the consultant shall submit the matter to the City for clarification.

CITY RESPONSIBILITIES

The City will provide information in its possession relevant to the preparation of the required information in the RFP. The City will provide only the staff assistance and the documentation specifically in referred to herein.

- Furnish scope of work and provide general direction as needed for the assigned project
- All plan check coordination within the City
- Advertise, award, and administer of construction contract
- Electronic files (sample plans & specifications, City of Santa Ana's CADD Standards)
- Electronic files for title sheets and sheet borders
- Facilitate meeting space and coordination and City facilities

FEE PROPOSAL

In addition to Section III.B.3 (Submittal Requirements: Fee Proposal) fee schedule shall be structured as follows:

The fee proposal shall include the firm's standard hourly fee schedule, and/or project fee schedule where applicable and as outlined in this document. A list of all positions and hourly rates required to perform the services described herein.

A more detailed scope of work will be provided when/if a Task Order proposal is requested of a consultant. All tasks orders shall include the staff title, hours, hourly rate and totals as related to the project.

OTHER TERMS AND CONDITIONS

1. The project will be implemented in compliance with the City of Santa Ana's policies, as well as Prevailing Wages and State/Federal Requirements.

2. The City regards the inclusion of California based designs, engineering, and construction professionals, facilities, and services as part of the Team to be highly desirable, but not mandatory.

3. The City reserves the right to amend this Request for Proposal by addendum prior to the final dates of submission.

4. All reports, proposals, or other data or materials which are submitted shall become the sole property of the City of Santa Ana with the exception of the confidential Financial Capacity information and fee proposals.

5. All products used or developed in the execution of any contract resulting from this request will remain in the public domain at the completion of this project.

6. The City has an affirmative action program. The purpose of the affirmative action program is to encourage certified minority business enterprises and women business enterprises. All submitting firms must have established affirmative action programs approvable by the City. During the RFP stage, all firms will need to complete a "Certification of Non-Discrimination by Contractors" for each firm on their team.

EXHIBIT B

Proposal for

On-Call
Water Resources Engineering Services

RFP No. 22-002

MAY 2022

TETRA TECH

On-Call

Water Resources Engineering Services

RFP No. 22-002

Cover Letter

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TETRA TECH

TETRA TECH

May 24, 2022

Robert Aguirre, PE, Project Manager
City of Santa Ana, Public Works Agency
220 S. Daisy Ave., M-85
Santa Ana, CA 92703

Reference: Statement of Qualifications for On-Call Water Resources Engineering Services, RFP No. 22-002

Dear Mr. Aguirre,

Thank you for the opportunity to submit our Statement of Qualifications (SOQ) for On-Call Water Resources Engineering Services. We value the relationship we have built with the City of Santa Ana (City) through our past and currently on-going projects. We are committed to providing the City with the same consistent, diligent, high-quality service that you expect and deserve and have seen from Tetra Tech. Our project team is the ***"right"*** team to provide these On-Call Services for the following reasons:

- **Extensive City Water/Wastewater Design Experience:** Members of our project team have completed more than 47 water/wastewater projects for the City since 1999. Our project team knows the City's design requirements and standards, preferred materials, and operational preferences which will allow us to complete designs in the most cost-effective manner.
- **Extensive On-Call Engineering Services Experience:** Tetra Tech has been providing similar on-call engineering services for over 35 clients in Southern California. Many of these are repeat clients as we have provided service and solutions on-time and within budget.
- **Extensive Design Experience:** For over 15 years, members of our project team have been involved in the design of more than 300 miles of water, recycled water and sewer mains, 60 reservoirs, 40 water/recycled water pump stations, 15 water wells, 12 flow control facilities and 8 lift stations.
- **In-house Structural, Electrical, and Control Capabilities:** We have our own in-house structural, electrical, and control engineers who have been working on water and wastewater facilities for most of their careers and on the majority of the previous projects for the City.
- **Dedication to City:** We believe our past 22-year relationship with the City shows our commitment to providing the City with high-quality service. We have been awarded repeat work with the City due to our quality and responsiveness as well as the trust formed with the City Water Resources staff.

We assure you that the expertise, responsiveness, attention to detail, and commitment demonstrated on our previous work will be fully applied to this work. ***As requested in the RFP, Tom Epperson will be the legal authority who may sign the contract should Tetra Tech be selected***. Thank you for this opportunity to submit our SOQ, we look forward to working with you.

Sincerely,

Tom Epperson, PE
Vice President

TLE/NG/de

M:\Marketing\Proposals\FY 2022\Santa Ana_On-Call Water Resources

17885 Von Karman Avenue, Suite 500, Irvine, CA 92614-5227
Tel 949.809.5000 Fax 949.809.5010 tetratech.com

On-Call

Water Resources Engineering Services

RFP No. 22-002

Introduction & Team Experience

SANTA ANA
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TETRA TECH

INTRODUCTION

Tetra Tech is a Delaware Corporation (publicly traded) and has been in business for over 56 years. Founded in 1966, Tetra Tech is a nationally-recognized engineering and resource management firm of more than 21,000 engineers, scientists, construction specialists, and technical support personnel in 450 offices worldwide. Listed on the NASDAQ Exchange (TTEK), Tetra Tech's annual revenues now exceed $3.2 billion (2021). Thus, we are in an excellent financial position and can provide the necessary resources to rapidly deploy and meet aggressive project schedules. Tetra Tech consistently ranks among the top engineering firms annually according to the Engineering News-Record. **In 2022, Tetra Tech was ranked 4th among the top 500 design firms nationwide and was ranked #1 in the water service industry for the 19th year in a row!**

This project will be managed and directed from our Irvine office location: 17885 Von Karman, Suite 500. The primary contact for this project will be Mr. Tom Epperson, PE, Vice President; telephone 949/809-5156; fax 949/809-5010; e-mail tom.epperson@tetratech.com.

CITY EXPERIENCE

We believe our best relevant experience is the more than 47 projects that we have completed for the City of Santa Ana (City) since 1999. We are confident that these past projects with the City will attest to our technical excellence, responsive staff and our complete understanding of the City's water and sewer facilities. Our previous work for the City included a wide range of engineering services, including: pipelines, pump stations; reservoirs; wells; lift stations; flow control facilities; upgrading of the City's water and wastewater facilities; mechanical, structural, electrical and instrumentation design; studies and miscellaneous support. During these projects, we have developed a working relationship with the City's Public Works staff, Parks and Building Departments and Construction Management groups. Because of Tetra Tech's large pool of talented engineers and scientists, we will be able to respond to the full spectrum of issues dealing with the City's water and wastewater facilities. We believe that the City is our best reference for our performance and execution of our past contracts. Summarized below are the various type of projects that we have performed for the City since 1999:

- East Station and West Station Chemical Facilities, Sodium Hypochlorite Generation and Storage Systems and Building;
- Crooke Reservoir and Pump Station Improvements, Well 28, Well 27, and Crooke Pump Station Upgrades;
- Elevated Tank Documentation for Property Acquisition;
- Boilerplate Specifications Update, Update City Boilerplate to 2018 Greenbook;
- 20-Inch Water Main Relocation at two intersections for Railcar;
- SA-1 Hydro-Generator Replacement;
- Washington Well Drilling and CEQA Phase, New Well Drilling Phase 1;
- SA-7 Pipeline Relocations, Warner, Bristol, Centennial Park, Mid City, Pico-Lowell and Central Water Main Replacements;
- San Lorenzo Force Main and Sewer Main Improvements, Westminster and McFadden Avenue Sewer Replacements;
- Pump Stations: John Garthe Pump Station Upgrades, P&ID Plans, Crooke MCC Replacement and South Station Booster Pump Modifications;
- Wells: Well 32 Rehabilitation, Typical Chemical Buildings, Well 24 Electrical Upgrades, Well 39 and Well 34 Modifications;
- Reservoir: John Garthe Phase 2 and Elevated Tank Safety Improvements and Painting; and
- Lift Stations: San Lorenzo and Maxine Emergency Bypass.

ON-CALL ENGINEERING EXPERIENCE

Tetra Tech's portfolio includes hundreds of projects ranging from minor pipeline improvements and lift station upgrades to treatment plant improvements and expansions. Through efficient management and leadership, our professional staff are currently providing similar engineering services on an as-needed basis for over 20 clients in Southern California, including Moulton Niguel Water District, West Basin Municipal Water District, Upper San Gabriel Valley Municipal Water District, City of Paramount, City of Huntington Beach, Los Angeles Department of Water and Power, and the City of Santa Ana. Many of these clients are repeat clients as Tetra Tech has provided responsive service and innovative solutions on-time and within budget. We understand the privilege of on-call contracts and the necessity to provide timely responses while maintaining schedules and budgets.

We believe our best relevant experience is the projects that we have completed as part of our past and on-going As-Needed Contracts with southern California municipalities. We are confident these past projects will attest to our technical excellence, responsible staff, and our complete understanding of every aspect of an On-Call engineering services contract. As part of these As-Needed Contracts our projects have included a wide range of engineering services including: feasibility studies, design, plan review, construction management services; and design services for pipelines, pump stations, rehabilitation of facilities, lift stations, electrical, SCADA, and structural engineering support services.

On-Call Engineering Service Clients	Total Years of Service	Cumulative Contract Capacity	Project Types			Similar Services		
			Water	Wastewater	Recycled Water	Pipelines	Conveyance	Structural
West Basin Municipal Water District	25	$13,800,000			■	■	■	■
Central Basin Municipal Water District	5	$200,000			■	■	■	
Moulton Niguel Water District	20	$2,000,000	■	■	■	■	■	■
City of Anaheim	7	$500,000	■			■	■	
Upper San Gabriel Valley Municipal Water District	8	$800,000			■	■	■	
City of Paramount	14	$2,000,000	■		■	■	■	■
San Diego County Water Authority	8	$2,300,000						■
City of Oceanside	4	$1,500,000		■	■	■	■	
City of Tustin	17	$1,000,000	■			■	■	■
Long Beach Water Department	7	$745,000	■	■		■	■	
City of Huntington Beach	7	$1,300,000	■			■	■	■
Los Angeles County	10	$3,125,000	■	■	■	■	■	■
City of Los Angeles Bureau of Sanitation	7	Unlimited		■	■			
City of Los Angeles Department of Water and Power	1	$60,000,000	■		■	■	■	■

WATER/WASTEWATER EXPERIENCE

The following summarizes the experience of the members of our project team:

Pipeline Projects

During the last 15 years, members of our project team have been involved in the design and/or construction support of more than 300 miles of water and recycled water pipelines. Tetra Tech deems pipeline projects to be just as important as facility projects because comprehensive research and design can mitigate field issues. We believe we have a very proficient team that executes these projects efficiently and successfully.

Sewer Relining or Rehabilitation Projects

For more than 15 years, members of our project team have been involved in the design and/or construction support services of more than 100,000 feet of relining or rehabilitation of existing sewer mains. Tetra Tech has extensive understanding of the temporary handling of the sewage flow during the work as well as the importance of detailing the bypass facilities within the construction plans and specifications.

Pump Station/Well Projects

Within the last 15 years, our team has been involved in the design and/or construction support of more than 40 water/recycled water pump stations and 15 water wells. We have developed a team, including a hydrogeological engineer, that works efficiently and effectively together to provide our clients with the maximum capacity required.

Lift Station Projects

For more than 15 years, members of our project team have been involved in the design and/or construction support services of more than 8 lift stations.

Flow Control Facility Projects

During the last 15 years, members of our project team have been involved in the design and/or construction support of more than 12 flow control facilities.

Reservoir Projects

Within the last 15 years, our team has been involved in the design and/or construction support of more than 60 water/recycled water reservoirs (steel and concrete). The reservoir design projects utilize a combination of our in-house structural and electrical teams along with a geotechnical firm to present the best design improvement to the client.

Water Quality and Disinfection Projects

During the last 15 years, our project team has completed design of over 11 treatment (process/membrane) facilities within Southern California, including design of disinfection facilities at over 10 well and/or reservoir facilities. With new PFAS regulation becoming increasingly required within the State of California, our engineers have become proficient in the design of the latest treatment options available completing over 14 local design projects of PFOS, PFOA, TCE, TOC and Perchlorate.

Structural Seismic Retrofits

Our in-house structural group has been responsible for the structural analysis and design of water projects completed by Tetra Tech. This work has also included numerous seismic retrofits throughout Southern California. The seismic analysis includes a three-dimensional finite element analysis, member stress analysis, and foundation stability assessment.

Electrical and Controls

Our in-house electrical group has also supported the projects done within the Irvine office, including utility, industrial, residential, commercial, governmental, and military projects. Our teams work efficiently together to provide our clients with the most comprehensive design.

Planning/Engineering Studies

For more than 15 years, members of our Project Team have completed over 15 master plans and/or hydraulic modeling, engineering studies within Southern California.

PIPELINE PROJECTS BY PROJECT TEAM				
Client	**Project Name**	**Length (ft)**	**Size (in)**	**Design Complete**
Potable and Recycled Water (over 300 miles in last 15 years)				
Moulton Niguel Water District	Crown Valley Main Replacement	9,600	12”	~Oct 2022
City of Downey	Cole St, 5th St, Florence Ave, Samoline and Melva St	7,000	8”-12”	2021-Current
Mesa Water District	1951 Cohort Pipeline Replacement	22,100	6”-16”	Current
City of Anaheim	La Palma Ave and Tustin Ave Water Main Replacement at Railway Crossing	600	12”-36”	2021
Golden State Water Company	Water Main Replacement (3 projects)	24,700	8”-12”	2020 - 2021
City of Lakewood	Water Main Replacement (Annual)	150,000	8”	2002 - 2019
Central Basin MWD	La Mirada Recycled Water Pipeline	28,700	4”-20”	2018
City of Anaheim	Katella Ave. Water Main Replacement	7,000	12”-16”	2017
City of Santa Ana	Water Main Replacement (5 projects)	50,000	8”-12’	2007 - 2017
Upper San Gabriel Valley MWD	Phase IIB Package 3 RW	20,000	4”-12”	2007 - 2017
El Toro Water District	Recycled Water Expansion	127,700	4”-24”	2016
City of Newport Beach	Newport Blvd. Water Main Replacement	5,300	8”-24”	2016
Irvine Ranch Water District	Peters Canyon Channel Reuse Pipeline	17,000	10”-16”	2016
Sewer Relining, Rehabilitation and Replacement				
Moulton Niguel Water District	Crown Valley Force Main Replacement	9,400	12”	Oct 2022
Moulton Niguel Water District	Regional Lift Station Force Main Replacement	16,000	24”	2020
Orange County Sanitation District	Gisler-Redhill	3,600	21”-33”	2015
Orange County Sanitation District	SARI and Yorba Linda Spur	25,500	15” & 54”	2013
Long Beach Water Department	Orange/Del Amo/15th Street	5,200	8”-15”	2013
City of Hawthorne	Sewer Improvement Project	3,700	10” & 12”	2013
City of Santa Ana	Westminster Avenue & McFadden Sewer	4,900	12”-15”	2013
Long Beach Water Department	Broadway Phase 3 Relining	3,000	14” & 18”	2009
City of Buena Park	Westminster Ave. and Beach Blvd. Siphon	3,000	8” & 15”	2009
Flow Control Facilities (15 in the last 15 years)				
City of Santa Ana	SA-7 Relocation			2021
KSD Joint Venture	Carlsbad Conveyance FCF			2016
City of Santa Ana	SA-4 and SA-5			2016
Irvine Ranch Water District	Relocation of Zone 1 FCF			2012
Orange County WD	Kraemer Basin Valve Vault			2012
City of Anaheim	Sand Canyon PRS			2009

PUMP STATION/WELLS/LIFT STATION/FACILITIES BY PROJECT TEAM		
Client	**Project Name**	**Design Complete**
Pump Stations (over 27 in the last 15 years)		
Orange County Water District	Santiago Pump Station Modification	2022
Yorba Linda Water District	Timber Ridge Booster Pump Station Replacement	2021
Irvine Ranch Water District	Zone 8 to 9 Booster Pump Station	2021
City of South Gate	Elizabeth Booster Pump Station	2016
Irvine Ranch Water District	Peters Canyon Channel Revise Pump Facilities	2016

PUMP STATION/WELLS/LIFT STATION/FACILITIES BY PROJECT TEAM		
Client	**Project Name**	**Design Complete**
Orange County Water District	Mid-Basin Injection Wells (4 Wells)	2016
Orange County Water District	Burris Pump Station	2015
City of Orange	New Santiago Booster Pump Station	2010
Reservoirs (over 60 in the last 15 years)		
Golden State Water Company	Huntington Horn Reservoir	2022
Montecito Water District	Park Lane Reservoir	2021
City of Tustin	Simon Ranch Reservoir	2019
City of Tustin	Rawlings Reservoir	2010
City of Anaheim	Nohl Canyon Rank	2008
Water Wells (over 23 in the last 15 years)		
City of Orange	Well 29 and Well 28	2021
City of Paramount	Well 16	2019
Orange County Water District	Mid Basin Injection Centennial Park	2017
City of Orange	Well 27	2016
City of South Gate	Well 29	2016
Irvine Ranch Water District	Well 115 and 107 Replacement	2013
Irvine Ranch Water District	Well 78 Replacement	2012
City of Paramount	Well 15	2011
Lift Stations (8 in the last 15 years)		
City of Santa Ana	San Lorenzo Lift Station	2019
City of Santa Ana	Maxine Lift Station Bypass	2014

WATER QUALITY/DISINFECTION AND SEISMIC RETROFITS BY PROJECT TEAM		
Client	**Project Name**	**Design Complete**
Water Quality/Disinfection		
Moulton Niguel Water District	2018/19 Reservoir Management System	2019 - 2020
City of Paramount	Well 16 Treatment Plant	2019
City of Lakewood	Well 22 Treatment Facility	2015
Irvine Ranch Water District	PDF Ammonia and Chlorine Mods	2013
City of Paramount	Chlorine Replacement at Wells 13 and 14	2012
City of Anaheim	Nohl Tank Disinfection Modifications	2011
Membrane Treatment		
City of Oceanside	Pure Water Oceanside Advanced Water Purification Facility	Current
WRD of Southern California	Albert Robles Center for Water Recycling	2019
Poseidon Resources	Huntington Beach Seawater Desalination Plant	2013
Irvine Ranch Water District	Well 21 and 22 Desalter	2010
Seismic Retrofit/Rehabilitation		
City of Santa Ana	Walnut Reservoir Assessment and Evaluation	2022
Montecito Water District	Reservoir Vulnerability Retrofits (6 Reservoirs)	2022
Orange County Water District	Santa Ana Gap Reservoir Assessment	2022
Golden State Water Company	Hunting Horn Reservoir Assessment	2021
City of Riverside	Condition Assessment of 3 Reservoirs	2021

Below is our organization chart and a table summarizing our Project Team's education and years of experience may be found following this page. We have included resumes for the noted personnel in the Appendix.

SUMMARY OF EXPERIENCE AND AVAILABILITY							
Team Member	Project Duty and Location	No. Years Experience	California Registration	Pipeline Design (miles)	No. of BPS/Wells	No. of Lift Stations	Percent of Commitment
Tom Epperson	Project Director/Manager Irvine Office	41	RCE # 36399	300	58	13	30%
Neha Gajjar	Deputy Project Manager Irvine Office	30	RCE # 55574	150	4	3	40%
Mark Bush	QA/QC Irvine Office	27	RCE # 60477	110	20	4	10%
Erica Jenkins	Task Engineer Irvine Office	29	EIT # EX102020	65	12	2	30%
Kyle Bohn	Design Engineer Irvine Office	16	RCE # 77984	60	8	2	30%
Laurence Esguerra	Task Engineer Irvine Office	19	RCE # 73803	80	24	4	30%
Matt Vera	Design Engineer Irvine Office	8	RCE # 86663	40	10	1	40%
Mike Tsoi	Task Engineer Irvine Office	32	RCE # 53715	30	18	5	40%
Erin Cabañero	Design Engineer Irvine Office	13	RCE # 89704	50	14	4	40%
Amanda Taylor	Task Engineer Irvine Office	13	PE Chemical # 6700	N/A	10	2	30%
Beverly Encina	Design Engineer Irvine Office	19	RCE # 74408	10	17	3	30%
Victor Ramirez	Task Manager San Dimas Office	40	RCE # 56863 RSE # 4720	N/A	N/A	N/A	30%
Eric Yuen	Design Engineer San Dimas Office	15	RCE # 75983 RSE # 6177	N/A	22	N/A	30%
Molly Mell	Task Manager Irvine Office	29	RCE # 59104	N/A	N/A	N/A	30%
Molly Lovegren	Design Engineer Irvine Office	18	RCE # 73957	40	4	3	30%
Mazen Kassar	Task Manager Irvine Office	29	REE # 15809	N/A	32	N/A	30%
Douglas Seaman	Design Engineer Irvine Office	10	N/A	N/A	N/A	N/A	30%
Ken Berard	Task Manager San Dimas Office	36	RCE # 45499	50	32	6	30%
Adrian Lee	Task Engineer San Dimas Office	14	RCE # 79032	N/A	N/A	N/A	30%
Nate Schreiner	Task Manager Irvine Office	14	RCE # 74974	N/A	N/A	N/A	30%
Cory Heggtveit	Irvine Office	20	EIT # 121854	20	10	1	30%

TETRA TECH TEAM ON-CALL EXPERIENCE																			
Reference Projects	**Tom Epperson**	**Neha Gajjar**	**Mark Bush**	**Laurence Esguerra**	**Matt Vera**	**Molly Lovegren**	**Erin Cabañero**	**Kyle Bohn**	**Erica Jenkins**	**Mike Tsoi**	**Cory Heggtveit**	**Amanda Taylor**	**Beverly Encina**	**Ken Berard**	**Adrian Lee**	**Victor Ramirez**	**Eric Yuen**	**Mazen Kassar**	**Douglas Seaman**
City of Santa Ana On-Call Services	PM	DPM	QC	PE	PE	DE	PE	DE	DE	DE	DE	--	DE	PE	DE	PM	DE	PM	DE
Moulton Niguel WD On-Call Services	PM	DPM	QC	PE	PE	--	DE	DE	--	DE	PE	PM	DE	--	--	PM	DE	PM	--
Carlsbad Conveyance Pipeline	QC	--	PM	PE	--	DE	--	DE	--	--	--	--	--	PM	--	PM	DE	PM	--
GSWC Roseton Plant Improvements	PM	DPM	QC	PE	DE	--	PE	--	--	--	--	--	--	--	--	PM	DE	PM	DE
Mesa Water District (3 projects)	PD	DPM	QC	--	DE	--	--	--	PE	--	--	--	--	--	--	--	--	--	--
City of Orange Wells 28 and 29	PM	--	QC	--	DE	--	DE	--	--	PE	--	--	--	--	--	PM	DE	PM	DE
El Toro WD Recycled Water Expansion	PM	--	--	PE	--	--	DE	DE	DE	--	DE	--	--	--	--	--	--	--	--
Irvine Ranch WD Sand Canyon and IDP Conveyance Pipelines	PM	--	--	PE	--	DE	DE	--	DE	PE	--	--	--	--	--	--	--	--	--
WBMWD On-Call Pipelines (4 projects)	QC	--	PM	PE	DE	DE	DE	DE	DE	--	--	--	--	--	--	--	--	--	--
City of Anaheim OCTA Railway Crossing	PM	DPM	QC	--	--	--	--	--	PE	--	--	--	--	--	--	--	--	--	--
OCWD GWR, Barrier & Replacements (4 projects)	PM	--	PM	PE	--	DE	--	--	DE	PE	--	--	--	--	--	PM	DE	PM	--
Irvine Ranch WD Wells (10 wells)	PM	--	--	PE	--	DE	DE	--	DE	PE	--	--	--	--	--	PM	DE	PM	--
Irvine Ranch WD Pump Stations (5 pump stations)	PM	--	PE	PE	--	--	DE	--	DE	PE	DE	--	--	--	--	PM	--	PM	--
Irvine Ranch WD PDF and IDF Chlorine Mods (2 projects)	PM	--	--	--	--	DE	--	--	--	PE	--	QC	DE	--	--	--	--	PM	--
City of Paramount Wells Disinfection (3 well sites)	PM	--	PE	--	--	--	--	PE	DE	--	--	QC	DE	--	--	PM	--	PM	--
City of Lakewood Treatment Facilities (2 projects)	--	--	--	--	--	--	--	--	--	PE	--	PM	DE	--	--	PM	DE	PM	--
Irvine Ranch WD Membrane Treatment Facilities (4 projects)	--	--	--	--	--	DE	--	--	--	--	--	QC	DE	--	--	PM	DE	PM	DE
City of Ontario Reservoir Seismic Eval	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	PM	DE	--	--
Pico Water District Master Plan and Studies	--	--	--	--	--	--	--	--	--	--	--	--	--	PM	PE	--	--	--	--
City of Torrance Model Update & Analyses	--	--	--	--	--	--	--	--	--	--	--	--	--	PE	DE	--	--	--	--
El Toro WD Customer Retrofits	PM	--	--	--	--	--	DE	DE	--	--	PE	--	--	--	--	--	--	--	--
Upper District Customer Retrofits (2 projects)	PM	--	--	--	--	--	--	--	--	--	PE	--	--	--	--	PM	PE	--	--

PD - Project Director; PM - Project/Task Manager; DPM - Deputy Project Manager; PE - Project/Task Engineer; DE - Design Engineer; QC - Quality Control

On-Call

Water Resources Engineering Services

RFP No. 22-002

Understanding and Approach

SANTA ANA 1869

TETRA TECH

UNDERSTANDING OF NEED

The City intends to retain Civil Engineering Consultants on an as-needed or "on-call" basis. On an on-call, as-needed basis, the selected consultants may later be asked to provide professional engineering services proposals on specific, project-by-project basis, based on an agreed-upon specific scope of services and fees. The consultant shall be able to assist the City through this contract to provide the necessary engineering services. The consultant shall utilize in-house staff and/or subconsultants to complete the assignments to meet the City standards. For specialized work for which the prime consultant shall require a subconsultant, the prime consultant shall serve as an administrative liaison between the City and the subconsultant.

Approach

Our basic approach to engineering support services will be to provide the City with an experienced, knowledgeable and enthusiastic staff dedicated to providing the level of service the City desires. Tetra Tech is committing our top project manager and most experienced project engineers to this contract to ensure that this is accomplished. Our Team will be able to recognize and anticipate problems and be able to come to the City with options and solutions in a timely manner. Our core principles establish how we plan to partner with the City to successfully complete your projects:

- ***Service:*** Tetra Tech puts its clients first. We listen to and better understand our clients' needs and deliver cost-effective solutions that meet those needs. Our philosophy is to "Do it Right."
- ***Value:*** Tetra Tech takes on our clients' problems as if they were our own. We develop and implement real-world solutions that are cost-effective, efficient, and practical.
- ***Excellence:*** Tetra Tech brings superior technical capability, disciplined project management, and excellence in safety and quality to all of our work.
- ***Opportunity:*** Our people are our number one asset. Our workforce is diverse and includes leading experts in our fields. Our entrepreneurial nature and commitment to success provides challenges and opportunities.

Our extensive experience with similar projects will ensure that the City will receive a high level of service delivered by qualified, knowledgeable engineering professionals. Highly meticulous and coherent plans and specifications greatly benefit all project stakeholders, with the largest benefit realized by the Owner. Quality contract documents clearly lead to a larger number of bidders, lower competitive bid prices (due to increased competition, the contractor has less to assume and take the risk for, and a greater overall comfort level in our design based on a long history of successful projects), and lowest overall cost while achieving a very high-quality end product (quality contract documents mitigates the potential, and impact of change orders, and sets forth a standard of quality the contract must achieve).

No two projects are the same, although many are similar. The key is to utilize elements of work that have been successful and can be appropriately applied to your projects, continue to improve construction efficiencies without lowering quality based on contractor feedback, and maximize the overall operational flexibility.

We feel the previous work that Tetra Tech has completed on previous projects for the City are examples of our quality product which has resulted in a low overall cost for the City. We want to utilize the experience gained from working on the previous projects, and to continue providing the City with exceptional services to assure that another project is successfully completed to the satisfaction of the City.

Tetra Tech's experience in design and engineering services covers all facilities in the water and wastewater systems including:

- Planning Studies
- Hydraulic Modeling
- Pipelines
- Storage
- Pump and Regulatory Stations
- Water Wells/Hydrogeology

- Treatment
- Recycled Water
- Customer Retrofits
- Civil Engineering Services
- Geotechnical Engineering Services
- Environmental Services
- Mechanical (HVAC and Plumbing)
- Structural Engineering
- Architectural
- Landscape Architectural and Irrigation
- Electrical, Instrumentation and Control
- Plan Check Services

To keep the City aware of the status of the project, we will schedule and administrate design meetings and prepare monthly progress reports as appropriate for the assignment. The following are typical key issues which we believe must be addressed to successfully complete design services:

- Meeting schedule
- Coordination with City, and reviewing and permitting agencies
- Utility coordination and conflict resolution
- Potholing of conflicting utilities
- Accounting for traffic control during alignment selection
- Analyzing alignment alternatives
- Providing construction phasing if necessary
- Identifying options for pipeline rehabilitation
- Hydraulic calculations
- Facility layout
- Operator safety
- Maintenance friendly
- Structure aesthetics match surrounding neighborhood

Sample Project Approach

We have provided a team that can respond to many types of water and wastewater system projects including large diameter steel water mains, PVC small mains, new wells and well retrofits, pump stations, pressure reducing stations, flow control facilities, and more. Each type of project requires its own specific approach. To illustrate our ability to perform, we have provided a detailed approach for a pipeline design that we previously completed.

Meeting Project Schedule

Tetra Tech has the necessary resources to rapidly deploy and meet aggressive project schedules. In addition, our Project Team has recent pipeline experience that includes many design and construction issues similar to your projects, placing our team high on the issues-resolution learning curve. Based on this experience, we have summarized several ways to expedite the project schedule for the various pipelines:

- Perform survey and aerial work immediately by including an area that encompasses the alterative alignments rather than just the assumed alignment. Tetra Tech will not authorize the preparation of the topography until the final alignment has been approved.
- Expedite the alignment analysis by using existing street plans, other construction plans, and field investigations for location of existing utilities.
- Meet early with regulatory agencies to obtain permit requirements and construction constraints.
- Findings related to alignment analysis will be presented to the City in memorandums based on logical segments prior to completion of the Preliminary Design Report. As alignments are approved, base maps will be prepared.
- Processing of Caltrans and railroad permits can be a time-consuming and extensive process. To expedite these approvals, Tetra Tech will complete the design of any portion of the pipeline requiring these permits immediately once the alignment has been approved. This approach will provide the City with the maximum contingency in case difficulties arise in the permit process.

Resolving Key Issues

Agency Coordination: Immediately upon Notice-to-Proceed for each lateral, Tetra Tech will meet with the corresponding regulatory agencies to coordinate and define the agency requirements.

Early coordination with Agencies and defining agency requirements in Specifications will result in less chance of Change Order. The following

has been found to be successful to accomplish this:

- Working Hours
- Lane Closures
- Storage of Equipment
- Open Cut vs. Boring
- Trench Backfill
- Pavement Removal and Replacement

In conjunction with the signing of the plans by the regulatory agencies or receipt of approved permit, Tetra Tech recommends a meeting occur to finalize the cost implications of the backfill and pavement replacement requirements, construction restrictions, traffic control, and other factors which could affect the cost of construction. A memorandum of understanding will be prepared after the meeting and distributed to the attendees for their concurrence. This approach will minimize the potential of change orders to the contractor as a result of requirements added during the construction phase.

Utility Coordination: We propose to perform our utility research and investigation immediately upon issuance of the Notice to Proceed for each pipeline. During Design we will contact USA Dig-Alert, send preliminary, second, and final utility notices, field walk the alignment, pothole if necessary, and identify critical utilities.

The USA markings for the geotechnical investigation will also be used to verify the location of the existing utilities. In addition, the actual potholing activities will be monitored to assist in the investigation of hazardous materials. The potholing services will be completed by use of the vacuum extraction method, thereby minimizing pavement damage and traffic disruption.

In addition, a field walk must be completed to look for evidence of infrastructure (e.g., valve cans, trench patch, vaults, etc.) as some utility owners do not belong to USA Dig Alert, and others respond with only partially complete information. We have learned to take the extra steps to verify potential underground infrastructure.

Hazardous Waste: Our previous experience on the West Basin Municipal Water District and Long Beach Water Department projects, have made us sensitive to the negative impacts associated with the discovery of hazardous materials within the pipeline trenches. These materials, if not properly planned for in the contract documents, could have a disastrous effect on the schedule and cost of pipeline projects. Our geotechnical investigation borings will be done on the proposed alignment and will include a sniffer to minimize the potential of finding unknown hazardous materials during construction. The goal is to avoid the hazardous material, but if it must be encountered, it is important to be aware of it, quantify the amount and type and estimate the cost to dispose of it.

Traffic Control: When the proposed pipeline alignments are located within highly traveled streets, traffic control will be a major concern of the regulatory agencies. Traffic control plans will be prepared with the objective of providing the contractor with adequate room for safety as well as efficient operation while providing the least possible disruption to the traveling public. We believe that traffic control is a key design element and it will be completed together with the design of the pipeline.

Alignment Selection: Proposed pipeline alternative alignments will be evaluated relative to the following items:

- Utilities
- Hazardous Materials/High Groundwater
- Constructability
- Traffic Impacts
- Community Impacts
- Permit Requirements

In addition, when the proposed pipelines cross signalized intersections which are highly traveled, the intersections need to be evaluated as to whether bore and jack operation or open-cut construction will be the most beneficial solution. During the preliminary design phase, we will prepare sketches of the proposed bore and receiving pit locations and corresponding traffic control concepts. It should be noted that if the intersections are bored, the streets will not be able to be open to traffic at the end of each work day.

Construction Phasing: Construction phasing will be a key element of the project specifications. We will work with the regulatory agencies to minimize the impacts of the

construction to the adjoining properties. We are sensitive to their concerns regarding construction impacts and the concerns of the local residences and businesses along the proposed alignments. The following are several key issues to consider:

- Identify Schools and Emergency Facilities
- Develop Plan to Minimize Impacts
- Maintain Access to Commercial, Businesses, Residences
- Limit Length of Work Zone

Our previous experience has shown us the importance of limiting the length of the total work zone the contractor will be allowed. By requiring the contractor to pressure test, place final pavement, and perform clean-up within reasonable working limits prior to starting new excavation work, the construction impacts to the public/community are minimized.

PROJECT MANAGEMENT POLICIES AND PROCEDURES

Tetra Tech team's strength lies in the qualifications of our management team and our steadfast commitment to following our propriety written Project Management Policies and Procedures, to proactively manage the project's schedule, resources, budget and deliverables to ensure project metrics are maintained or exceeded, thus ensuring the overall success of the project.

Successful project teams need leaders who are agile and flexible with the ability to adapt quickly to changing circumstances to maintain project schedules and budgets. Successful organizations invest in their people, resources, and tools and develop processes and procedures that can implemented rapidly in times of uncertainty.

The benefits of our organization's investments and Tetra Tech's culture of developing leaders and managers with these abilities has been on full display during the COVID-19 crisis. Over the past several years, Tetra Tech invested in highly secure, cloud-based software products, including the complete suite of Microsoft Office 365, allowing our staff to collaborate and communicate remotely. This investment allows Tetra Tech's professionals and project teams to remain fully connected and hard at work servicing our clients regardless of their location. Because our investments include the latest and most advanced cybersecurity features and certifications, we can extend secure and remote access to project files and deliverable work-products to our subconsultants and clients, as well.

During the COVID 19 crisis, Tetra Tech closed hundreds of offices located in countries across the globe. Despite those challenges, 95 percent of our staff, nearly 20,000 associates, were able to work from home and continue to produce deliverables such as memos, reports, permit applications, and engineering designs. We are proud that our organization successfully navigated the challenges impacting so many of our staff and offices. Our project team has demonstrated that we can adapt quickly and continue to produce high- quality work products while incorporating client and stakeholder input and feedback without "face-to-face" meetings and "printed" materials. As a result, Tetra Tech is confident we can maintain workflow, meet the project's schedule goals, and stay agile and productive in the event of another disaster declaration.

Planning the Project

Every project, regardless of size and complexity, must undergo the same planning process. Of course, each step is scalable based on the various components of the project. Planning starts with a thorough understanding of the goals and objectives of the project, items to be provided by others, and all project stakeholders. With this basic information, the project is further developed through the creation of a detailed scope of work, including the deliverables. Next the WBS, or Work Breakdown Structure, which mirrors the scope of work is developed to assign resources, budget and schedule required to complete each scope of work item. All elements together yield the basis for the Project Management Plan (PMP).

This planning performs multiple functions. The obvious function is that it will allow us to identify critical path tasks and staffing needs. We can make sure that certain resources are made available when needed to complete the task along the schedule's critical path so that subsequent dependent tasks can begin as scheduled. In addition, it ensures that our team

has properly considered the resources and schedule needed to complete each task, eliminating surprises during project implementation.

Another function is that, through the process of creating the plan and distributing it to our team members, it serves as a primary initial communication provided at the internal kick-off meeting to verify that all team members are completing the project in concert with each other, understanding the reliance on various disciplines, outside influences including subconsultants, permitting agencies and the client.

The PMP also provides direction on internal and external communication protocol, design and CAD standards, filing systems/document control, project risks, internal schedule to allow for proper quality reviews, and quality review plan to be followed. We create the work plan and then work the work plan – rigorously – to ensure overall project success for all stakeholders.

Project Management

To accomplish the project goals, we will utilize proven project management techniques and tools, clearly described in our organized and detailed work plan. From the many similar projects we have completed in the past, we have developed a methodology and philosophy that will serve as the basis for this project.

The Project Manager will be responsible for making certain that the project meets schedule, budget, and quality goals. He will direct and rely on his team of experienced design managers, engineers, technical staff and subconsultants to carry out the technical details of the project. The Project Manager will provide overall project management including contract administration, and budget, schedule tracking, kick-off and progress meetings and controls, and meeting the project's quality goals.

We rely on systematic management procedures to ensure the project is delivered on time, and within budget. Tetra Tech will implement standard project controls to monitor and evaluate project progress. A detailed critical path schedule with milestone submittal dates and a projected project expenditure curve will be developed. A centralized computer-based project accounting system will be used to quickly and accurately monitor the expenditure of person hours and dollars. Budget status for the entire project, as well as budget status for individual tasks, will be monitored so that comparisons and contingency plans can be developed as needed throughout the life of the project. The accurate accounting of project expenditures, coupled with a detailed critical path schedule incorporating milestone submittals, will enable Tetra Tech to monitor total project status and therefore modify our project work plan at the earliest indications of deviations from the initial plan.

The Project Manager is committed to effective communication and accurate documentation as they are fundamental to the success of the project. Meeting minutes, schedule, memoranda, monthly progress reports, decision logs, and other information will be made available for the project team and to the City. The Project Manager will be proactive in communicating through telephone calls, emails, and one-on-one meetings.

Communications

Our approach to this project includes a "teamwork and partnering" style with the City. We are hired for our resources, expertise, independent thought, technical background, and problem-solving abilities. We also recognize that the City possesses these same attributes of past experiences, knowledge, and innovative ideas. Therefore, we understand that it is imperative to work closely with your staff to ensure a successful project.

The Tetra Tech team's goal is to keep the City's staff informed from day one of the project. Communication tools include formal progress reports, meeting agendas and minutes, e-mail and an informal give-and-take approach starting with our Project Manager and extending to every member of the Tetra Tech project team. Our Project Manager will be responsible for day-to-day communications. However, at the project outset, a chain of command and communication methods will be set-up and agreed upon.

Schedule Control

Tetra Tech will implement standard project controls to monitor and evaluate project progress. We have a long-standing commitment with our clients to deliver projects on time.

However, throughout the course of any given project, there may be occasions where project schedules slip for a variety of reasons outside of our control. We have successfully mitigated project schedule delays in the past by increasing the available staff assigned to a project and by assisting our Clients with thorough and timely reviews of deliverables. The Tetra Tech team will always strive to work with the City to bring any foreseeable delays back on schedule.

Cost Control

The Tetra Tech team is committed to delivering a project that not only meets or exceeds the performance criteria established by the City, but to accomplish this within the allocated budgets. Budget and schedule tracking tools will be used to manage the day-to-day activities of a project and ensure that the project is progressing within schedule and under budget; our Project Manager utilizes Tetra Tech's "PM Portal." The PM Portal is the primary project reporting software system proprietary to Tetra Tech. It provides quick and easy access to a variety of reports for managing projects, in real time, including labor and direct cost per task, subcontractor's costs per task, budget remaining, and other financial information.

Risk Management Approach

Our risk management approach predicts problems which may negatively impact the project and determines the course of action to mitigate the risk should it occur. Our approach embodies a continuous process of identifying, assessing, mitigating, monitoring, managing, and controlling risk in accordance with our corporate risk management policy and best commercial practices. We have refined this approach over a 50-year history, on a variety of private, state/federal governmental and municipal contracts.

Resource Management

Tetra Tech employs project management tools that project required labor allocation per project, to the task level, with a three-month forecast. When compared to the expected peak work load, Tetra Tech has more than enough staff capacity to bring on additional resources to meet all of our deadlines. The team members who have been included in this project team were not only selected based on their qualifications that fit with the requirements of the project, but because they are available to commit their time to this project.

A tool that Tetra Tech employs to manage available human resources is keeping an updated long-term view of key deliverable dates within Microsoft Project. This allows us to ensure that the intensive last minute subconsultant coordination, reprographics, and shipment of deliverables do not conflict with other commitments. If one or more deadlines coincide, this forward planning allows the team to prepare for surges.

Quality Assurance/Quality Control

Our team clearly understands the importance of the City's projects and the importance of ensuring that the City receives the highest quality product. Quality management is an integral part of our project management work plan. Tetra Tech has developed an office environment and philosophy which encourages, and requires, a very high level of quality in which our clients have come to expect from Tetra Tech.

Our quality assurance program includes that a detailed QA/QC Plan will be prepared and submitted for review by the City, upon request. This plan establishes lines of communication and procedures for ensuring quality during all phases of the project. The plan is flexible and can be modified to respond to your specific requirements, as our best efforts are fruitless unless they meet your criteria.

In keeping with our open communications policy, our Quality Control documents can be made available to the City throughout the project. We believe that it is in our best interest to have our clients fully informed and up to date on our quality control process. Design reviews, field inspections, and material testing can be provided to the City in either hard copy or electronically.

We recognize that implementation of a QA/QC Plan will be an important element in how the City assesses the success of this project. The QA/QC Plan will be incorporated into the PMP.

QC review forms will be used to document that internal reviews have been conducted. All comments will be identified with the reviewer's name. When comments are resolved to the satisfaction of the reviewers, the reviewers and our Project Manager will sign off on the review forms.

The QA/QC Plan will ensure technical adequacy and QC of work, along with design parameters are translated into planning and design documents. QA/QC will be directed by **Mr. Tom Epperson, PE,** and led by **Mr. Mark Bush, PE,** who has more than 27 years of experience. Formal QA/QC reviews are scheduled around project submissions. The review will be completed well ahead of the submission date to allow time to correct potential errors and omissions, including complete subconsultant coordination. In every QA/QC review, a checklist form developed by Tetra Tech for the project is utilized for the review. The reviewer completes the checklist by adding text and makes any additional comments in red on the document. The Project Manager and the QA/QC Manager review the comments for fatal flaws. If none are found, the Project Manager oversees the implementation of the comments by closing each comment on the form with a response and by addressing the changes on the plans by highlighting the revision.

CATEGORY OF SERVICES

Tetra Tech will propose on all the category of services except for Construction Inspection. Per the RFP, the following matrix of services is presented:

No.	Service	Elect to Propose	Decline to Propose
1	Planning, Resources, and Design	✓ (a-e)	
2	Construction Management	✓ (a-b)	✓ (c) Construction Inspection
3	Pipeline Design	✓	
4	Electrical, Instrumentation and Control Services	✓	
5	Geotechnical Engineering Services	✓	

On-Call

Water Resources Engineering Services

RFP No. 22-002

Relevant Project Experience

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RELEVANT PROJECT EXPERIENCE

A summary of our Project Team's water and wastewater experience is included earlier in our Water/Wastewater Project Experience section of this SOQ. The following is a brief list of pipeline and well/pump station projects completed with agency contact information:

Client and Contact	Project Name	Brief Description
Irvine Ranch Water District Irvine, CA **Richard Mori, PE** mori@irwd.com 949/453-5571	Fleming Reservoir and Zone 8 to 9 PS Peters Canyon Pump Station Peters Canyon Pipelines IDP Raw Water and Brine Pipelines Green Acres Intertie Sand Canyon Relocations	2,000 GPM 1,200 GPM 17,000 LF of 8" to 16" mains 47,000 LF of 12" to 24" mains 9,600 LF of 24" RW main 7,000 LF of 12" to 24" pipelines
El Toro Water District Lake Forest, CA **Dennis Cafferty, PE** dcafferty@etwd.com 949/837-7050	East Side RW Expansion West Side RW Expansion North Side RW Expansion East System Expansion System Expansion – Phase II	22,800 LF of 4' to 20" RW mains 66,500 LF of 4' to 20" RW mains 13,400 LF of 4' to 12" RW mains 7,900 LF of 4' to 8" RW mains 20,600 LF of 4' to 10" RW mains
Moulton Niguel Water District Laguna Niguel, CA **Matt Collings, PE** mcolling@mnwd.com 949/425-3552	Crown Valley Regional Force Main La Paz Road RW Extension, Phase 1 Pacific Park Recycled Water Main Lower Mission Viejo RW Pipelines Cedarbrook RW Pipelines Cabot Road Pipelines Pacific Park Water Mains	9,400 LF of 12" Force Main 4,000 LF of 12" RW main 14,000 LF of 12" to 16" RW mains 11,000 LF of 12" to 16" RW mains 16,000 LF of 6" to 12" RW mains 10,000 LF of 12" to 24" pipelines 16,000 LF of 36" to 42" water mains
Orange County Water District Fountain Valley, CA **Mike Markus, PE** mmarkus@ocwd.com 714/378-3305	Santiago Pump Station Modifications Mid-Basin Injection Wells (4 wells) Burris Pump Station Barrier Pipeline Replacement GWR Barrier Pipelines GWR Unit III Pipeline	5,400 GPM 3,000 GPM each 90,000 GPM total 1,800 LF of 30" barrier pipeline 12,000 LF of 20" to 42" pipeline 23,000 LF of 60" to 66" pipeline
City of Anaheim Anaheim, CA **Craig Parker, PE** cparker@anaheim.net 714/765-5196	OCTA Railway Crossing Santa Ana Canyon Road TM Anaheim Hills Road TM, Phase I Katella Avenue WM Replacement, Phase I Katella Avenue WM Replacement, Phase II	600 LF of 12" & 24" DW mains (J&B) 4,500 LF of 30" DW mains 3,500 LF of 30" DW mains 3,000 LF of 16" DW main 3,000 LF of 16" DW main
City of Newport Beach Newport Beach, CA **Mike Sinacori, PE** msinacori@newportbeachca.gov 949/644-3005	Newport Boulevard WM Replacement Via Oporto to 28th Street and 26th Street to 19th Street Newport Pier Area WM Replacement	2,600 LF of 24" steel DW pipeline 1,700 LF of 16" PVC DW pipeline 900 LF of 8" PVC DW pipeline 5,800 LF of 6" PVC DW pipeline
City of Orange Orange, CA **Sonny Tran, PE** stran@cityoforange.org 714/288-2475	Well 29 and Well 28 Well 27 New Santiago Booster Pump Station Reservoir No. 4 Booster Pump Station	3,000 GPM each 3,000 GPM 4,500 GPM 6,000 GPM

FACILITY PROJECTS

The following are three projects that are sample facility projects:

- ***Santiago Pump Station Modification Project, Orange County Water District:*** The goal of the project is to have the ability to pump water from Santiago Basin to Santiago Creek and/or Burris Pump Station when the water is above 240 feet. The design includes modifying the existing pump station to a floating pump station that would pump water between the elevations of 285 feet to 240 feet.
- ***Fleming Reservoir and Zone 8 to 9 Pump Station, Irvine Ranch Water District:*** These facilities include a 1.3 MG concrete reservoir and three (3) booster pumps and motors within a building. In addition, there was a new RMS building with SHC/ammonia feeds and a diesel fuel storage tank.
- ***Well 29 and PFAS Treatment Facility, City of Orange:*** This project included the design of the drilling and equipping of Well No. 29, corresponding disinfection equipment and a new PFOS/PFOA treatment system.
- ***Roseton Plant Improvements, Golden State Water Company:*** This project included the design of a new 0.75 MG reservoir, improvements to the booster pumping station, a new backup power generator, and optional future treatment facilities.

Project Descriptions of these four projects are included in the Appendix. Presented in the table below are the references for these facility projects that we encourage the City to contact relative to our similar experience, development of contract documents, and overall project performance.

Client and Contact	Project Name	Project Team Responsible
Orange County Water District Fountain Valley, CA **Chris Olsen, PE** colsen@ocwd.com 714/378-3305	Santiago Pump Station Modifications Mid-Basin Injection Centennial Burris Pump Station	Tom Epperson Laurence Esguerra Matt Vera Eric Yuen Mazen Kassar
Irvine Ranch Water District Irvine, CA **Richard Mori, PE** mori@irwd.com 949/453-5571	Fleming Reservoir and Zone 8 to 9 Pump Station IRWD Wells (10 wells) IRWD PDF and IDF Chlorine Modifications (2 projects) IRWD Sand Canyon & IDP Conveyance Pipelines	Tom Epperson Mike Tsoi Erin Cabanero Beverly Encina Molly Lovegren Eric Yuen Mazen Kassar
City of Orange Orange, CA **Sonny Tran, PE** stran@cityoforange.org 714/288-2475	Well 29 & PFAS Treatment Well 28 & Public Mini Park Well No. 27 Demolition, Drilling and Equipping	Tom Epperson Laurence Esguerra Matt Vera Eric Yuen Mazen Kassar
Golden State Water Company Santa Fe Springs, CA **Joe Farah, PE** joe.farah@gswater.com 562/907-9200, x423	Roseton Plant Improvements Huntington Horn Reservoir Live Oak/Lynrose Pipelines Wilmington/Walnut Main Replacements	Tom Epperson Mark Bush Laurence Esguerra Neha Gajjar Matt Vera Victor Ramirez Mazen Kassar

On-Call

Water Resources Engineering Services

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Contract Issues

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CONTRACT ISSUES

We have carefully reviewed the sample Consultant Agreement attached to the City's Request for Proposal and respectfully request the City consider the following modifications:

1. Agreement: Item 8: Indemnification

   Tetra Tech: Request revision of the following sentence, "*Consultant ~~agrees to defend, and~~ shall indemnify and hold harmless the City, its officers~~, agents~~, employees, contractors, special counsel, and representatives from liability: (1) for personal injury, damages, just compensation, restitution, judicial or equitable relief arising out of claims for personal injury, including death, and claims for property damage,* ***to the extent caused by*** *~~which may arise from~~ the negligent operations of the Consultant, its subcontractors, agents, employees, or other persons acting on its behalf which relates to the services described in section 1 of this Agreement~~; and (2) from any claim that personal injury, damages, just compensation, restitution, judicial or equitable relief is due by reason of the terms of or effects arising from this Agreement~~. This indemnity and hold harmless agreement applies to all claims for damages, just compensation, restitution, judicial or equitable relief suffered, or alleged to have been suffered, by reason of the events referred to in this Section ~~or by reason of the terms of, or effects, arising from this Agreement. The Consultant further agrees to indemnify, hold harmless, and pay all costs for the defense of the City, including fees and costs for special counsel to be selected by the City, regarding any action by a third party challenging the validity of this Agreement, or asserting that personal injury, damages, just compensation, restitution, judicial or equitable relief due to personal or property rights arises by reason of the terms of, or effects arising from this Agreement~~. City may make all reasonable decisions with respect to its representation in any legal proceeding. Notwithstanding the foregoing, to the extent Consultant's services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant.*"

2. Agreement: Item 16: Termination

   Tetra Tech: Request addition of the following sentence, "***"The Consultant may terminate services on the Project upon seven (7) days written notice in the event of substantial failure by the City to fulfill its obligations of the terms hereunder. Consultant shall submit an invoice for services performed up to the effective date of termination and the City shall pay Consultant all outstanding invoices, together with all costs arising out of such termination, within fourteen (14) days. The City may withhold an amount for services that may be in dispute provided that the City furnishes a written notice of the basis for their dispute and that the amount withheld represents a reasonable value***."

On-Call

Water Resources Engineering Services

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References

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REFERENCES

A true indicator of our abilities lies in our industry-wide reputation. **We have been long regarded as a premium engineering firm providing clear solutions to complex challenges.** Accordingly, we urge you to contact our references to inquire first-hand knowledge about our past work. In addition to our successfully completed projects for the City, we offer the references provided below. Each are familiar with the wide range of services we provide, and the key personnel on our team.

Irvine Ranch Water District
15600 Sand Canyon Avenue
Irvine, CA 92618
Richard Mori, PE
949/453-5571
mori@irwd.com

8 Pipelines; 6 Pump Stations; 12 Well Equipping; 1 Reservoir; and 4 Membrane Treatment Projects

El Toro Water District
24251 Los Alisos Blvd.
Lake Forest, CA 92630
Dennis Cafferty, PE
949/837-7050
dcafferty@etwd.com

Recycled Water Distribution System Expansion; and Oso Lift Station Improvements

City of Paramount
16400 Colorado Avenue
Paramount, CA 90723
Adriana Figueroa
562/220-2100
AFigueroa@paramountcity.com

As-Needed Services; 4 Well Equipping/Disinfection; Pipeline Upgrade; and 4 Reports including a Water Master Plan

Moulton Niguel Water District
27500 La Paz Road
Laguna Niguel, CA 92677
Matt Collings, PE
949/425-3552
mcolling@mnwd.com

On-Call Services; 8 pipelines; 4 Meter Projects; 6 Pump Station/1 Lift Station Upgrades; 4 Studies; and 2 Reports

Orange County Water District
18700 Ward Street
Fountain Valley, CA 92708
Mike Markus, PE
714/378-3305
mmarkus@ocwd.com

6 Pipelines; 1 Vault Modification; 1 Pump Station; and 1 Well Injection Project

Mesa Water District
1965 Placentia Avenue
Costa Mesa, CA 92627
Andrew Wiesner, PE
949/207-5458
andreww@mesawater.org

On-Call Services; 2 Well Projects; 4 Pipeline Projects; Valve Replacements; Standard Upgrades; and 4 Water/Wastewater Projects

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Water Resources Engineering Services

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Project Descriptions

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Santiago Pump Station Modifications

Santiago Creek, CA

Engineering Fee:
$178,000

Schedule:
February 2022

Key Staff:
Tom Epperson, PE
Project Director

Laurence Esguerra, PE
Team Leader

Neha Gajjar, PE
Project Manager

Matt Vera, PE
Design Engineer

Mazen Kassar, PE
Electrical/Controls Manager

Eric Yuen, PE, SE
Structural Engineer

Reference:
Orange County Water District
Fountain Valley, CA
Chris Olsen, PE
714/378-3232
colson@ocwd.com

The original Santiago Pump Station was constructed at the bottom of Bond Basin in 2002. Four submersible pumps, each with their own MCC, were installed with varying power and head capacities to accommodate large fluctuations in water elevation. Soon after commissioning the station, three of the four pumps failed.

In 2011, Orange County Water District (OCWD) installed the floating pump station that is currently in use. In 2019, the last functional submersible pump failed, leaving OCWD without the ability to pump water from Santiago Basin when the water elevation is above 240-feet.

The OCWD identified two (2) potential solutions to regain pumping capacity when water elevations are above 240-feet:

Option 1 – Add two small pumps to the floating station and construct any necessary modifications to accommodate the additional pumps; or

Option 2 – Replace the existing larger pump drives with Variable Frequency Drives (VFD) and construct any additional necessary modifications that will allow the pumps to function within the configuration of the existing facilities.

The goal of this project was to provide a recommendation and prepare 65% plans on the optimal option to restore the ability to pump water from Santiago Basin. Preliminary evaluations of the options, included identifying the appropriate VFD and their potential costs; coordinating with the barge manufacturer for additional barge sections to accommodate the two smaller pumps; and working with the pump manufacturer to obtain potential costs for the purchase of two smaller pumps.

Fleming Zone 8 Tank and Zone 8 to 9 Booster Pump Station Improvements

Orange County, CA

Irvine Ranch Water District (IRWD) provides potable water supply service to the Santiago Area located in an unincorporated region of Orange County. This service area includes four distinct sub-areas containing a system of reservoirs and pump stations that solely rely on the existing 150,000-gallon steel Zone 8 Fleming storage reservoir and the existing Zone 8 to 9 booster pump station as the main source of water supply.

In 2017, IRWD completed an analysis and recommended improvements for the undersized infrastructure and requirements for additional storage. This project included several primary components, including:

- Demolition of the existing reservoir and pump station
- A new above ground 1.3 MG prestressed concrete reservoir
- Replacement of the Zone 8 to 9 pump station with three 600 GPM pumps
- A replacement storage building
- An RMS building with sodium hypochlorite/aqueous ammonia treatment
- A 2,000-gallon diesel fuel storage tank
- Siting for electrical service, controls, and telemetry improvements

Project Value:
$11,700,000

Schedule:
September 2022

Key Staff:
Tom Epperson, PE
Project Manager

Mike Tsoi, PE
Team Leader

Erin Cabanero, PE
Project Engineer

Laurence Esguerra, PE
Project Engineer

Amanda Taylor, PE
Process Engineer

Mazen Kassar, PE
Electrical Engineer

Adrian Lee, PE
Project Engineer

Eric Yuen, PE, SE
Structural Engineer

Peter Kim, PE, TE
Traffic Engineer

Reference:
Irvine Ranch Water District
Irvine, CA
Richard Mori, PE
949/453-5571
mori@irwd.com

Well No. 29 with PFOS and PFOA Treatment Systems

Orange, CA

Project Value:
Drilling: $3.1M
Equipping: $8M (Est.)

Schedule:
December 2022

Key Staff:
Tom Epperson, PE,
Project Director

Lawrence Esguerra, PE
Project Manager

Mike Tsoi, PE
Team Leader

Erin Cabañero, PE
Project Engineer

Amanda Taylor, PE
Process Engineer

Matt Vera, PE
Project Engineer

Mazen Kassar, PE
Electrical Engineer

Eric Yuen, PE, SE
Structural Engineer

Reference:
City of Orange
Orange, CA
Sonny Tran, PE
714/288-2475
stran@cityoforange.org

Tetra Tech provided engineering design services for the well drilling and well equipping of a potable water well in the City of Orange. The City's Water Division operates a water distribution system including water mains, wells, pump stations, and reservoirs. The City pumps water from the groundwater basin through an existing well network that includes 12 active wells and imports water from the Colorado River and Northern California as a secondary source. Well No. 29 is proposed to enhance the reliability, efficiency, and redundancy of the City's water system.

Currently, Well No. 8 and its supporting facilities were located within the existing site. The property was mostly unpaved and small areas of asphalt around the well facilities. The Well No. 8 is to be destroyed and the new Well No. 29 and PFOS/PFOA treatment system constructed.

Well No. 29 will pump water to the 370 Zone and is expected to produce approximately 3,000 GPM. The PFOS/PFOA treatment system shall be designed to treat approximately 3,500 to 4,500 GPM, which includes the total production of proposed Well No. 29 and existing Well No. 9, located 300 feet to the north. The well facilities include a wellhead enclosure, chlorination, and electrical building, with an external roll-up generator connection for backup power. The on-site piping includes piping from Well Nos. 9 and 29 to the treatment system and post treatment piping to the distribution system. The Water Division is to bid the well drilling phase and well equipping phase separately. The site includes building and landscaping design, paving and fencing. Well drilling construction began in February 2021 and well equipping began after drilling was complete.

Roseton Plant Improvements

Artesia, CA

Engineering Fee:
Approx. $320,000

Schedule:
Current

Key Staff:
Tom Epperson, PE
Project Manager

Neha Gajjar, PE
Deputy Project Manager

Laurence Esguerra, PE
Project Engineer

Matt Vera, PE
Design Engineer

Mazen Kassar, PE
Electrical/Controls Manager

Eric Yuen, PE, SE
Structural Design Engineer

Reference:
Golden State Water Co.
Santa Fe Springs, CA
Joe Farah, PE
562/907-9200 x423
Joe.Farah@gswater.com

Golden State Water Company wants to add a 0.75 MG welded steel reservoir, booster station, and backup power generator to the existing plant. Included with the work is the relocation of the Fe/Mn backwash tank and skid mounted recycle pump, and relocation of the MCC for Well No. 2. The existing facilities to remain include Well No. 1 and No. 2, the three bay chemical building, Fe/Mn treatment system, and SCE transformer if it is determined it is adequately sized for the proposed and existing facilities.

The booster pump station is to be comprised of four vertical turbine pumps each with a capacity of 1,000 GPM against system pressure (with assumed 75 hp motors). The new Welded Steel Reservoir (WSR) shall have a usable capacity of 0.75 MG, with a separate inlet and outlet. The WSR inlet will incorporate an altitude valve to control tank filling with system water. Desired WSR dimensions shall have a maximum external height of 30 feet, an overflow level equal to 26 feet, and a diameter of approximately 70 feet. The groundwater wells will discharge into the WSR following wellhead treatment. Included in the design, will be improvements to fill the WSR from the distribution system via an altitude valve.

A backup power supply shall be included which shall comprise of a Cummins diesel powered generator with Tier 4 emissions, sound attenuation suitable for a residential neighborhood, a fuel capacity capable of allowing the generator to operate 72 hours at full load, and an automatic transfer switch (ATS). The generator shall be capable of operating: one groundwater well pump; four booster pumps; Fe/Mn treatment system; SCADA and plant controls; and ancillary power needs. The sizing of the generator, fuel capacity and ATS will be coordinated with Cummins. Electrical services include evaluation of the proposed loads and determination if the existing SCE service will be sufficient to accommodate improvements.

On-Call

Water Resources Engineering Services

RFP No. 22-002

Resumes

SANTA ANA
1869

TETRA TECH

Tom Epperson, PE

Project Director/Manager

Mr. Epperson has more than 41 years of professional experience in water, wastewater, and reclaimed water engineering. Tom has been responsible for the preparation of water, wastewater, and reclaimed water master plans; project design reports for various water, wastewater, and reclaimed water facilities; and the planning and design of water, wastewater, and reclaimed water pipelines, along with pump stations and reservoirs. Tom has completed the design, bidding, and construction management of over 300 miles of water/reclaimed water/sewer mains, 40 water/reclaimed water pump stations, 15 well-head facilities, 12 sewer lift stations and 25 water/reclaimed water storage reservoirs throughout Southern California.

Education:
BS, Environmental Engineering, University of California, Irvine, 1978

Registrations/Certifications:
Professional Civil Engineer, California, No. 36399, 1983

Professional Affiliations:
American Society of Civil Engineers
American Water Works Association
Orange County Water Association
Water Environment Federation
WateReuse Association

Office Location:
Irvine, CA

Years of Experience:
41

Years with Tetra Tech:
29

EXPERIENCE

Well No. 32 Rehabilitation, City of Santa Ana, CA. 2017 - Present. Project Manager. Engineering planning and design to assist with the rehabilitation of Well No. 32. The project includes the construction of new CMU block well building and sodium hypochlorite building, sodium hypochlorite disinfection facility, approximately 3,300 linear feet of 16-inch pipe from Well No. 32 to John Garthe Reservoir, bore and jack under channel crossing and site improvements.

West Chandler Well, South Croddy Well and Pipeline, Mesa Water District, Costa Mesa, CA. 2017 - Present. Project Director for the drilling and equipping of Well Nos. 12 and 13, two new potable water wells (approximately 1,050 feet deep), to provide additional local water reliability to the customers of Mesa Water District. The project involves the demolition of existing buildings at Well Nos. 12 and 13 properties within the City of Santa Ana. Both wells are located outside of Mesa Water's service area and will require the construction of approximately 4,400 feet of pipeline to connect the proposed wells to Mesa Water's existing system. Each well site includes the construction of a vertical turbine pump estimated to produce approximately 3,000 gpm, new CMU block wall building, new chemical storage facility, sodium hypochlorite and aqua ammonia disinfection facility, and site and landscaping improvements.

La Palma Avenue and Tustin Avenue Watermain Replacements at OCTA Crossing, City of Anaheim, CA. 2019 - Ongoing. Project Director. The OCTA planned to construct an additional railroad track for the Metrolink within its existing right-of-way as part of the Anaheim Canyon Station Metrolink Project. The new tracks cross City of Anaheim water mains at La Palma Avenue and Tustin Avenue and therefore the mains must be rerouted and placed within a steel casing. Tetra Tech prepared plans and specifications to replace the existing 36-inch CCP with a 36-inch steel in a 48-inch steel casing in La Palma Avenue, the existing 12-inch CIP with a 12-inch DIP in a 24-inch steel casing in La Palma Avenue, and the existing 12-inch CIP with a 12-inch DIP in a 24-inch steel casing in Tustin Avenue. The project also included coordination with OCTA.

Regional Lift Station Force Main Replacement, Moulton Niguel Water District, Aliso Viejo, CA. 2017 - Ongoing. Project Manager. Mr. Epperson is the project manager providing engineering services for the replacement of approximately 15,000 linear feet of 20-inch and 24-inch Techite sewer force main with Laguna Niguel Regional Park. Regional Lift Station and Force Mains are critical wastewater facilities that pump flow from MNWD sewer collection system to South Orange County Wastewater Authority Regional Treatment Plant. The replacement force main consists of dual 24-inch pipeline approximately 8,000 feet length and will be constructed with Laguna Niguel Regional Park. Scope of services include preliminary design, final design and construction phase services.

Neha Gajjar, PE

Deputy Project Manager

Education:
BS, Civil Engineering, University of California at Berkeley, 1991

Registrations/Certifications:
Professional Civil Engineer, California, No. 55574, 1996

Professional Affiliations:
American Society of Civil Engineers

Society of Women Engineers

Office Location:
Irvine, CA

Years of Experience:
30

Years with Tetra Tech:
4

Ms. Gajjar has more than 30 years of professional experience providing project management, planning, and design of water transmission, distribution, and storage facilities projects. Neha has significant experience preparing plans and specifications for water/sewer mains, storm drains, pipelines, and has an intimate understanding of these requirements for many municipalities. Ms. Gajjar's responsibilities as engineering lead include establishing design parameters, planning activities to meet client needs and project schedules, and managing required appropriate technical resources required for each project.

EXPERIENCE

Washington Well Drilling Phase 2, Drilling and CEQA, City of Santa Ana, CA. 2020 - Ongoing. Project Manager. The City of Santa Ana selected Tetra Tech to plan the drilling and equipping plans of a new well within a vacant City property near the intersection of Washington/Penn. The first phase of the project identified the drill location and facility configuration within the lot. This is the second phase and focuses on the final well site layout and renderings for the new well facility. The work also includes coordination with environmental and cultural requirements in advance of any drilling efforts.

SA-1 Hydro-Generator Replacement, City of Santa Ana, CA. 2020 - Ongoing. Project Manager. As recommended within its Alternative Energy Feasibility Study, the City of Santa Ana plans to replace an existing turbine generator that is over 33 years old and nearing the end of its useful life. The hydro-generator is located off of Metropolitan Water District's SA-1 station where high pressure flow is reduced to lower pressure and the generator converts the pressure differential into energy to power Well 39. All these facilities are near each other and located at the John Garthe Reservoir and Pump Station Facility. Tetra Tech will prepare a Basis of Design Memorandum to evaluate generator options. The scope also includes preparation of plans and specifications to construct the selected hydro-generator and any appurtenant modifications required to facilitate the new component, including upgrades to the electrical facilities and reconfiguration of the piping system.

Crooke Reservoir and Pump Station Improvements-Preliminary Design Phase, City of Santa Ana, CA. 2020 - Ongoing. Project Manager. The City of Santa Ana wishes to have preliminary design plans prepared for this Capital Improvement Project which includes civil, mechanical, structural, and electrical disciplines involved. The proposed upgrades include Well 28 (new VFD/MCC, separate SCE Transformer, new stand-by generator, new perimeter wall), Well 27 (new soft starter/MCC, new stand-by generator, upgrades/rehabilitation of valving, piping, pump/motor), and Crooke Pump Station (new main switchboard/ATS/MCC/VFDs/Control Panel/AC unit, expansion of electrical room, upgrades to pump/motors, and miscellaneous site improvements, including lowering of roadway under a railway bridge to allow access to Well 28). The final deliverables was a preliminary technical memorandum, including 30% design plans showing the preliminary design improvements of the various facilities.

La Palma Avenue and Tustin Avenue Watermain Replacements at OCTA Crossing, City of Anaheim, CA. 2019 - Ongoing. Project Manager. The OCTA planned to construct an additional railroad track for the Metrolink within its existing right-of-way as part of the Anaheim Canyon Station Metrolink Project. The new tracks cross City of Anaheim water mains at La Palma Avenue and Tustin Avenue and therefore the mains must be rerouted and placed within a steel casing. Tetra Tech prepared plans and specifications to replace the existing 36-inch CCP with a 36-inch steel in a 48-inch steel casing in La Palma Avenue, the existing 12-inch CIP with a 12-inch DIP in a 24-inch steel casing in La Palma Avenue, and the existing 12-inch CIP with a 12-inch DIP in a 24-inch steel casing in Tustin Avenue. The project also included coordination with OCTA.

Mark Bush, PE

QA/QC

Mr. Bush has more than 27 years of professional experience in water, wastewater and recycled water engineering. He has been responsible for the completion of over 100 miles of potable water, recycled water and sewer mains, 20 potable water and recycled water pump station and well projects and 14 potable and recycled water reservoirs. Mr. Bush is an integral part of the Water/Wastewater Department and brings leadership, strong work ethic, technical knowledge and dedication to overall client satisfaction on every project.

Education:

BS, Civil and Environmental Engineering, University of California, Irvine, 1997

Registrations/Certifications:

Registered Civil Engineer, California, No. 60477, 2000

Professional Affiliations:

American Society of Civil Engineers

American Water Works Association

Orange County Water Association

Office Location:

Irvine, CA

Years of Experience:

27

Years with Tetra Tech:

27

EXPERIENCE

Michigan and Harrison Road Sanitary Sewer Improvements, City of East Lansing, MI. 2018 - Present. QA/QC. Reviewed plans and specifications for critical sanitary sewer infrastructure upgrades that included the construction of a new inverted siphon river crossing, new conveyance piping ranging in diameter from 8 to 54 inches, two new combined sewer regulator structures, as well as the modification of several control structures, new storm sewers, and rehabilitation of 24-inch sanitary sewers within the limits of Michigan State University campus.

Mid-Basin Injection: Centennial Park Design Services, Orange County Water District, Fountain Valley, CA. 2015 - Ongoing. QA/QC. Responsible for the QA/QC of the design of four injection wells to be located within Centennial Park in the city of Santa Ana for Orange County Water District. In addition to the engineering services for the four injection wells, the project includes the design of the supply pipeline, backflush pipeline, bridge crossing, two shared facility sites, a monitoring well site, site improvements, and paving of park access roads and parking lots.

Central Water Integration Project, San Antonio Water System, San Antonio, TX. 2018. Pipeline Design Lead. Project consists of treatment facilities, conveyance pipelines, and improvements to existing pump stations and distribution facilities to integrate a new 48.0 MGD potable water supply source into the utility's potable water distribution system. The supply source for this project consisted of a $900 million P3 water supply project that will import groundwater from a wellfield that is 140 miles from the City of San Antonio.

City Trunk Line North Unit 2, Los Angeles Department of Water & Power, Los Angeles, CA. 2018. QA/QC Manager. Design of the City Trunk Line North Unit 2, which will consist of 12,200 linear feet of 54-inch diameter welded steel pipe. The design includes three bore and jack tunnels and 3,500 linear feet of slip-lining, where new 54-inch steel pipe will be pushed through an existing 72-inch riveted steel pipeline.

New Santiago Booster Pump Station, **City of Orange, CA.** 2012. Project Manager. Oversaw the preparation of plans and specifications for a potable water pump station. Project included the installation of three vertical turbine pumps, two surge tanks, drop facility and a standby diesel generator.

Pier F Sewer Repair, **Port of Long Beach**, **Long Beach, CA.** 2010. Project Engineer for the evaluation of a damaged existing 8-inch and 18-inch sewer that resulted in the formation of a sinkhole within Pier F Avenue, located within the Port of Long Beach. The project included CCTV of the damaged pipe, bypass pumping of sewer flows and cleaning of the pipes in order to assess the damage. After the evaluation, repair options were evaluated including open cut and trenchless technologies. Repair options had to include mitigation of the high groundwater within the Port due to tidal influence. Cut and cover, microtunneling and rehabilitation of the damaged pipe utilizing pipe bursting, spiral wound sliplining, and sliplining methodologies were evaluated. Traditional cut and cover was the recommended repair option.

Erica Jenkins

PW and RW Pipeline Replacement/Extension

Ms. Jenkins has more than 29 years of experience and has been responsible for the preparation of water, sewer, reclaimed water pipeline projects, and project design reports for various water and sewer facilities. She has been responsible for completing the design, bidding, and construction management of over 50 miles of water/reclaimed water/sewer mains throughout Southern California.

Education:
BS, Civil Engineering, California State University, Fullerton, 1996

Registrations/Certifications:
Engineer-in-Training, California, No. EX102020

Professional Affiliations:
American Water Works Association

Office Location:
Irvine, CA

Years of Experience:
29

Years with Tetra Tech:
29

EXPERIENCE

La Palma Ave. and Tustin Ave. Water Main Replacements at OCTA Crossing, City of Anaheim, CA. 2021. Design Engineer. The OCTA planned to construct an additional railroad track for the Metrolink within its existing right-of-way as part of the Anaheim Canyon Station Metrolink Project. The new tracks cross City of Anaheim water mains at La Palma Avenue and Tustin Avenue and therefore the mains must be rerouted and placed within a steel casing. Tetra Tech prepared plans and specifications to replace the existing 36-inch concrete cylindrical pipe with a 36-inch steel in a 48-inch steel casing in La Palma Avenue, the existing 12-inch CIP with a 12-inch DIP in a 24-inch steel casing in La Palma Avenue, and the existing 12-inch CIP with a 12-inch DIP in a 24-inch steel casing in Tustin Avenue.

Waterline Replacement Projects, Golden State Water Company, CA. 2020. Design Engineer. Prepare the design plans for several water main replacement projects throughout the GSWC service areas primarily the Southwest District. Work included existing utility research and base map preparation, determining abandonment required, alignment selection and field check surveys, and obtaining permit conditions for construction for various affected cities. Projects include: 175th Street/185th Street Area Main Replacement; Water Quality Area 6 Main Replacement; 108th Street/100th Street Area Main Replacement; Otis Avenue and Prospect Avenue Area Main Replacement; Wilmington Avenue and Walnut Drive Area Main Replacement; Overland Avenue Area Water Main Replacement; and Live Oak/Lynrose Avenue Water Main Replacement.

Overland Avenue Area Water Main Replacement, Golden State Water Company, Culver City, CA. 2019. Design Engineer. Preparation of plans and specifications to replace deteriorated pipe along Overland Bridge across Ballona Creek in GSWC's system. The key to the project was to determine the impact of the installation of a new pipeline to the existing bridge structure. Tetra Tech's structural group confirmed the design did not affect the integrity of the bridge.

Long Beach Valve Replacement Project, Long Water Department, Long Beach, CA. 2018. Design Engineer for improvements to an existing Flow Control/Pressure Reducing Station for the Department. The improvements included the removal of existing piping and control valves with the replacement of new butterfly valves and plunger valves. The pressure reduction in this station was approximately 180 psi and required that the plunger valve be designed and sized properly to handle such a large drop at this particular station.

Atkinson Area Main Replacement, Precision Pipeline, Hawthorne and Inglewood, CA. 2018. As Lead Design Engineer completed the design plans for a water main project in the City of Hawthorne and Inglewood. The work was completed as part of a design-build contract with Precision Pipeline. Work included: existing utility research and base map preparation, determining abandonment required, alignment selection and field check surveys, interaction with client and GSWC project manager with plan check comments, procurement of permit. Total water main footage was approximately 17,000 feet of 8-inch pipe.

Kyle Bohn, PE

PW and RW Pipeline Replacement/Extension

Mr. Bohn is a professional engineer with more than 16 years of experience and he has worked on over 50 miles of pipeline projects. His pipeline experience includes various different pipe materials including those that would be considered for this project such as fusible PCV, PVC, HDPE and epoxy lined ductile iron pipe. Mr. Bohn has been involved in traditional cut and cover pipeline design as well as multiple trenchless projects. His trenchless experience includes the planning, design and construction support of bore and jack, micro-tunneling and horizontal direction drilling. Kyle understands the design constraints, construction staging area needs and risks involved with each type of construction activity.

Education:
BS, Civil Engineering, University of California, Irvine, 2006

Registrations/Certifications:
Professional Civil Engineer, California, No. 77984, 2011

Office Location:
Irvine, CA

Years of Experience:
16

Years with Tetra Tech:
16

EXPERIENCE

City Trunk Line North Unit 2, Los Angeles Department of Water & Power, CA. 2017 - Present. Project Engineer for the design of the City Trunk Line North Unit 2, which will consist of 12,200 linear feet of 54-inch diameter welded steel pipe. The design includes three bore and jack tunnels and 3,500 linear feet of slip-lining, where new 54-inch steel pipe will be pushed through an existing 72-inch riveted steel pipeline. The project requires the preparation of plans, specifications, and construction cost estimates.

West Chandler Well, South Croddy Well and Pipeline, Mesa Consolidated Water District, CA. 2017 - Present. Project Engineer. In order to provide additional local water reliability, Mesa Water purchased two properties within the City of Santa Ana to be used as groundwater well sites. Proposed Well No. 12 is located at 4011 West Chandler Avenue and Proposed Well No. 13 is located at 3120 South Croddy Way. Both wells are located outside of Mesa Water's service area and will require the construction of approximately 3,000 feet of pipeline to connect the proposed wells to Mesa Water's existing system. Tetra Tech has been retained by Mesa Water to develop plans and specifications for the construction of Well Nos. 12 and 13 and the pipeline connecting the wells to the existing distribution system. Once operational, Well Nos. 12 and 13 can potentially provide an additional 7 to 9 million gallons per day of safe and reliable drinking water.

Alternate Raw Water Transmission Line, Trabuco Canyon Water District, CA. 2016. Project Engineer. project included removal and abandonment of the existing creek crossing and construction of approximately 4,500 linear feet of new 16-inch PVC raw water transmission main. The final pipeline alignment routed the pipe through public walking trails, private property, above ground over a 144-inch shallow storm drain crossing, through city streets, and across a bridge, and required coordination with Orange County Parks, private property owners, Orange County Flood Control District, City of Lake Forest, FEMA, and the California Department of Fish and Wild Life.

Carlsbad Seawater Desalination Conveyance Pipeline, KSD Joint Venture, Carlsbad, CA. 2015. Design Engineer for the Carlsbad Conveyance Pipeline Design-Build Project. The project was designed for the Kiewit Shea Desalination Joint Venture team and consists of approximately 10 miles of 54-inch welded steel pipe. The pipeline was installed in existing city streets and right-of-way through the cities of Carlsbad, Vista and San Marcos. Large diameter tunnels were used to cross a major commuter rail line, an Interstate Highway, and protected wetlands at the entrance to a seawater lagoon. The 54-inch transmission main is sized for 54 MGD of desalinated seawater. Pressures range from 250 psi at the point of connection to 500 psi at the seawater desalination plant.

Laurence Esguerra, PE

Sewer Main Relining/Rehabilitation

Mr. Esguerra has more than 19 years of experience in water and wastewater specializing in the design of over 75 miles of potable water, recycled water and sewer pipelines, 5 pump stations, 5 production wells, 2 lift stations, reinforced concrete and steel reservoirs, flow control facilities, and pressure reducing valve vaults. Along with his extensive technical skills in water/wastewater Mr. Esguerra is experienced in project management by leading multi-disciplinary projects trough preliminary design, final design and construction.

Education:
BS, Civil Engineering
University of California, Irvine, 2004

Registrations/Certifications:
Professional Civil Engineer, California, No. 73803, 2009

Professional Affiliations:
American Society of Civil Engineers, Orange County

Orange County Water Association

Office Location:
Irvine, CA

Years of Experience:
19

Years with Tetra Tech:
19

EXPERIENCE

Diemer Pipeline Emergency Repair, Moulton Niguel Water District, Aliso Viejo, CA. 2017. Project Engineer. Provided plans and construction phase services for approximately 200 feet of existing 36-inch CML&C steel pipe. The relocated pipe was relocated above ground and spans an existing drainage channel with about six to several feet of clearance (from the bottom of the channel). Concrete thrust blocks, encasements were required on the vertical riser at both ends of the relocation to handle the corresponding thrust. The above ground pipe was incased within a steel casing for added security.

Pipeline from Baker Pump Station to OC-76, El Toro Water District, Lake Forest, CA. 2017. Project Engineer. Design of 5,100 feet of pipeline to minimize the pressure increase within the R-6 Pressure Zone as a result of the Baker Pump Station.

Carlsbad Seawater Desalination Conveyance Pipeline, KSD Joint Venture, Carlsbad, CA. 2015. Design Engineer. Engineering design for the Carlsbad Conveyance Pipeline Design-Build Project. The project was designed for the Kiewit Shea Desalination Joint Venture team and consists of approximately 10 miles of 54-inch welded steel pipe. The pipeline was installed in existing city streets and right-of-way through the cities of Carlsbad, Vista, and San Marcos. Large diameter tunnels are being used to cross a major commuter rail line, an Interstate Highway, and protected wetlands at the entrance to a seawater lagoon. The 54-inch transmission main is sized for 54 million gallons per day of desalinated seawater. Pressures range from 250 psi at the point of connection to 500 psi at the seawater desalination plant.

Sand Canyon Grade Separation, **Irvine Ranch Water District, Irvine, CA.** 2010. Design Engineer. Design services for the relocation of over 5,000 linear feet of 8- to 24-inch potable pipeline in the City of Irvine as part of the Roadway Grade Separation for the Railroad. The project also included the design of 2,000 feet of 16-inch recycled waterline.

Ohio Street and Oriente Drive Pipeline Replacement, Yorba Linda Water District, Yorba Linda, CA. 2010. Design Engineer. Design improvements for approximately 3,000 feet of 16-inch ductile iron and 1,000 feet of PVC water main to replace existing cast iron water mains within the City of Yorba Linda. The project included the replacement of existing water services, fire hydrants and the up-sizing of the existing main.

Sand Canyon Grade Separation, **Irvine Ranch Water District, Irvine, CA.** 2010. Design Engineer. Design services for the relocation of over 5,000 linear feet of 8- to 24-inch potable pipeline in the City of Irvine as part of the Roadway Grade Separation for the Railroad. The project also included the design of 2,000 feet of 16-inch recycled waterline.

Matt Vera, PE

Sewer Main Relining/Rehabilitation

Mr. Vera has provided design engineering in various water and wastewater projects including domestic and reclaimed water pipelines, gravity sewer mains, sewer main rehabilitations, pump stations, lift stations, wells, flow control facilities, and pressure reducing valve vaults. Matt's project experience includes preparation of construction plans, specifications, design calculations, project reports, studies, and memorandums.

Education:
BS, Civil Engineering, University of California, Irvine, 2013

Registrations/Certifications:
Professional Civil Engineer, California, No. 86663, 2016

Professional Affiliations:
Orange County Water Association

Office Location:
Irvine, CA

Total Years of Experience:
8

Years with Tetra Tech:
3

EXPERIENCE

SA-1 Hydro-Generator Replacement, City of Santa Ana, CA. 2020 - Present. Project Engineer. Engineering design services for replacement of a 33-year old turbine generator. Services include removing the existing turbine/generator and installing a new unit and connecting to the electrical and control systems, upgrading the ventilation system, new RTU control panel, coordination with Enterprise Automation, and replacement of the existing switchboard and MCC. The demolition of the existing unit will include the removal of the generator, turbine shaft, impellers and upper housing. Replacement will include new construction involving, new motorized valve upstream of the new turbine/generator, new manual valve downstream, new ball valve with motorized flow controller, and new PRV valve.

Well No. 32 Rehabilitation, City of Santa Ana, CA. 2017 - Present. Project Engineer. The project required a PDR, plans, and specification development for the rehabilitation of the well facility. The underground well would be scraped, cleaned and modified within an above-ground CMU block control building (housing mechanical and electrical rooms). The design also includes 3,500 feet of 12-inch discharge pipe to John Garthe Reservoir with a bridge crossing, modification at the reservoir to connect to the on-site piping and a separate on-site generation sodium hypochlorite building including restroom and shower facilities.

Regional Lift Station Enhancements, Moulton Niguel Water District, Laguna Niguel, CA. 2017 - Ongoing. Project Engineer. Tetra Tech was selected to provide miscellaneous enhancements/rehabilitations to improve the reliability of the District's Regional Lift Station. The project included installation of a 13,000 gallon per minute independently-powered, self-priming, backup pumping system which will engage during loss of power (whether scheduled or emergency) or routine pump maintenance, the downsizing one of five existing sewage pumps with the installation a sewage grinder to better handle low flow conditions and the addition of supplementary wet well capacity to mediate issues with the existing wet well overflow. The project included rehabilitation to an existing wet well and a removable roof installation over the existing valve vault to allow easier access for future maintenance. The construction sequencing is of key importance as the lift station is required to remain on-line throughout enhancements.

Regional Treatment Plant Southerly Influent Sewer Improvements, Moulton Niguel Water District, Laguna Niguel, CA. 2018 - Present. Design Engineer for the modification and rehabilitation of to the southerly influent sewers for South Orange County Wastewater Authority's Regional Treatment Plant. The project consisted of the demolition and replacement of the existing influent structures to consolidate flows into the plant, the rehabilitation of approximately 700 LF of existing 36-inch diameter sewers with cured-in-place pipe lining, the installation of a new cast-in-place diversion structure and the rehabilitation of the existing 72-inch manholes. A flow metering structure and flow metering equipment were also added to the influent sewers to allow for more accurate pre-treatment chemical dosing. Site improvements were made to improve egress and ingress for the District including the addition of a supplemental access gate and access road. Conceptual bypass plans and construction sequence were of key importance as the Regional Treatment Plant influent sewers cannot be off-line.

Mike Tsoi, PE

Pump/Lift Station Upgrades

Education:
BS, Civil Engineering, University of California, Irvine, 1991

Registrations/Certifications:
Professional Civil Engineer, California, No. 53715, 1994

Professional Affiliations:
American Society of Civil Engineers

Office Location:
Irvine, CA

Years of Experience:
32

Years with Tetra Tech:
32

Mr. Tsoi has more than 32 years of professional experience in water, wastewater, and recycled water engineering. Mike has been responsible for the planning and design of water, wastewater, and recycled water pipelines along with pump stations, flow control facilities, reservoirs and site improvements. Over the span of his career, Mr. Tsoi has designed more than 15 wells, 20 pump stations, and 300,000 feet of pipeline.

EXPERIENCE

Fleming Zone 8 Tank and Zone 8 to 9 Booster Pump Station Demolition and Replacement, **Irvine Ranch Water District, Irvine, CA.** 2019 - Present. Deputy Project Manager. Engineering design services for demolition and replacement of an existing above ground 0.15 MG Zone 8 steel tank and Zone 8 to 9 pump station consisting of two 600 gpm vertical turbine pumps each equipped with a 60 horsepower motor. The Fleming pump station site also contains an existing administrative building with a conference room and restroom, two storage buildings, and an AT&T cellular antenna facility. Services also include storage building replacement; reservoir management system building with sodium hypochlorite and aqueous ammonia storage and feed systems and an “in-tank” chemical injection and mixing system; a 2,000 gallon diesel fuel storage tank and dispensing system; and site electrical service, controls, and telemetry improvements.

Well No. 28 and Public Mini Park, City of Orange, CA. 2019 - Present. Lead Project Engineer for engineering design services for proposed new Well No. 28 and Public Mini Park. Services include drilling and equipping of Well No. 28, a new potable water well (980 feet deep). The project involved installation of a CMU block control building and sodium hypochlorite building, 12.5% sodium hypochlorite disinfection facility, sound enclosure around the well head, site and landscaping improvements, and public mini park.

Mid-Basin Injection: Centennial Park Design Services, Orange County Water District, Santa Ana, CA. 2020. Project Engineer responsible for the design of four injection wells to be located within Centennial Park in the City of Santa Ana for Orange County Water District. In addition to the engineering services for the four injection wells, the project includes the design of the supply pipeline, backflush pipeline, bridge crossing, two shared facility sites, a monitoring well site, site improvements, and paving of park access roads and parking lots.

Dyer Road Well Field Surge Tank and Construction Support, Irvine Ranch Water District, Irvine, CA. 2020. Lead Project Engineer. Preliminary design and final design phase services for the design of a new 603 cubic foot surge tank at Well 5; the design of a new 1,206 cubic foot surge tank at Well 7; the design of a larger 3,454 cubic foot surge tank at Well 11 to replace the existing 2,985 cubic foot tank; and the design of a larger 1,570 cubic foot surge tank at Well 15 to replace the existing 1,400 cubic foot tank. Each site includes an air compressor, piping, valves and other appurtenances.

Peters Canyon Channel Water Capture and Reuse Pipeline, Irvine Ranch Water District, Irvine, CA. 2016. Project Engineer for over 17,000 linear feet of 10-inch to 16-inch steel and PVC pipeline. This was a joint project with the City of Irvine, City of Tustin, County of Orange, and Caltrans. Project included three storm drain diversion structures and intake design, hanging the pipeline from two bridges, bore and jack under the railroad and backpressure vault.

Well No. 27 Equipping Plan, City of Orange, CA. 2016. Project Engineer for the preparation of the plans, specifications and cost estimate for the equipping of a potable water well. As part of the well equipping a generator room was installed for backup power.

Erin Cabañero, PE

Pump/Lift Station Upgrades

Ms. Cabañero has provided design engineering in various water and wastewater projects including domestic and reclaimed water pipelines, water main replacements, gravity sewer mains, pump stations, lift stations, reinforced concrete reservoirs, steel tank reservoirs, wells, flow control facilities, and pressure reducing valve vaults. Responsibilities have included preparation of construction plans, specifications, and design calculations; assisted supervisors in preparing project reports and memorandums and project schedules.

Education:
BS, Civil Engineering, University of California, Irvine, 2009

Registrations/Certifications:
Professional Civil Engineer, California, No. C 89704, 2018

Professional Affiliations:
American Society of Civil Engineers

Office Location:
Irvine, CA

Years of Experience:
13

Years with Tetra Tech:
13

EXPERIENCE

Fleming Zone 8 Tank and Zone 8 to 9 Booster Pump Station Demolition and Replacement, **Irvine Ranch Water District, Irvine, CA.** 2019 - Present. Design Engineer. Engineering design services for demolition and replacement of an existing above ground 0.15 MG Zone 8 steel tank and Zone 8 to 9 pump station consisting of two 600 gpm vertical turbine pumps each equipped with a 60 horsepower motor. The Fleming pump station site also contains an existing administrative building with a conference room and restroom, two storage buildings, and an AT&T cellular antenna facility. Services also include storage building replacement; reservoir management system building with sodium hypochlorite and aqueous ammonia storage and feed systems and an “in-tank” chemical injection and mixing system; a 2,000 gallon diesel fuel storage tank and dispensing system; and site electrical service, controls, and telemetry improvements.

Well No. 32 Rehabilitation, City of Santa Ana, CA. 2017 - Present. Design Engineer. Provided engineering planning and design to assist with the rehabilitation of Well 32. The project includes the construction of new CMU block well building and sodium hypochlorite building, sodium hypochlorite disinfection facility, approximately 3,300 linear feet of 16-inch pipe from Well 32 to John Garthe Reservoir, bore and jack under channel crossing, and site improvements.

Mid-Basin Injection: Centennial Park Design Services, Orange County Water District, Santa Ana, CA. 2020. Design Engineer for four injection wells to be located within Centennial Park in the City of Santa Ana for Orange County Water District. In addition to the engineering services for the four injection wells, the project includes the design of the supply pipeline, backflush pipeline, bridge crossing, two shared facility sites, a monitoring well site, site improvements, and paving of park access roads and parking lots.

Elizabeth Reservoir, Booster Pump Station and New Well No. 29, City of South Gate, CA. 2019. Design Engineer for the design and construction support for the drilling and equipping of a new 2,500 gpm well, sodium hypochlorite facilities, and generator at the well site and a 1.8 steel reservoir, booster pump station consisting of three 125 hp pumps/motors at the reservoir site, and about 5,000 feet of water main replacements within the City of South Gate. The project combined the well drilling and well equipping phases of the work together.

Burris Pump Station, Orange County Water District, Anaheim, CA. 2018. Design Engineer for the design of the new Burris Pump Station which consists of four 1,750 horsepower vertical turbine pumps delivering a maximum flow rate of 200 cfs to the Santiago Basins from Burris Basin. Work consisted of reviewing the existing Burris Pump Station Evaluation Report, assisting OCWD with selecting a replacement option, performing final design of the selected option and providing bid and construction phase services. The project also included unique designs: 190,000 cubic yards of earthwork to be completed prior to pump station construction, the construction of a 55-foot diameter by 55-foot high circular wet well which was computer and physically modeled during design for flow characteristics, and the construction of a 180,000 gallon surge suppression system.

Amanda Taylor, PE

Water Quality/Disinfection

Ms. Taylor is experienced in analysis and process design of various municipal and industrial water/wastewater projects. Amanda has experience with traditional and advanced water and wastewater projects, including Title 22, Microfiltration, Ultrafiltration, Reverse Osmosis, and UV Treatment.

Education:

MS, Environmental Engineering and Science, Johns Hopkins University, Baltimore, MD, 2011

BS, Biological Systems Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA, 2008

Registrations/Certifications:

Professional Chemical Engineer, California, No. 6700, 2015

Virginia Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects, Virginia, No. 0402050760, 2013

Office Location:

Irvine, CA

Years of Experience:

13

Years with Tetra Tech:

5

EXPERIENCE

PFAS On-Call Contract, Orange County Water District, CA. 2021 - Ongoing. Process Engineer for IX/GAC treatment for PFOS and PFOA design for 18 affected wells in the Main Orange County Basin. Project included design, estimating of capital and operating costs, coordinating with vessel suppliers, and construction management for the following projects:

- Serrano Water District – 4.3 MGD Treatment for 2 wells
- Yorba Linda Water District – 25.0 MGD Treatment for 10 wells
- Fullerton Kim 1A – 4.0 MGD Treatment for 1 well
- Fullerton Main Plant – 12.0 MGD for 5 wells

Pure Water Oceanside, Conveyance and Injection Facilities, City of Oceanside, CA. 2019 - Ongoing. Process Engineer. As part of the Pure Water Oceanside project Tetra Tech designed the pipelines that will be constructed as part of the Advanced Water Purification Facility (AWPF) that convey the advanced treated water to the existing Lower Recycled Water Pump Station and to the Upper Recycled Water Pump Station that will be built along with the AWPF. In addition, Tetra Tech designed three new injection wells (Well 1, Well 3 and Well 6) and conveyance pipelines to the wells, totaling a maximum capacity of 6.0 MGD.

Carlsbad Desalination Intake Pump Station, Design of a 300 MGD Dilution Pump Station, Phase 1, Kiewit Infrastructure West, Carlsbad, CA. 2019 - Ongoing. Process Engineer. This design-build project provides for the design and construction of brine dilution pumps at the existing Carlsbad Desalination Plant (CDP) with minimal production shutdown. The project consists of hydraulic pump modeling and design of dilution pumps, discharge piping, brine piping, and flowmeter facilities, NRG forebay modifications including new screen backwash pumps and tunnel bulkheads, a new electrical building, and the associated civil and grading work. The project has extensive structural rehabilitation work and a new floating dock in the lagoon. The project provides instrumentation and controls for the operation of the new facility and will tie in new signals to the existing CDP control system. The project has many environmental factors and requires working closely with local permitting agencies, the City, the CDP operators, and the Encina Power Station.

San Jacinto Valley Water Banking Project, Enhanced Recharge and Recovery Program Phase 1 Well Equipping and Treatment Facilities Preliminary Design, Eastern Municipal Water District, San Jacinto, CA. 2019 - Ongoing. Process Engineer responsible for the process design of a new 8.64 MGD centralized treatment plant based on the recommendations offered during the preliminary design report prepared for the District under a separate task order. The central groundwater treatment plant includes greensand plus pressure filters for iron and manganese removal and disinfection and the option to expand to four double-the-flow capacity to the iron and manganese removal equipment and triple the flow to the disinfection system. The process design includes greensand plus pressure filter systems, a backwash reclaim system, and bulk sodium hypochlorite storage and dosing facilities.

Beverly Encina, PE

Water Quality/Disinfection

Education:
BS, Civil Engineering, University of California, Irvine, 2002

Registrations/Certifications:
Professional Civil Engineer, California, No. 74408, 2009

Office Location:
Irvine, CA

Years of Experience:
19

Years with Tetra Tech:
19

Ms. Encina is experienced in analysis and design for various types of public works projects including, but not limited to, water pipeline distribution systems, water booster pump stations, hydraulic analysis, storm drainage system, site improvement design, and membrane treatment plant design.

EXPERIENCE

Burbank Operable Unit Plant Upgrade Design Services, Lockheed Martin Corporation, Burbank, CA. 2019 - Ongoing. Project Engineer. Tetra Tech is preparing the design package for planned upgrades at the Burbank Operable Unit groundwater treatment plant. The upgrades shall consist of providing additional liquid phase granular activated carbon treatment capacity with approximately 1,500 gpm of increased capacity, new motorized valves to control flow to the existing liquid-phase granular activated carbon vessels, advanced oxidation process treatment to address 1,4-dioxane contamination from the Burbank Operable Unit extraction wells and North Hollywood Operable Unit extraction wells, upgrades to the SCADA system and automation of the plant to integrate flow from the North Hollywood Operable Unit wells, along with alarm upgrades to the vapor phase granular activated carbon regeneration process compressors, boilers, and liquid phase granular activated carbon system controls; variable frequency drives on existing extraction well motors; modifications to the air stripper blower motors; and new piping connections to new treatment equipment as described in this report to bypass the existing air stripper and vapor phase granular activated carbon systems, as needed. Provided detailed civil and mechanical design on deliverables including a basis of design report, construction design drawings, specifications, and cost estimates for construction, and operations and maintenance.

Kotzebue Water Treatment Plant, City of Kotzebue, Kotzebue, AK. 2019 - Ongoing. Project Engineer. New 0.65 MGD membrane treatment plant. The potable treatment plant treats surface water with high color, iron, and manganese. The two-step membrane treatment process is designed to remove particulate and colloidal matter through an ultrafiltration step, and color in the nanofiltration step. The membrane treatment facility post-treatment includes fluoridation according to City standards, corrosion inhabitation by chemical addition, and chlorination. Treatment facilities include an ultrafiltration treatment system, a nanofiltration treatment system, on-site generation of mixed oxidants, chemical mixing and addition facilities, and product water pumping facilities. Provided detailed mechanical design on deliverables including a conceptual design plan, construction design drawings and specifications, support, bid support, and construction support.

Pure Water Oceanside Advanced Water Purification Facility, City of Oceanside, CA. 2018 - Ongoing. Project Engineer. The newly proposed Advanced Water Purification Facility (AWPF) will provide highly treated water supply with the specific purpose to recharge the Mission Groundwater Basin in the upper San Luis Rey recycled water service area through indirect potable reuse as a component of an overall project titled Pure Water Oceanside. The AWPF will be built on an existing former recycled water storage pond at the San Luis Rey Water Reclamation Facility. The AWPF process will be designed as a multi-barrier treatment process including microfiltration, reverse osmosis, and ultraviolet advanced oxidation process. In addition to these three main unit treatment processes, the AWPF will include chemical storage and feed equipment for conditioning, stabilizing and membrane cleaning. Influent flow storage, flow diversion, and associated pumping will also be included in the facilities design. Ms. Encina provided detailed civil and mechanical design on deliverables including a conceptual design plan, construction design drawings and specifications, as well as permit support, bid support, and construction support.

Victor Ramirez, PE, SE

Building Rehab & Struct. Seismic Architecture

Mr. Ramirez has more than 40 years of structural engineering design experience with special emphasis in the design of water storage/water containment and water conveyance related structures. His experience includes reservoirs, water/wastewater treatment plants, booster pump stations, flow control facilities, pressure reducing stations and pipelines. Mr. Ramirez is thoroughly knowledgeable in all types of construction, including reinforced concrete, masonry, structural steel, and timber.

Education:
BS, Civil Engineering, California State University, Los Angeles, 1995

Registrations/Certifications:
Professional Civil Engineer, California, No. 56863, 1997

Professional Structural Engineer, California, No. 4720, 2004

Professional Affiliations:
American Institute of Steel Construction

Structural Engineers Association of Southern California

Office Location:
San Dimas, CA

Years of Experience:
40

Years with Tetra Tech:
40

EXPERIENCE

Well Equipping & Treatment at Well No. 16, City of Paramount, CA. 2016 - Ongoing. Structural Engineer. The City of Paramount has drilled a new 18" diameter well (Well No. 16) to increase flow into the potable water system. Based on water quality data collected during drilling the newly drilled Well No. 16 will require treatment to filter out the naturally occurring arsenic, manganese, and iron. Additionally, the City was to decommission existing Well No. 13 and relocate a portion of the existing treatment system to the new Well No. 16 site.

Seismic Resiliency of 8 Reservoirs, Montecito Water District, Montecito, CA. 2021. Structural Project Engineering assisting with the Final Design documents for Bella Vista, Cold Spring, Hot Springs, Buena Vista, Doulton , Romero, Terminal and Park Lane. Tetra Tech prepared Structural and Seismic Evaluation of District Storage Reservoirs dated 9/2015 and used that report to prepare final design documents.

MF Filtrate Tank Assessment, Leo Vander Lans Advanced Water Treatment Facility Water Replenishment District of Southern California, Pico Rivera, CA. 2019. Structural Project Manager for the condition assessment of the existing 35,000-gallon capacity, welded steel, microfiltration filtrate tank at the Leo Vander Lans Advanced Water Treatment Facility, Long Beach, CA. The microfiltration filtrate tank is founded on and anchored to a concrete foundation. The Tetra Tech team provided field investigation, condition assessment report, and recommendations.

Hunting Horn Reservoir Evaluation, Golden State Water Company, North Tustin, CA. 2019. QA/QC Structural Manager for the structural and seismic evaluation and study of Hunting Horn Reservoir, a partially buried, cylindrical, reinforced concrete tank with a wood framed roof. The tank has a capacity of 0.44 MG and is about 72 feet in diameter by 16 feet deep. It has a flat concrete floor, concrete masonry walls, and a wood framed roof.

Conveyance Pipeline for Carlsbad 50 MGD Seawater Desalination Plant, Poseidon Resources Corporation, Carlsbad, CA. 2013. Structural Engineering. Manager for the design of two piping and control buildings and four buried concrete vaults six structures associated with the interconnection of the new 54-inch diameter Carlsbad Conveyance Pipeline with the existing SDCWA P3 and P4 pipelines. The six structures are buried reinforced concrete vaults that consist of two pump wells, two isolation valve vaults, an interconnect valve vault and a flow control facility. The flow control facility vault has an above-grade concrete masonry control room with a steel framed roof built on top of it. The buildings are concrete masonry structures with steel framed roofs.

John Garthe Reservoirs, City of Santa Ana, CA. 2002. Structural Project Manager. Structural design of a ring beam which supports a 973,000 square foot reservoir floating cover, a reinforced concrete chemical containment area with a structural steel canopy and several foundations for process equipment and tanks.

Eric Yuen, PE, SE

Building Rehab & Struct. Seismic Architecture

Mr. Yuen has more than 15 years of experience in the design, analysis and detailing in structural engineering. Mr. Yuen is knowledgeable in reinforced concrete, masonry, structural steel and wood frame design, and construction for a variety of building and infrastructure projects including reservoirs, water/wastewater treatment facilities, as well as seismic retrofit of existing structures.

Education:

BS, Civil Engineering, California State Polytechnic University, Pomona, 2007

MS, Structural Engineering, California State Polytechnic University, Pomona, 2016

Registrations/Certifications:

Professional Civil Engineer, California, No. 75983, 2009

Professional Structural Engineer, California, No. 6177, 2014

Professional Affiliations:

American Institute of Steel Construction

Office Location:

San Dimas, CA

Years of Experience:

15

Years with Tetra Tech:

15

EXPERIENCE

Timber Ridge Booster Pump Station Replacement, Yorba Linda Water District, Placentia, CA. 2020 - Present. Structural Project Manager. Project includes engineering planning, design and construction-phase services for the replacement of an existing 35-year old booster pump station. Tetra Tech to design and construct a new CMU block pump station building; replace the existing gas engine pump and enclosure with a new electric driven pump/motor with the same or greater rated capacity; install an emergency natural gas engine driven generator set; install two bladder tanks for surge protection for the 1000 Zone and 1300 Zone; replace existing direct buried mag meters on the 1300 Zone and 1160 Zone discharge piping with above ground meters; and replace and upgrade the existing electrical equipment.

Pure Water Oceanside, Advanced Water Purification Facility, City of Oceanside, CA. 2018 - Ongoing. Structural Engineer. To counteract the growing reliance on imported water supply while increasing local water supplies, and to meet the City's long-term goal of 50% water independence by 2030, the City has selected a team led by Tetra Tech to design a new Advanced Water Purification Facility (AWPF). The newly proposed AWPF will provide highly-treated water supply with the specific purpose to recharge the MGB in the upper San Luis Rey recycled water service area through indirect potable reuse as a component of the overall Pure Water Oceanside project. The AWPF will be built on an existing former recycled water storage pond at the San Luis Rey Water Reclamation Facility. The AWPF process will be designed as a multi-barrier treatment process including microfiltration, reverse osmosis, and ultraviolet advanced oxidation process. In addition to these three main unit treatment processes, the AWPF will include chemical storage and feed equipment for conditioning, stabilizing and membrane cleaning. The facilities design also includes influent flow storage, flow diversion, and associated pumping.

Albert Robles Center for Water Recycling and Environmental Learning (Formerly known as GRIP), Water Replenishment District of Southern California, Pico Rivera, CA. 2019. Structural Engineer for a new 13,000 acre-feet per year of fully advanced treated recycled water. The structures include a two-story administration building with a rooftop garden, a 45,000 square foot process building, a 3 MG buried concrete equalization tank, and a dozen ancillary structures. The administration building has rigid floor and roof diaphragms with concentric steel braced frames as the lateral force resisting elements. The process building has a steel framed roof and concrete masonry shear walls. An extensive network of cable trays and piping are supported from the roof for gravity and seismic loads.

Conveyance Pipeline for Carlsbad 50 MGD Seawater Desalination Plant, KSD Joint Venture, Carlsbad, CA. 2014. Structural Design Engineer. Assisted with the design of several structures associated with the interconnection of the new 54-inch diameter Carlsbad Conveyance Pipeline with the existing SDCWA P3 and P4 pipelines. The four structures are buried reinforced concrete vaults that consist of two pump wells, two isolation valve vaults, an interconnect valve vault and a flow control facility. The flow control facility vault has an above-grade concrete masonry control room, with a steel framed roof built on top of the structure.

Molly Mell, PE, ENV SP

Construction Support Services

Education:
BS, Civil Engineering, University of Redlands, 1992

Registrations/Certifications:
Professional Civil Engineer, California, No. 59104, 1999

Envision™ Sustainability Accredited Professional

Professional Affiliations:
American Society of Civil Engineers

Office Location:
Irvine, CA

Years of Experience:
29

Years with Tetra Tech:
29

Ms. Mell has a diverse base of knowledge of the elements necessary to successfully execute large scale multi-disciplinary projects. Molly has provided construction management and construction support services for a variety of infrastructure improvement projects that involved coordination and community between the agencies, contractor and utility companies. Ms. Mell has had significant roles providing management, coordination and detailed design on a broad range of project types. As a senior project manager, Molly has pulled together successful teams to complete these projects on schedule and on budget.

EXPERIENCE

Port Security Improvements and Modernization Program, Port of Long Beach, Long Beach, CA. 2022 - Ongoing. Program Manager. For over a decade Tetra Tech has played an integral role in partnership with the Port of Long Beach to maintain and modernize Port facilities, infrastructure, security systems, and fiber optic networks. To date Ms. Mell has led over 20 projects valued over $50 million at the Port of Long Beach. These projects include:

- Security Systems Service, Maintenance and Repair Program
- Design-Build Services for Fiber Optic Network Program
- Pier G Radiation Portal Monitor Fiber Optic Installation
- Port of Long Beach Access and CCTV Non MTSA (2015-16)
- Rail and Bridge CCTV Systems

On-Call Bridge/Civil Engineering Design and Support, Bureau of Engineering, City of Los Angeles, CA. 2015 - Ongoing. Program Manager. Tetra Tech has maintained a successful partnership with the City of Los Angeles to modernize their aging infrastructure with the goal of mitigating structural, safety, seismic, and aesthetic concerns. To date Ms. Mell has led Tetra Tech teams on six projects for this City of Los Angeles program, these projects include:

- Soto St. Bridge over Mission Rd. and Huntington Dr. Bridge Removal and Street Improvement
- Taylor Yard Bikeway/Pedestrian Bridge
- Riverside Drive Near Zoo Drive Bridge over Los Angeles River, Bridge No. 53C-1298
- Avenue 26 over Arroyo Seco Channel Seismic Retrofit, Bridge No. 53C-1875
- Bike/Pedestrian Path for Los Angeles River Greenway
- Century Boulevard Extension Project

Public Works Infrastructure Improvement Programs, City of Santa Clarita, CA. 2020. Program Manager. Tetra Tech has supported the City Public Works Department in delivering complex high-profile projects including the Cross-Valley Connector and the Golden Valley Bridge Widening. Our program with the City also included development and implementation of the Bridge Maintenance program and Pedestrian Overcrossing Replacement program. Ms. Mell led five improvement projects within this program including:

- El Paseo Dr. Pedestrian Overcrossing Replacement Program
- Golden Valley Road Bike Trail Connection
- Golden Valley Road/Soledad Canyon Road Interchange Improvements and Grade Separation
- Bridge Maintenance Program
- Cross-Valley Connector Gap Closure

Molly Lovegren, PE

Construction Support Services

Ms. Lovegren has provided design engineering in various water and wastewater projects including domestic and reclaimed water pipelines, water main replacements, gravity sewer mains, pump stations, lift stations, reinforced concrete reservoirs, flow control facilities, and pressure reducing valve vaults. Responsibilities have included: preparation of construction plans, specifications, design calculations, and project memorandums.

Education:
BS, Civil & Environmental Engineering, University of California, Los Angeles, 2005

Registrations/Certifications:
Professional Civil Engineer, California, No. 73957, 2009

Professional Affiliations:
American Society of Civil Engineers

Office Location:
Irvine, CA

Years of Experience:
18

Years with Tetra Tech:
18

EXPERIENCE

San Jacinto Valley Water Banking Project - Enhanced Recharge and Recovery Program, Phase 1A Pipelines Final Design, Eastern Municipal Water District, San Jacinto, CA. 2022. Pipeline Project Engineer. Final design for approximately 4,700 linear feet of 18-inch and 12-inch PVC raw water pipelines from four well sites. Work included survey, geotechnical investigation, final plans, specifications, and cost estimate.

Central Water Integration Pipeline, San Antonio Water System, San Antonio, TX. 2020. Project Engineer. The San Antonio Water System entered into a contract with Vista Ridge LLC (Project Company) to provide 50,000 acre-feet per year of Carrizo/Simsboro Aquifer groundwater. Work covered four pipeline segments: Segment 5-1 (10,300 LF of 54-inch CML and C steel pipe); Segment 5-2 (4,100 LF of 36-inch CML and polyurethane coated steel pipe); Segment 5-3 (1,800 LF of 48-inch CML and polyurethane coated steel pipe); and Segment 5-4 (5,000 LF of 30-inch and high-density polyethylene pipe and 24-inch ductile iron pipe).

Emergency Technical Support Services, Montecito Water District, Montecito, CA. 2018. Project Engineer. An intense precipitation event triggered mudslides throughout the City of Montecito. The Montecito Water District's infrastructure was significantly impacted. The District commenced emergency operations with the primary objective to rapidly make repairs to the District's water supply and delivery system. Priorities were established, damage assessments conducted, and repair work commenced. Tetra Tech assisted the District with Priority 1, the repair of the Highline that connects the District from the west to east and allows the District to feed their higher elevation water reservoirs. The Highline was constructed in the early 1940s and is a 14-inch diameter welded steel pipe. The damage to the Highline occurred at six creek crossings: Cold Springs, Hot Springs, San Ysidro, Buena Vista, Bella Vista, and Romero. The District requested Tetra Tech to devise repairs that could be constructed within seven days with materials that were available.

I-8 Crossing at Viewside Lane, Padre Dam Municipal Water District, Santee, CA. 2017. Design Engineer. Provided construction plans, specifications, and construction support services for the replacement of an existing 8-inch water main crossing Interstate 8 Freeway at Viewside Lane near Alpine, California. Warner Industrial Park Waterline Replacement, City of Santa Ana, CA. 2015. Project Engineer. The project included preparation of construction drawings and specifications for the Warner Industrial Park Water and Sewer Main Improvements Project. The project consisted of designing approximately 8,200 linear feet of new 8-inch PVC water main.

Warner Industrial Park Sewer Replacement, City of Santa Ana, CA. 2015. Design Engineer. The project consisted of the replacement of approximately 2,000 linear feet of the existing sewer line on Susan Avenue between Warner Avenue and Segerstrom Avenue.

Westminster Avenue Sewer Main Improvements, City of Santa Ana, CA. 2013. Design Engineer. Oversaw approximately 3,300 linear feet of 15-inch VCP sewer main to increased capacity in the City's sewer system.

Mazen Kassar, PE

Electrical & Controls

Mr. Kassar has more than 29 years of experience in electrical engineering and industry standard that include electrical engineering staff management, project management, construction management and supervision, water and wastewater treatment, petro-chemical design, and environmental soil and groundwater treatment. Mazen's background includes designing medium and low voltage power distribution, designing instrumentation, control systems and SCADA systems for a wide-variety of projects, and the installation of electrical systems for remediation projects, including soil vapor extraction systems and groundwater pump-and-treat systems.

Education:
BS, Electrical Engineering, California State University, Long Beach, 1990

Registrations/Certifications:
Professional Electrical Engineer, California, No. 15809, 1998

General Construction, Class B, California, No. 777845, 2008

Professional Affiliations:
Institute of Electrical and Electronics Engineers

Office Location:
Irvine, CA

Years of Experience:
29

Years with Tetra Tech:
12

EXPERIENCE

Timber Ridge Booster Pump Station Replacement, Yorba Linda Water District, Placentia, CA. 2020 - Present. Electrical Project Manager. Project includes engineering planning, design and construction-phase services for the replacement of an existing 35-year old booster pump station. The District contracted Tetra Tech to design and construct a new CMU block pump station building; replace the existing gas engine pump and enclosure with a new electric driven pump/motor with the same or greater rated capacity; install an emergency natural gas engine driven generator set; install two bladder tanks for surge protection for the 1000 Zone and 1300 Zone; replace existing direct buried mag meters on the 1300 Zone and 1160 Zone discharge piping with above ground meters; and replace and upgrade the existing electrical equipment.

Fleming Zone 8 Tank and Zone 8 to 9 Booster Pump Station Demolition and Replacement, Irvine Ranch Water District, Irvine, CA. 2019 - Present. Electrical Project Manager. Engineering design services for demolition and replacement of an existing above ground 0.15 MG Zone 8 steel tank and Zone 8 to 9 pump station consisting of two 600 gpm vertical turbine pumps each equipped with a 60 horsepower motor. The Fleming pump station site also contains an existing administrative building with a conference room and restroom, two storage buildings, and an AT&T cellular antenna facility. Services also include storage building replacement; reservoir management system building with sodium hypochlorite and aqueous ammonia storage and feed systems and an "in-tank" chemical injection and mixing system; a 2,000 gallon diesel fuel storage tank and dispensing system; and site electrical service, controls, and telemetry improvements.

Well No. 32 Rehabilitation, City of Santa Ana, CA. 2017 - Present. Electrical Project Manager. The project involved the preparation of a PDR and plans/specifications for the rehabilitation of the well facility. The underground well would be scraped, cleaned and modified to be within an above ground CMU block control building (housing mechanical and electrical rooms). The design also included a separate on-site generation sodium hypochlorite building, 3,500 feet of 12-inch discharge pipe to John Garthe Reservoir and modification at the reservoir to connect to the on-site piping.

Santiago Pump Station Modification, Orange County Water District, Fountain Valley, CA. 2022. Electrical Project Manager. Provided engineering planning, design and construction-phase services for modifications to the existing Santiago Basin Floating Pump Station installed within the existing Santiago Recharge Basin. Services included replacement of the existing two large pump drives with VFDs and constructed additional necessary modifications that would allow the pumps to function between a water elevation of 285-feet and 240-feet.

Ken Berard, PE

Technical Studies/Reports/Hydraulic Modeling

Mr. Berard has extensive experience in many facets of water engineering, including numerous studies ranging from complete water master plans to efficiency studies. Ken's design experience includes preparing bid documents for reservoirs, pump stations, wells, pipelines, chlorination facilities, and pressure reducing facilities. Mr. Berard also has extensive experience in hydraulic modeling. He has used and is familiar with more than six software packages in addition to open channel flow software.

Education:
BS, Civil Engineering, California State Polytechnic University, Pomona, 1986

Registrations/Certifications:
Professional Civil Engineer, California, No. 45499, 1992

Professional Affiliations:
American Water Works Association

Inland County Water Association

Office Location:
San Dimas, CA

Years of Experience:
36

Years with Tetra Tech:
36

EXPERIENCE

Sewer Master Plan, City of Whittier, CA. 2018. Project Manager. Prepared a master plan for a sewer system serving a population of 88,000. H2OMAP Sewer was used in conjunction with an existing GIS to model the conveyance system. The use of SmartCover flow monitoring technology allowed for model calibration as well as providing the City with a permanent ability to monitor future flows in real time.

Water & Sewer Feasibility Study, Islamic Community Center of Loma Linda, County of San Bernardino, CA. 2017. Project Manager for study that evaluated several alternatives for water and sewer service for a proposed development. The study considered hydraulics, specific alignments and their impediments (channel crossing, freeway crossing, et al), geotechnical, permitting, and costs.

Hawthorne Boulevard Transmission Hydraulic Analysis, City of Torrance, CA. 2016. Project Manager to assess impacts of various options to connect a 12-inch 4,300-foot-long transmission main. Computer modeling utilized H2O Map and evaluation included water age, fire flow, pressure, and other criteria. Recommendation was for a very simple option which resulted in the lowest construction cost.

Durfee Avenue Grade Separation Hydraulic Analysis, Pico Water District, CA. 2016. Project Manager to assess impacts of a proposed grade separation project and make recommendations for sizing, pressure class, and connection locations. Also evaluated the potential loss of a main under a railroad at a nearby location.

Water Master Plan, City of Inglewood, CA. 2015. Project Manager. The City has a population of 100,000 and needed to prepare for the redevelopment of the Hollywood Park area including the development of an 80,000 seat NFL stadium and 6,000 seat music venue. Water demands considered unique demand patterns for the proposed NFL stadium and support facilities. The City's GIS system was utilized to facilitate modeling of the three pressure zone distribution system with InfoWater software. The distribution system included four groundwater wells, treatment plant, pump station, two reservoirs, four pressure reducing facilities, two MWD imported water connections, six emergency connections, and 156 miles of piping. A prioritized capital improvement program and financial plan was developed with 6 priorities and a total of about $55 million in construction costs.

Potable Water Reservoir Feasibility Study, City of El Segundo, CA. 2013. Project Manager for feasibility level report to determine location and configuration of a 7.5-million-gallon reservoir to increase the City's emergency storage capacity. The desired capacity was determined using the City's existing water master plan and current demand data, and potential sites throughout the entire City were first screened based upon available land, constructability, and public disturbance considerations. The potential sites were then evaluated based on infrastructure requirements, proximity to existing storage site, land use compatibility, and potential reservoir capacity. The top three potential sites were determined, and then conceptual reservoir and site configurations were developed including screening/aesthetic requirements, type of construction, and construction costs were estimated. Site renderings were created to aid in council presentations.

Adrian Lee, PE

Technical Studies/Reports/Hydraulic Modeling

Mr. Lee has more than 14 years of professional experience in the development of conceptual studies for domestic water and reclaimed water systems, as well as final design for water distribution and transmission systems, sewer conveyance facilities, and utility relocations.

Education:
BS, Civil Engineering, University of California, Irvine, 2007

Registrations/Certifications:
Professional Civil Engineer, California, No. 79032, 2011

Professional Affiliations:
American Society of Civil Engineers

American Water Works Association

Office Location:
San Dimas, CA

Years of Experience:
14

Years with Tetra Tech:
14

EXPERIENCE

Main Plant Water Master Plan, City of Fullerton, CA. 2021. Project Engineer/Hydraulic Modeler for the modeling and hydraulic analysis of the City's Main Plant, consisting of groundwater wells, a reservoir, and a pump station. Utilized the City's Infowater model and analyzed potential future scenarios to provide recommendations for pipeline size and configurations. Analysis was performed in conjunction with the ongoing design of a PFAS Water Treatment Plant to be located at the Main Plant, and the analysis took into consideration the proposed Treatment Plant configurations and constrains.

Hawthorne Boulevard Transmission Hydraulic Analysis, City of Torrance, CA. 2016. Project Engineer to assess impacts of various options to connect a 12-inch 4,300 foot long transmission main. Computer modeling utilized H2O Map and evaluation included water age, fire flow, pressure, and other criteria. Recommendation was for a very simple option which resulted in the lowest construction cost.

Inglewood Water Master Plan 2014, City of Inglewood, CA. 2015. Design Engineer/Hydraulic Modeler for the modeling and analysis of City's potable water system. Developed a calibrated model of the City's water system in InfoWater, utilizing the City's GIS data. Assessed the system based on criteria for fire flow, pressure, velocity, and water age. Also assessed the City's operational storage and fire storage requirements. Provided recommendations for optimizing operations, and developed a capital improvements program.

Beaudry Terrace/Glorietta Park Pressure Surge Analysis, **City of Glendale, CA.** 2015. A report to analyze occurrences of surge and main breaks in the Beaudry Terrace area of the 1666 Zone in the City of Glendale's water system. Updated the City's H2ONET model and provided fire flow evaluations of the Beaudry Terrace area. Also analyzed possible pipeline connections to improve fire flow in the Verdugo 1666 Zone.

Total Dissolved Solids Analysis, City of Torrance, CA. 2012. Design Engineer to assess impacts of supplying up to 5,000 gpm from North Torrance Well Field. This new source required blending due to high Total Dissolved Solids and Manganese. Developed H2ONET TDS contour map under several scenarios to identify distribution system blending of TDS and Manganese. Identified impacts of various improvements to dispersion of TDS.

Condition Assessment of CMP Storm Drains, City of San Diego, CA. 2012. Design Engineer for a large storm drain assessment project for the City of San Diego, for which over 11.5 miles of CMP storm drain from 8-inch to 120-inch was inspected and assessed. Video inspection of the City's CMP storm drains was performed by a subcontractor and the video footage with reports was delivered to Tetra Tech. Each pipe was individually assessed as to condition, specific types and severity of defects discovered, and recommendations for repair were made based on the engineer's analysis. The project was divided into five phases with each phase providing a summary of defects as well as recommendation for rehabilitation or replacement. The report will be used to prioritize maintenance and repair of the entire storm drain conveyance system.

Nate Schreiner, PE, QSD

Site Development & WQMP/SWPPP

Mr. Schreiner manages domestic projects on behalf of government clients, applying a successful 14-year history of project management, hydrologic and hydraulic modeling, civil engineering design, condition assessments of a variety of infrastructure, and cost estimating. Nate has performed hydrologic and hydraulic analyses of various types of drainages including culverts, channels, rivers, and alluvial fans. Previously he was involved in projects involving USACE Periodic Inspections of levees, FEMA levee certification, and master drainage plans. He has inspected approximately 300 miles of levee in various states and is well versed with USACE facilities. Nate has been involved in all phases of the project life-cycle including site investigations, preliminary design, public outreach, PS&E, QA/QC, and construction support. As a Qualified SWPPP Developer (QSD), Mr. Schreiner has ample experience with providing Stormwater Pollution Prevention Plans (SWPPP) for construction activities.

Education:

BS, Environmental Engineering, California Polytechnic State University, San Luis Obispo, 2006

Registrations/Certifications:

Professional Civil Engineer, California, No. 74974, 2009

Qualified SWPPP Developer, Certificate No. C74974

Office Location:

Irvine, CA

Years of Experience:

14

Years with Tetra Tech:

13

EXPERIENCE

First Street Pedestrian Improvement, City of Santa Ana, CA. 2022 - Present. Project Manager. Responsible for preparing the plans, specifications and estimates, for widening of the existing sidewalk by three feet on each side of the roadway by reducing the width of the vehicle travel lanes. Improvements include constructing new widened sidewalks, reconstructing curb ramps, constructing new curb and gutter, reconstructing bus stop pads, creating bulb-outs, reconstructing driveway approaches, resurfacing and/or reconstructing the asphalt pavement in the roadway, restriping travel lanes, installing high visibility marked crosswalks, relocating and/or adjusting existing utility features to grade, relocating street furniture, relocating and/or planting trees, modifying the traffic signal equipment and infrastructure at the signalized intersections, and retrofitting and/or reconstructing drainage structures including catch basins and parkway drains.

Carriage Crest Stormwater and Runoff Capture, Sanitation Districts of Los Angeles County, Carson, CA. 2016 - Present. Project Manager. Responsible for preparing the plans, specifications and estimates, from concept to detailed design. Carriage Crest Park was identified in the Enhanced Watershed Management Program as a high-priority site for a regional stormwater capture project due to its proximity to two large storm drains with a total drainage area exceeding 1,100 acres.

Silver Lake Reservoir Stormwater Capture, City of Los Angeles Bureau of Engineering, Los Angeles, CA. 2020. Project Manager for the pre-design phase of the project to construct stormwater infrastructure to capture stormwater from a 170-acre watershed and divert it to the Silver Lake and Ivanhoe reservoirs in Los Angeles, CA. To offset the potable water demand associated with maintaining historic water levels in the reservoirs, stormwater from the local watershed is proposed to be redirected into the Reservoirs. Various types, sizes, and locations of stormwater infrastructure and BMPs were evaluated and selected to assist the City in meeting their stormwater capture goals. Nate guided the project engineer in the hydrologic and hydraulic modeling, and reviewed all project submittals. Nate also coordinated with the City's Street and Stormwater Division project manager and staff at a pre-design review meeting.

Luke Ramirez, PE, LEED®

HVAC/Plumbing

Mr. Ramirez provides clients with a variety of heating, ventilation, and air conditioning (HVAC) and plumbing designs as well as lifecycle assessment of systems and products. His projects have included HVAC and plumbing designs for municipal, industrial, and commercial facilities; construction administration services for water and wastewater plants; Energy Audit Reports; quality assurance measurement for a utility provider in Colorado; pump replacement analyses and design for the U.S. Fish and Wildlife Service; and mechanical renovation of dorms at Misawa Airforce Base in Japan. In addition, he has designed petroleum systems for hatcheries and mines in Alaska, Colorado, and Nevada.

Education:

BS, Mechanical Engineering, University of Washington, 2006

Registrations/Certifications:

Professional Mechanical Engineer, California, No. 36190, 2012

LEED® Accredited Professional, 2008

Professional Affiliations:

American Society of Heating, Refrigerating, and Air Conditioning Engineers

Office Location:

Denver, CO

Years of Experience:

15

Years with Tetra Tech:

15

EXPERIENCE

North Mercer Pump Station, King County, WA. 2017 - Present. Mechanical Engineer. Tetra Tech provided alternatives evaluation, predesign, and future phases of final design and construction support services for the improvement of this major conveyance system between Mercer Island and Bellevue Washington. Projected peak flows for this regional facility are 16 MGD. Existing facilities consist of a pump station and 17,000 feet of force main, gravity sewers both on-land and in-water and two inverted siphons, one of which will be installed by trenchless methods.

Advanced Oxidation Process, Confidential Client. 2019. Mechanical Engineer. Tetra Tech is designing the addition of an Advanced Oxidation Process treatment system for a coal mine water treatment plant for a confidential client. Mr. Ramirez is responsible for HVAC and plumbing designs, which consist of a direct fired natural gas heating and ventilation unit for the plant and a split system AC unit for the electrical room. Plumbing designs include a non-potable water booster pump system for plant wash down.

Active Water Treatment Plant, Confidential Client. 2019. Mechanical Engineer. Tetra Tech is designing the selenium removal process for a confidential client at their active water treatment plant. Mr. Ramirez is responsible for the heating and cooling designs for the process water treatment. The process water must be heated for the biological removal of selenium and must be cooled before being discharged back to the river. Heating is accomplished by natural gas fired hot-water boilers serving a closed loop heating system with plate and frame heat exchangers. Cooling is provided by air cooled chillers serving a closed loop cooling system with plate and frame heat exchangers.

Beaumont Water Treatment Plant, Confidential Client, Beaumont, CA. 2018. Mechanical Engineer. Tetra Tech designed a water treatment plant to treat chlorinated solvents, perchlorate, and other contaminants. Mr. Ramirez was responsible for HVAC and plumbing designs.

Avon Drinking Water Facilities, Space Needs Assessment and Feasibility Study, Eagle River Water and Sanitation District, Avon, CO. 2017. Mechanical Engineer. Mr. Ramirez provided HVAC and Plumbing assessments on this study to determine the amount of administrative and support space required at the Avon Drinking Water Facility (ADWF). The study evaluated space requirements for administration, maintenance, and operations staff at the ADWF, as well as civil/site, structural, HVAC, electrical, and security needs. As the mechanical lead, Mr. Ramirez participated in a series of workshops to identify needs, develop and analyze alternatives, and make recommendations for moving to more detailed design.

Cory Heggtveit, EIT

Retrofits

Education:
BS, Civil Engineering, California State University, Long Beach, 2009

Registrations/Certifications:
Engineer in Training, California, No. 121854, 2005

Office Location:
Irvine, CA

Years of Experience:
20

Years with Tetra Tech:
20

Mr. Heggtveit has provided design engineering in various water and wastewater projects including domestic and reclaimed water pipelines, water main replacements, gravity sewer mains, pump stations, lift stations, reinforced concrete reservoirs, flow control facilities, recycled water customer conversions, and pressure reducing valve vaults. Cory's responsibilities have included preparation of construction plans, specifications, design calculations and project memorandums.

EXPERIENCE

Los Angeles Stadium and Entertainment District Recycled Water Project, West Basin Municipal Water District, Inglewood, CA. 2018 - Ongoing. Project Coordinator. Tetra Tech provided technical support and assistance to the developers of a 298-acre multi-use site that will be the home of the Los Angeles Stadium and other sports and entertainment venues. It will include space for commercial office, residential, shopping, restaurants and parks. Tetra Tech assisted the developer with on-site irrigation plans so they meet Los Angeles County Department of Public Health, West Basin, and other regulatory requirements.

Palos Verdes Golf Course Recycled Water Retrofit, West Basin Municipal Water District, Carson, CA. 2020. Project Coordinator. Prepared regulatory drawings for conversion of the 100-acre Palos Verdes Golf Course to use Title 22 Recycled Water. Assisted the District with meeting with State and Los Angeles County Departments of Public Health to explain the project and request approval for the use of recycled water to refill the golf courses existing irrigation impoundment (lake).

Dominguez Technology Center Recycled Water Retrofit Project, West Basin Municipal Water District, Carson, CA. 2019. Project Coordinator. Assisted the Water District with the conversion of 300 Acre Dominguez Technology Centers (Commercial Center) irrigation systems to use Title 22 Recycled Water. Services provided included preparation of regulatory drawings, permitting assistance, regulatory assistance and coordination, Hydraulic analysis of District's recycled water distribution system and pump station, Engineering support during construction, startup assistance of the recycled water pump station, and cross connection testing support with State and County Departments of Public Health.

Torrance Unified School District Recycled Water Conversions, West Basin Municipal Water District, Carson, CA. 2017. Design Engineer. The Torrance Unified School District prepared plans to construction classroom modernizations and recycled water irrigation system upgrades for three of their existing schools which required approval from the Los Angeles County Department of Public Health. Tetra Tech developed supplemental overall site plans for each school to assist the District with obtaining approval from the Los Angeles County Department of Public.

Sepulveda Boulevard Parkway Project, West Basin Municipal Water District, Carson, CA. 2017. Design Engineer. Updated sites plans for an existing recycled water irrigation site, and assisted the District with obtaining approval from the Los Angeles County Department of Public Health for the Sepulveda Boulevard Parkway Recycled Water Project.

Aliso Village Shopping Center Recycled Water Retrofit, Moulton Niguel Water District, Aliso Viejo, CA. 2015. Project Coordinator for the design of the Aliso Village Shopping Center Recycled Water Retrofit including preparation of the plans and specifications, potholing of existing recycled water pipeline, preparation of legal description and sketch, and permitting with the County of Orange.

Paula Fell

Environmental

Education:
MS, Environmental Sciences, California State University, 1993

BA, Biological Sciences, Kansas State University, 1981

Training/Certifications:
Association of Environmental Professionals Workshops

Office Location:
Irvine, CA

Years of Experience:
27

Years with Tetra Tech:
5

Ms. Fell has more than 27 years of experience preparing environmental documentation and more than 23 years in a senior management role. Paula has prepared and managed California Environmental Quality Act/National Environmental Policy Act (CEQA/NEPA) documents including Initial Studies (ISs), Mitigated Negative Declarations (MNDs), Environmental Impact Report (EIRs), Environmental Assessments (EAs), and Environmental Impact Statements (EISs), for projects throughout California on behalf of federal, state, regional, and local agencies and private clients. Paula's expertise also includes data collection and analysis on environmental issues such as visual resources, land use, public services, biological resources, socioeconomics, recreation, and utilities.

EXPERIENCE

Washington Avenue Lot Well and Facility, Initial Study/Mitigated Negative Declaration, City of Santa Ana, CA. 2020 - Present. Project Manager. Managing the preparation of an Initial Study/Mitigated Negative Declaration for the development of a new water well, well building, chemical building, and other supporting facilities on a currently vacant lot in Santa Ana.

SA-1 Hydro-Generator Replacement, City of Santa Ana, CA. 2020 - Present. Environmental. Engineering design services for replacement of a 33-year old turbine generator. Services include removing the existing turbine/generator and installing a new unit and connecting to the electrical and control systems, upgrading the ventilation system, new RTU control panel, coordination with Enterprise Automation, and replacement of the existing switchboard and MCC. The demolition of the existing unit will include the removal of the generator, turbine shaft, impellers and upper housing. Replacement will include new construction involving, new motorized valve upstream of the new turbine/generator, new manual valve downstream, new ball valve with motorized flow controller, and new PRV valve (in series).

Water Wells No. 12 and No. 14 and Pipeline, Construction Mitigation Support, Mesa Water District, Costa Mesa, CA. 2020 - Present. Project Manager. Managing implementation of cultural resources mitigation measures for the construction of two new water wells and associated pipelines.

Crown Valley Pipeline Replacements, Moulton Niguel Water District, Aliso Viejo, CA. 2020 - Present. Project Manager. Managing the preparation of an Initial Study/Mitigated Negative Declaration. Project will replace existing water supply and sewer lines serving the Cities of Dana Point and Laguna Niguel.

Water Well No. 39 Hydro-generator Unit Replacement, California Environmental Quality Act Documentation, City of Santa Ana, CA. 2020. Project Manager. Prepared a Notice of Exemption and supporting documentation for the replacement of a hydro-generator unit for Well 39.

Water Well No. 32, Initial Study/Mitigated Negative Declaration, City of Santa Ana, CA. 2020. Project Manager. Managing the preparation of an Initial Study/Mitigated Negative Declaration for the rehabilitation of existing Well No. 32 and construction of a new above ground well building and approximately 3,250 linear feet of new pipeline.

Central Park Amphitheater, Initial Study/Mitigated Negative Declaration, City of Rancho Cucamonga, CA. 2019. Project Manager. Managed preparation of an Initial Study/Mitigated Declaration for an approximately 40,000 square feet amphitheater on 11 acres located at the Rancho Cucamonga Central Park. Project was completed under an extremely aggressive schedule in order to facilitate a grant application for funding.

Peter Kim, PE, TE

Traffic Control

Education:
BS, Civil Engineering, California State Polytechnic University, Pomona, 1989

Registrations/Certifications:
Professional Civil Engineer, California, No. 51616, 1994

Professional Traffic Engineer, California, No. 1871, 1997

Professional Affiliations:
American Society of Civil Engineers

Institute of Transportation Engineers (Associate)

Office Location:
Irvine, CA

Years of Experience:
27

Years with Tetra Tech:
27

Mr. Kim has more than 27 years of experience in transportation and traffic engineering. His project experience includes numerous traffic signal designs, street lighting plans, ramp-metering plans, traffic monitoring stations, signing and striping plans, traffic control plans for major freeway projects, and traffic impact studies for various developments. Mr. Kim's knowledge of Caltrans, City and County Standards, criteria and requirements is outstanding. He has been responsible for over 20 freeway projects requiring preparation of traffic design plans and traffic management plans throughout Southern California. Mr. Kim has also prepared traffic control plans for various water districts for over 100 projects. Mr. Kim is the owner/principal of PMK Associates, Inc., a SBE certified firm which provides traffic engineering services to Tetra Tech along with other commercial and private clients.

EXPERIENCE

Design of 1,000 GPM PFAS Treatment Plant at existing Well ET-1, Irvine Ranch Water District, Irvine, CA. 2021 - Present. Traffic Design. Mr. Kim was contracted by Tetra Tech as the Traffic Engineer for the preparation of nine (9) traffic control plans on the Irvine Center Drive in the City of Irvine.

Harvard Avenue Trunk Sewer Diversion Structure Rehabilitation, Irvine Ranch Water District, Irvine, CA. 2020 - Present. Traffic Design. Mr. Kim was contracted by Tetra Tech as the Traffic Engineer for the preparation of six (6) traffic control plans on Harvard Ave. and Main Ave. in the City of Irvine.

Regional Lift Station Force Main Replacement, Moulton Niguel Water District, Aliso Viejo, CA. 2017 - Ongoing. Traffic Engineer. Prepared nine (9) traffic control plans in the City of Aliso Viejo.

3.7 MG Zone 1 Reservoir Construction Support, Irvine Ranch Water District, Irvine, CA. 2021. Traffic Design. The 3.7 MG Reservoir will provide an additional permanent reservoir with storage and operational flexibility in the Irvine Ranch Water District's Zone 1 system.

Peter's Canyon Channel Water Capture & Reuse Pipeline, Irvine Ranch Water District, Irvine, CA. 2015. Mr. Kim was contracted by Tetra Tech as the Lead Traffic Engineer for the preparation of traffic control plans for 17,000 linear feet of pipeline along Harvard Avenue in the City of Irvine.

Carlsbad Seawater Desalination Conveyance Pipeline, Poseidon Resources Corporation, Carlsbad, CA. 2014. Mr. Kim was contracted by Tetra Tech as the Traffic Engineer Lead for the preparation of traffic control plans for 52,000 linear feet of pipeline that serves the product water from the planned 50 MGD desalination plant in the City of Carlsbad. Pipeline diameters ranged from 24-inch to 54-inch welded steel pipeline operating at a maximum pressure of 800 psi. Seven flow control facilities were planned. The pipeline was routed through the cities of Carlsbad, San Marcos, Vista and Oceanside. In addition, there were two bridge crossings, Caltrans right-of-way crossing, railroad crossing, and several bore and jack crossings located throughout the project. Final Traffic Control plans were prepared for permitting through the City of Carlsbad and Caltrans.

Anaheim Regional Transportation Intermodal Center (ARTIC), City of Anaheim, CA. Under PMK Associates, as the Lead Traffic Design Engineer, Mr. Kim was responsible for the 100% PSE for traffic signals, signing and striping, stage construction, and street lighting for ARTIC; a transit hub designed to tie together freeways, bus routes, and rail system as well as allow for future expansion to incorporate the California High-Speed Rail.

COMPANY INTRODUCTION

Mr. Richard C. Slade has over 50 years of hydrogeologic experience in California, the last 33 of which have been as Principal Hydrogeologist and owner of Richard C. Slade & Associates LLC (RCS), Consulting Groundwater Geologists. Mr. Slade maintains licenses as a Registered Geologist and Certified Engineering Geologist in California. The RCS firm has seven full-time professional groundwater geologists including:

- Two senior project-level hydrogeologists, Mr. Earl LaPensee and Mr. Anthony Hicke. Both are Professional Geologists and Certified Hydrogeologists in California. Mr. LaPensee has been with RCS since 1989, whereas Mr. Anthony Hicke has been with RCS since 2001.
- Four staff/field-level geologists (Messrs. Luis Busso, Chris Wick, Joe Amar, and Sean Bowen) provide as-needed field and office support services on groundwater projects. All four are degreed geologists; Mr. Busso and Mr. Wick have been with RCS for approximately 10 years, while Mr. Amar and Mr. Bowen started with the firm in 2013 and 2016, respectively. Mr. Busso, Mr. Wick, Mr. Amar, and Mr. Bowen are all California Professional Geologists.

Specific areas of expertise for RCS include:

- groundwater resource development via siting, specifying, designing and testing of new water wells for both municipal-supply and agricultural-supply;
- conducting analysis and correlations of the resistivity signatures on geophysical electric logs available from water wells, oil wells, and groundwater monitoring wells;
- providing independent, detailed E-log correlation networks and cross sections based on key marker beds;
- preparing Technical Specifications and detailed line item bid sheets for the preliminary design and cost analysis of new wells and monitoring wells;
- providing detailed geologic logs of drill cuttings generated during pilot hole drilling for new water wells and groundwater monitoring wells;
- providing experienced geologists to field monitor the drilling, final design, construction and testing of new water wells and groundwater monitoring wells;
- providing evaluations, cost estimates, Technical Specifications and field monitoring services for the rehabilitation and destruction of existing wells;
- groundwater basin evaluations and basin management and water well feasibility studies;
- conducting pumping tests and providing technical analyses of pumping test data
- evaluating groundwater contamination;
- assessing groundwater quality; and
- rehabilitation of older wells.

Typical clients include city water departments, county water agencies, water districts, engineering firms, environmental attorneys, and numerous wineries and vineyards. In the Orange County region, RCS over the years has sited, designed and assisted in the construction of 21 wells for the cities of Anaheim (10), Fullerton (3), Garden Grove (1), Golden State Water Company (2), Irvine Ranch Water District (2) and for Orange County Water District (3 in Fullerton).

METZ SURVEYING INC.

24303 WALNUT ST, SUITE D, SANTA CLARITA, CA
TEL: 661-388-4492 WWW.METZSURVEYING.COM

Company Profile

Metz Surveying is a full-service land surveying company founded in 2016 by president Eric Metz based out of Santa Clarita, California. Metz Surveying can offer clients the experience of large firms with the efficiency of a small business, allowing projects to be completed on time and budget. This is accomplished utilizing the latest in Trimble GPS & Trimble Robotic total stations allowing for a seamless field to office workflow that ensures projects are completed quickly and efficiently while adhering to the highest of industry standards.

Prior to the company founding, Mr. Metz worked as a project surveyor for Tetra Tech Inc. for over 16 years. During his career at Tetra Tech, Mr. Metz was responsible for a variety of surveying projects. From large scale boundary and GPS control surveys of various government installations to municipality water and sewer line improvement projects. The experience gained from working at Tetra Tech has allowed Metz Surveying to offer services to clientele that most small sized surveying companies lack the experience to provide.

Metz Surveying is a California Certified Small Business and an active member of the California Land Surveyors Association.

Leighton Consulting, Inc. (Leighton) provides geotechnical engineering, environmental consulting, and materials testing and special inspection services. Our firm enjoys a rich history in Southern California having provided professional engineering and geologic services for 60 years and earned a reputation as a leader in this field through our innovative yet practical design solutions and field support for construction projects. Leighton has been providing Tetra Tech geotechnical consulting services for over 20 years and understands the expectation and requirements of the design team and local agencies.

Our 180 employees are strategically located throughout Southern California to serve our clients from offices in Irvine, Downtown Los Angeles, Rancho Cucamonga, Temecula, San Diego, Ventura, and Santa Clarita. Our staff is comprised of California licensed Geotechnical Engineers (GE), Professional Engineers (PE), Certified Engineering Geologists (CEG), Hydrogeologists (CHG), Professional Geologists (PG), and Registered Environmental Assessors (REA). Supporting the professional consulting services, we have in-house geotechnical and materials testing laboratories that are certified by Caltrans, AASHTO, Division of State Architects (DSA), and City of Los Angeles.

Our local experience gives us an incomparable history and basis for understanding site issues and constraints. We have successfully completed projects with complex geology and constraints and won over 40 awards for engineering excellence. We have provided professional services for many water infrastructure projects, including water tanks and reservoirs, storm drains, storm channels, detention basins, sewer lines, potable water and recycled water pipelines, desalination plants, and groundwater replenishment facilities.

On-Call

Water Resources Engineering Services

RFP No. 22-002

Certifications

SANTA ANA
1869

TETRA TECH

NON-COLLUSION AFFIDAVIT
(Title 23 United States Code Section 112 and
Public Contract Code Section 7106)

To the CITY OF SANTA ANA DEPARTMENT OF PUBLIC WORKS

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106 the BIDDER declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the BIDDER has not directly or indirectly induced or solicited any other BIDDER to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived or agreed with any BIDDER or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that 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 BIDDER, or to fix any overhead, profit, or cost element of the bid price, or of that of any other BIDDER, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that 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, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Non-collusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Non-collusion Affidavit. BIDDERS are cautioned that making a false certification may subject the certifier to criminal prosecution.

Signed Tom Epperson

State of California
County of Orange

Subscribed and sworn to (or affirmed) before me on this 12 day of May, 2022, by Tom Epperson, proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

CAROL A. KONDO
Notary Public - California
Orange County
Commission # 2394875
My Comm. Expires Feb 24, 2026

Notary Public Signature

Notary Public Seal

NON-LOBBYING CERTIFICATION

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

1. No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

2. If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence any officer or employee of any federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant loan, loan or cooperative agreement, the undersigned shall complete and submit a "Disclosure of Lobbying Activities".

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U. S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such sub recipients shall certify and disclose accordingly.

Firm Tetra Tech, Inc.

Signed and Printed Name: Tom Epperson, PE

Title Vice President

Date May 24, 2022

NON-DISCRIMINATION CERTIFICATION

The undersigned consultant or corporate officer, during the performance of this contract, certifies as follows:

1. The Consultant shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Consultant shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without, regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Consultant agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The Consultant shall, in all solicitations or advertisements for employees placed by or on behalf of the Consultant, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

3. The Consultant shall send to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Consultant's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The Consultant shall comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

5. The Consultant shall furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his/her books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation, to ascertain compliance with such rules, regulations, and orders.

6. In the event of the Consultant's non-compliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, the contract may be canceled, terminated, or suspended in whole or in part and the Consultant may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Execution Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulations, or order of the Secretary of Labor, or as otherwise provided by law.

7. The Consultant shall include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted

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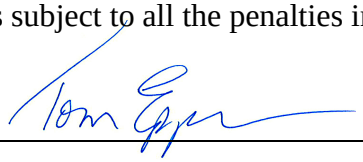
8. Pursuant to California Labor Code Section 1735, as added by Chapter 643 Stats. 1939, and as amended,

No discrimination shall be made in the employment of persons upon public works because of race, religious creed, color, national origin, ancestry, physical handicaps, mental condition, marital status, or sex of such persons, except as provided in Section 1420, and any consultant of public works violating this Section is subject to all the penalties imposed for a violation of the Chapter.

Signed: 

Title: Vice President

Firm: Tetra Tech, Inc.

Date: May 24, 2022

NON-DISCRIMINATION CERTIFICATION

The undersigned consultant or corporate officer, during the performance of this contract, certifies as follows:

1. The Consultant shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Consultant shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without, regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Consultant agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The Consultant shall, in all solicitations or advertisements for employees placed by or on behalf of the Consultant, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

3. The Consultant shall send to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Consultant's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The Consultant shall comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

5. The Consultant shall furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his/her books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation, to ascertain compliance with such rules, regulations, and orders.

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Signed: _____

Title: PRINCIPAL GROUNDWATER GEOLOGIST

Firm: RICHARD C. SLADE & ASSOC. LLC

Date: 5/29/2022

NON-DISCRIMINATION CERTIFICATION

The undersigned consultant or corporate officer, during the performance of this contract, certifies as follows:

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Signed: KRIS LUTTON

Title: Senior Vice President

Firm: Leighton Consulting, Inc.

Date: 5/19/22

NON-DISCRIMINATION CERTIFICATION

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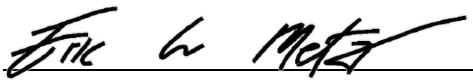
Signed: 

Title: President

Firm: Metz Surveying Inc.

Date: 5-24-22

On-Call
Water Resources Engineering Services

RFP No. 22-002

TETRA TECH

SANTA ANA
1869

EXHIBIT C

TETRA TECH

May 24, 2022

Robert Aguirre, PE
Project Manager
City of Santa Ana, Public Works Agency
220 S. Daisy Ave., M-85
Santa Ana, CA 92703

Reference: Hourly Rate Schedule for On-Call Water Resources Engineering Services, RFP No. 22-002

Dear Mr. Aguirre,

Tetra Tech is pleased to submit our Hourly Rate Schedule to the City of Santa Ana for the On-Call Water Resources Engineering Services contract. Per the Request for Proposal requirements, Hourly Rate Schedules for our Subconsultants have also been included.

Should you require additional information or have any questions, please feel free to contact me at 949/809-5156 or via email at tom.epperson@tetratech.com. We sincerely appreciate this opportunity to submit our proposal and look forward to working with you.

Respectfully,

Tom Epperson, PE
Vice President

TLE/NG/de

Attachments

M:\Marketing\Proposals\FY 2022\Santa Ana-CA_On-Call Water Resources

17885 Von Karman Avenue, Suite 500, Irvine, CA 92614-5227
Tel 949.809.5000 Fax 949.809.5010 tetratech.com

TETRA TECH

2022
HOURLY CHARGE RATE AND EXPENSE REIMBURSEMENT SCHEDULE

Project Management	
Project Manager 1	$220.00
Project Manager 2	$270.00
Sr Project Manager	$305.00
Program Manager	$340.00
Principal in Charge	$340.00
Engineers	
Engineering Technician	$37.00
Engineer 1	$100.00
Engineer 2	$115.00
Engineer 3	$130.00
Project Engineer 1	$150.00
Project Coordinator	$165.00
Project Engineer 2	$170.00
Sr Engineer 1	$175.00
Sr Engineer 2	$185.00
Sr Engineer 3	$210.00
Principal Engineer	$320.00
Planners	
Planner 1	$95.00
Planner 2	$115.00
Sr Planner 1	$135.00
Sr Planner 2	$150.00
Sr Planner 3	$195.00
Designers & Technicians	
CAD Technician 1	$65.00
CAD Technician 2	$75.00
CAD Technician 3	$90.00
CAD Designer	$105.00
Sr CAD Designer 1	$125.00
Sr CAD Designer 2	$150.00
CAD Director	$155.00
Survey Tech 1	$50.00
Health & Safety	
H&S Administrator	$95.00
Sr H&S Administrator	$115.00
H&S Manager	$145.00

Construction	
Construction Project Rep 1	$80.00
Construction Project Rep 2	$90.00
Sr Constr Project Rep 1	$105.00
Sr Constr Project Rep 2	$120.00
Construction Manager 1	$170.00
Construction Manager 2	$190.00
Construction Director	$235.00
General & Administrative	
Project Assistant 1	$67.00
Project Assistant 2	$75.00
Project Administrator	$95.00
Sr Project Administrator	$125.00
Sr Graphic Artist	$130.00
Technical Writer 1	$97.00
Technical Writer 2	$124.00
Sr Technical Writer	$155.00
Information Technology	
Systems Analyst / Programmer 1	$77.00
Systems Analyst / Programmer 2	$115.00
Sr Sys Analyst / Programmer 1	$130.00
Sr Systems Analyst / Programmer 2	$196.00
Project Accounting	
Project Analyst 1	$90.00
Project Analyst 2	$114.00
Sr Project Analyst	$155.00

Reimbursable In-House Costs:	
Photo Copies (B&W 8.5"x11")	$ 0.15/Each
Photo Copies (B&W 11"x17")	$ 0.40/Each
Color Copies (up to 8.5"x11")	$ 2.00/Each
Color Copies (to 11"x17")	$ 3.00/Each
Compact Discs	$10/each
Large format copies	$0.40 S.F.
Mileage-Company Vehicle	$0.80/mile
Mileage-POV	$0.55/mile*

*current GSA POV mileage rate subject to change

All other direct costs, such as production, special photography, postage, delivery services, overnight mail, printing and any other services performed by subconsultant will be billed at cost.

NOTE: Rates subject to change annually.

RICHARD C. SLADE & ASSOCIATES LLC
CONSULTING GROUNDWATER GEOLOGISTS

SCHEDULE OF CHARGES

January 2022

Professional Services	Hourly Rates
President	$300.00
Principal	$256.00
Senior Groundwater Geologist	$220.00
Staff Groundwater Geologist	$190.00
Field Groundwater Geologist	$128.00
Clerical	$ 98.00

Field Equipment Charges	
Pressure Transducers (water level & barometric pressure monitoring during pumping tests)	$ 50.00/wk.
Electric Tape Water Level Probe	$ 25.00/day
Field Water Quality Probe (T, pH, EC)	$ 50.00/day

Litigation, Depositions and Testimony

Depositions and trial testimony are charged at twice the hourly rate (4-hour minimum/day).

Travel Time and Mileage

Travel time for meetings and/or to job sites will be charged at our standard hourly rates. Mileage is charged at the current IRS rate.

Administrative Fee

In-house costs for phone, e-mail, fax, regular postage, printing, copying, binding, and records retention, unless otherwise provided for in our project proposal Scope of Services, will be charged an Administrative Fee of total project labor charges multiplied by 2.5%.

Outside Services

Any services and materials not ordinarily furnished by RCS, including subcontracted services (i.e., water quality laboratory testing), delivery services, reproduction and printing, etc., are billed at cost + 15%. Reproduction costs for large format printing, and/or high volume reproduction and binding of hard copy reports performed in-house by RCS staff, will be billed at rates similar to comparable outside services.

Conditions

RCS reserves the right to update this Schedule of Charges on January 1 of each year (the beginning of our Fiscal Year). Invoices are issued at our option on a monthly basis or when the work is completed. A service charge of 1½% will be payable on any amount not paid within 30 days. Any attorney fees or other costs incurred in collecting delinquent charges shall be paid by the client.

Client will furnish rights-of-way to land as required for field visits and field operations, such as sampling or testing of water wells.

Leighton

2022 PROFESSIONAL FEE SCHEDULE

LABOR RATES

CLASSIFICATION	$/HR
Technician I	94
Technician II / Special Inspector	104
Senior Technician / Senior Special Inspector	122
Prevailing Wage (field soils / materials tester) *	158
Prevailing Wage (Special Inspector) *	162
Prevailing Wage (On site Source Inspector, NDT and soil remediation O&M)*	166
System Operation & Maintenance (O&M) Specialist	154
Non Destructive Testing (NDT)	162
Deputy Inspector	122
Field / Laboratory Supervisor	154
Source Inspector	140
City of Los Angeles Deputy Building (including Grading) Inspector	165

* See Prevailing Wages in Terms and Conditions

CLASSIFICATION	$/HR
Project Administrator/Word Processor/Dispatcher	85
Information Specialist	125
CAD Operator	145
GIS Specialist	145
GIS Analyst	170
Staff Engineer / Geologist / Scientist	158
Senior Staff Engineer / Geologist / Scientist / ASMR	173
Operations / Laboratory Manager	190
Project Engineer / Geologist / Scientist	199
Senior Project Engineer / Geologist / Scientist / SMR	219
Associate	245
Principal	270
Senior Principal	325

GEOTECHNICAL LABORATORY TESTING

METHOD	$/TEST
CLASSIFICATION & INDEX PROPERTIES	
Photograph of sample	10
Moisture content (ASTM D2216)	20
Moisture & density (ASTM D2937) ring samples	30
Moisture & density (ASTM D2937) Shelby tube or cutting	40
Atterberg limits 3 points (ASTM D4318):	150
- Single point, non-plastic	85
- Atterberg limits (organic ASTM D2487 / D4318)	180
- Visual classification as non-plastic (ASTM D2488)	10
Particle size:	
- Sieve only 1½ inch to #200 (AASHTO T27/ASTM C136/ASTM D6913/CTM 202)	135
- Large sieve 6 inch to #200 (AASHTO T27/ASTM C136/ASTM D6913/CTM 202)	175
- Hydrometer only (ASTM D7928)	110
- Sieve + hydrometer ≤3 inch sieve, (ASTM 7928)	185
- Percent passing #200 sieve, wash only (ASTM D1140)	70
Specific gravity and absorption of fine aggregate (AASHTO T84/ASTM C128/ASTM D854/CTM 207)	130
Specific gravity and absorption of coarse aggregate (AASHTO T85/ASTM C127/CTM 206)	100
- Total porosity - on Shelby tube sample (calculated)	165
- Total porosity - on other sample (calculated)	155
Shrinkage limits wax method (ASTM D4943)	126
Pinhole dispersion (ASTM D4647)	210
Dispersive characteristics (double hydrometer ASTM D4221)	90
As-received moisture & density (chunk/carved samples)	60
Sand Equivalent (AASHTO T176/ASTM D2419/CTM 217)	105
SHEAR STRENGTH	
Pocket penetrometer	15
Direct shear (ASTM D3080, mod., 3 points):	
Consolidated undrained - 0.05 inch/min (CU)	285
Consolidated drained - <0.05 inch/min (CD)	345
Residual shear EM 1110-2-1906-IXA (price per each additional pass after shear)	50
Remolding or hand trimming of specimens (3 points)	90
Oriented or block hand trimming (per hour)	65
Single point shear	105
Torsional shear (ASTM D6467 / ASTM D7608)	820

METHOD	$/TEST
COMPACTION & PAVEMENT SUBGRADE TESTS	
Standard Proctor compaction, 4 points (ASTM D698)	
- 4 inch diameter mold (Methods A & B)	160
- 6 inch diameter mold (Method C)	215
Modified Proctor compaction 4 points (ASTM D1557):	
- 4 inch diameter mold Methods A & B	220
- 6 inch diameter mold Method C	245
Check point (per point)	65
Relative compaction of untreated/treated soils/aggregates (CTM 216)	250
Relative density 0.1 ft mold (ASTM D4253, D4254)	235
California Bearing Ratio (ASTM D1883)	
- 3 point	500
- 1 point	185
R-Value untreated soils/aggregates (AASHTO T190/ASTM D2844/CTM 301)	310
R-Value lime or cement treated soils/aggregates (AASHTO T190/ASTM D2844/CTM 301)	340
SOIL CHEMISTRY & CORROSIVITY	
pH Method A (ASTM D4972 or CTM 643)	45
Electrical resistivity – single point – as received moisture	45
Minimum resistivity 3 moisture content points (ASTM G187/CTM 643)	90
pH + minimum resistivity (CTM 643)	130
Sulfate content - gravimetric (CTM 417 B Part 2)	70
Sulfate content - by ion chromatograph (CTM 417 Part 2)	80
Sulfate screen (Hach®)	30
Chloride content (AASHTO T291/CTM 422)	70
Chloride content – by ion chromatograph (AASHTO T291/CTM 422)	80
Corrosion suite: minimum resistivity, sulfate, chloride, pH (CTM 643)	265
Organic matter content (ASTM D2974)	65
CONSOLIDATION & EXPANSION/SWELL TESTS	
Consolidation (ASTM D2435):	195
Each additional time curve	45
Each additional load/unload w/o time reading	40
Expansion Index (ASTM D4829)	130
Single load swell/collapse - Method B (ASTM D4546-B, seat, load & inundate only)	105
Swell collapse Method A up to 10 load/unloads w/o time curves (ASTM D4546-A)	290

METHOD	$/TEST
TRIAXIAL TESTS	
Unconfined compression strength of cohesive soil (with stress/strain plot, ASTM D2166)	135
Unconsolidated undrained triaxial compression test on cohesive soils (UU, ASTM D2850, USACE Q test, per confining stress)	170
Consolidated undrained triaxial compression test for cohesive soils, (CU, ASTM D4767, USACE R-bar test) with back pressure saturation & pore water pressure measurement (per confining stress)	375
Consolidated drained triaxial compression test (CD, USACE S), with volume change measurement. Price per soil type below EM 1110-2-1906(X):	
Sand or silty sand soils (per confining stress)	375
Silt or clayey sand soils (per confining stress)	500
Clay soils (per confining stress)	705
Three-stage triaxial (sand or silty sand soils)	655
Three-stage triaxial (silt or clayey sand soils)	875
Three-stage triaxial (clay soils)	1,235
Remolding of test specimens	65

METHOD	$/TEST
HYDRAULIC CONDUCTIVITY TESTS	
Triaxial permeability in flexible-wall permeameter with backpressure saturation at one effective stress (EPA 9100/ASTM D5084, falling head Method C):	310
Each additional effective stress	120
Hand trimming of soil samples for horizontal K	60
Remolding of test specimens	65
Permeability of granular soils (ASTM D2434)	135
Soil suction (filter paper method, ASTM D5298)	400
SOIL-CEMENT	
Moisture-density curve for soil-cement mixtures (ASTM D558)	240
Wet-dry durability of soil-cement mixtures (ASTM D559) [1]	1,205
Compressive strength of molded soil-cement cylinder (ASTM D1633)[1]	60
Soil-cement remolded specimen (for shear strength, consolidation, etc.) [1]	235

[1] Compaction (ASTM D558 maximum density) should also be performed – not included in above price

CONSTRUCTION MATERIALS LABORATORY TESTING

METHOD	$/TEST
CONCRETE STRENGTH CHARACTERISTICS	
Concrete cylinders compression (ASTM C39) (6" x 12" and 4" x 8")	35
Compression, concrete or masonry cores (testing only) ≤6 inch (ASTM C42)	40
Trimming concrete cores (per core)	20
Flexural strength of concrete (simple beam-3rd pt. loading, ASTM C78/CTM 523)	85
Flexural strength of concrete (simple beam-center pt. loading, ASTM C293/CTM 523)	85
Non shrink grout cubes (2 inch, ASTM C109/C1107)	25
Drying shrinkage - four readings, up to 90 days, 3 bars (ASTM C157)	400
Length of concrete cores (CTM 531)	40
HOT MIX ASPHALT (HMA)	
Resistance of compacted HMA to moisture-induced damage (AASHTO T283/CTM 371)	2,100
Hamburg Wheel, 4 briquettes (modified) (AASHTO T324)	900
Superpave gyratory compaction (AASHTO T312/ASTM D6925)	350
Extraction by ignition oven, percent asphalt (AASHTO T308/ASTM D6307/CTM 382)	150
Ignition oven correction/correlation values (AASHTO T308/ASTM D6307/CTM 382)	1,350
Extraction by centrifuge, percent asphalt (ASTM D2172)	150
Gradation of extracted aggregate (AASHTO T30/ASTM D5444/CTM 202)	135
Stabilometer, S-Value (ASTM D1560/CTM 366)	265
Bituminous mixture preparation (AASHTO R30/CTM 304)	80
Moisture content of HMA (AASHTO T329/ASTM D6037/CTM 370)	60
Bulk specific gravity of compacted HMA, molded specimen or cores, uncoated (AASHTO T166/ASTM D2726/CTM 308)	50
Bulk specific gravity of compacted HMA, molded specimen or cores, paraffin-coated (AASHTO T275/ASTM D1188/CTM 308)	55
Maximum density - Hveem (CTM 308)	200
Theoretical maximum density and specific gravity of HMA (AASHTO T209/ ASTM D2041/CTM 309)	130
Thickness or height of compacted bituminous paving mixture specimens (ASTM D3549)	40
Wet track abrasion of slurry seal (ASTM D3910)	150
Rubberized asphalt (add to above rates)	+25%
BRICK	
Compression - cost for each, 5 required (ASTM C67)	50
Absorption - cost for each, 5 required (ASTM C67)	50

METHOD	$/TEST
AGGREGATE PROPERTIES	
Bulk density and voids in aggregates (AASHTO T19/ASTM C29/ CTM 212)	50
Organic impurities in fine aggregate sand (AASHTO T21/ASTM C40/CTM 213)	60
LA Rattler-smaller coarse aggregate <1.5" (AASHTO T96/ASTM C131/ CTM 211)	200
LA Rattler-larger coarse aggregate 1-3" (AASHTO T96/ASTM C535/CTM 211)	250
Apparent specific gravity of fine aggregate (AASHTO T84/ASTM C128/ CTM 208)	130
Specific gravity and absorption of coarse aggregate (ASTM C127/CTM 206) >#4 retained	100
Clay lumps, friable particles (AASHTO T112/ASTM C142)	175
Durability Index (AASHTO T210/ASTM D3744/CTM 229)	200
Moisture content of aggregates by oven drying (AASHTO T255/ASTM C566/CTM 226)	40
Uncompacted void content of fine aggregate (AASHTO T304/ ASTM C1252/ CTM 234)	130
Percent of crushed particles (AASHTO T335/ASTM D5821/CTM 205)	135
Flat & elongated particles in coarse aggregate (ASTM D4791/CTM 235)	215
Cleanness value of coarse aggregate (CTM 227)	210
Soundness, magnesium (AASHTO T104/ASTM C88/CTM 214)	225
Soundness, sodium (AASHTO T104/ASTM C88/CTM 214)	650
MASONRY	
Mortar cylinders 2" x 4" (ASTM C780)	30
Grout prisms 3" x 6" (ASTM C1019)	30
Masonry cores compression, ≤6" diameter - testing only (ASTM C42)	40
Masonry core shear testing (Title 24)	80
Veneer bond strength, cost for each - 5 required (ASTM C482)	55
CMU compression to size 8" x 8" x 16" - 3 required (ASTM C140)	55
CMU moisture content, absorption & unit weight - 6 required (ASTM C140)	50
CMU linear drying shrinkage (ASTM C426)	175
CMU grouted prisms compression test ≤8" x 8" x 16" (ASTM C1314)	200
CMU grouted prisms compression test > 8" x 8" x 16"(ASTM C1314)	250
BEARING PADS/PLATES AND JOINT SEAL	
Elastomeric bearing pads (Caltrans SS 51-3)	990
Elastomeric bearing pad with hardness and compression tests (Caltrans SS 51-3)	1,230
Type A Joint Seals (Caltrans SS 51-2)	1,620
Type B Joint Seals (Caltrans SS 51-2)	1,530
Bearing plates (A536)	720

METHOD	$/TEST
REINFORCING STEEL AND PRESTRESSING STRANDS	
Rebar tensile test, ≤ up to No. 11 (ASTM A370)	65
Rebar tensile test, ≥ No. 14 & over (ASTM A370)	200
Rebar bend test, up to No. 11 (ASTM A370)	65
Rebar bend test, ≥ No. 14 & over (ASTM A370)	200
Resistance butt-welded hoops/bars, tensile test, ≤ up to No. 10 (CTM 670)	65
Resistance butt-welded hoops/bars, tensile test, ≥ No. 11 & over (CTM 670)	85
Mechanical rebar splice, tensile test, ≤ up to No. 11 (CTM 670)	65
Mechanical rebar splice, slip test, ≤ up to No. 11 (CTM 670)	40
Mechanical rebar splice, tensile test, ≥ No. 14 & over (CTM 670)	200
Mechanical rebar splice, slip test, ≥ No. 14 & over (CTM 670)	200
Headed rebar splice, tensile test, ≤ up to No. 11 (CTM 670)	65
Headed rebar splice, tensile test, ≥ No. 14 & over (CTM 670)	200
Epoxy coated rebar/dowel film thickness (coating) test (ASTM A775/A934)	45
Epoxy coated rebar/dowel continuity (Holiday) test (ASTM A775/A934)	65
Epoxy coated rebar flexibility/bend test, up to No. 11 (ASTM A775/A934)	45
Prestressing wire, tension (ASTM A416)	175
Sample preparation (cutting)	50

METHOD	$/TEST
STREET LIGHTS/SIGNALS	
LED Luminaires / Signal Modules / Countdown Pedestrian Signal Face Modules (Caltrans RSS 86)	1,300
SPRAY APPLIED FIREPROOFING	
Unit weight (density, ASTM E605)	60
FASTENERS / BOLTS / RODS	
F3125 GR A307, A325 Bolts, tensile test, ≤ up to 1-1/4" diameter, plain (ASTM A370)	65
F3125 GR A307, A325 Bolts, tensile test, ≤ up to 1-1/4" diameter, galvanized (ASTM A370)	75
A490 Bolts, tensile test, ≤ up to 1-1/4" diameter, plain (ASTM A370)	65
A490 Bolts, tensile test, ≤ up to 1-1/4" diameter, galvanized (ASTM A370)	75
A593 Bolts, tensile test, ≤ up to 1-1/4" diameter, stainless steel (ASTM A370)	65
F1554 Bolts, tensile test, ≤ up to 1-1/4" diameter, plain (ASTM A370)	100
F1554 Bolts, tensile test, ≤ up to 1-1/4" diameter, galvanized (ASTM A370)	120
SAMPLE TRANSPORT	
Pick-up & delivery (weekdays, per trip, <50 mile radius from Leighton office)	90

EQUIPMENT LIST

ITEM	$UNIT
1/4 inch Grab plates	5 each
1/4 inch Tubing (bonded)	0.55 foot
1/4 inch Tubing (single)	0.35 foot
3/8 inch Tubing, clear vinyl	0.55 foot
4-Gas meter (RKI Eagle or similar)/GEM 2000	130 day
Air flow meter and purge pump (200 cc/min)	50 day
Box of 24 soil drive-sample rings	120 box
Brass sample tubes	10 each
Caution tape (1000-foot roll)	20 each
Combination lock or padlock	11 each
Compressed air tank and regulator	50 day
Concrete coring machine (≤6-inch-dia)	150 day
Consumables (gloves, rope, soap, tape, etc.)	35 day
Core sample boxes	11 each
Crack monitor Two-Dimensional	25 each
Crack monitor Thee-Dimensional	30 each
Cutoff saws, reciprocating, electric (Sawzall®)	75 day
D-Meter Walking Floor Profiler	100 day
Disposable bailers	12 each
Disposable bladders	10 each
Dissolved oxygen meter	45 day
DOT 55-gallon containment drum with lid	65 drum
Double-ring infiltrometer	125 day
Dual-stage interface probe	80 day
Dynamic Cone Penetrometer	400 day
Generator, portable gasoline fueled, 3,500 watts	90 day
Global Positioning System/Laser Range Finder	80 day
Hand auger set	90 day
HDPE safety fence (≤100 feet)	40 roll
Horiba U-51 water quality meter	135 day
Light tower (towable vertical mast)	150 day
Magnehelic gauge	15 day
Manometer	25 day
Mileage (IRS Allowable)	0.585 mile

ITEM	$ UNIT
Moisture test kit (excludes labor to perform test, ASTM E1907)	60 test
Nuclear moisture and density gauge	88 day
Electrical moisture and density gauge	88 Day
Pachometer	25 day
Particulate Monitor	125 day
pH/Conductivity/Temperature meter	55 day
Photo-Ionization Detector (PID)	120 day
Pump, Typhoon 2 or 4 stage	50 day
QED bladder pump w/QED control box	160 day
Quire fee – Phase I only	200 each
Resistivity field meter and pins	50 day
Slip / threaded cap, 2-inch or 4-inch diameter, PVC Schedule 40	15 each
Slope inclinometer	200 day
Soil sampling T-handle (Encore)	10 day
Soil sampling tripod	35 day
Speedy (R) moisture tester	5 day
Stainless steel bailer	40 day
Submersible pump, 10 gpm, high powered Grundfos 2-inch with controller	160 day
Submersible pump/transfer pump, 10-25 gpm	50 day
Support service truck usage (well installation, etc.)	200 day
Survey/fence stakes	8 each
Tedlar® bags	18 each
Traffic cones (≤25)/barricades (single lane)	50 day
Turbidity meter	70 day
Tyvek® suit (each)	18 each
Vapor sampling box	55 day
Vehicle usage (carrying equipment)	20 hour
VelociCalc	35 day
Visqueen (20 x 100 feet)	100 roll
Water level indicator (electronic well sounder) <300 feet deep well	60 day
ZIPLEVEL®	15 day

Other specialized geotechnical and environmental testing and monitoring equipment are available, and priced per site

TERMS AND CONDITIONS

- **Expiration:** This fee schedule is effective through December 31, 2022 after which remaining work will be billed at then-current rates.
- **Proposal Expiration:** Proposals are valid for at least 30 days, subject to change after 30 days; unless otherwise stated in an attached proposal.
- **Prevailing Wages:** Our fees for prevailing wage work are based upon California prevailing wage laws and wage determinations. Unless specifically indicated in our proposal, costs for apprentice are not included. If we are required to have an apprentice on your project, additional fees will be charged.
- **Overtime:** Standard overtime rate is per California Labor Law and is billed at 1.5 or 2 times their hourly billing rate. Overtime rate for non-exempt field personnel working on a Leighton observed holiday is billed at 2 times their hourly billing rate. Overtime rate for Prevailing wage work is per the California Department of Industrial Relations (DIR) determination and is multiplied at 1.5 to 2 times their hourly billing rate for overtime and double-time, respectively.
- **Expert Witness Time:** Expert witness deposition and testimony will be charged at 2 times hourly rates listed on the previous pages, with a minimum charge of four hours per day.
- **Minimum Field Hourly Charges:** For Field Technicians, Special Inspectors or any on-site (field) materials testing services:

  4 hours: 4-hour minimum charge up to the first four hours of work

  8 hours: 8-hour minimum charge for over four hours of work, up to eight hours.

  Project time accrued includes portal to portal travel time.
- **Insurance & Limitation of Liability:** These rates are predicated on standard insurance coverage and a limit of Leighton's liability equal to our total fees for a given project.
- **Outside Direct Costs:** Heavy equipment, subcontractor fees and expenses, project-specific permits and/or licenses, project-specific supplemental insurance, travel, subsistence, project-specific parking charges, shipping, reproduction, and other reimbursable expenses will be invoiced at cost plus 20%, unless billed directly to and paid by client.
- **Invoicing:** Invoices are rendered monthly, payable upon receipt in United States dollars. A service charge of 1½-percent per month will be charged for late payment.
- **Client Disclosures:** Client agrees to provide all information in Client's possession about actual or possible presence of buried utilities and hazardous materials on the project site, prior to fieldwork, and agrees to reimburse Leighton for all costs related to unanticipated discovery of utilities and/or hazardous materials. Client is also responsible for providing safe and legal access to the project site for all Leighton field personnel.
- **Earth Material Samples:** Quoted testing unit rates are for soil and/or rock (earth) samples free of hazardous materials. Additional costs will accrue beyond these standard testing unit rates for handling, testing and/or disposing of soil and/or rock containing hazardous materials. Hazardous materials will be returned to the site or the site owner's designated representative at additional cost not included in listed unit rates. Standard turn-around time for geotechnical-laboratory test results is 10 working days. Samples will be stored for 2 months, after which they will be discarded. Prior documented notification is required if samples need to be stored for a longer time. A monthly storage fee of $10 per bag and $5 per sleeve or tube will be applied. Quoted unit rates are only for earth materials sampled in the United States. There may be additional cost for handling imported samples.
- **Construction Material Samples:** After all designated 28-day breaks for a given sample set meet specified compressive or other client-designated strength, all "hold" cylinders or specimens will be automatically disposed of, unless specified in writing prior to the 28-day break. All other construction materials will be disposed of after completion of testing and reporting.

METZ SURVEYING INC.

24303 WALNU ST, SUITE 1, SANTA CLARITA, CA
TEL: 661-388-4492 WWW.METZSURVEYING.COM

Effective January 1st, 2022 through December 30th, 2022

PERSONNEL	RATE (PER HOUR)
1 PERSON SURVEY CREW	$175.00
2 PERSON SURVEY CREW	$225.00
SURVEY TECHNICIAN	$75.00
CADD DRAFTER	$90.00
PROJECT SURVEYOR	$110.00
SENIOR SURVEYOR	$130.00

Half Day Topographic Survey Rate = **$2,460.00**

Full Day Topographic Survey Rate = **$3,900.00**