



PROFESSIONAL DESIGN SERVICES FOR THE
**CONSOLIDATION OF THE
BRACKEN BRAE AND FOREST SPRINGS
MUTUAL WATER COMPANIES**

FEBRUARY 24, 2022

Proposal by
LEE+RO

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February 24, 2022

Attn: Josh Wolff, District Engineer
San Lorenzo Valley Water District
13060 Highway 9
Boulder Creek, CA 95006

Re: Proposal for the Consolidation of the Bracken Brae and Forest Springs Mutual Water Companies

Dear Mr. Josh Wolff:

LEE + RO has read the RFP and takes no exception(s) to any portion of the RFP.

The RFP states that San Lorenzo Valley Water District is interested in consolidating the above mentioned mutuals by extending water services through new infrastructure.

In response, LEE + RO proposes a strong team of engineers to deliver the project with Murthy Kadiyala, PE, PLS, as the Project Manager. Murthy has 18 years of experience with his career is focused on water infrastructure design - new or rehabilitation. Murthy will be supported by a team of experienced Civil, Mechanical, Electrical, I&C, and Structural Engineers. LEE + RO has teamed up with subconsultants with in-depth knowledge of the project area with the goal of providing timely project delivery and fast response to District's questions.

LEE + RO brings 40 years of experience in water Infrastructure design projects. We feel our specific expertise offers a unique value proposition to the District — not only do we enjoy our reputation for quality design and creative problem solving, but we are also well known for our skill and responsive service. It is a testament to LEE + RO's quality of work that over 90% of our business comes from repeat business. We are proud to leverage our pipeline, booster pump station, and storage tank design expertise to proactively generate value to offer responsive, efficient service to the District.

We understand that construction cost has recently gone up significantly. Needless to say, the \$3.2M project budget must be carefully spent and seek value. For this proposal, LEE + RO team brainstormed and conceptually developed an alternate approach to the RFP. District may find the following cost-saving ideas significant towards achieving the project on budget.

- **Avoid Pipeline Alignment along Big Basin Highway (HWY 236) as much as possible.** By running the pipeline through internal streets at the earliest feasible intersections, District can mitigate risks associated with Caltrans' lane closure and flagger operation. The alternate alignment is shown in **Section 2** of this proposal.
- **Consolidate storages to one tank site.** Preliminary hydraulic analysis shows that having one storage tank site at Forest Springs would be sufficient and thus provide cost-savings. The conceptual design is shown in **Section 2** of this proposal.
- **Crossing the HWY 236 under the Boulder Creek Bridge.** Because there is HWY 236 between the proposed booster pump station and Forest Springs service area, a

pipeline crossing is required. The ideal crossing would be to hang pipe under the Boulder Creek bridge deck overhang and avoid trenching the HWY.

- **Expedited schedule with cost and time savings for non-optional tasks.** The surveying and geotechnical scopes are optimized by tailoring them to meet the aggressive project schedule.

As the Principal-in-Charge, I will support the project by committing the necessary resources for efficient project planning and execution that will conform to your cost, schedule, and logistical constraints.

LEE + RO sincerely appreciates the opportunity to submit this proposal. If you have any questions, please feel free to contact me via email or phone number below my signature.

Respectfully Submitted,

LEE + RO, Inc.



Tony Park
Vice President
1550 Parkside Drive Suite 320
Walnut Creek, CA 94596
tony.park@lee-ro.com
(925) 627-3382

2. PROJECT DESCRIPTION AND APPROACH

INTRODUCTION

The San Lorenzo Valley Water District (SLVWD, District) is located in the mountains of northern Santa Cruz County. Due to the varying surface topography, the District comprises of 35 pressure zones with 190 miles of pipelines, 33 booster pump stations and 55 tanks (9.3 MG capacity total). The private developments of Bracken Brae and Forest Springs, located in the sphere of influence of the District near the community of Boulder Creek, were severely damaged by the August 2020 CZU Lightning Complex fires. While the fire repairs are separately undertaken by the two individual mutual water companies serving them, the District wishes to upgrade their water systems in an effort to consolidate them into the District, with the help of grants received from the State of California.

OBJECTIVES

The District is seeking design services for the following water system improvements in Bracken Brae and Forest Springs (see **Figure 1**):

- 1.8 miles (~9,500 LF) of new and replacement water mains including two (2) bridge crossings
 - ~3,900 LF of 8" diameter water main replacement in SLVWD service area
 - ~2,200 LF of new 8" diameter water main for Bracken Brae interconnection
 - ~3,400 LF of new 8" diameter water main for Forest Springs interconnection
- New water tank
- New booster pump station

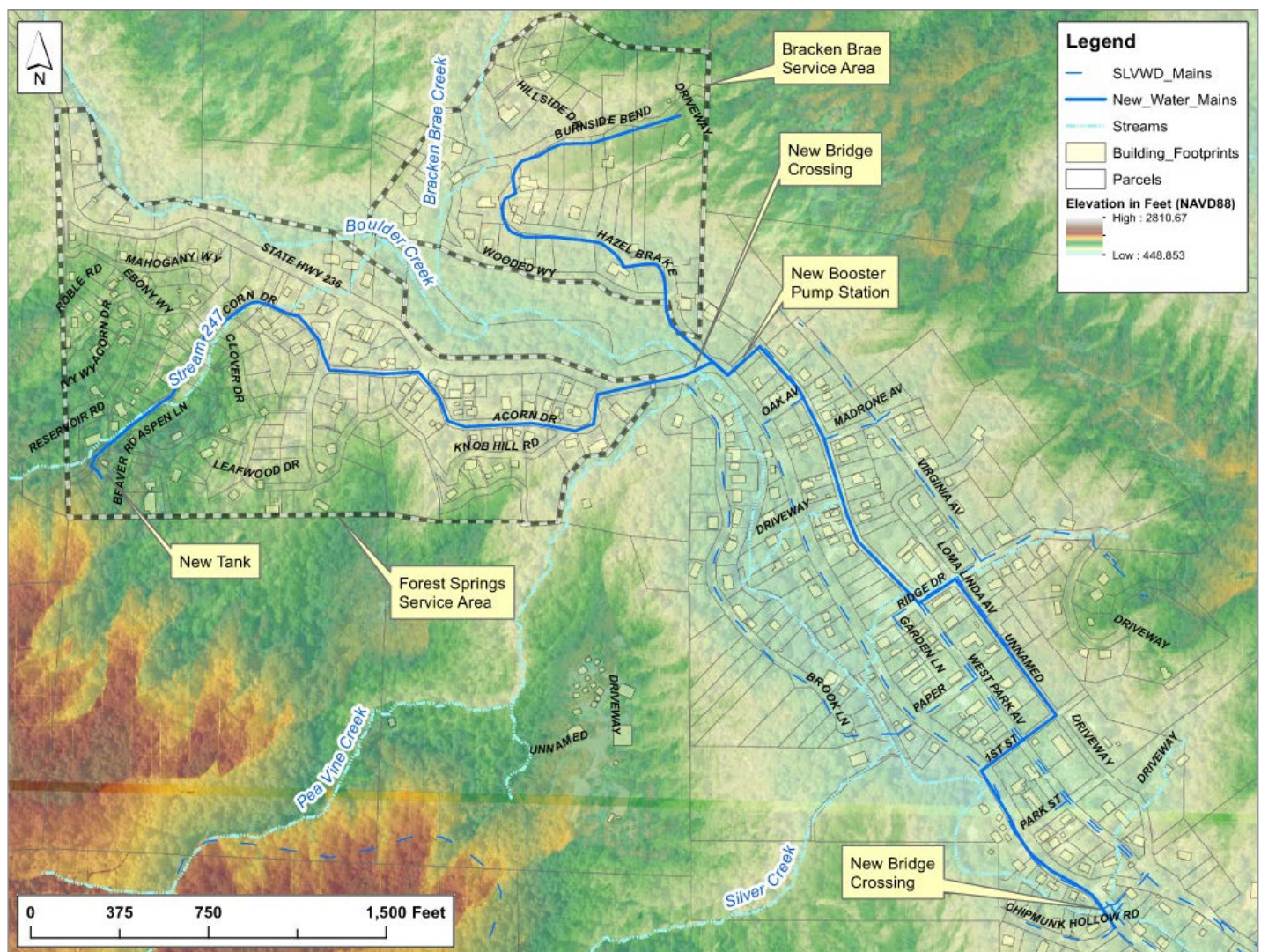


Figure 1 - Project Overview Map

NEW AND REPLACEMENT WATER MAINS

LEE + RO will design the new and replacement water mains per latest District standard specifications (Jan 2022 Revision). The replacement water main in SLVWD service area includes portions of Big Basin Way (Hwy 236), 1st St, Loma Linda Ave, Ridge Dr and West Park Ave. The new water mains in Bracken Brae includes portions in Big Basin Way (Hwy 236), Hazel Brake and Burnside Rd. The new water mains in Forest Springs includes portions in Big Basin Way (Hwy 236), Acorn Dr and Reservoir Rd. **LEE + RO's approach is to minimize length in Caltrans' right-of-way.**

The design will consist of:

- 8-inch diameter cement mortar lined and asphalt coated ductile iron main and fittings, pressure class 350 (0.25-inches nominal thickness) is the only available pressure class in this size. The ductile iron pipe is manufactured to the working pressure and also includes a 100 psi surge allowance and a safety factor of 2, which is more than adequate for the project needs. Depending on the recommendations of surge analysis (see **Section 7**), **anti-surge air valves, pressure relief/surge anticipator valves, surge tanks or in-line dampener** will be designed to protect the District's water infrastructure. Interconnections with existing mutual service mains will also be included.
- The water main trench (SD-10) will be sawcut to 20" wide and will have a minimum cover of 36-inches to the top of the water main. The pipe bedding will be 4" thick sand bedding, followed by pipe and trench zone backfill of 2-sack cement sand slurry to the bottom of the pavement section. Pavement restoration and traffic control will be designed to comply with County of Santa Cruz Public Works' and Caltrans' permit requirements.
- 6" Steamer fire hydrants (SD-3) are especially critical to help fight any future fires in the area. Spacing will be based on providing adequate coverage to all the building and structures. For the few homes in the area, the water mains are being upsized mainly to help increase residual pressures at the fire hydrants during fire flows.
- 1-inch water service and meter (SD-4). It is our understanding that there are no individual water meters for the customers in the area, so new meters and bolted meter boxes with backflow devices (SD-15) and chlorination taps (SD-11) will be designed. The exact location of the meters will be field coordinated.
- 8-inch gate valves (SD-1) for isolation spaced adequately for operational flexibility.
- 2-inch blow-offs (SD-6) will be added at low points such as near creek or culvert crossings. Any discharges to the creeks will need to be dechlorinated and shall comply with the NPDES discharge requirements.
- 2-inch air release and vacuum relief valves (SD-7) will be specified at high points.
- Water sampling stations (SD-12) will be added where required by the District.
- There will be two water main bridge crossings along Big Basin Way (Hwy 236): one at Chipmunk Hollow Road and the other at Hazel Brake crossing Boulder Creek. These will be designed with **Flex-tend expansion joints** and supported at deck overhangs with AWWA Clevis hangers, longitudinal and vertical bracing (see **Figure 2**).



Figure 2 – Water Main Bridge Crossing with Overhang Pipe Supports

NEW TANK

LEE + RO performed a preliminary analysis of the distribution system, system hydraulics and site in preparation of the proposal. The reservoir site is a 12,373 sft parcel to be acquired from Forest Springs is located at the end of Reservoir Road identified as APN 083-231-02. The parcel is located on a side slope and has a flattened space where the current rectangular shaped tank is sited. The existing tank will require demolition so that the new tanks can be constructed. A temporary water storage system will be designed during the new reservoir design process. The temporary system is envisioned to be a series of small 10,000 gallon poly tanks linked together and connected to the distribution pipeline. This will ensure that water storage is available while the new tanks are constructed.

Table 1 – Tank and Pump Sizing

Area	Homes	Population	Area (Acres)	Unit Factor (gpm/acre)	Avg Day Demand (gpm)	Max Day Demand (gpm)	Pump Design Flow (gpm)	Fire Flow (gpm for 2 hours)	Tank Design Volume (gallons)
Bracken Brae *	24	54	28	0.16	4	7	20	1000	120,000
Forest Springs **	126	385	56		9	13	40		
Total	152	439	84		13	20	60		

* Bracken Brae has an active intertie connection with Big Basin Water Company and has standby connections to a groundwater well and creek.

** Forest Springs has an active intertie connection (1-inch meter) and has an inactive stream diversion from a raw water reservoir.

LEE + RO will evaluate, present tank options and design the tank as an at grade steel reservoir. According to the analysis, the proposed tank volume required is 120,000 gallons which is shown in **Table 1**. **LEE + RO recommends two reservoirs at 60,000 gallons each to be constructed at the site**, see **Figure 3**. This will ensure redundancy so that one tank can be taken down for maintenance purposes while the other tank is still providing storage. LEE + RO will also provide project site improvements including developing site drainage improvements, new fencing with anti-climb features, site security, new electrical panel and I&C upgrades. LEE + RO's electrical and I&C staff will design the tank instrumentation. LEE + RO will evaluate the following options available for the tanks:

1. Tank type – bolted steel, glass fused bolted steel, or welded steel tanks
2. Roof type – flat steel or aluminum dome
3. Coatings options – thermoset epoxy, glass fused to steel, thermoset powder or galvanized
4. Foundation type – types 1 - 6 to be evaluated
5. Foundation ring footing – LEE + RO will set minimums and require mechanical anchorage due to high seismic in the region
6. Tank appurtenances – hatch, vent, ladders, drains, overflow drainage, level gauge, manways, and handrails
7. Mixing system – Gridbee or similar by Medora
8. Disinfection system – match the currently installed system

Preliminary tank data that will be used in the tank design are as follows:

1. Location – APN 083-231-02 Latitude 37.137125, Longitude -112.152133
2. 2 – 60,000 gallon tanks
3. Inside diameter – 20-ft, shell height – 32-ft



4. Floor elevation – 965-ft, overflow elevation 993-ft
5. Freeboard – 4.52-ft
6. Inlet/outlet pipe – 8-in DI
7. Seismic use group – III
8. Importance factor – 1.50
9. Site class – D (default)
10. Ss - 1.823, S1 – 0.719, Fa – 1.2, Fv – 1.0

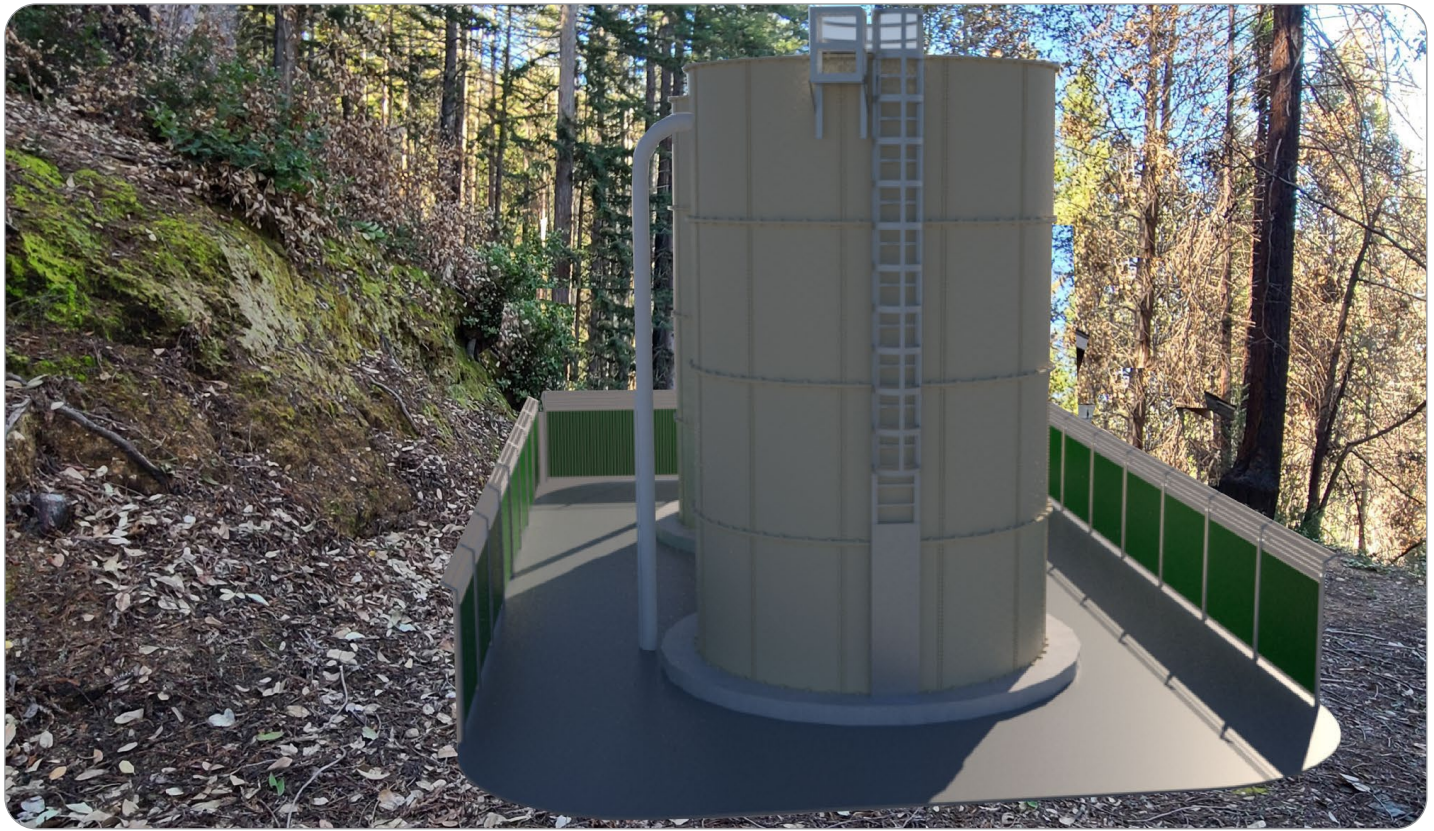


Figure 3 - New Tank Site Rendering

NEW PUMP STATION

Careful upfront planning is required to properly facilitate the installation of the new pump station and site improvements including storm drain and new propane fueled generator.

Our team of industry leading pump station hydraulic experts will be able to quickly evaluate the hydraulic information provided by the District to confirm the recommended pumping capacity and existing pipeline sizes, and narrow down the most appropriate pumps and pumping configurations to accommodate the system. The results of the hydraulic analysis along with a surge analysis will be clearly articulated into a technical memorandum. The LEE + RO team is committed to accomplishing these tasks while minimizing the impacts to the local community. Our seasoned team of engineers and quality control staff will assure constructability is built into the construction documents. This will allow for an economical and a well-coordinated construction process.

Our team has critically reviewed the available documents, and has started a preliminary analysis, which is further summarized on the following pages. **Figure 4** below is an overall site plan of the new booster pump station to complement the preliminary design. LEE + RO's team will provide facilities design in accordance with national design standards – AWWA, ASME, ACI, ASCE 7, CBC and other applicable codes and standards.



Figure 4 – New Booster Pump Station Rendering

PUMP STATION DESIGN

The booster pump station is envisioned to be located off Big Basin Way (Hwy 236) on a 6,230 sft rectangular parcel, APN 082-011-04, just north of Oak Ave. It is envisioned that the pump station will blend in with the community with fire hardened features and noise dampening features. The new PS building will incorporate either a concrete or metal roof with roof access hatches for easy equipment removal.

Pump Station Building: Generally, split faced block offers a natural look while at the same time providing noise mitigation. Our experienced team of engineers routinely design block structures for our clients. Our designer will explore different colors and patterns of CMU blocks and roof colors and materials to provide an aesthetically pleasing as well as functional building. Natural lighting will be provided via skylights and can design glass block for additional sources of natural light.

For sound mitigation our typical noise mitigation measures include acoustical doors, louvers, and special specifications for air conditioning equipment and the ventilation fans. The backup generator will be enclosed within the building including the muffler. The facilities' CMU construction will contribute significantly towards noise mitigation.

The technical memorandum will be used to present draft site layouts and building configurations for District's approval. These layouts will contain provisions for siting a new surge tank (if required), propane tank, service panels, and permanent backup power generator. A minimum slope of 1.5 percent shall be used around the site to allow for adequate drainage and a fence shall be placed along the site's perimeter.

LEE + RO understands that coordination with PG&E could take a long time and will coordinate with PG&E for a pole drop connection off of Big Basin Way (Hwy 236) early in the design process, depending on the pump selection and power requirements.

Site Piping: The suction and discharge pipe shall be sized so that maximum suction velocity is 5 fps, maximum discharge velocity is 8 fps, and the minimum recommended discharge pipe velocity is 3 fps.

HYDRAULICS AND PRELIMINARY PUMP SIZING

Hydraulic Analysis: The new potable water pump station will be constructed to provide potable water to the newest pressure zone consisting of Bracken Brae and Forest Springs. **LEE + RO's approach is to design a single tank and a single pressure zone to minimize initial capital costs and long-term O&M costs to the District.** Our team understands District's processes, goals, and standards which will allow for well-designed facilities.

Based on preliminary analysis and information provided in the RFP, the new pumps design points will be 60 gallons per minute at 350 feet of total dynamic head at average daily conditions. The elevation of the booster pump station is 650-ft and the highest point is the projected high water level of the Forest Springs Reservoir is 993-ft. The maximum day demand for 8 hours could be provided by small diameter vertical in-line duplex pumps such as Grundfos pumps.

LEE + RO already downloaded and processed USGS's high resolution (1m) LIDAR DEM data:

- It allowed generation of high-resolution contour data (NAVD88 vertical datum)
- It will immensely help the design of the project
- Provides cost savings in the order of several tens of thousands of dollars in topo surveying in this wooded steep terrain
- It will help meet the aggressive project schedule

From preliminary review of the available information, we developed the preliminary water line profiles shown in **Figure 5**. Two elevation profiles were developed and plotted – one of the profiles represents the water main for Bracken Brae and the second profile has been developed to show the water main to Forest Springs Tanks. Head loss was calculated to be very low due to the low design flows.

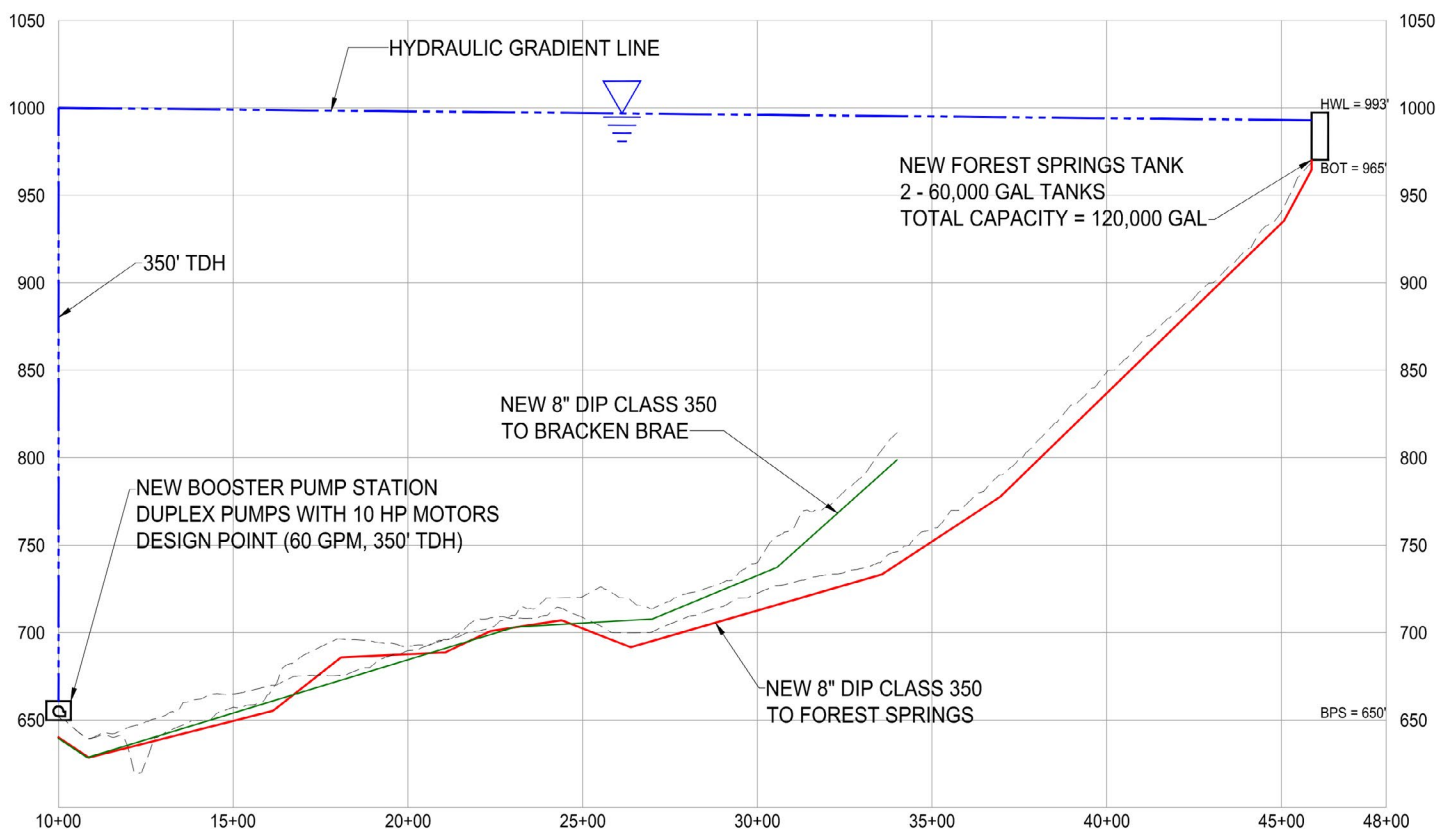


Figure 5 - Pipeline Profile

PRELIMINARY DRAWINGS LIST

Drawing Count	Drawing Number	Drawing Description
1	G-1	TITLE SHEET, VICINITY MAP, LOCATION MAP, DRAWING INDEX
2	G-2	GENERAL NOTES AND ABBREVIATIONS
3	G-3	GENERAL LEGEND AND SYMBOLS
4	G-4	KEY MAP AND BASIS OF SURVEY
5	D-1	DEMOLITION PLAN - FOREST SPRINGS TANK SITE
6	D-2	DEMOLITION PLAN - BOOSTER PUMP STATION SITE
7	C-1	PIPELINE PLAN – BIG BASIN HWY/ ACORN DR STA 10+00 TO 28+00
8	C-2	PIPELINE PLAN – ACORN DR STA 28+00 TO 45+00
9	C-3	PIPELINE PLAN – BIG BASIN HWY/ HAZEL BRAKE/BURNSIDE BEND STA 50+00 TO 74+00
10	C-4	PIPELINE PLAN – BIG BASIN HWY/ 1ST ST/ LOMA LINDA AVE STA 100+00 TO 120+00
11	C-5	PIPELINE PLAN - RIDGE DR/ WEST PARK AVE STA 120+00 TO 135+00
12	C-6	BRIDGE CROSSING @ CHIPMUNK HOLLOW RD AND @ HAZEL BRAKE
13	C-7	GRADING PLAN - FOREST SPRINGS TANK SITE
14	C-8	GRADING SECTIONS - FOREST SPRINGS TANK SITE
15	C-9	GRADING PLAN - BOOSTER PUMP STATION SITE
16	C-10	GRADING SECTIONS - BOOSTER PUMP STATION SITE
17	C-11	CIVIL DETAILS 1
18	C-12	CIVIL DETAILS 2
19	M-1	FOREST SPRINGS TANK SITE PIPING PLAN
20	M-2	FOREST SPRINGS TANK SITE CONNECTIONS/ MECHANICAL DETAILS
21	M-3	BOOSTER PUMP STATION SITE PLAN
22	M-4	BOOSTER PUMP STATION PIPING SECTIONS/ DETAILS
23	M-5	BOOSTER PUMP STATION PIPING SECTIONS/ DETAILS 2
24	S-1	BOOSTER PUMP STATION BUILDING FLOOR PLAN
25	S-2	BOOSTER PUMP STATION BUILDING SECTIONS
26	S-3	BOOSTER PUMP STATION STRUCTURAL DETAILS
27	E-1	ELECTRICAL NOTES AND ABBREVIATIONS
28	E-2	ELECTRICAL LEGEND AND SYMBOLS
29	E-3	ELECTRICAL PLAN - FOREST SPRINGS TANK SITE
30	E-4	ELECTRICAL PLAN - BOOSTER PUMP STATION SITE

3. IDENTIFICATION OF PRIME CONSULTANT

Legal Name of Firm	LEE + RO, Inc.
Location of Company Offices (Address, Phone) and Website Address	<p>City of Industry - Headquarters 1199 S. Fullerton Road City of Industry, CA 91748 / (626) 912-3391</p> <p>Walnut Creek - branch 1550 Parkside Drive Suite 320, Walnut Creek, CA 94596 / (925) 937-4050</p> <p>Sacramento - branch 8950 CA Center Drive Suite 120 Sacramento, CA 95826 / (916) 631-0111</p> <p>San Diego - branch 10640 Scripps Ranch Blvd., Suite 150 San Diego, CA 92131 / (858) 558-4411</p> <p>Website Address: www.lee-ro.com</p>
Legal form of company	California S Corporation
Point of Contact	<p>Tony Park, PE / Vice President</p> <ul style="list-style-type: none"> • (925) 953-3978 (Mobile), (925) 627-3382 (Direct), tony.park@lee-ro.com • 1550 Parkside Drive Suite 320, Walnut Creek, CA 94596
Project Team Discipline/Job Title	<p>Principal-in-Charge: Tony Park, PE</p> <p>Project Manager - Murthy Kadiyala, PE, PLS</p> <p>QA/QC Manager - Sam Lee, PE</p> <p>Project Engineer - Adam Betsworth, PE</p> <p>Mechanical Engineer (Tank, BPS) - Eric Magee, PE, PACP, ENV SP</p> <p>Electrical Engineer - Ken Creager, PE</p> <p>Electrical Engineer - Mehdi Nabavi, PE</p> <p>Structural Engineer - Alice Maupin, SE</p> <p>Assistant Engineer (Civil) - Lee Faraca, EIT</p>
Company Background - Description of the firm and statement of the firm's qualifications	<p>Over 42 Years in Business and Going Strong</p> <p>LEE + RO is a multidiscipline (full-service) water infrastructure engineering firm, established in 1979. The firm specializes in the planning, design, and construction management of water/wastewater/recycled water infrastructure including pipelines, potable and recycled water storage and conveyance facilities (pump stations, reservoirs, flow control facilities, and conveyance pipelines), sewage lift stations, and related systems such as electrical distribution systems, emergency generators, and controls. The firm has strived to deliver quality engineering, design, and construction management services throughout its 42-year existence. The firm's in-house engineering disciplines include civil, sanitary, process, structural, mechanical, electrical and instrumentation & controls(I&C) engineers as well as resident engineers and construction managers. The firm has four California offices, and the total number of current employees is 80. The firm's staffing includes 35 California registered professional engineers in various engineering disciplines.</p> <p>Statement of Past Disqualifications</p> <p>LEE + RO has not had any past bankruptcy filings, and identify any contract or subcontract by the firm which has been terminated, in default, or had claims made against it that resulted in litigation or arbitration in the last five years since its inception in 1979.</p>

4. IDENTIFICATION OF SUB CONSULTANTS



IFLAND SURVEY | Surveying

Prime Contact Person:

- Name/Title: Gary Ifland, LS / Principal Surveyor
- Address: 4113 Scotts Valley Drive, Ste 102, Scotts Valley, CA 95066
- Phone: (Office) 831-426-7941 ext.3630 (Cell)831-246-0971 / Email: gary@iflandsurvey.com

Staff and Discipline/Job title

- Gary R. Ifland, LS - Principal Surveyor, LS 7367 / Project Manager
- Vernon C. Little, LS, CFedS - Licensed Surveyor, LS 8701 / Office & Field Support
- Gerald Fusari - Field Surveyor / Crew Chief

Company Background: 22 years in business

Ifland Survey has provided surveying services throughout the Bay Area since 1999. Gary Ifland, LS 7367, is company President and provides the responsible management of all of the firm's surveying operations. Gary's experience in civil engineering and land surveying work includes over 3000 projects since 1986. In Santa Cruz County alone, Gary Ifland has filed more subdivision and parcel maps than any other active surveyor. His construction staking experience includes subdivision improvements for thousands of lots and more than 100 commercial building projects. In addition, Gary and the technical staff of experienced survey and CAD technicians are ready to meet the needs of our clients for smaller projects including Lot Line Adjustments, Property Surveys, Legal Descriptions and Expert Witness Testimony for Easement and Property Line Disputes. We strive to provide professional quality survey work, competitively priced, with timely and exceptional service.



Pacific Crest
ENGINEERING INC

PACIFIC CREST ENGINEERING, INC | Geotechnical

Prime Contact Person:

- Name/Title: Chris Johnson, PE / Principal Civil Engineer
- Address: 444 Airport Boulevard, Suite 106, Watsonville, CA 95076
- Phone: (Off.) 831-246-0971 ext.3630 (Cell)831-246-0971 / Email: cjohnson@pacengineering.net

Staff and Discipline/Job title:

- Chris Johnson, PE - Principal Civil Engineer
- Matthew Maciel, GE - Principal Geotechnical Engineer
- Elizabeth M. Mitchell, GE - Associate Geotechnical Engineer

Company Background: 20 years in business

Pacific Crest Engineering Inc. (PCEI) is a full service Geotechnical Group that specializes in geotechnical engineering and on-site construction inspection services. The Watsonville office includes a certified, fully equipped laboratory facility where they perform a variety of soil, asphalt and concrete testing. Skilled geotechnical engineers perform design level geotechnical investigations and develop comprehensive recommendations to mitigate difficult site conditions.

ZZ TECHNOLOGY | Surge Modeling

Prime Contact Person:

- Name/Title: Larry Crossley, PE / Principal Mechanical Engineer
- Address: 727 Center Lane, Santa Paula, California 93060
- Phone: (Office) 805-933-1429 / Email: lcrossley1@roadrunner.com

Staff and Discipline/Job title:

- Larry Crossley, PE - Principal Mechanical Engineer

Company Background: 24 years in business

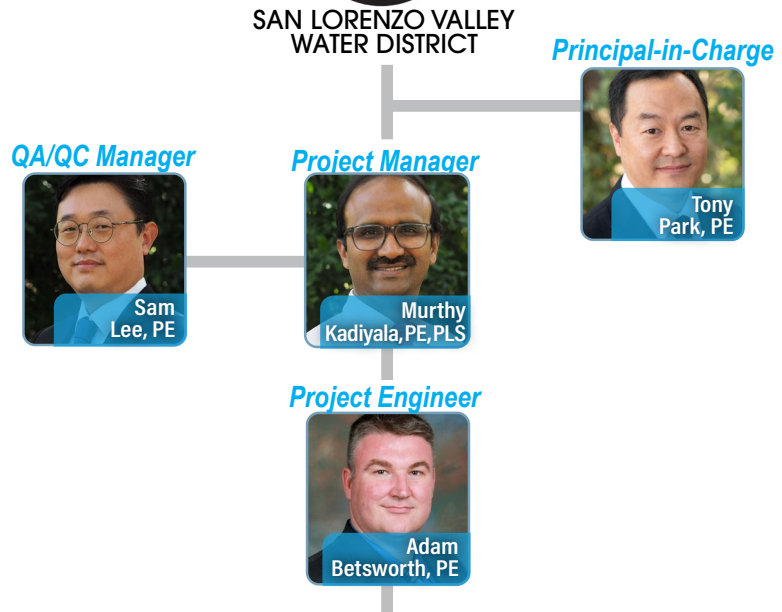
ZZ Technology was established in January of 1998, by Larry Crossley (Founder and sole proprietor). ZZ Tech specializes in hydraulic transient modeling, surge control equipment design, fabrication and field testing in municipal and industrial pipeline applications. Larry Crossley has been a licensed engineer in the State of California since 1978 with prior work in transient theory and pipeline protection devices. Mechanical Engineering Certificate No. M 18600.

5. PROJECT ORGANIZATION AND EXPERIENCE OF THE PROJECT TEAM

The proposed project team is assembled with the intent of being able to quickly provide the requisite professional services in response to the type of work required for this project. LEE + RO key staff members chosen for the project have significant experience executing similar services for other municipal agency clients. The LEE + RO team organization, identifying the roles and responsibilities of proposed key personnel and specialty subconsultants, is shown in **Exhibit 5-1**. Resumes can be found in **Appendix A**.



**Exhibit 5-1
Organization Chart**

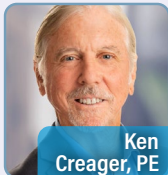


PROJECT TEAM

*Mechanical
(Tank, BPS)*



Electrical



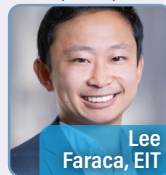
Electrical



Structural



*Asst. Engineer
(Civil)*



SUB-CONSULTANTS

Surveying GARY IFLAND
Surge Modeling ZZ TECHNOLOGY
Geotechnical Engineering
PACIFIC CREST ENGINEERING

KEY TECHNICAL STAFF BIOS



30 Years Experience

Civil Engineer, CA #C57542

Tony Park, PE | Principal-In-Charge

Tony is the contract manager for all LEE + RO clients in northern California. He has 30 years of experience in civil & sanitary engineering, specializing in water resources, conveyance, and treatment of water and wastewater. His experience covers from project management, planning to design, and extends to construction management and operations and maintenance. Mr. Park has completed many planning and feasibility studies, including hydraulic modeling. He also managed design projects and prepared construction documents for a wide variety of capital improvement projects for local agencies such as the San Francisco Public Utilities Commission and the City of San Jose as well as federal and state agencies such as U.S. Bureau of Reclamation and US Bureau of Indian Affairs.

RELEVANT EXPERIENCE INCLUDES:

- Recycled Water Treatment Facility Project, City of Watsonville, CA.
- Carmel Area Wastewater District (CAWD) and Pebble Beach Company in Carmel, CA.
- Department of Public Works, City of Burlingame, CA.



16 Years Experience

Civil Engineer, CA #C73472
Land Surveyor, CA #9180

Murthy Kadiyala, PE, PLS | [Project Manager](#)

As a licensed professional engineer and professional land surveyor, Murthy Kadiyala has over 16 years of municipal civil and infrastructure engineering, design, and construction experience in water and wastewater conveyance systems including trunk sewers, force mains, and water transmission mains, storage tanks and pump stations. Murthy has extensive experience with hydraulics and hydrology and modeling expertise with H2ONet, InfoWater, WaterCAD, SewerCAD, and ArcGIS. He also has high level skills in AutoCAD Civil 3D, TerraModel and MicroStation applications. Murthy is a licensed surveyor with experience in property boundary legal analysis and land surveying both field and office. He has also served in the responsible role of a water and wastewater plan checker for many years. His knowledge of the service connections to private developments including land title and encumbrances has enabled him to resolve potential issues early in the design process. Murthy has engineered water and wastewater conveyance projects requiring extensive permitting, right-of-way acquisition and analysis, traffic & noise mitigation, and public relations.

RELEVANT EXPERIENCE INCLUDES:

- Santiago Canyon Pump Station Improvements, Irvine Ranch Water District, CA.
- Overland Drive and Margarita Road Potable Water Pipeline Replacement, Rancho California Water District.
- State College Boulevard Water Main Realignment Project, City of Anaheim, CA.



15 Years Experience

Civil Engineer, CA #C73790

Adam S. Betsworth, PE | [Project Engineer](#)

Adam S. Betsworth is a Civil Engineer with 15 years of experience. Adam has supervised and trained employees in various tasks and in the use of Civil 3D. He has calculated and resolved complex mathematical/engineering problems and formulas to meet project specifications. He presented projects to clients, from concept to 3D model designs using Civil 3D in conjunction with product samples and presentation material. Adam has proper understanding of government rules and regulations as needed to complete projects. He has the ability to draft plans and concepts using Civil 3D, LDD, and AutoCAD.

RELEVANT EXPERIENCE INCLUDES:

- Watson Road Booster Station, County of Riverside, CA.
- Redlands/Hemlock Booster Station, County of Riverside, CA.
- Broadway Sewer Siphon Replacement, Sunset Beach Sanitary District, CA.



23 Years Experience

Civil Engineer, CA #64566

Eric Magee, PE, PACP, ENV SP | [Mechanical Engineer \(Tank, BPS\)](#)

Eric has 23 years of water and wastewater infrastructure design experience in private, municipal, and federal applications. His professional working proficiency includes project management, design development, planning, construction services and coordination of multi-disciplinary projects from design phase through construction. Eric's expertise is in water/recycled water conveyance, wastewater infrastructure, and storage solutions. He is an active member of the American Water Works Association and serves on two standards committees.

RELEVANT EXPERIENCE INCLUDES:

- Soledad Pump Station Upgrade, City of San Diego, CA.
- Task 14CP02-Soledad Pump Station Upgrade, San Diego, CA.
- La Jolla Improvements 3, City of San Diego, CA.



30 Years Experience

Electrical Engineer, CA #E12748

Ken Creager, PE | [Electrical Engineer](#)

Ken Creager is a highly organized and responsible professional with significant experience in engineering, project management, construction oversight and inspection for water/wastewater, petrochemical, research facilities, and major industrial projects. His expertise includes power generation, substation design, power distribution, heavy industrial / facilities design, as well as, automation and control systems design, power system analysis and master planning. He also has extensive design experience with cogeneration facilities.

RELEVANT EXPERIENCE INCLUDES:

- Hazard Mitigation Project at Ely Booster Station, Sonoma County Water Agency, Santa Rosa, CA.
- Electrical and Civil Site Improvements for Well Sites, Solano Irrigation District, Solano, CA.
- Citywide Emergency Generators Replacement – Phase 2, City of Santa Clara, CA.



21 Years Experience

Electrical Engineer, CA #23111

Mehdi Nabavi, PE | Electrical Engineer

Mehdi Nabavi has 21 years of experience as an electrical engineer on numerous small to large water and wastewater projects throughout North America. He is highly experienced in electrical modular design, electrical equipment packages, FEED, detailed design and preparation of bid documentation, and providing engineering support services during construction and commissioning phases.

RELEVANT EXPERIENCE INCLUDES:

- Ely Booster Station Hazard Mitigation Project, Sonoma County Water Agency, CA.
- Electrical Improvement to Lake Herman and Cordelia Water Pump Stations, City of Benicia, CA.
- Treatment Plant Piping Renovations Project Phase 10, Central Contra Costa Sanitary District, CA.



20 Years Experience

Civil Engineer, CA # C51691
Structural Engineer,
NV # S020877
Structural Engineer,
AZ # S50525

Alice Maupin, SE | Structural Engineer

Alice Maupin is a California registered civil engineer with more than 20 years of seismic structural analysis, field investigation, design, constructability assessment, and project management experience. In her work with Metropolitan Water District of Southern California (MWD) and CalPortland Cement Company (CPC), she has produced numerous foundation designs with seismic anchorage for large diameter water tanks and concrete cement silos. Part of her graduate work at USC dealt with seismic sloshing effects on tank foundations. In addition to Alice's design experience with new structures, she is also experienced in the rehabilitation of existing structures.

RELEVANT EXPERIENCE INCLUDES:

- Santiago Canyon Pump Station Improvements, Irvine Ranch Water District.
- Cement Hill Water Treatment Plant Chemical Rehabilitation, Suisun-Solano Water Authority, Antioch, CA.
- Pomerado Park Reservoir Upgrade Project, City of San Diego.



2 Years Experience

Engineer-in-Training #19-284-02

Lee Faraca, EIT | Assistant Engineer (Civil)

Mr. Faraca is a Civil Engineer in Training specializing in water and wastewater infrastructure projects. He has gained valuable experience working on numerous small to large water and wastewater projects covering planning, design, and construction administration. His project experience includes construction administration support, field inspections, development of specifications and providing design support, and coordination. Mr. Faraca is skilled in engineering software, including MS Office suite, AutoCAD, and Bluebeam.

RELEVANT EXPERIENCE INCLUDES:

- Pajaro Slough Pump Station, City of Watsonville, CA.
- Replacement of Switchgear & MCC at Cajalco Intake Plant, West Municipal Water District.
- Demonstration, Recharge, Extraction and Aquefer Management (DREAM) Project, Aqueduct Tie-in Design, San Joaquin County, California, East Bay Municipal Utility District.



15 Years Experience

Civil Engineer, CA #C78939

Sam Lee, PE | QA/QC Manager

Sam Lee has 15 years of diversified civil, sanitary, mechanical and process engineering and design experience with water and wastewater infrastructure engineering projects. His experience includes facility investigation and evaluation, condition assessments, documentation of as-built conditions through field verification of existing dimensions, piping and equipment layouts, engineering analysis and design, and construction phase engineering services for wastewater and water treatment plants, booster pump stations and lift stations, force mains and other water and wastewater conveyance and collection systems, including emergency generators and other auxiliary equipment. Through a wide variety of water infrastructure engineering projects, Sam has acquired diverse design and inter-discipline coordination skills.

RELEVANT EXPERIENCE INCLUDES:

- 2016-17 & 2017-18 Reservoir Management Systems Replacement Projects, Moulton Niguel Water District.
- Wastewater Treatment Facilities Upgrade, City of Calexico.
- Recycled Water Phase 2C (Tankless Alternative) Planning Services, Santa Clarita Valley Water Agency.



6. EXPERIENCE AND PAST PERFORMANCE

Below we highlight several representative relevant projects complete with client references. Please refer to Exhibit 6-1 and Exhibit 6-2, where we provide matrices listing representative potable and recycled water pump station engineering experience and water pipeline project experience.

OVERLAND DRIVE AND MARGARITA ROAD POTABLE WATER PIPELINE REPLACEMENT

Client Name	Rancho California Water District
Client Reference	Jacob Wiley, Engineering Manager (951) 296-6900 / wileyj@ranchowater.com
Organization Role	Prime Consultant
Project Budget and Total Dollar Value of Completed Project	Original Contract - \$219,910.00 Amended to \$256,340 (added Construction Phase Services)
Budgeted Project Schedule and Total Time to Completion	Construction: November 2020 - May 2021 (Design Completed in 2020)
Estimated Construction Costs and Actual Construction Costs	\$1.63 Million (Estimated and Actual)

PROJECT SIZE AND DESCRIPTION

LEE + RO provided engineering design services for the replacement of a potable water line and associated pavement restoration work. This Project is located within the City of Temecula and consists of the design of a replacement pipeline for approximately 2,432 linear feet of existing 16-inch diameter C905 PVC potable water pipeline. The existing pipeline, installed in 1999, experienced two catastrophic failures from 2018 to June 2019. During repair work, District staff observed that the pipeline ruptured from what appears to be "over-belled" joints, which has resulted in failure at the joints and subsequent splitting longitudinally down the pipe section.

LEE + RO performed a pipe material evaluation, alignment selection, pipeline replacement/repair alternatives, and provided a technical memorandum and performed bid phase services. The project included development of engineered traffic control plans through primarily commercial developments consisting of Costco, restaurants and a strip mall, and coordination with the City for plan checking and approval thereof.



SANTIAGO CANYON PUMP STATION IMPROVEMENTS

Client Name	Irvine Ranch Water District
Client Reference	Alex Murphy, Project Manager (949) 453-5863 / murphy@irwd.com
Organization Role	Prime Consultant
Project Budget and Total Dollar Value of Completed Project	Original Contract - \$485,400 Amended to \$657,104 (added Additional Design Services)
Budgeted Project Schedule and Total Time to Completion	May 2019 - in Construction
Estimated Construction Costs and Actual Construction Costs	Bidding currently, \$7.8 Million (Estimated)

PROJECT SIZE AND DESCRIPTION

The Santiago Canyon Pump Station Improvements (Project) will increase pumping capacity at Manning, Read, Shaw and Williams pump stations to meet Tier 1 Fire Flow requirements, improve reliability, and upgrade the facilities to current District standards. The project improvements include a new pressure reducing valve connecting zones 9 and 10B (at Manning Pump Station only), which will open during fire flow conditions, site improvements for maintenance across the four pump stations, and improved fire protection. Evaluation of existing standby generators due to increased pump horsepower was performed along with the evaluation and design of electrical equipment upgrades, instrumentation and control improvements to current District standards including PLC replacements, and design of communications upgrades including two new 35-foot-tall IRWD standard communications towers at Shaw Reservoir and Williams Pump Station.



WATER TANK NO. 1 (CUNNINGHAM) REPLACEMENT PROJECT

Client Name	City of San Bruno
Client Reference	Hae Won Ritchie, City Engineer (650) 616-7067 / hrichtie@sanbruno.ca.gov
Organizations Role	Prime Consultant
Project Budget and Total Dollar Value of Completed Project	Original Contract - \$154,060
Budgeted Project Schedule and Total Time to Completion	August 2013 - In Construction (Design Completed in 2018)
Estimated Construction Costs and Actual Construction Costs	\$3 million (Estimated)

PROJECT SIZE AND DESCRIPTION

The Project included the replacement design of a potable water reservoir. LEE + RO evaluated the existing seismic and structural conditions of the 2.5 million-gallon (MG) capacity steel storage tank constructed in the 1960s. Initial investigations concluded that the upgrade costs would be prohibitive, so a study was conducted to compare the value of replacing the reservoir with a new steel tank or constructing a pre-stressed concrete reservoir. The precast concrete reservoir was selected. The tank site is located in the middle of a heavily wooded residential neighborhood and engineering tasks included working closely with neighbors, developing slope stability recommendations on a hillside site, conducting a fault trace study due to proximity to the San Andreas fault.



7. CONTRACTUAL SCOPE OF SERVICES

SCOPE OF WORK

LEE + RO has thoroughly reviewed the RFP Scope of Work and supporting reference documents. The Scope of Services summarized below follows the RFP with our suggested modifications to help deliver the project that fully meets or exceeds the District objectives.

TASK A – PROJECT MANAGEMENT AND CONTRACT ADMINISTRATION

LEE + RO will provide the necessary project management and contract administration required to execute the project. This includes kickoff meeting and weekly telecommunication conferences (45 minutes) to discuss project status. At the kickoff meeting, the District will supply any additional record drawings and discuss the design parameters with LEE + RO. This also includes two (2) site visits to ensure construction drawings represent actual field conditions. Sub-tasks include the following:

1. Project Management, Coordination and Contract Administration
2. Kick-off Meeting and Records Gathering
3. Weekly Telecommunications and Project Reporting

LEE + RO will provide meeting agenda and prepare meeting minutes.

TASK B – FIELD INVESTIGATIONS AND ANALYSIS

1. RIGHT-OF-WAY AND BOUNDARY SURVEY

LEE + RO has teamed up with IFLAND SURVEY for providing record right-of-way survey for all project elements; and, boundary/topo survey for tank and booster pump station sites. The District will acquire the tank site from Forest Springs, while the anticipated booster station site will be acquired from a private party.

The record **Right-of-way survey** for all project elements will locate sufficient existing survey monuments to map the record right-of-way relative to found monuments and incorporate the street centerline, right-of-way and parcel lines in the CAD base map.

The **Boundary survey for tank and booster pump station sites** will include searching, obtaining and reviewing record deeds and maps to map the parcel boundaries relative to found monuments. No new monuments will be established in the field. It will also include mapping all topo features within these sites.

2. GEOTECHNICAL INVESTIGATION

RO has teamed up with PACIFIC CREST ENGINEERING for geotechnical investigation consisting of literature review, site reconnaissance, subsurface exploration, and laboratory testing to develop design and construction recommendations.

The test boring locations will be marked in white paint and utilities notified via USA Digalert a minimum of 72-hours prior to performing exploratory borings at the site. An encroachment permit application, along with associated traffic control plan for borings, will be made to the County of Santa Cruz prior to field investigation. Soil borings within Caltrans right-of-way will be avoided. A total of up to six (6) soil borings including one each at the tank site and booster pump station site will be drilled to depths ranging from 10 to 20 feet below ground surface. The borings will be backfilled with the soil cuttings at the completion of drilling and capped off with dry cement within pavement areas. Laboratory testing including moisture content, unit weight, Atterberg limits, grain size distribution, shear strength, and Caltrans corrosion analysis will be performed on the field collected soil samples.

Geotechnical recommendations for the design and construction of the project will include

- A qualitative discussion of seismic hazards
- Backfill, compaction, cut and fill recommendations for site and subgrade preparation
- Allowable bearing pressures for foundation design
- Active, at-rest and passive lateral earth pressures for retaining wall design
- Surface and subsurface drainage recommendations

3. HYDRAULIC AND SURGE ANALYSIS

will work with the District to obtain a copy of the calibrated Infowater water model prepared by Akel Engineering Group for the November 2021 Water Master Plan. Multiple steady state scenarios will be developed and simulated for different combinations of demand conditions (Avg Day, Max Day + Fire Flow, Peak Hour), proposed pipe sizes, pumping conditions and tank levels for existing, proposed consolidation with Bracken Brae and Forest Springs, and future consolidation with Big Basin Water Company. The node pressures and pipeline velocities will be checked for conformance to the District standards.

LEE + RO has teamed up with ZZ TECHNOLOGY for a surge (transient) analysis for this project. It is critical to perform this

analysis to protect the District facilities from transient pressure surges. Transient studies would model power outage shutdown and valve closure scenarios at the proposed booster pump station using SURGE software. Hydraulic design data such as pipe diameter, material, elevations, pump curves, tank levels, pump discharge valve type and closing speed will be used to accurately model the transients created on sudden shutdown and the performance of surge control equipment. Pump shutdown on power failure is typically most critical, as initial downsurge can cause the water to boil and vapor cavities to form. Collapse of vapor cavities can lead to water hammer and potential pipeline damage.

Anti-surge air valves can control downsurge pressures in the pipeline if properly sized and located along the profile. Pressure relief or surge anticipator valves can reduce the upsurge created on flow reversal. Surge tanks (pressurized air chambers) limit downsurge and upsurge and is considered the most failsafe. Evaluation of these surge control options will be provided as deemed appropriate.

TASK C – PRELIMINARY DESIGN (30% SUBMITTAL)

1. UTILITY RESEARCH

LEE + RO will contact and coordinate record requests with all public and private utilities (e.g. Pacific Gas & Electric, Comcast, AT&T Pacific Bell, SLVWD, Bracken Brae and Forest Springs mutuals etc.) to identify and determine the location of their utilities at the project sites and along the streets adjacent to the project sites. Due to the largely overhead utilities, potholing is mainly needed at the end connections and other tie-in connections required to interconnect the District mains with the consolidated mutual companies' mains along the proposed pipe alignment.

2. PREPARE 30% PLANS

LEE + RO will prepare the following as part of preliminary design:

- Establish design criteria based on District Standard Specifications (Jan 2022) and discussions with District
- Prepare pipeline alignment and site plans for tank and booster pump station based on field topo survey, including building and piping layouts
- Prepare outline specifications
- Prepare preliminary cost estimate
- Prepare Baseline project schedule

3. PERFORM QA/QC AND SUBMIT 30% DESIGN

After the 30% design is complete, LEE + RO will perform an extensive QA/QC and submit 30% design package for District review and comment.

4. ATTEND 30% DESIGN REVIEW MEETING

The 30% design meeting will be held to review plan view site layout drawings for the well site. One (1) week prior to this meeting, LEE + RO will provide the District with electronic copies of plan view site layout drawings for District review and comment.

5. INCORPORATE DISTRICT 30% COMMENTS

The District will provide LEE + RO with their 30% comments within two (2) weeks following the 30% design review meeting. LEE + RO will then proceed with the 50% Contract Documents preparation and submittal.

TASK D – 50% DESIGN

1. PERMITTING AND AGENCY COORDINATION ACTIVITIES

Permits anticipated to be acquired by LEE + RO for construction include anticipated to be acquired by LEE + RO for construction include construction encroachment permits from Santa Cruz County Public Works, Caltrans and any other permitting agencies. Fees associated with encroachment permits and any other permits for construction will be paid by the District.

Immediately after the 30% design review meeting, LEE + RO will contact above permitting agencies to determine all permit requirements and will obtain courtesy review comments from the agencies to discuss with the District at the 50% design review meeting. LEE + RO will assist the District with the application process to obtain encroachment permits.

2. PREPARE 50% PLANS, SPECIFICATIONS, AND ESTIMATE

Once the 30% design comments are received from the District, LEE + RO will commence with the design of the 50% Contract Documents (Construction Drawings, Specifications, and Cost Estimate). The 50% drawings will include a title sheet and more complete versions of the 30% design documents. The site plan will be advanced to include complete construction notes. A piping plan and sections sheet will be provided in the Drawing set and will include the proposed piping alignment, orientation, and piping elevations with detailed construction notes. The drawings will include connection details to the existing system. The site plans for tank and booster station showing proposed elevations will be included with the 50% complete plans.

LEE + RO will provide construction drawings drawn in AutoCAD format (latest version) on D size sheets (24" x 36"). As a minimum, the construction drawings included with the 50% submittal will include the following sheets:

- Title Sheet
- Pipeline alignment and construction callouts
- Demolition plans for existing tank

- Site piping and electrical plan for tank and booster pump station
- Mechanical plan and sections of tank piping, pump suction and discharge lines
- Electrical single-line diagram and lighting panel schedule for tank and booster pump station

The specifications will include a bid schedule, along with the special construction provisions. LEE + RO will prepare the Contract Specifications using the latest District format. A detailed estimate of probable construction costs, along with a recommended construction duration will be provided.

3. PERFORM QA/QC AND SUBMIT 50% DESIGN

After the 50% design is complete, LEE + RO will perform an extensive QA/QC and submit the 50% design package for District review and comment.

4. ATTEND 50% DESIGN REVIEW MEETING

The 50% design meeting will be held to review the drawings and specifications at the 50% design completion stage. One (1) week prior to this meeting, LEE + RO will provide the District with electronic copies of plans and specifications for District review and comment.

TASK E – 95% DESIGN

1. PREPARE 95% PLANS

Once the 50% design review comments are received from the District, LEE + RO will incorporate District comments and advance the design drawings to the 95% complete stage. The tank and booster pump station site plans will show all existing property lines, public rights-of-way, easements, utilities, and existing and proposed improvements in the project site, and material and equipment notes. The drawings will show the existing piping and piping to be abandoned or removed in the plan view, along with the method of abandonment of the existing facilities.

The piping plan and elevations will show the below-ground and above-ground piping at the proposed tank site and booster pump station site.

LEE + RO will provide the District with electronic copies of plans for District review. This submittal will include a complete set of contract drawings including:

- Title Sheet
- Pipeline alignment, construction callouts and details
- Demolition plans for existing tank
- Site piping and electrical plan for tank and booster pump station

- Mechanical plan and sections of tank piping, pump suction and discharge lines
- Structural design of tank including foundation and tank accessories layout
- Structural design of booster pump station building including concrete pads for surge tank and propane tank
- Miscellaneous mechanical, structural, and civil details
- Electrical single-line diagram and lighting panel schedule for tank and booster pump station
- Pumping unit electrical plan, conduit, and conductor schedule
- Miscellaneous electrical details

2. PREPARE 95% SPECIFICATIONS

Once the 50% design review comments are received from the District, LEE + RO will incorporate District comments and advance the Specifications to the 95% complete stage. LEE + RO will provide the District with electronic copies of specifications for District review. This submittal will include a complete set of specifications for all three project sites.

3. PREPARE 95% COST ESTIMATE

Once the 50% review comments to the cost estimate are received from the District, LEE + RO will incorporate District comments and advance the cost estimate to the 95% complete stage.

4. PERFORM QA/QC AND SUBMIT 95% DESIGN

After the 95% Design is complete, LEE + RO will perform an extensive QA/QC and submit the 95% complete design documents for District review and comment.

5. ATTEND 95% DESIGN REVIEW MEETING

The 95% design review meeting will be held to review the drawings and specifications at the 95% design completion stage. Two (2) weeks prior to this meeting, LEE + RO will provide the District with electronic copies of plans and specifications for District review and comment.

TASK F – FINAL DESIGN SERVICES

1. PREPARE FINAL DESIGN

LEE + RO will complete the well equipping drawings and specifications to 100% design stage, by incorporating all comments from the previous submittals.

2. QA/QC AND SUBMIT FINAL DESIGN PLANS, SPECIFICATIONS, AND ESTIMATE (PS&E)

LEE + RO will submit Final Contract Documents to the District as follows:

- Plans (Mylar) and Specifications, ready for District signatures.
- Electronic copies of all calculations and reports for District files.
- Electronic copies of drawing files in AutoCAD or DXF format.
- A detailed estimate of probable construction costs for each project site

TASK G - BID PHASE SERVICES

1. ADVERTISING ASSISTANCE

LEE + RO will assist District in advertising for and obtaining bids for the work and, where applicable, maintain a record of prospective bidders to whom bidding documents have been issued and attend the pre-bid conference.

2. PREPARE ADDENDA

LEE + RO will prepare addenda as necessary to clarify, correct or change the bidding documents.

3. NEGOTIATIONS SUPPORT

LEE + RO will provide information or assistance needed by District in the course of any negotiations with prospective contractors. Additionally, we will consult with District as to the acceptability of subcontractors, suppliers, and other individuals and entities proposed by prospective contractors for those portions of the work as to which such acceptability is required by the bidding documents.

4. EVALUATE BIDS

LEE + RO will assist District in evaluating bids and in assembling and awarding contracts for the work. Additionally, we will determine the acceptability of substitute materials and equipment proposed during the bidding or negotiating phase when substitution prior to the award of contracts is allowed by the bidding documents.

TASK H – CONSTRUCTION PHASE SERVICES

1. RESPOND TO RFIs

LEE + RO will issue necessary clarifications and interpretations of the contract documents as appropriate to the orderly completion of contractor's work. Such clarifications and interpretations will be consistent with the intent of and reasonably inferable from the contract documents. We will also evaluate and determine the acceptability of substitute or "or- equal" materials and equipment proposed by contractor.

2. SHOP DRAWINGS REVIEW

LEE + RO will review and approve or take other appropriate action with respect to shop drawings and samples and other data which contractor is required to submit, but only for conformance with the information given in the contract documents and compatibility with the design concept of the completed project as a functioning whole as indicated by the contract documents. Such reviews and approvals or other action will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions and programs incident thereto.

TASK I – OPTIONAL SERVICES

1. ADDITIONAL TOPO SURVEY

As an optional task, LEE + RO together with IFLAND SURVEY will provide topo survey for all project elements including the length of new and replacement water mains.

The topo survey will include roadway and utility improvements within the general limits of the roadway and adjacent areas that may be suitable for water main construction. The survey will include utilities by surface evidence and any pre-marked underground utilities, together with surface topo features, trees etc. Any significant private improvements encroaching into the street right-of-way will also be located. Survey datum will be based on NAD83 State Plane Coordinates and NAVD88 benchmarks. The deliverable will be a CAD base map showing all feature line work and spot elevations at an appropriate scale.

2. ADDITIONAL GEOTECHNICAL INVESTIGATION

As an optional task, LEE + RO together with PACIFIC CREST ENGINEERING will provide up to fourteen (14) additional geotechnical borings to provide an extensive investigation including literature review, site reconnaissance, subsurface exploration, and laboratory testing to develop design and construction recommendations. Some of these borings will also be the Caltrans right-of-way, together with added costs for Caltrans' permitting, traffic control plans and actual field traffic control. **These additional borings are in case the permitting agencies such as Caltrans and Santa Cruz County Public Works require them in order to approve the project permits, owing to a geologically diverse terrain in the County.**

ASSUMPTIONS:

1. CEQA: The District will handle CEQA. LEE + RO will assist the District with any information and exhibits.

2. CONSTRUCTION ACTIVITIES: Do not appear to disturb more than one acre at a time and is therefore not subject to permitting under a statewide General NPDES for Construction Stormwater Activities issued by the State Water Resources Control Board. However, Contractor will be required to prepare and submit an approved project specific WQMP plan demonstrating compliance with post-construction BMPs.



PROJECT SCHEDULE

Below is a preliminary schedule of milestone dates and durations LEE + RO used in development of this proposal:

- Design Contract Notice to Proceed – March 7, 2022
- Design Duration - 134 days
- Anticipated Design Completion – July 18, 2022

ID	Task Name	Duration	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	Notice to Proceed	0 days	3/7	◆ Notice to Proceed						
2	BASELINE SCHEDULE	134 days	3/7	BASELINE SCHEDULE					7/18	
3	Design Services	134 days	3/7	Design Services					7/18	
4	Kick-off Meeting	0 days	3/7	◆ Kick-off Meeting						
5	Utilities Research	43 days	3/7	4/18						
6	Surveying	43 days	3/7	4/18						
7	Geotech	43 days	3/7	4/18						
8	Hydraulic Analysis	22 days	3/7	3/28						
9	Prepare 30% Design	57 days	3/7	5/2						
10	District 30% Design Review	7 days			5/3	5/9				
11	30% Design Meeting	0 days			5/9	◆ 30% Design Meeting				
12	Permit Coordination	70 days			5/10	7/18				
13	Prepare 50% Design	28 days			5/10	6/6				
14	District 50% Review	7 days				6/7	6/13			
15	50% Meeting	0 days				6/13	◆ 50% Meeting			
16	Prepare 95% Design	21 days				6/14	7/4			
17	District 95% Review	7 days					7/5	7/11		
18	95% Meeting	0 days					7/11	◆ 95% Meeting		
19	Prepare Final Design	7 days					7/12	7/18		
20	Submit Final Design	0 days						7/18	◆ Submit Final Design	

8. INSURANCE

LEE + RO has reviewed the insurance requirements in the RFP and will provide insurance certificates, in which the District will be named as an additional insured, after notification of award of contract. A minimum 30-day notice will be provided to the District upon cancellation of any policy. A list of our current insurance certificates is provided in the matrix below.

Insurance Certificate Matrix

TYPE	CARRIER	EFF DATE	EXP DATE	PER OCCURENCE	AGGREGATE	POLICY NO.
Commercial General	Sentinel Insurance Co.	11/01/2021	11/01/2022	\$2,000,000	\$4,000,000	20SBWEG2776
Automobile	Hartford Insurance Co.	11/01/2021	11/01/2022	\$1,000,000	\$1,000,000	20UEGZH5830
Workers' Compensation	Hartford Insurance Co.	11/01/2021	11/01/2022	\$1,000,000	Each	20WEGAB8B8V
Umbrella	Sentinel Insurance Co.	11/01/2021	11/01/2022	\$5,000,000	\$5,000,000	20SBWEG2776
Professional Liability	Travelers Casualty and Surety Co of America	10/17/2021	10/17/2022	\$5,000,000	\$5,000,000	107510841

LEE + RO RESUMES





LICENSE/CERTIFICATION

Civil Engineer, CA #C57542

EDUCATION

MS, Engineering,
California State University, San Francisco

BS, Civil Engineering,
University of California, Berkeley

OFFICE LOCATION

Walnut Creek

TONY PARK, PE

PRINCIPAL-IN-CHARGE

Tony is the contract manager for all LEE + RO clients in northern California. He has 30 years of experience in civil engineering, specializing in water resources, conveyance, and treatment of water and wastewater. His experience covers from planning to design and extends to construction management and operations and maintenance. Tony has also participated in planning studies including master planning, feasibility studies, and alternatives evaluations and managed design projects for a wide variety of capital improvement projects for local, state, and federal agencies.

EXPERIENCE

Recycled Water Treatment Facility Project, City of Watsonville, California. Project Engineer for providing engineering support for the \$18 million 9-mgd Recycled Water Treatment Facility construction. The project includes new flocculation clarifiers, disk filtration, ultraviolet disinfection, clearwell storage tank, chemical facilities, and a distribution pump station. Recycled water is delivered to 95 agricultural water users in the 8,000-acre coastal area.

Carmel Area Wastewater District (CAWD) and Pebble Beach Company in Carmel, California. Project engineer for estimating the risk of the reuse water shortage assumed by the micro-filtration / reverse osmosis (MF/RO) project. Due to the shortage of potable water on the Monterey Peninsula, CAWD considered recycled water for the irrigation of golf courses in the area, including world-renowned Pebble Beach Golf Course. Responsibilities included using Monte Carlo simulation to determine the risk of a water shortage using recycled water associated with the proposed MF/RO treatment and storage system.

Department of Public Works, City of Burlingame, California. Project engineer for modeling water distribution system for the. Collected the City's water demand information and monitored water levels in storage tanks, operation of booster pump stations, and pressure records at PRV stations. Identified the City's urgently needed system improvements. The model was also used for water quality simulation where chlorine residual levels were traced. The comprehensive results of the KYPIPE modeling analysis are to be used in developing a Water System Master Plan for the City of Burlingame.

WRP Emergency Standby Generator Project, City of Livermore. Principal-in-Charge for the pre-design and design of the installation of a new 2 MW emergency diesel generator and its integration with the existing electrical system at the Livermore Water Reclamation Plant. The Project included size and location design of the new generator, design of a closed transition automatic transfer scheme between the generator and the existing 480 V main-tie-main switchgear, protective relay improvements to the plant 12 kV switchgear, and site improvements including area paving and drainage design.

Treatment Plant Electrical Switchgear Replacement Project, Delta Diablo, Antioch. Principal-in-Charge for this \$4.2 million project to replace the existing 480 V, 3000 A switchgear with a new 480 V, 5000 A switchgear. The Project included the design of the new switchgear, relocation of existing oil tanks, HVAC, and piping, addition of a breaker-breaker ATS to an existing MCC, and the design of a closed transition automatic transfer scheme.

Westside Recycled Water Project, San Francisco Public Utilities Commission (SFPUC). Project Engineer for \$186 million (construction cost estimate) Westside Recycled Water Project for SFPUC. Designed chemical storage and feeding systems for six different chemicals necessary to clean microfiltration and membrane system for reverse osmosis. Also designed chemical metering pumps, feed pumps for the filter and membranes, and decarbonators.



LICENSE/CERTIFICATION

Civil Engineer, CA #C73472

Professional Land Surveyor, L9180

EDUCATION

MS, Civil Engineering,
Michigan State University

BS, Civil Engineering,
Osmania University,
Hyderabad, India

OFFICE LOCATION

City of Industry

MURTHY KADIYALA, PE, PLS

PROJECT MANAGER

As a licensed professional engineer and professional land surveyor, Murthy Kadiyala has over 16 years of municipal civil and infrastructure engineering, design, and construction experience in water and wastewater conveyance systems including trunk sewers, force mains, and water transmission mains, storage tanks and pump stations. Murthy has extensive experience with hydraulics and hydrology and modeling expertise with H2ONet, InfoWater, WaterCAD, SewerCAD, and ArcGIS. He also has high level skills in AutoCAD Civil 3D, TerraModel and MicroStation applications. Murthy is a licensed surveyor with experience in property boundary legal analysis and land surveying both field and office. He has also served in the responsible role of a water and wastewater plan checker for many years. His knowledge of the service connections to private developments including land title and encumbrances has enabled him to resolve potential issues early in the design process. Murthy has engineered water and wastewater conveyance projects requiring extensive permitting, right-of-way acquisition and analysis, traffic & noise mitigation, and public relations.

EXPERIENCE

Santiago Canyon Pump Station Improvements, Irvine Ranch Water District.

Provided hydraulic modeling for the project to increase pumping capacity at Manning, Read, Shaw, and Williams pump stations to meet the Tier 1 fire flows in their respective zones to provide improved reliability and upgrade the facilities to current District standards. LEE + RO updated the existing hydraulic model for the Santiago Canyon area consisting of several pressure zones and ran the model for existing, interim and buildout conditions for average day, max day plus fire flow and peak hour scenarios. Global fire flow analyses were performed with and without proposed pump station and future pipeline improvements. The model results were used not only to confirm and select the proposed pumps and pressure reducing valves at the four pump stations, but also to confirm the master planned pipeline improvements.

Overland Drive and Margarita Road Potable Water Pipeline Replacement, Rancho California Water District.

Project Manager for the replacement of a potable water line and associated pavement restoration work. This project is located within the city of Temecula and consists of the design of a replacement pipeline for approximately 1,700 linear feet of existing 16-inch diameter C905 PVC potable water pipeline. The existing pipeline, installed in 1999, experienced two catastrophic failures from 2018 to June 2019. During repair work, District staff observed that the pipeline ruptured from what appears to be "over-belled" joints, which has resulted in failure at the joints and subsequent splitting longitudinally down the pipe section.

State College Boulevard Water Main Realignment Project, City of Anaheim.

Provided construction phase services for the design of a \$2.5 million water main project along State College Boulevard in the City of Anaheim. This project relocated water mains that were interfering with a new 54-inch trunk sewer constructed between the 91 Freeway and Howell Avenue. The project included replacement of 400 LF of 6-in and 10-in CIP with 12-in DI pipe; 2,700 LF of 6-in CIP with 12-in DI pipe; and 400 LF of 18-in concrete cylinder pipe with 18-in DI pipe. State College Boulevard is a busy arterial with numerous underground utilities. The City of Anaheim electrical facilities are underground, and waterlines had to avoid buried duct banks. The waterlines were designed to provide an adequate vertical clearance around 8 ft x 8 ft RCB storm drain culverts and 45-in and 81-in diameter storm drains.

11.8 MG Sunnyslope Water Storage Tank, Jurupa Community Services District (JCSD).

Murthy provided construction phase engineering services for an 11.8 million gallon (MG) capacity pre-stressed post-tensioned concrete reservoir in the Jurupa Hills. Reviewed contractor's submittals, RFI and RFCs. Murthy also coordinated the SCE service connection, from the off-site pole-mounted transformer. The offsite Storm Drain connection also needed to be routed to avoid conflict with a nearby proposed private development.



LICENSE/CERTIFICATION

Civil Engineer, CA #C73790

EDUCATION

BS, Civil Engineering,
California State Polytechnic University,
Pomona

OFFICE LOCATION

City of Industry

ADAM S. BETSWORTH, PE

PROJECT ENGINEER

As a licensed professional engineer, Adam Betsworth has over 15 years of municipal civil, infrastructure, engineering, design and construction experience in water and wastewater conveyance systems as well as land development experience. He's worked with AutoCAD for more than 21 years and is an expert with Civil 3D. Betsworth's municipal work includes but is not limited to: potable and recycled water pipelines, wastewater treatment plants, lift stations, trunk sewers, potable and recycled water reservoirs and booster pump stations. His work in land development covered commercial grading plans, street plans, sewer, water, recycled, and transmission lines, storm drain plans, channels, traffic control plans, tract maps, legal descriptions, and writing complex exhibits and reports. Betsworth has performed his duties as civil engineer at various job sites. Adam has supervised and trained employees in various tasks and in the use of Civil 3D. He has calculated and resolved complex mathematical/engineering problems and formulas to meet project specifications. He presented projects to clients, from concept to 3D model designs using Civil 3D in conjunction with product samples and presentation material. Adam has proper understanding of government rules and regulations as needed to complete projects.

EXPERIENCE

Watson Road Booster Station, County of Riverside. A water booster station project in which Adam was responsible for the on-site grading, wall plans, buildings, and pump station.

Redlands/Hemlock Booster Station, County of Riverside. A water booster station project in which Adam was responsible for the on-site grading, wall plans, buildings, and pump station.

Broadway Sewer Siphon Replacement, Sunset Beach Sanitary District. Civil Engineer providing civil and mechanical engineering design services for the project to proactively replace the 85-year-old pipe, which is still in working condition, to provide greater pipe resistance to earthquake shaking. The project is located in the City of Huntington Beach community of Sunset Beach, near Captain Jack's restaurant at the corner of Pacific Coast Highway (Caltrans R/W) and Broadway. The project entails replacing approximately 220 LF of existing 6-inch diameter cast iron sewer siphon crossing beneath Sunset Channel (60' wide R/W) northwest of the existing bridge in Broadway (80' wide R/W). The existing bridge in Broadway (City R/W) provides the only land connection to the approximately 110 residences on an island surrounded by water channels which drain to the Pacific Ocean. The predesign phase consists of evaluating alternative trenchless methods, such as Horizontal Directional Drilling (HDD), Pipe Bursting, Pipe Jacking & Boring etc. The design phase consists of preparing design plans, specifications and cost estimates based on the District selected trenchless method. Adam will aid in assisting the District with obtaining all necessary permits for this project. This project involves meetings with the District's Board, Captain Jack's restaurant owner, homeowners near Bayview Drive, permit agencies; and, with Caltrans and the City of Huntington Beach.

March Lifecare Campus, March Air Reserve Base. A commercial project in which Adam was responsible for the grading and design of the booster station plans including the on-site piping and features such as the MCC, antenna, etc.

Plano Lift Station Odor Control System Feasibility Study, Santa Margarita Water District. Civil Engineer providing civil and mechanical engineering design services for a feasibility study of Plano LS Odor Control System and Realignment of Inlet Sewer. Adam is performing a complete investigation of the existing conditions based on existing and available data and develop alternatives that are constructible and economical to the District. A feasibility letter report with figures and costs, will be prepared summarizing the findings and recommendations.



ERIC MAGEE, PE, PACP, ENV SP

MACHANICAL ENGINEER (TANK, BPS)

Eric has 23 years of water and wastewater infrastructure design experience in private, municipal, and federal applications. His professional working proficiency includes project management, design development, planning, construction services and coordination of multi-disciplinary projects from design phase through construction. Eric's expertise is in water/recycled water conveyance, wastewater infrastructure, and storage solutions. He is an active member of the American Water Works Association and serves on two standards committees.

LICENSE/CERTIFICATION

Civil Engineer, CA #64566

EDUCATION

MBA, Business Administration

Point Loma Nazarene University

BS, Civil & Environmental Engineering,
San Diego State University

OFFICE LOCATION

San Diego

EXPERIENCE

Soledad Pump Station Upgrade, City of San Diego, CA. Project Manager for the design of upgrades to the Soledad Potable Water Booster Pump Station. This pump station serves the La Jolla Soledad West 925 Zone and is the primary pump station. The pumps had been in service for a number of years and were hydraulically deficient. In addition, there were a number of maintenance and operational issues. The work included replacement of the 4 pumps with 2 VFDs and 2 constant speed, vertical turbine pumps, new pump building. The project also involves water quality improvements to the existing circular prestressed concrete tank. The scope of the improvements involves the installation of a Tide Flex water mixing system using a series of check valves. In addition, the inlet and outlet will be separated to enhance water mixing. Both the inlet and outlet pipes will be installed under the wall footing and penetrate the reservoir floor.

Task 14CP02-Soledad Pump Station Upgrade, San Diego, CA. Project Manager for the design of upgrades to the Soledad Potable Water Booster Pump Station. This pump station serves the La Jolla Soledad West 925 zone and is the primary pump station. The pumps had been in service for a number of years and were hydraulically deficient and had a number of maintenance and operational issues. Work included the installation of a new pump building, new VFDs and constant speed vertical turbine pumps, reservoir water quality improvements, new storm drain system, valve improvements, installation of new surge tank, site improvements, etc.

La Jolla Improvements 3, City of San Diego, CA. Civil Engineer for this force main improvements project. The City of San Diego has established an ongoing program for the replacement of all aging and deteriorating water and sewer mains currently in service. These replacements will reduce future water main breaks and reduce maintenance requirements. The program will also bring the existing water mains up to current city standards. The area is currently being serviced by a temporary 3-inch regulator to maintain domestic service; however, the current supply does not provide adequate fire flow to the area. Replacement of existing water mains (currently out of service) with new mains will provide adequate fire flow to the area. La Jolla Improv 3 also includes the construction of four (4) curb ramps and street resurfacing. The project is in Council District 1 in the La Jolla Community Planning Area. The project is proposed within the City right-of-way (ROW), private streets and easements. The project will utilize both the open trench and trenchless construction methods.

1 MG Reservoir Rehabilitation, Atascadero State Hospital, Atascadero, CA. Project Manager for the 1 MG Reservoir Rehabilitation. The Department of State Hospitals (DSH) completed improvements to extend the service life of the existing 1 MG Reservoir at the Atascadero State Hospital. DSH's water system consists of the 1 MG water reservoir, four supply wells, domestic water treatment system and staging area, above-grade storage tank, and distribution system. The existing 1 MG rectangular reinforced concrete storage tank was constructed in the 1950's and is the primary source of water storage for the hospital. The tank consists of two sectionalized containment reservoir compartments in a north south configuration with a flat column supported reinforced concrete roof. Provided materials testing and construction documents to upgrade distressed concrete, seepage, inoperable valves, corrosion evaluation, roof analysis, and other tank upgrades for water quality and safety.



KENNETH CREAGER, PE

ELECTRICAL ENGINEER

Ken Creager is a highly organized and responsible professional with significant experience in project management, engineering, construction oversight and inspection for water/wastewater, petrochemical, research facilities, and major industrial projects. His expertise includes power generation, substation design, power distribution, heavy industrial / facilities design, as well as, automation and control systems design, power system analysis and master planning. He has extensive design experience with cogeneration facilities.

LICENSE/CERTIFICATION

Electrical Engineer CA#12748

EDUCATION

BS, Electrical Engineering,
University of the Pacific

OFFICE LOCATION

Walnut Creek

EXPERIENCE

Pajaro Slough Pump Station, City of Watsonville, CA. Vice-President of Electrical and Instrumentation Engineering for the Pajaro Slough Pump Station Project. Provided technical support included review and approval of all client deliverables before submission, technical guidance for electrical system design, construction oversight guidance, and commissioning support

Replacement of Switchgear & MCC at Cajalco Intake Plant, West Municipal Water District, CA. Electrical Engineer providing bidding and construction phase services for the replacement of switchgear & MCC at Cajalco Intake Plant. The Intake Plant's existing main electrical switchgear had reached the end of its useful life. The switchgear is provided with 4160V, 3-phase, 1200A overhead service, which is then distributed on-site to three major areas, Intake Pump Station, Booster Pump Station No. 1, and Booster Pump Station No. 2, as well as via overhead power line to the Plant facility, Hillside Irrigation, and Hillside Domestic tank and booster pump areas. WMWD requested the replacement of the 4160V switchgear including the service entrance meter and main circuit breaker sections, motor control centers sections, feeder breaker sections as well as the section that connects the existing solar PV system; excluding components that serve the decommissioned Booster Station No. 1 loads. Safety deficiencies will be improved such as grounding, arc-flash, and reliability. All the pumps will require new starters and controls. In addition, the PLC/SCADA system will need to be completely replaced. A feasibility evaluation was conducted for conversion of entire 4160V MCCs to 480V equipment, which includes but is not limited to circuit protection, transformer, starter sections, and motors.

Demonstration, Recharge, Extraction and Aquefer Management (DREAM) Project, Aqueduct Tie-in Design, San Joaquin County, California, East Bay Municipal Utility District, CA. Electrical Engineer providing construction support services for this pilot groundwater banking project in San Joaquin County as a part of DEMONSTRATION RECHARGE, EXTRACTION, AND AQUIFER MANAGEMENT (DREAM) Project. This conceptual project will assist EBMUD in evaluating the benefits of supplementing the existing water supply by combining groundwater with surface water sources beyond the EBMUD service area. The project involves supplying 1,000 acre-feet (AF) of Mokelumne River water to farmer(s) for irrigation in lieu of groundwater pumping, followed by extracting up to 500 AF of banked supplies during dry years. The extracted groundwater will be conveyed through a new pipeline and delivered to EBMUD's Mokelumne Aqueduct by a temporary booster pump station (this project). Groundwater will be extracted from an existing 10-inch diameter irrigation well owned by a private landowner. The existing 100 horsepower (HP) well can extract water at rates up to 1,200 gallons per minute (gpm) at an estimated system pressure between 20-30 pounds per square inch (psi). Pumped groundwater will flow through 2.8 miles of proposed 12-inch diameter high-density polyethylene (HDPE) pipeline, which will be designed and constructed by the North San Joaquin Water Conservation District (NSJWCD). This project will extend piping another 260-feet, boost the pressure, and then discharge to the aqueduct. EBMUD will construct a tie-in connection to allow delivery of the pumped groundwater into the aqueduct at a maximum flow rate of 2 cubic feet per second (cfs) or 900 gpm. To overcome the aqueduct water pressure, a booster pump station is required to increase the discharge pressure to 200 psi. EBMUD requires the consultant to prepare preliminary and final design report, and plans with the assumption that most, if not all, of the needed equipment will be rented.



MEHDI NABAVI, PE

ELECTRICAL ENGINEER

Mehdi has 21 years of experience as a professional electrical engineer on numerous small to large water and wastewater projects throughout North America. He is highly experienced in electrical modular design, electrical equipment packages, FEED, detailed design and preparation of bid documentation, and providing engineering support services during construction and commissioning phases.

EXPERIENCE

Ely Booster Station Hazard Mitigation Project, Sonoma County Water Agency, CA. Electrical Engineer for the improvements to the water booster station to provide protection against a 500-year flood event and a magnitude 7.0 earthquake. The project includes improvements to sealing and elevating electrical appurtenances including the main 4.16kV switchgear and standby generator above the 500-year floodplain, replacing the pump motor housing structures and anchoring equipment critical to the operation of the booster station. The project will replace the existing medium voltage switchgear that feeds two 500-hp pumps with a new switchgear. The project also modifies existing 500-hp vertical turbine pumps to elevate the motors above the 500-year floodplain.

Electrical Improvement to Lake Herman and Cordelia Water Pump Stations, City of Benicia, CA. Electrical Engineer for the project performed for City of Benicia. Intention of project was to equip pump stations with provisions for connecting emergency diesel generator power supply. Existing motor Reduced Voltage Soft Starters (RVSS) settings were reviewed and motor starting study was performed to define rating of diesel generator and maximum allowable cable length between generator and MCC. Electrical single line drawings and plan layouts were developed to include new NEMA 3R enclosure generator breaker connected to existing MCC busbar. As part of coordination with PG&E, Kirk-Key interlocks were installed to avoid paralleling emergency generator and utility power supply.

Treatment Plant Piping Renovations Project Phase 10, Central Contra Costa Sanitary District, CA. Electrical Engineer for the project to address the aging infrastructure and improve system reliability. This project rehabilitates or replaces various piping systems and equipment throughout the plant. It includes replacing piping and metering pumps for hypochlorite system, 1W water system, replacing VFD for high pressure water pump and effluent pumps, replacing conductor and conduits for primary and secondary clarification tanks.

Emergency Generator and PLC based ATS system, City of Livermore Water Reclamation Plant (Plant), CA. Electrical Engineer in charge of engineering services and inspection during construction. Project included installing new 2MW generator and ATS system for make before breaker connection to 480VAC main switchgear.

Improvements to the Water Pollution Control Plant's (WPCP) Influent Pump Station (IPS) and Effluent Pump Station (EPS), West County Wastewater District (Richmond), CA. Electrical Engineer for the project to improve Influent/Effluent pump station valves. Four new 24" and 36" valves and electrical actuators were added to existing pump station. Existing 480V MCC and PLC were modified to supply and control new MOVs.

Cement Hill Water Treatment Plant Chemical System Rehabilitation project, Suisun-Solano Water Authority, CA. Electrical Engineer in charge of engineering services during construction. Project objectives include replacement of the gaseous chlorine with hypochlorite (bleach) for disinfection as well as replacement of the filter aid and coagulant storage tanks, metering pumps, and piping system within the plant chemical pipe trench.

LICENSE/CERTIFICATION

Electrical Engineer, CA #23111

EDUCATION

MS, Electrical Engineering,
SHARIF University of Technology,
Tehran, Iran

BS, Electrical Engineering,
SHARIF University of Technology,
Tehran, Iran

OFFICE LOCATION

Walnut Creek



ALICE MAUPIN, SE

STRUCTURAL ENGINEER

LICENSE/CERTIFICATION

Structural Engineer, NV # S020877

Structural Engineer, AZ # S50525

EDUCATION

MS, Civil Engineering with emphasis on
Water and Wastewater Treatment

Graduate courses in structural design,
University of Southern California

BS, Civil Engineering (Structural Option),
California State University, Los Angeles

OFFICE LOCATION

City of Industry

Alice Maupin is a California registered civil engineer with more than 20 years of seismic structural analysis, field investigation, design, constructability assessment, and project management experience. In her work with Metropolitan Water District of Southern California (MWD) and CalPortland Cement Company (CPC), she has produced numerous foundation designs with seismic anchorage for large diameter water tanks and concrete cement silos. Part of her graduate work at USC dealt with seismic sloshing effects on tank foundations. In addition to Alice's design experience with new structures, she is also experienced in the rehabilitation of existing structures.

EXPERIENCE

Santiago Canyon Pump Station Improvements, Irvine Ranch Water District.

Structural Engineer for the Santiago Canyon Pump Station Improvements Project to increase pumping capacity at Manning, Read, Shaw and Williams pump stations to meet the Tier 1 fire flows in their respective service zones to provide improved reliability and upgrade the facilities to current District standards. The project improvements include the following primary components at the five locations:

- Design of pump and pump manifold piping improvements to meet or exceed the Tier 1 criteria and provide improved operational capability and reliability.
- Design of a new pressure reducing valve connecting zones 9 and 10B (at Manning Pump Station only) which will open during fire flow conditions to utilize the excess storage capacity in Zone 10B to feed Zone 9.
- Design of site improvements to provide adequate access for maintenance and fire protection.
- Evaluation of existing standby generators and design of replacement generators as necessary due to increased pump horsepower.
- Evaluation of existing electrical service capacity and design of electrical equipment upgrades as necessary.
- Evaluation of instrumentation and control improvements to upgrade pump stations to the current District standards including the replacement of the PLC at some of the sites.
- Design of upgrades to the communications equipment to provide increased reliability. This task will include construction of two new 35-foot-tall IRWD standard communications towers: one at Shaw Reservoir, and another at Williams Pump Station.

Cement Hill Water Treatment Plant Chemical Rehabilitation, Suisun-Solano Water Authority, Antioch, CA.

Structural Engineer on project to replace existing gaseous chlorine disinfection system with 6% sodium hypochlorite at Cement Hill Water Treatment Plant. The system will be designed so that the plant can receive full loads at 12.5% sodium hypochlorite. The new hypochlorite facility contains new metering pumps; hypochlorite FRP storage tanks; shade/rain structure; water softener system for in-tank dilution; secondary containment; booster pump skid; sodium hypochlorite, filter aid, and coagulant piping; chlorine corrosion resistant fittings, supports and fasteners; area lighting; instrumentation for status and remote control; and a new eyewash station.

Pomerado Park Reservoir Upgrade Project, City of San Diego.

Structural Engineer for the rehabilitation of the Pomerado Park Reservoir. This tank is a 5 MG, above grade welded steel tank that was constructed in 1969. A recent condition assessment showed significant corrosion in the tank walls, piping, and attached appurtenances. LEE + RO, as a subconsultant to Dokken Engineering, is designing improvements to the facility to extend its useful life and improve conditions for the City's operators. Improvements will include (1) new interior and exterior tank coating systems, (2) replacement of corroded bolts and connectors, (3) replacement of an existing valve vault and associated piping, and (4) a complete replacement of the facility's existing I&C system, including level sensors, PLCs and networking equipment.



LEE FARACA, EIT

ASSISTANT ENGINEER (CIVIL)

Mr. Faraca is a Civil Engineer in Training specializing in water and wastewater infrastructure projects. Mr. Faraca has gained valuable experience working on numerous small to large water and wastewater projects covering planning, design, and construction administration. His project experience includes construction administration support, field inspections, development of specifications and providing design support, and coordination. Mr. Faraca is skilled in engineering software, including MS Office suite, AutoCAD, and Bluebeam.

LICENSE/CERTIFICATION

Engineer-in-Training #19-284-02

EDUCATION

MS, Civil & Environmental Engineering,
California Polytechnic State University,
San Luis Obispo

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

OFFICE LOCATION

Walnut Creek

EXPERIENCE

Hazard Mitigation Project at Ely Booster Station, Sonoma County Water Agency, Santa Rosa, CA. Assistant project engineer for the design of a 4,160V, 1,200A switchgear and MCC powering 2EA 500hp pumps. Site is within the floodplain and requires flood hazard mitigation. Assisted with the location of actuator valves and controls housing to withstand potential flooding. Worked on secondary containment calculation and design for the existing generator fuel tank. Identified possible utility conflicts. Assisted the structural engineering department with the draft and layout of the switchgear reinforced concrete pad. Formatted and preliminary reviewed all specifications. Worked with the client to make incorporate all civil changes from the 60%, 90%, 99%, and design review meetings.

Electrical and Civil Site Improvements for Well Sites, Solano Irrigation District, Solano, CA. Assistant engineer for the civil and electrical improvements to 13 different pump stations across Solano County. Improvements include new 200 A service entrances and associated utility coordination. Walked 13 project sites with surveyor subcontractor outlining the survey extents and required shots and elevations. Assisted in the site layouts design, inclusive of electrical poles, guy wires, disconnects, electrical meters, motor starters, grounding, and fencing for each site. Perform utility research and communicated with US Bureau of Reclamation and US Army Corp of Engineers about required permits for work within irrigation canals.

Citywide Emergency Generators Replacement – Phase 2, City of Santa Clara, CA. Project engineer for the design of 4 emergency generators to replace the existing 375 hp, 480 hp, 587 hp, and 1140 hp, generators, as well as all four belly tanks with 24 hours of full load fuel storage for two storm drain stations and two water well sites. Designed and drafted the 30% site plan drawings and civil details, assembled the cost estimate, and updated the project schedule. Worked with Peterson Power, Cummins, and Kohler to get preliminary generator and tank sizing. Coordinated design with the civil, electrical, and structural teams and drove the project to design submittal milestones.

Switchgear Replacement Project, Delta Diablo Treatment Plant, Antioch, CA. Assistant engineer for the 480V, 4000 A switchgear replacement project at Delta Diablo. Verified dimensions, identified hazardous location clearances, worked with client on planning plant shutdowns, and to locate areas for temporary generators. Identified needed clearances for ductbanks, conduits, and drainage pipes. Drafted hazardous location zones within area of work. Worked on the technical specifications and drafting for the 100% submittal. Assisted in tracking, logging, and reviewing submittals and RFIs sent to LEE + RO over Procore. Conducted a preliminary review of all construction submittals and helped coordinate responses. Coordinated and responded to civil and structural RFIs. Attended weekly construction meetings and discussed project specifics with the client, construction managers, and contractors.



SAM LEE, PE

QA/QC MANAGER

LICENSE/CERTIFICATION

Civil Engineer, CA #C78939

EDUCATION

MS, Environmental Engineering,
University of Southern California

BS, Environmental Engineering,
Yonsei University, Korea

OFFICE LOCATION

City of Industry

Sam Lee has 15 years of diversified civil, sanitary, mechanical and process engineering and design experience with water and wastewater infrastructure engineering projects. His experience includes facility investigation and evaluation, condition assessments, documentation of as-built conditions through field verification of existing dimensions, piping and equipment layouts, engineering analysis and design, and construction phase engineering services for wastewater and water treatment plants, booster pump stations and lift stations, force mains and other water and wastewater conveyance and collection systems, including emergency generators and other auxiliary equipment. Through a wide variety of water infrastructure engineering projects, Sam has acquired diverse design and inter-discipline coordination skills.

EXPERIENCE

2016-17 & 2017-18 Reservoir Management Systems Replacement Projects, Moulton Niguel Water District, CA. Project Engineer for engineering, design, and construction support services for the conversion of on-site hypochlorite generation systems to bulk liquid sodium hypochlorite for ammonia chloramine disinfection at eight (8) different water reservoir sites in the MNWD service area. Each site contains one or two potable water storage reservoirs that supply domestic water to the local communities. The water is disinfected utilizing chloramines in the reservoirs to maintain the desired residual chlorine concentration prior to delivery. Each disinfection facility contains new bulk sodium hypochlorite and ammonia storage and feeding systems and includes a masonry block chemical storage building with separate rooms for each chemical, ventilation and split system AC units for the chemical rooms, storage tanks, chemical pumps and piping, reservoir mixers, analyzers and dosage control, chemical leak detection systems, sample and drain piping, electrical, process monitoring and control via SCADA, shower/eyewash stations, intrusion alarms and site utilities.

Wastewater Treatment Facilities Upgrade, City of Calexico, CA. Project Engineer for the WWTP upgrades project to provide the City with an upgrade WWTP with the capacity to treat current and future flow demands, as well as meet any potential regulatory requirements, specifically regarding ammonia concentrations in the effluent. The upgrades to the WWTP consist of a new packaged septage receiving station, improvements to the existing headworks, a new influent metering structure, a new vortex grit removal system, a new influent pump station, three new Biolac aeration basins and appurtenances, new aeration blowers and blower building, two new secondary clarifiers, new RAS, WAS, and Scum Pump Stations, replacement of the existing Calgon UV System with a Trojan UV 4000 System, a new rotary drum sludge thickener facility, conversion of an existing primary clarifier to plant water storage and distribution system, and a new water distribution system and hydrants, a new plant stormwater drainage system, a new electrical buildings and electrical power distribution systems, a new PLC/SCADA systems, new piping for conveyance of wastewater, mixed liquor, secondary effluent, sludges and utility water, and miscellaneous site improvements including paved road for access to main process units.

Recycled Water Phase 2C (Tankless Alternative) Planning Services, Santa Clarita Valley Water Agency, CA. Project Engineer for the evaluation of the Phase 2C Recycled Water System (Tankless Alternative). The full recycled water build out involves new reservoirs and pumping facilities. SCVWA desired evaluation of the Phase 2C portion of the system without the storage facility option to accelerate the implementation to select users. The potential large recycled water users in the Phase 2C area include the College of the Canyons, California Institute of the Arts, Vista Valencia Golf Course, large residential communities, shopping centers, neighborhood parks, and recreation facilities and commercial facilities. LEE + RO evaluated the Phase 2C Recycled Water System (Tankless Alternative) assuming the limited number of recycled water customers or users to be connected to the system. The recycled water supply will be from the Valencia Water Reclamation Plant operated by Los Angeles County Sanitation District. LEE + RO evaluated potential minimum, average and maximum recycled water demands for all seasons and sized the potential pipeline, pump stations, and local booster station facilities to accommodate the Phase 2C user needs.

SUBCONSULTANT QUALIFICATIONS





IFLAND SURVEY

Surveying - Mapping - GPS

FIRM OVERVIEW

HISTORY & QUALIFICATIONS

IFLAND SURVEY is a professional land surveying and mapping firm based in Santa Cruz, CA. Founded in 1995, the firm's professional and technical staff is skilled and equipped to provide complete surveying and mapping services to a range of clients and project types. We leverage advanced technologies and utilize robotic total stations, drones (UAV), 3D laser scanners (liDar), and GPS units, combined with industry leading software solutions by Autodesk (AutoCAD Civil3d), Trimble (Business Center and Realworks) and Pix4D (photogrammetry software).

PROJECT SPECIFIC QUALIFICATIONS

IFLAND SURVEY has a strong record of relevant experience and similar work in Santa Cruz County including various large scale mapping projects for Soquel Creek Water District, including recent work for the Pure Water Soquel project and St. Andrews Main Replacement project. IFLAND SURVEY has additionally performed survey projects for Cal Water Service Co, SLV Water District, Central Water District and the Santa Cruz City Water Department.

KEY STAFF

The key staff for this project would be: Gary Ifland (Project Manager), Vernon Little (Licensed Surveyor) and Gerald Fusari (Crew Chief). Below is a brief outline of experience. See attached Appendix B for detailed resumes for education, professional background and additional information. Other staff may also complement this team as needed.

Gary R. Ifland, LS* - Principal Surveyor, LS 7367 / Project Manager

Mr. Ifland, is the principal-in-charge of all survey work for Ifland Survey. His 30+ years of extensive surveying experience on both large and small projects, include boundary and topographic surveys, right of way surveys, geodetic control surveys, GPS surveys, laser scanning, and construction surveys. Gary is a certified UAV pilot and has completed over 40 UAV surveys since 2016.

Vernon C. Little, LS, CFedS* - Licensed Surveyor, LS 8701 / Office & Field Support

Mr. Little, a licensed Land Surveyor, is a project manager / surveyor for the company since 2014. His 20+ years of work experience covers extensive survey office experience preparing and reviewing ALTA surveys, boundary surveys, topographic surveys, right-of-way surveys, and legal descriptions. Vern is proficient in AutoCAD Civil3d and performs both office and field survey tasks.

Gerald Fusari - Field Surveyor / Crew Chief

Mr. Fusari has been a field surveyor with Ifland Survey since 1998. His role is the primary party chief and he has vast experience in all field operations and with various types of equipment and techniques including robotic total stations, GPS and laser scanning.

CLIENT REFERENCES

Below is a list of references for this project.

*County of Santa Cruz Public Works
Soquel Creek Water District
San Lorenzo Valley Water District*

*Greg Jones, LS
Taj DuFour
Josh Wolff*

*831-454-2783
831-475-8501
831- 818-0055*

OTHER

INNOVATIVE / ADVANCED TECHNIQUES

Ifland Survey has always been attentive to innovative solutions in the field of Land Surveying. Over the years, the majority of our work has been directly related to civil engineering projects, so our focus has been to provide quality, cost-effective products. So while we pride ourselves in typically being the first local firm to use many survey technologies (GPS, Laser Scans, UAVs), we also understand that each technology has its place in the surveyors "toolbox". We also believe that technology itself does not equate to a successful project. Success at implementing technology takes a comprehensive approach that also includes trade skills in all areas of surveying, communication, professionalism and a thorough project understanding.

FEDERAL AND STATE FUNDING – PREVAILING WAGES

Ifland Survey has performed, and is currently performing, other State and Federal funded projects. We are familiar with Prevailing Wage requirements for Land Surveying and we are registered with the State of CA – DIR accordingly. We utilize Elation Systems for our Certified Payroll processing and reporting.

FINANCIAL RESPONSIBILITY & INSURANCE INFO

Ifland Survey was founded in 1995. Our commitment to financial stability and responsibility is an integral part of our success and we are proud to represent the fact that we have not been part of any lawsuit or have paid any claim against our company since its inception. In addition to the standard required insurance coverages (general, auto, workers comp), we maintain Professional Liability Insurance (Errors and Omissions) in the amount of \$1M/2M aggregate.

TECHNICAL ABILITY & SUB-CONSULTANTS

Our technical ability has been generally outlined in this proposal. However, to be clear, we believe we possess all of the field and office technical abilities required for this project. More specifically, these include all survey field equipment (GPS, Robotic, 3d Scanning, and UAV) together with production software expertise in AutoCAD (LDD and Civil3d), Trimble Realworks, Sketchup, Trimble Business Center & Pix4dMapper. In the event that sub-surface utility location efforts are needed, we may sub-consult that part to a local company. We currently use Coast Wide Utility Locators for most of that work.

CONTACT INFORMATION

Gary Ifland & Associates, dba Ifland Survey, Inc.
4113 Scotts Valley Drive, #102
Scotts Valley, CA 95066
(831) 426-7941 office

President: Gary R. Ifland, PLS gary@iflandsurvey.com



IFLAND SURVEY

Surveying - Mapping - GPS

Gary R. Ifland

President

Contact Info:

Address: 4113 Scotts Valley Drive, #102
Scotts Valley, CA 95066
Tel: (831) 426-7941
Email: gary@iflandsurvey.com

Licenses:

LS #7367 (Licensed Land Surveyor – California - 1997)
CA Real Estate License # 01494114 (2006)

Education:

Cabrillo College – General Education studies '82-'84
Biola University, Business Administration studies '84-'86

Other Certifications:

GPS Data Processing & RTK Surveys (Trimble Navigation)
sUAS Remote Pilot (FAA)

Professional Associations:

California Land Surveyors Association (CLSA)
American Society of Civil Engineers (ASCE)

Mr. Ifland is the principal responsible for the management and coordination of all survey work for Ifland Survey. In addition to his broad range of surveying experience, he has been involved in the design of many land development and roadway projects for both public and private sector clients. His 30+ years of extensive surveying experience on both large and small projects, include boundary and topographic surveys, right of way surveys, geodetic control surveys, GPS surveys, Laser Scan surveys, sUAS (drone) surveys and construction surveys. Over the years, Mr. Ifland has performed, directed and/or coordinated surveying services for more than 2500 projects. A very brief sample of his project experience is listed below:

Control Networks & Monumentation Preservation, Santa Cruz, CA - Project management of GPS surveying and mapping services for aerial control and first order monuments at over 75 locations for the City of Santa Cruz. Performed survey and mapping of various monumentation preservation projects for the County of Santa Cruz including portions of the Soquel Augmentation Rancho, Mount Hermon Road and Soquel Drive.

Subdivision Work, Santa Cruz County, CA - Skypark Development, 191 Lots, Scotts Valley, CA - Bay Breeze Development, 114 Lots, Watsonville, CA – Ranchview Terrace, Santa Cruz, CA - Survey coordination and management of initial boundary, aerial and topographic surveys. Construction Surveys, Monumentation and Final Tract Mapping. Prepared and filed more Tract and Parcel Maps in Santa Cruz County than any other currently active surveyor.

Utility Mapping Projects, Santa Cruz, Monterey & Bay Areas, CA – Survey and Mapping for various utility mapping projects including Pure Water Soquel Pipeline (Soquel Creek Water District / Black & Veatch), Crystal Springs Reservoir (Cruz Bros/URS/City of San Francisco), Harry Trace Water Treatment Plant (SFPUC), Brackney Landslide Pipeline (City of Santa Cruz / Mott McDonald). We have additionally performed many other water projects for Soquel Creek Water District, San Lorenzo Valley Water District, Cal Water and City of Santa Cruz.

Boundary & Topo Surveys, Monterey & SF Bay Areas, CA – Performed and produced more than 500 boundary and/or topo surveys for private, public and quasi-public property owners/clients including Barry Swenson Builder, Bogard Construction, California GIANT, County of Santa Cruz, City of Santa Cruz, City of Scotts Valley, City of Watsonville, Dominican Hospital, DEVCON, DR Horton, Boys & Girls Clubs of America, Girl Scouts of America, Gordon M. Ball, Granite Construction, KB Homes, Mercy Housing, Mid Pen Housing, Mid-Peninsula Regional Open Space District, Palo Alto Medical Foundation, PAVEX, SETI Institute, Soquel Creek Water District, Soquel Unified School District, UC Santa Cruz, CSU-Monterey Bay & Santa Cruz City Schools.

Construction Surveys – In addition to the extensive subdivision and residential construction staking as previously mentioned, performed construction staking for commercial, industrial, educational, medical and retail sites including UCSC- Kresge College, Aptos Village Center, Bethany/1440 Multiversity Campus, Pajaro Valley High School, Scotts Valley High School, Sutter Health, First Community Housing, Carmel River Lagoon Restoration, Gateway Shopping Center, San Lorenzo River Levee, Tannery Arts & Digital Media Center, Live Oak Business Park & many more.

Legal Support & Expert Witness Testimony – Surveying and related support services including expert witness testimony for legal cases involving disputes over property lines, title and easement rights including work for Santa Cruz County Sheriff's Department, First American Title Company, Travelers' Insurance Company, Farmers Insurance Company and various private clients.



IFLAND SURVEY

Surveying - Mapping - GPS

Vernon C. Little

Licensed Land Surveyor, CFedS

Contact Info:

Address: 4113 Scotts Valley Drive, #102
Scotts Valley, CA 95066
Tel: (831) 426-7941
Email: vern@iflandsurvey.com

Survey Licenses:

Professional Land Surveyor, 2009, California #8701
Professional Land Surveyor, 1999, Nevada #13930
Professional Land Surveyor, 2001, Utah #4892453-2201
Professional Land Surveyor, 2006, Idaho #12088 (retired)
Registered Land Surveyor, 2006, Arizona #44953
Professional Land Surveyor, 2011, Wyoming #13343 (inactive)
Certified Federal Surveyor, 2008, Certificate #1147

Education:

CA State University, Fresno – BS – Land Survey Engineering ('94)

Professional memberships

California Land Surveyors Association
Nevada Association of Land Surveyors (Past President)

Prior Employment History:

VTN Nevada, Las Vegas, NV (Principal / project surveyor) 2002–2014
VTN Nevada, Las Vegas, NV (Sr. survey technician) 1996–2002
Concept Engineering, Inc., Issaquah, WA: (survey tech) 1995
VTN Nevada, Las Vegas, NV: (survey tech) 1994/1995

Mr. Little is an accomplished surveyor (currently licensed in 4 states and a certified federal surveyor) who has spent the majority of his survey career working with civil engineering firms. He has extensive survey office experience preparing and reviewing ALTA surveys, boundary surveys, record of surveys, parcel maps, final maps, performing right-of-way analysis, writing legal descriptions, BLM retracement surveys, preparing topographic maps, and mapping services. Below is a brief sample of Vern's most recent relevant surveying project experience:

Topographic Survey Projects – Project management, research, analysis, CAD and field work for the following recent topographic survey projects:

- Park Way / Allerton Street, Santa Cruz, CA (November 2017) - City of Santa Cruz Public Works, Jeremy Van Horn - Boundary and topographic survey for the storm water design purposes for headwall and storm channel along Park Way and Allerton Street.
- Amerigas, Princeton, CA (August 2018) - Eadie Consultants, Charlie Eadie - Boundary, topographic survey, and UAV orthomosaic photo for site planning purposes.

- Santa Cruz County Storm Repair Projects, Santa Cruz, CA (April 2018 - ongoing) - WSP, Inc., Ali Seyedmadani- Boundary, topographic survey, and laser scanning for storm damage repair design purposes. (6 various location within Santa Cruz County.)
- MBSST (Rail Trail) Santa Cruz - San Lorenzo River Trestle, Santa Cruz, CA (April 2018 - ongoing) - Mesiti-Miller, Dale Hendsbee- Topographic survey, laser scanning, and UAV orthomosaic pedestrian bridge replacement along the San Lorenzo River railroad trestle.
- Eastside Alley Sewer Replacement, Santa Cruz, CA (January 2015, June 2017) - City of Santa Cruz Public Works, Dan Estranero - Topographic survey and City of Santa Cruz orthographic photo overlay for the Eastside Alley sewer replacement project with the DeLaVeaga area. Followed by the construction staking for the sewer replacement construction.

Utility Mapping Projects – Survey coordination, management and mapping for various recent utility projects including:

- Grant Road Improvement Project, Mountain View, Cal Water Service Company,
- Inter-garrison Road Survey and Mapping, CSUMB
- Promontory Place, Survey and Mapping, CSUMB
- Divarty Rd at General Jim Moore Rd, CSUMB

Other Boundary / Topographic Mapping Projects – Survey coordination, management and mapping for various topographic projects including:

- West Cliff Drive Emergency Sinkhole Repair, City of Santa Cruz
- Rio Del Mar Beach Access, Department of Public Works, County of Santa Cruz,
- Vine Hill School Facilities Modernization and ADA access, Scotts Valley Unified School District
- Brook Knoll School - Facilities Modernization and ADA access, Scotts Valley Unified School District
- Rock Creek Slide, Big Sur, Monterey County,
- Campus Surveys for School Modernization Projects (6 locations), Santa Cruz City School District

Rural Boundary/Topographic Survey Projects – Project management, research, analysis, CAD and field work for the following recent rural survey projects (cost shown is the survey portion):

- Buzzard Lagoon, Watsonville, CA (January 2018) - Better Place Forests.
- Wagner Road, Los Gatos, Santa Clara County - MROSD.
- Charcoal Road, Cupertino, CA (Oct. 2017 - Jan. 2018) - MROSD.
- Bear Gulch Pump Station #45, Upper Lake Road, Woodside, CA - Cal Water Service Co.
- Tunitas Creek Beach Access, Half Moon Bay, CA - Peninsula Open Space District.
- Mt Umunhum, Santa Clara County - MROSD.



Founded in 2001, the firm principals have over 50 years of combined consulting experience within the local area.

Engineering licenses:

- California Registered Geotechnical Engineer
- California Registered Civil Engineer
- California Registered Chemical Engineer
- California Registered Fire Protection Engineer

Laboratory Certifications:

- AASHTO
- CALTRANS
- CCRL
- Department of State Architect (DSA)

Technical Certifications:

- NICET Soils Technician, Level I and/or Level II
- ICC Soils, Reinforced Concrete, Structural Masonry and Structural Steel/Bolting Special Inspector
- CAL-TRANS and AASHTO Test Methods (Soil, Aggregates, HMA and Concrete)
- ACI Concrete Field Testing Technician - Grade I
- ACI Concrete Strength Testing Technician
- HAZWOPER Certification

ENGINEERING EXCELLENCE

EXCEPTIONAL QUALITY AND SERVICE

Pacific Crest Engineering Inc. (PCEI) is a full service geotechnical, chemical process and environmental engineering firm providing engineering services to both the public and private sectors of the Monterey Bay and Silicon Valley areas. We are committed to providing exceptional quality and service to our clients, most of whom have worked with our staff for many years.

Pacific Crest Engineering Inc. is a Certified Small Business Enterprise (#47199) with the State of California. We are listed in the California Unified Certification Program (CUCP) database under Geotechnical and Chemical Engineering Services, Geotechnical Testing Laboratory, Environmental Consulting and Sampling, and Other Scientific and Technical Consulting Services. We provide geotechnical and environmental consulting as well as materials testing of soil, asphalt and concrete.

Pacific Crest Engineering has consistently demonstrated our ability to provide timely responses to milestone dates, field inspection coordination, requests from other team members working on the project, and deliverables. Good communication is the key to maintaining a consistent approach to meeting project goals and timelines. Our engineers and field technicians possess one or more of the licenses and/or certifications listed to the left from recognized state and national agencies.

ENGINEERING SERVICES

Pacific Crest Engineering Inc is very responsive to the needs of our clients and particularly committed to working closely with design teams, jurisdictional agencies and clients during all phases of our projects. Pacific Crest Engineering Inc combines the highest standards in technical ability with timeliness and cost-effective project management to provide services tailored to the specific needs of each client and project. Our interaction with the many tiers of personnel contributing to the success of our projects has been positive and productive. We are a firm dedicated to high-quality work, professionalism and our reputation for technical excellence.



GEOTECHNICAL
ENGINEERING



MATERIALS TESTING



SPECIAL INSPECTION



STORMWATER
MANAGEMENT



ENVIRONMENTAL
CONSULTING



CHEMICAL PROCESS / FIRE
PROTECTION ENGINEERING

Engineering Excellence since 2001

Pacific Crest Engineering Inc is a firm providing full service geotechnical, materials testing, special inspection and environmental engineering consulting services to the public and private sectors of the Monterey Bay area. We are a certified Small Business (#47199) with the State of California.



Chris Johnson, PE

PRINCIPAL CIVIL ENGINEER

Since 2006, Mr. Johnson has been working on a wide variety of different projects with various geotechnical considerations. Projects, including offices, levees, multistory residential developments, roadway bypasses, retaining walls, shoring, ground improvement, and government facilities. His construction experience includes soil mixing, jet grouting, soldier beam retaining walls, soil nail retaining walls, underpinning of existing structures, tie-back installation and design, levee cut off walls and precast concrete.

Mr. Johnson also provided oversight and management for moderate to large-scale construction projects. His project management experience includes supervision and of construction crews as well as engineering and design staff.

In his role as Associate Engineer at Pacific Crest Engineering, Mr. Johnson demonstrates extensive experience in the practice of geotechnical engineering.

EDUCATION

BS in Civil Engineering, California State University San Jose, CA

LICENSES/REGISTRATIONS

California Civil Engineer, C82630

CERTIFICATIONS

Cal Trans Certificate of Proficiency
California Tests: CT 125, CT 231, CT 375

AREAS OF EXPERTISE

Project coordination and management for large scale construction projects. Geotechnical drilling and sampling. Soil Mixing, jet grouting, and other ground improvement techniques



Matthew Maciel, GE

PRINCIPAL GEOTECHNICAL ENGINEER
LABORATORY QUALITY MANAGER

Since 2007, Mr. Maciel has provided analysis, design, management and construction observation for a wide range of geotechnical engineering projects, including commercial, medical and university facilities, single and multi-family residential developments, hillside grading projects, bridges, landslide repairs, water tanks, pipelines, retaining structures, drainage and infiltration facilities, and roadways. His experience has included analysis, design and development of geotechnical investigations pertaining to karst hazards, slope stability, liquefaction, surface fault rupture, coastal erosion, settlement, pavement distress and expansive soils.

Mr. Maciel also provides technical direction and field engineering during construction phases for moderate to large-scale projects. This includes exercising project management skills to resolve disputes while maintaining good client relations and the appropriate standard of care. His project management responsibilities include supervision and peer review of field and laboratory staff.

As the Laboratory Quality Manager, Mr. Maciel oversees the daily operations of PCE's AASHTO, Caltrans and DSA certified materials testing laboratory. Management activities include quality control, test standard and contract compliance, maintenance and acquisition of laboratory and technician certifications, technician training, test mock and report development, maintenance of verification of equipment calibrations, and scheduling. Mr. Maciel also manages the radiation safety program, and is the active Radiation Safety Officer, RSO.

In his role as Associate Engineer and Laboratory Quality Manager Mr. Maciel demonstrates extensive experience in the practice of geotechnical engineering and also manages complex design level and construction phase projects.

EDUCATION

BS in Civil Engineering, California State University San Jose, CA

LICENSES/REGISTRATIONS

California Geotechnical Engineer, GE3189

California Civil Engineer, C82779

CERTIFICATIONS

ICC Soils and Reinforced Concrete Special Inspector No. 8065594

ACI Concrete Field Testing Technician - Grade 1

ACI Concrete Strength Testing Technician - Grade 1

NICET Geotechnical Engineering Technology Exploration, Construction, Laboratory and Generalist Level 2

Cal Trans Certificate of Proficiency California Tests: 105, 125, 201, 202, 204, 205, 216, 217, 226, 227, 231, 308, 309, 375, 504, 518, 521, 533, 539, 540, 556, & 557

AASHTO Tests: T11, T27, T176, T209, T275 & T329

8 Hour Radiation Safety Officer Training Certificate

40 Hour Hazardous Waste Operations and Emergency Response (HAZWOPER)

8 Hour Nuclear Density Gauge Certificate

AREAS OF EXPERTISE

Geotechnical drilling, engineering analysis and preparation of geotechnical investigations

Construction phase project management and field engineering

Geotechnical laboratory testing

Special inspection

Construction

Coastal Engineering

Special Geotechnical Solutions

Special Inspection - Soil, Asphalt & Concrete

Forensic Engineering

PROFFESIONAL ORGANIZATIONS

American Society of Civil Engineers
California Geotechnical Engineers Association

American Public Works Association



Elizabeth M. Mitchell, GE

PRINCIPAL GEOTECHNICAL ENGINEER
MANAGER OF TESTING & INSPECTION SERVICES

Since 1992, Mrs. Mitchell has provided management, consultation, and design services for a wide range of geotechnical engineering and material testing projects throughout the Santa Cruz County area. Her project experience includes various industrial facilities, infrastructure, commercial buildings, schools and universities, water tanks and pipelines, forensic studies, light bridges, landslide repair, and single and multi-family developments. These projects have included the design and development of geotechnical investigation studies, with an emphasis in the area of complex karst conditions, geotechnical analysis, coastal engineering, slope stability, liquefaction analysis, settlement analysis, identification and mitigation of structural pavement distress, structural pavement design, expansive soil conditions, subsurface investigation and design of deep and shallow foundation systems.

Ms. Mitchell also provides technical direction and field engineering during earthwork phases for moderate to large-scale projects and other geotechnically challenging sites. This includes exercising project management skills to resolve disputes while maintaining good client relations and the appropriate standard of care. Her project management responsibilities include supervision and peer review for department engineering and field staff. In her role as Principal Geotechnical Engineer and Manager of Testing & Inspection Services, Ms. Mitchell demonstrates extensive experience in the practice of geotechnical engineering and also manages complex design level and construction phase projects.

EDUCATION

MS, Civil Engineering, San Jose State University
BS, Industrial Engineering, California Polytechnic State University, San Luis Obispo

LICENSES/REGISTRATIONS

California Geotechnical Engineer, GE 2718
California Civil Engineer, C58578

CERTIFICATIONS

ICC Soils Special Inspector
No. 8029279-EC
Qualified SWPPP Developer and Practitioner (QSD/QSP) No. 20502
Water Treatment Operator, T2
Water Distribution Operator, D2

AREAS OF EXPERTISE

Schools, Hospitals, and Universities
Public works, pipelines, water works projects
Bridges, Structures, and Roadway Construction
Coastal Engineering
Special Geotechnical Solutions
Special Inspection – Soil, Asphalt & Concrete
Forensic Engineering

PROFESSIONAL ORGANIZATIONS

American Society of Civil Engineers
California Geotechnical Engineers Association
American Public Works Association
American Water Works Association



Company Information

Company: ZZ Technology
727 Center Lane
Santa Paula, CA 93060

Phone/Fax: 805-933-1429
E-mail: lcrossley1@roadrunner.com
Website: zztechnology.com

Established: January 1998

Owner: Larry Crossley
(Sole Proprietor)

Personal Qualifications

Engineer: Larry Crossley
Santa Paula, CA 93060

Education: Graduated in 1974 from the University of California at Santa Barbara with B.S. degree in Mechanical Engineering

Licenses: Professional Engineer in the State of California since 1978
Mechanical Engineering Certificate No. M 18600

Experience: Founder and sole proprietor of ZZ Technology since 1998, specializing in hydraulic transient modeling, surge control equipment design, fabrication and field testing in municipal and industrial pipeline applications. Customer base includes such firms as AECOM, Bartlett & West, CH2M-Hill, Dudek, PSOMAS, Stantec, Water Works Engineers and Wood Rogers, Inc.

Employed by Fluid Kinetics Corporation from 1978 to 1998 as lead engineer for surge arrestor product line. Duties included evaluation of pipeline systems for hydraulic transients, preparation of equipment proposals for water and wastewater projects, equipment design, startup and field-testing to evaluate performance.



Recent Projects

Project: Santa Margarita Water District
Rienda Lift Station
Rancho Santa Margarita, CA

Customer: PSOMAS
Santa Ana, CA
Nancy Baker (714) 481-8059

Duties: Hydraulic transient analysis was performed to determine surge levels in three phases of this lift station. Surge control options included an air chamber at the pump station or upgrades to existing pipeline air valves. Services completed December 2020

Project: Yuima Municipal Water District
Forebay Pump Station
Pauma Valley, CA

Customer: Dexter Wilson Engineering
Carlsbad, CA
Stephen Nielsen (760) 438-4422

Duties: Hydraulic transient analysis was performed to determine surge levels following sudden pump shutdown. Both existing and future transmission main designs were modeled with recommendations for anti-surge air valves along the pipelines or a large air chamber at the pump station. Services completed June 2019

Project: City of Roseville
Recycled Water System
Roseville, CA

Customer: Water Works Engineers
Sacramento, CA
Mike Fisher (916) 521-9200

Duties: Hydraulic transient analysis was performed to explore surge control options for a new booster station and existing piping network. Recommendations included an air chamber in the station design and adjustment of PRV settings. Services completed August 2018



COST PROPOSAL FOR THE
**CONSOLIDATION OF THE
BRACKEN BRAE AND FOREST SPRINGS
MUTUAL WATER COMPANIES**

FEBRUARY 24, 2022

9. TOTAL PROFESSIONAL FEE AND FEE SCHEDULES

EXHIBIT 1. FEE PROPOSAL

Fee Proposal for Professional Engineering Services for the San Lorenzo Valley Water District:
Consolidation of the Bracken Brae and Forest Springs Mutual Water Companies

Task ID	Labor Category Used for Fee Estimate: E8 Managing Engineer; E7 Supervising Engineer; E6 Principal Engineer; E5 Senior Engineer; E4 Engineer; E2 Assistant Engineer; and A2 Senior Word Processor	Hours per Labor Category							Total Hours	Labor Cost	Other Direct Costs (ODCs)	Sub- consultants	TOTAL FEES
		E8	E7	E6	E5	E4	E2	A2					
		LABOR CLASSIFICATION AND BILLING RATE (\$/hr)											
		Task Description	\$273	\$246	\$229	\$204	\$190	\$152					
	NON-OPTIONAL SERVICES												
Task A	Project Management and Contract Administration												
1	Project Management and Contract Administration	8			20			8	36	\$7,288			\$7,288
2	Kick-off Meeting and Records Gathering	4	4	4	4	4	4		24	\$5,176	\$200		\$5,376
3	Weekly Telecommunications and Project Reporting	20			20			8	48	\$10,564			\$10,564
	Subtotal Task A - Project Management	32	4	4	44	4	4	16	108	\$23,028	\$200	\$0	\$23,228
Task B	Field Investigations and Analysis												
1	Right-of-way and Boundary Survey (Sub-consultant: IFLAND SURVEY)	2			8			4	14	\$2,690		\$31,500	\$34,190
2	Geotechnical Investigation (Sub-consultant: PACIFIC CREST ENGINEERING)	2			8			4	14	\$2,690		\$40,116	\$42,806
3	Hydraulic and Surge Analysis (Sub-consultant: ZZ TECHNOLOGY)	4			40			4	48	\$9,764		\$4,200	\$13,964
	Subtotal Task B – Field Investigations	8	0	0	56	0	0	12	76	\$15,144	\$0	\$75,816	\$90,960
Task C	Preliminary Design (30% Design)												
1	Utility Research				4		20	8	32	\$4,880	\$200		\$5,080
2	Prepare 30% plans		20	20	40	100	20		200	\$39,700			\$39,700
3	Perform QA/QC and submit 30% Design		24		8	8			40	\$9,056			\$9,056
4	Attend 30% design review meeting	4	4		4				12	\$2,892	\$200		\$3,092
5	Incorporate District 30% comments				8	8			16	\$3,152			\$3,152
	Subtotal Task C - Preliminary Design	4	48	20	64	116	40	8	300	\$59,680	\$400	\$0	\$60,080
Task D	50% Design												
1	Permitting and agency coordination activities	8			20		20		48	\$9,304			\$9,304
2	Prepare 50% plans, specifications and estimate		40	40	40	100	40	20	280	\$54,800			\$54,800
3	Perform QA/QC and submit 50% design		32		8	8			48	\$11,024			\$11,024
4	Attend 50% design review meeting	4	4		4				12	\$2,892	\$200		\$3,092
	Subtotal Task D - 50% Design	12	76	40	72	108	60	20	388	\$78,020	\$200	\$0	\$78,220
Task E	95% Design												
1	Prepare 95% plans		32	32	32	80	32		208	\$41,792			\$41,792
2	Prepare 95% specifications		8		12		12	20	52	\$8,800			\$8,800
3	Prepare 95% cost estimate		8		8		12		28	\$5,424			\$5,424
4	Perform QA/QC and submit 95% design		32		8	8			48	\$11,024			\$11,024
5	Attend 95% design review meeting	4	4		4				12	\$2,892	\$200		\$3,092
	Subtotal Task E - 95% Design	4	84	32	64	88	56	20	348	\$69,932	\$200	\$0	\$70,132
Task F	Final Design												
1	Prepare Final Design		8	8	8	40	20		84	\$16,072			\$16,072
2	QA/QC and submit final design plans, specifications and estimate (PS&E)		20		4	4		8	36	\$7,520	\$100		\$7,620
	Subtotal Task F - Final Design	0	28	8	12	44	20	8	120	\$23,592	\$100	\$0	\$23,692
Task G	Bid Phase Services												
1	Advertising Assistance				8		8		16	\$2,848	\$200		\$3,048
2	Prepare Addenda		4	4	4	4	4		20	\$4,084			\$4,084
3	Negotiations Support	8			8				16	\$3,816			\$3,816
4	Evaluate Bids				8		8		16	\$2,848			\$2,848
	Subtotal Task G - Bid Phase Services	8	4	4	28	4	20	0	68	\$13,596	\$200	\$0	\$13,796
Task H	Construction Phase Services												
1	Respond to RFIs		20		20		20		60	\$12,040			\$12,040
2	Shop Drawings Review		20		20		40		80	\$15,080	\$200		\$15,280
	Subtotal Task H - Construction Phase Services	0	40	0	40	0	60	0	140	\$27,120	\$200	\$0	\$27,320
	NON-OPTIONAL TASKS ONLY (TASKS A Thru H)	68	284	108	380	364	260	84	1548	\$310,112	\$1,500	\$75,816	\$387,428
	OPTIONAL SERVICES												
Task I	Optional Services												
1	Additional Topo Survey (Sub-consultant: IFLAND SURVEY)								0	\$0	\$0	\$39,900	\$39,900
2	Additional Geotechnical Investigation (Sub-consultant: PACIFIC CREST ENGINEERING)								0	\$0	\$0	\$41,018	\$41,018
	Subtotal Task I - Optional Services								0	\$0	\$0	\$80,918	\$80,918
	TOTAL INCLUDING OPTIONAL TASKS (TASKS A Thru I)	68	284	108	380	364	260	84	1548	\$310,112	\$1,500	\$156,734	\$468,346

EXHIBIT 2. BILLING RATE SCHEDULE

(Effective From November 1, 2021 to October 31, 2022)

PERSONNEL CLASSIFICATION			BILLING RATES (\$/HOUR)
ENGINEERS			
Engineer 8	E8	Managing Engineer	\$273
Engineer 7	E7	Supervising Engineer	\$246
Engineer 6	E6	Principal Engineer	\$229
Engineer 5	E5	Senior Engineer	\$204
Engineer 4	E4	Engineer	\$190
Engineer 3	E3	Associate Engineer	\$171
Engineer 2	E2	Assistant Engineer	\$152
Engineer 1	E1	Junior Engineer	\$130
CAD / DESIGNERS			
Designer 6	T6	Principal Designer	\$190
Designer 5	T5	Senior Designer	\$171
Designer 4	T4	Designer	\$152
Designer 3	T3	Associate Designer	\$130
Designer 2	T2	Assistant Designer	\$113
Designer 1	T1	Junior Designer	\$95
FIELD PROFESSIONALS			
Field Professional 5	F5	Senior Resident Engineer	\$204
Field Professional 4	F4	Resident Engineer	\$190
Field Professional 3	F3	Senior Inspector	\$171
Field Professional 2	F2	Inspector	\$152
Field Professional 1	F1	Assistant Inspector	\$130
ADMINISTRATIVE			
Administrative 4	A4	Senior Contract Manager	\$149
Administrative 3	A3	Contract Manager	\$137
Administrative 2	A2	Senior Word Processor	\$128
Administrative 1	A1	Word Processor / Admin. Assistant	\$118

EXHIBIT 3. OTHER DIRECT COSTS (ODC'S)

(Effective From November 1, 2021 to October 31, 2022)

Automobile Mileage	IRS Published Rate
In-house Reproduction	\$0.08 / sheet (8.5 x 11 Bond B & W)
	\$0.20 / sheet (8.5 x 11 Bond Color)
	\$0.15 / sheet (11 x 17 Bond B & W)
	\$0.50 / sheet (11 x 17 Color)
	\$1.25 / sheet (24 x 36 Bond)
Mylar Original Drawing	\$8.00 / sheet (24 x 36 or 22 x 34)
Computers & Work Stations	No Charge
Sub-consultant Mark-up	Sub-consultant Invoice Amount Plus 5%, Unless Client Specifies Otherwise
Bulk Reproduction by Outside Printing Firm	Invoice amount plus 10% Handling Charge
Overnight Mailing, Air Fare, Project-Specific Software, Equipment Rental, etc.	At Cost