Proposal

Water Treatment Plant Rehabilitation Project

City Project No. WTR-00017

November 20,
2020

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Ms. June Lemos, CMC, City Clerk
City of Fort Bragg
416 North Franklin Street
Fort Bragg, CA 95437

RE: HDR's Proposal for Engineering Services – Water Treatment Plant Rehabilitation Project | City Project No. WTR-00017

Dear Selection Committee Members:

By selecting HDR, the City of Fort Bragg will bring in an experienced, known partner to help you deliver a major renovation and upgrade project for your water treatment plant to benefit your residents and the environment. HDR's employee-owners bring their experience and understanding of the equipment and processes of water treatment along with direct working experience with your City's facility and staff. We have the people, resources, and proven track record with the City to successfully work with you to deliver this project.

Consider the following features and benefits of selecting our team:

Resources and Professionals Who Listen and are Responsive/Flexible: As demonstrated on the City's award-winning wastewater treatment plant upgrade, HDR has multiple disciplines in our northern California offices to do the work needed for your project. We understand the resource challenges of getting work constructed at a remote site like Fort Bragg, and will continue to be flexible and responsive in providing solutions that work for the City's unique circumstances. Having all the necessary staff and resources will ensure our ability to respond rapidly to your needs, and give you greater confidence in our consultant team's delivery of your priority project.

The Right Experience: A key component of the City's project involves rehabilitation of the WestTech filters. HDR has provided design and construction phase services for more than 10 modular water treatment plant projects that used vendor-supplied equipment packages, which include the City's original modular water treatment plant design. As you can see in Table B-1, many of the proposed team members have worked on these past modular water treatment plant

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T 916.817.4700 **F** 916.817.4747

projects. We know the issues relating to rehabilitating existing treatment plants while gaining cost efficiencies for the residents of Fort Bragg. Bottom line: you know you can assign work to HDR and have the peace of mind knowing that things will be done right!

The Right Project Team: We are proposing a northern California-based team that has worked together, time and time again, on over a dozen similar projects, which includes the recent award-winning City of Fort Bragg wastewater treatment plant upgrade. HDR's project manager, Craig Olson, brings proven leadership and water engineering expertise necessary to communicate and lead project teams, and generate collaborative solutions. This team will assure that "no stone is unturned" when looking at solutions that reduce cost, improve operational efficiencies, and explore possible revenue sources for the City. No other firm can match the depth of experienced, local water staff as HDR. This team is available and ready to get to work for the City.

Systematic, Proven Approach: We understand the importance of developing consensus throughout this project. To that end, we will maximize the value of workshops with the City, your operations and maintenance staff that know the facility and processes firsthand, and key stakeholders, so that the value of their input will be seen in key process decisions that provide confidence in the reliability of the selected strategies. With COVID-19 still a world threat, we will use WebEx video conferencing as a tool for achieving consensus and keep the project moving forward, while keeping people safe. The result will be a facility that addresses your resident and stakeholder needs, while providing value and ease of operation for your staff.

We have the past experience and proven track record, the resources, and have selected the right team for your water treatment plant rehabilitation project. If you have any questions, please do not hesitate to call.

Sincerely,
HDR ENGINEERING, INC.

Holly L.L. Kennedy, P.E.
Senior Vice President

Craig A. Olson, P.E.
Project Manager

CAO:pk/20-10258136

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A. Firm Description

ESTABLISHED 1917

10,000+ EMPLOYEE-OWNERS

MORE THAN 215 LOCATIONS WORLDWIDE

>500 MULTI-DISCIPLINARY STAFF IN NORTHERN CALIFORNIA

About HDR

HDR is a nationally respected engineering, planning, architectural, and consulting firm that excels at helping clients manage a wide variety of projects of all sizes. As an integrated firm, HDR provides a total spectrum of services for our clients. Our staff of professionals represents hundreds of disciplines in the architecture, energy, federal, water resources, environmental, resource management, transportation, and water markets. We frequently partner on blended teams to provide sound, creative solutions beyond the scope of traditional engineering, architectural, and consulting firms.

Founded in 1917, HDR has grown to a staff of more than 10,000 employee-owners located in 215 offices worldwide. In northern California, HDR maintains a professional staff of nearly 500, of whom more than 100 specialize in water and wastewater engineering. By selecting HDR to provide services for your water treatment plant rehabilitation project, the City of Fort Bragg (City) will have at their disposal the resources of a large national firm delivered personally at the local level.

HDR is consistently ranked among the top engineering firms by leading industry publications. For example, in 2020, *Engineering News-Record* ranked HDR 6th in the Top 500 Design Firms. In the specific field of water treatment plants, we were ranked 7th. These rankings provide recognition of the commitment and success that HDR has toward meeting the expectations of clients like the City, and the success we have had in completing past projects. HDR's repeat business is an indication of client satisfaction and confidence.

2020 ENR TOP 500 DESIGN FIRMS

HDR

- **6** Top 500 Design Firm
- **15** Top 20 Water Treatment/Supply
- **7** Top 20 in Water Treatment & Desalination Plants
- **5** Top 20 in Water

B. Relevant Experience

HDR has provided facility planning, condition assessment, predesign, design, permitting assistance, environmental documentation, funding assistance, bidding, construction services, operations and maintenance (O&M) manuals, and facility startup and testing services for more than 100 new or upgraded water treatment facilities throughout the western U.S., which have included vendor-supplied equipment packaged/modular plants, new and rehabilitated filter treatment units, new and rehabilitated tanks, piping modifications, flow meters and valves, buildings, ponds, site improvements, supervisory control and data acquisition (SCADA) system upgrades, chemical feed pumps, laboratory building, electrical system upgrade, and chemical feed pumps.

Table B-1 lists some relevant HDR water treatment pant projects using vendor-supplied equipment packages that were completed by proposed project team members.

HDR was the original designer of the City's 2.2 mgd modular water treatment plant. Project manager Craig Olson, electrical engineer Bill Ettlich, and QA/QC reviewer Jeff Glover were involved in this project.

TABLE B-1. HDR'S WATER TREATMENT PLANT PROJECT EXPERIENCE USING VENDOR-SUPPLIED EQUIPMENT PACKAGES

Client	Size (mgd)	Project Description	Team Members
City of Fort Bragg, CA	2.2	HDR provided fast-track design and construction engineering services for the City's new 2.2 mgd modular water treatment plant, which replaced an obsolete plant. HDR, using the factory built modular units, was able to put together bid documents in less than 100 days. The new plant was housed in a 40-foot-wide by 60-foot-long modular steel building. The project included new raw and finished water pumps and extensive electrical and instrumentation modifications.	• Craig Olson • Bill Ettlich • Jeff Glover
Yuba County Water Agency, Marysville, CA	2	HDR provided design and construction phase services for a 2 mgd water treatment plant using factory-built modular adsorption clarifier/mixed-media filtration process treatment units. The project included masonry and concrete buildings, raw water and filtered water pumping stations, 500,000-gallon reservoir, chemical handling equipment, and sludge dewatering lagoons.	• Jeff Glover • Peter Van Meurs
Tuolumne Utilities District, Sonora, CA	1	HDR provided design and construction phase services for a new 1 mgd factory-built modular water treatment facility. The Columbia Water Treatment Plant was designed around a packaged adsorption clarification/filtration unit. The plant required special care as it serves the historic California gold mining town of Columbia and was built in a state park on a historic site.	• Bill Ettlich • Peter Van Meurs

TABLE B-1. HDR'S WATER TREATMENT PLANT PROJECT EXPERIENCE USING VENDOR-SUPPLIED EQUIPMENT PACKAGES			
Client	**Size (mgd)**	**Project Description**	**Team Members**
Lake County Special Districts, Lakeport, CA	0.6	HDR provided site evaluation, preliminary design, final design, bidding, and construction administration services for the 0.6 mgd Soda Bay Water Treatment Plant. The plant was designed around packaged Microfloc treatment units using ozone and granular-activated carbon for taste and odor control. Facilities for this plant included raw water pumping, preozonation, modular treatment units, adsorption clarification/mixed media filtration treatment units, post filtration granular activated carbon (GAC), 150,000-gallon steel water storage reservoir, backwash water clarification, and recycle and high-service pumping.	• Craig Olson • Jeff Glover • Bill Ettlich
Lake County Special Districts, Lakeport, CA	1.5	HDR provided design and construction phase services for a new 1.5 mgd water treatment plant around a package modular adsorption clarifier unit. The new facility produced drinking water free of taste and odor, and met all Safe Drinking Water Act (SDWA) water quality standards. Both ozone and activated carbon was used in the treatment process to remove taste- and odor-causing organic compounds. Project design also included two storage reservoirs of 250,000- and 500,000-gallon capacities, and a raw water pumping station.	• Craig Olson • Jeff Glover • Bill Ettlich • Peter Van Meurs
City of Ukiah, CA	6	HDR provided predesign, final design, and construction phase services for a new 6 mgd water treatment facility around factory built adsorption clarification/filtration modular treatment units. The plant treats water from a Ranney collector installed beneath the Russian River.	• Craig Olson • Bill Ettlich • Peter Van Meurs
City of Willits	2.2	HDR completed a predesign study that identified alternative treatment processes and plant sites. The study concluded that replacement of existing inadequate pressure filters with a complete treatment package plant at a new location was the most feasible alternative. HDR subsequently provided design, bidding, and construction engineering services for a new 2.2 mgd water treatment facility using factory-built modular treatment units. The project included a raw water pumping station, 1.5 million-gallon (MG) storage reservoir, about 6,500 linear feet (LF) of raw and finished water transmission main, and a 160-foot-span pipeline bridge across a river. Electrical and control system design included control panels, motor control centers (MCCs), variable frequency drives (VFDs), and a telemetry system for a remote water reservoir.	• Craig Olson • Jeff Glover • Bill Ettlich • Peter Van Meurs
California Department of Corrections, Folsom, CA	4	HDR designed the 4 mgd modular water treatment plant expansion serving Folsom Prison	• Bill Ettlich

TABLE B-1. HDR'S WATER TREATMENT PLANT PROJECT EXPERIENCE USING VENDOR-SUPPLIED EQUIPMENT PACKAGES

Client	Size (mgd)	Project Description	Team Members
Calaveras County Water District, San Andreas, CA	4	HDR provided design and construction phase services for a 4 mgd modular water treatment plant that replaced aging non-complying facilities. The project included a 20-inch-diameter pipeline, 500,000-gallon steel clearwell tank, high-service pumping station, backwash treatment lagoons, and site improvements. Separate specifications were developed for prepurchase of equipment to accelerate the project.	• Bill Ettlich
City of Watsonville, CA	1.25	HDR provided alternatives analysis, predesign, and final design of a 1.25 mgd pre-fabricated packaged water treatment system with chemical injection located upstream of the packaged units. The packaged water treatment system process includes pretreatment (static mixing chemical injection, mechanical flocculation, clarification using tube settlers, and sedimentation in the new package plant units), dual media gravity filtration, air scour blower, chlorine gas disinfection, coagulant and polymer feed systems and controls, water quality monitoring instrumentation, and programmable logic controller (PLC) based automatic control system and related wiring with human machine interface (HMI).	• Rich Stratton
City of Weatherford, TX	8	HDR provided design and construction for the 8 mgd water treatment plant built around vendor-supplied equipment. The project included raw water intake, piping, building, vertical turbine booster pumping station, and chemical feed systems.	• Rich Stratton
Irvine Ranch Water District, Irvine, CA	2	HDR provided design and construction phase services for he new Cienega Selenium Treatment Facility, which uses General Electric's (GE's) Advanced Biological Metals Removal (ABMet) technology. The ABMet system is used to reduce total selenium mass loading in Peters Canyon Wash prior to the confluence with San Diego Creek. The Cienega Selenium Treatment Facility includes an infiltration gallery, cleanouts, valves and valve boxes, manholes to collect water from Peters Canyon Wash into a common header to flow to the new influent pumping station, a discharge structure, backwash system, equipment building, sewer pipeline, and associated piping. The influent pump station is buried at grade and equipped with two 3 cfs submersible pumps. The backwash system consists of four fiberglass storage tanks (two for backwash and two for spent backwash storage), a backwash pumping station, and a spent backwash pumping station. The equipment building consists of the ABMet bioreactor tanks, piping gallery, and equipment area. The equipment area includes the odor control system, blowers, nutrient feed system, nutrient storage tanks, chemical storage tanks for odor control, electrical/control room, and storage room.	• Rich Stratton • Ray Genato • Ted Kontonickas

C. Key Personnel Qualifications

The capacity to successfully deliver good work at a fair price requires not only strong leadership, but staff with technical skills and the ability to perform the work. A number of our proposed key personnel for your project, including the project manager, are the same staff that recently completed design of the City's award-winning wastewater treatment plan upgrade, and were part of the design team of the City's original modular water treatment plant. We have assembled the right team that is ready to deliver your project, bringing back their knowledge and experience in working in your facility with you and your staff.

Figure C-1 shows the project team organizational chart, as well as the responsibilities of key HDR team members. Resumes for all team members are included in the appendix. Qualifications and experience of key staff follow this page.

Our project manager, Craig Olson, will be supported by a strong team of engineers and technical specialists with the appropriate qualifications to successfully complete the City's project. Under Craig's guidance, the project team will bring a cooperative, synergistic working relationship that will benefit the City. Through open meetings, clear communication, and budget and schedule tracking, his collaborative management style will lead to a "no surprises" design. Communication is crucial and Craig understands that external communication with outside agencies is just as important in order to stay on track with regulators and stakeholders. Additionally, his past project discipline and experience will keep the team on schedule and on budget. He also has extensive expertise with construction sequencing and keeping treatment plants operational during construction. By selecting Craig as your project manager, the City will be assured of responsiveness, accurate cost estimates, budget management, schedule control, and a quality project.

All team members are registered/licensed in California.

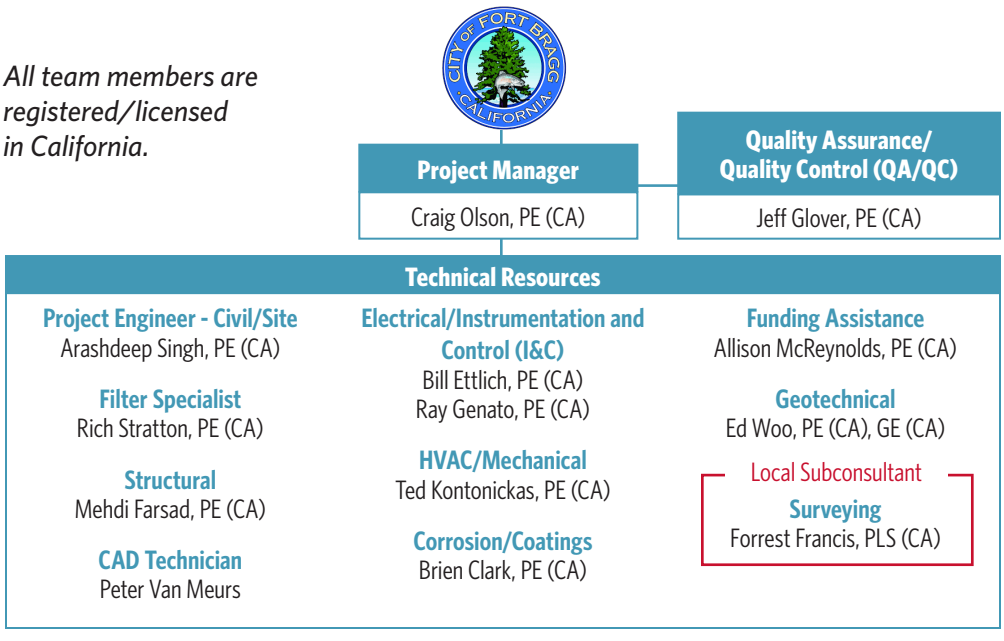


Figure C-1. Project Team Organization Chart

HDR Offers the City an Exceptional Team Defined by the Following Traits:

- A consistent record of successful project execution on more than 100 water treatment plant projects that will give the City confidence throughout the design process
- Our large pool of in-house resources clearly demonstrate the strength, expertise, and depth of staff we can provide the City
- The same team who designed the City's original water treatment plant and award-winning wastewater treatment plant upgrade
- Past success in delivering funding assistance for water and wastewater projects
- A history of on-schedule and on-budget delivery

Craig Olson, PE(CA)

Project Manager

- More than 38 years of water and wastewater engineering
- Over 60 treatment plant projects, six of which were water treatment plant projects using vendor-supplied treatment units for the City of Fort Bragg, two for Lake County Special District, Montecito Water District, City of Ukiah, and City of Willits
- Project manager during predesign, final design, funding assistance, and bidding services and Principal-in-Charge during construction of award-winning improvements to upgrade the City of Fort Bragg's wastewater treatment plant
- Project manager for design and construction of HDPE liners for City of Colfax, City of Healdsburg, Sonoma County Water Agency, and Douglas County Lake Tahoe Sewer Authority
- Proven history of being responsive to clients, and delivering quality projects on-time and within budget

"Craig Olson has good communication skills and works well throughout our organization from the technical hands on people to the engineers."

Mr. Craig Mobeck
City of Sunnyvale

Arashdeep Singh, PE(CA)

Project Engineer - Civil/Site

- Project engineer during predesign, final design, bidding, and construction engineering services for award-winning improvements to upgrade the City of Fort Bragg's wastewater treatment plant
- Project engineer for the City of Fort Bragg's sewer lift station rehabilitations, which were a separate bid package to the wastewater treatment plant upgrade project
- Project engineer for City of Fort Bragg's emergency trunk sewer repair project
- Project engineer for Placer County Water Agency's Foothill Water Treatment Plant expansion
- Known by clients to be an effective and responsive communicator

"Arashdeep Singh gave a good impression. He picked up on things very quickly and always seem to have the company's best interest in mind. He took care of things in a timely manner."

Mr. Ron Tobey
City of Pinole

Rich Stratton, PE(CA)

Filter Specialist

- More than 43 years of water engineering experience
- Considered one of HDR's top water treatment plant engineers, with specialized expertise in filters and developing cost-saving ideas
- More than 90 water treatment plant projects where he served as project manager, QA/QC reviewer, technical advisor, or project engineer
- Designed water treatment facilities with vendor-supplied equipment packages for City of Watsonville, City of Weatherford, and Irvine Ranch Water District
- Project manager for filter rehabilitation for Coastside County Water District's Nunes Water Treatment Plant
- Project manager for expansion of Placer County Water Agency's Foothills Water Treatment Plant, which included new gravity filters, optimization of existing filters, and filter-to-waste

> *"Rich is top notch. There has been unexpected things that came up, and he has great technical background that enabled him to provide solutions/ ideas or answer questions. He provides solutions that work."*
>
> Mr. Scott Irvine
> U.S. Bureau of Reclamation

Bill Ettlich, PE(CA)

Electrical/I&C

- More than 60 years of experience
- Electrical engineer for the City's original 2.2 modular water treatment plant, and for the recent wastewater treatment plant upgrade
- Seven modular water treatment plant projects, including for Folsom Prison, Tuolumne Utilities District, Calaveras County Water District, Lake County Special Districts' Soda Bay and Lakeport plants, City of Willits, and City of Ukiah
- Electrical engineer during design and construction engineering services for electrical, controls, and SCADA system modifications for the City's Madsen Hole Pumping Station, which included new electrical service panel, meter, and motor control center (MCC); and minor configuration to the existing SCADA and remote terminal unit (RTU)

> *"Bill Ettlich has impressed me very much. He returns calls right away, and overall I am very happy with working with him. The detail of the design, his project management and communication skills, and getting work done in a timely manner and on budget were impressive. He has been able to answer all of my questions."*
>
> Mr. Jim Flessner
> Sonoma County Water Agency

Jeff Glover, PE(CA)

QA/QC

Jeff has more than 42 years of water and wastewater engineering, and has been involved in 6 modular water treatment plant projects, including for the City of Fort Bragg, Lake County Special Districts' Soda Bay and Lakeport plants, City of Willits, Yuba County Water Agency, and Lakeway Municipal Utility District.

Ted Kontonickas, PE(CA)

HVAC/Mechanical

Ted has more than 29 years of water and wastewater engineering experience, and provided HVAC/mechanical design for the City's wastewater treatment plant upgrades, as well as for similar water treatment plant rehabilitation projects for Placer County Water Agency and City of Yuba City.

Medhi Farsad, PE(CA)

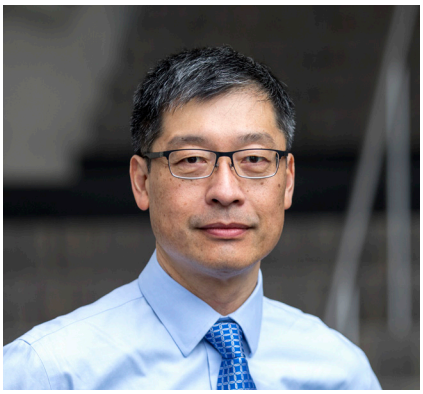
Structural

Mehdi has more than 21 years of experience as a structural engineer for water and wastewater facilities, and was the structural engineer for the City of Fort Bragg's wastewater treatment plant upgrade and City of Watsonville's packaged water treatment plant.

Brien Clark, PE(CA)

Corrosion/Coating

Brien has more than 19 years of experience on more than 100 corrosion/coating projects. He designed both internal/external coatings repair for tanks for Elsinore Valley Municipal Water District, City of Thousand Oaks, City of Phoenix, and many more.



Ed Woo, PE(CA), GE(CA)

Geotechnical

Ed has more than 34 years of experience, and was the geotechnical engineer for the City of Fort Bragg's award-winning wastewater treatment plant upgrade. He is well suited to provide a qualitative assessment of the settlement issues.

Allison McReynolds, PE(CA)

Funding Assistance

Allison has more than nine years of water and wastewater engineering experience, and prepared the preliminary engineer's report for applications that allowed the City to receive funding for the award-wining wastewater treatment plant upgrade.

D. References

References for public agencies and clients for whom similar work was performed are provided in this section.

Coastside County Water District | Nunes Water Treatment Plant Rehabilitation and Tank Recoating

Half Moon Bay, California

HDR provided preliminary design and final design of upgrades to the 4.5 mgd Nunes Water Treatment Plant, which included filter equipment rehabilitation, replacement of the underdrains, a new air scour system with blower, filter media replacement, new instruments, replacement of existing orifice plate flow meters with magnetic flow meters at new locations, replacement or refurbishment of valves, new actuators, new filter-to-waste piping and pumping system, concrete coating for the filters and clearwell, a new 2,500-gallon sodium hydroxide (caustic) tank on a concrete pad with piping and related appurtenances, and miscellaneous electrical/I&C improvements.

Reference
Mr. James Derbin, Superintendent
Coastside County Water District
(650) 276-0129 | jderbin@coastsidewater.org

Project Team
- Rich Stratton - Project Manager
- Ray Genato - Electrical QA/QC
- Ed Woo - Geotechnical QA/QC
- Peter Van Meurs - CAD Technician

City of Healdsburg | Gauntlett/ Fitch Water Treatment Plant and Pond Lining

Healdsburg, California

HDR provided predesign, final design, bidding, and construction engineering services for the new 2.6 mgd (4.5 mgd ultimate) water treatment plant, which uses vendor-supplied low-pressure membrane treatment. In addition, HDR also provided predesign, equipment prepurchase assistance, design, bidding, and construction engineering services for a new 1.4 mgd average dry weather flow (ADWF) and 7.0 mgd peak hour (with flow equalization) wastewater treatment plant, which included an effluent storage pond lined with a geomembrane (synthetic) liner. The existing ponds were dried and cleaned after the wastewater treatment plant was constructed, and an impermeable liner was installed in these ponds.

Reference
Mr. Jim Flugum, Former Deputy City of Healdsburg Engineer, now Principal Engineer with Sonoma County Water Agency
(707) 738-2624 | Jim.Flugum@scwa.ca.gov

Project Team
- Craig Olson - Project Manager
- Bill Ettlich- Electrical/I&C
- Ted Kontonickas - HVAC/Mechanical

City of Thousand Oaks | Lang Ranch Water Storage Tank Interior/Exterior Recoating

Thousand Oaks, California

HDR prepared contract documents, and provided engineering support services during bidding and construction phases for rehabilitation improvements to the Lang Ranch Water Storage Tank. Work included: (1) providing flexible connections between tank and inlet/outlet pipelines; (2) removing tank interior coal-tar coating, repairing corrosion damage, and recoating of tank interior; (3) removing tank exterior painting (lead-based), and repainting tank exterior; (4) modifying overflow weir and drain pipe to create a conventional design; (5) replacing exiting roof vent with a larger and more appropriate unit; (6) scanning/repairing floor and galvanic anodes; (7) providing a new cathodic protection system; and (8) providing safety upgrades, power and telemetry points of connection (SCADA) for water sampling ports, and water circulation pump (mixer).

Reference
Mr. Roner del Castillo, Project Manager
City of Thousand Oaks
(805) 901-9526 | RdelCastillo@toaks.org

Project Team
- Brien Clark - Corrosion/Coating
- Ray Genato - Electrical/I&C

City of Thousand Oaks | Tara Water Storage Tank Interior/ Exterior Recoating

Thousand Oaks, California

HDR provided predesign, final design, bidding, and construction support for the rehabilitation of a 3 million gallon circular welded steel tank. The design included removal/replacement of lead-based coatings and coal-tar coatings; performance specifications for the upgrade of impressed current cathodic protection systems; and seismic improvements, ventilation improvements, safety and security improvements, and measures to improve water quality. Work also includes the evaluation and repair of structural damage.

Reference
Mr. Brad Bussell, Senior Civil Engineer
City of Thousand Oaks
(805) 449-2400 | bbussell@toaks.org

Project Team
Brien Clark - Corrosion/Coating

Placer County Water Agency | Foothill Water Treatment Plant

Auburn, California

HDR provided predesign, final design, bidding, and construction phase services for capacity expansion improvements at Foothill Water Treatment Plant. Package 1 included new 36-inch level control valve with motor operator, new treated water pipeline to the existing 10 million-gallon clearwell, new interior and exterior washwater pipe vent, filter gallery piping modifications (including removal), rebuilding and reinstalling the existing 30-inch and 24-inch valves, concrete overflow weir demolition, and filter media replacement for four filters. Package 2 included demolition of existing flocculators, installation of new flocculators, and installation of appurtenant valves, meters, pneumatic, and electrical systems. Package 3 included construction and completion of process improvements, including demolition, removal, and replacement of the chain and flight sludge removal system and sludge cross collection system, new plate settlers, and larger chemical storage tank.

Reference
Mr. Aaron Sullivan, Associate Engineer
Placer County Water Agency
(530) 823-2033 | asullivan@pcwa.net

Project Team
- Rich Stratton - Project Manager
- Bill Ettlich - Electrical/I&C
- Arashdeep Singh - Civil
- Mehdi Farsad - Structural
- Peter Van Meurs - CAD Technician

Sonoma County Water Agency | Effluent Reservoir 5

Santa Rosa, California

HDR provided award-winning fast-track predesign, final design, bidding, and construction engineering services for a tertiary effluent reservoir consisting of a lined pond that retains up to 100 acre-feet of treated water. The pond has a maximum depth of 15 feet of water with 2 feet of freeboard and a design water surface elevation of 32 feet. Improvements included earth reservoir embankments, inlet piping between the reservoir and the treatment plant, outlet pumping station and connecting pipeline between the reservoir and the treatment plant, reservoir overflow outlet piping, electrical switchgear, reservoir recirculation pipe, chemical feed piping, 60-mil high density polyethylene (HDPE) liner, and a perimeter fence. This effluent storage reservoir was needed to provide maximum storage capacity of the site, and required compliance with the American Recovery and Reinvestment Act (ARRA) of 2009 agreement to receive federal funding for design and construction.

Reference
Mr. Kent Gylfe, Principal Engineer
Sonoma County Water Agency
(707) 547-1977 | kgylfe@scwa.ca.gov

Project Team
- Craig Olson - Project Manager
- Bill Ettlich - Electrical/I&C
- Ted Kontonickas - Mechanical/HVAC
- Peter Van Meurs - CAD Technician

E. Scope of Work

Project Understanding

HDR's understanding of the project is based on discussions with City staff and a site visit. Figure E-1 shows the site plan and key project components.

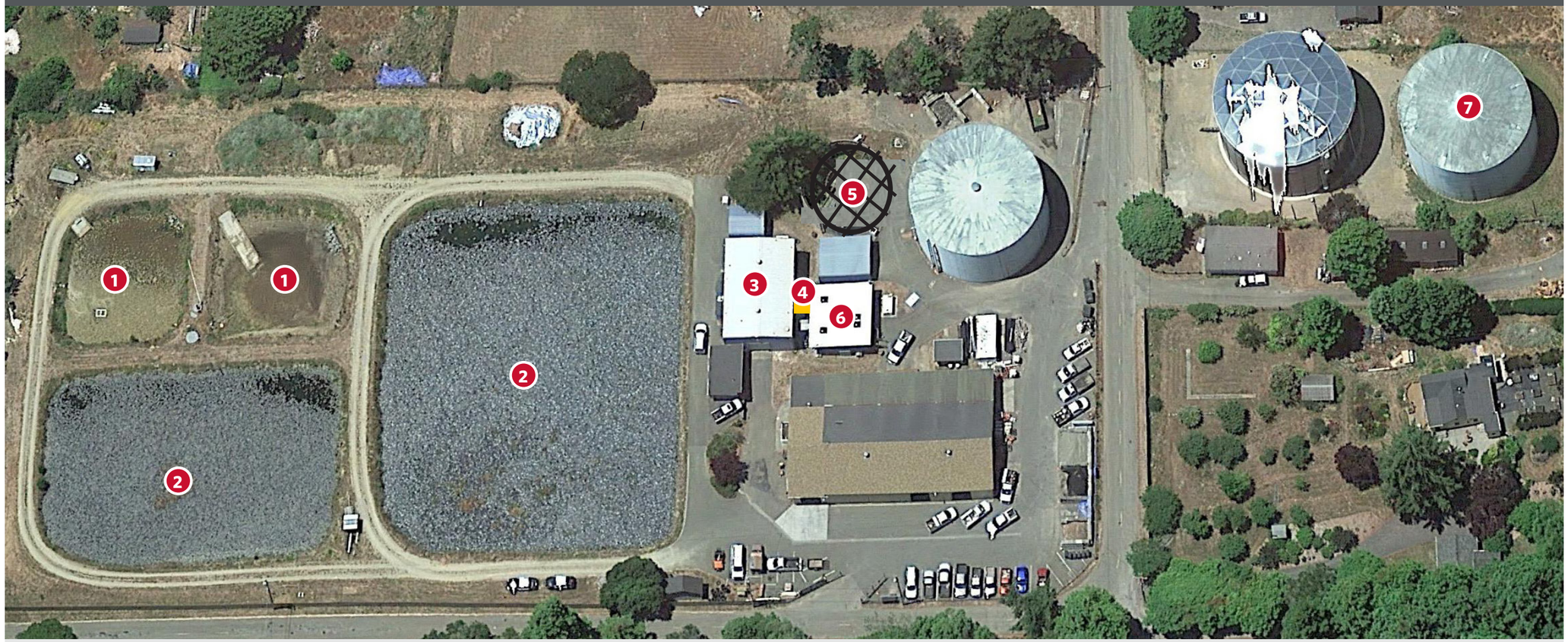
HDR will provide final design services (preparation of bidding documents, including plans and specifications) for two independent projects that will be identified in the preliminary engineer's report:

- Water treatment plant rehabilitation project
- Storage Tank No. 2 rehabilitation project

Scope of Work

HDR's work plan (see Figure E-2 on the following page) for the City's project is designed to be efficient, but flexible and responsive. We have shown the water treatment plant design and funding support activities as parallel tracks, with stakeholder workshops after key submittals to assure that all of the City's comments have been appropriately addressed and the project is ready to advertise for bids.

Figure E-1. Key Project Components



1. **Backwash Ponds:** Install high density poly ethylene (HDPE) liner to slope of backwash ponds to eliminate exfiltration and leakage. Remove sludge and sediment in the backwash ponds. Salvage existing concrete bottom.
2. **Raw Water Storage Ponds:** Install HDPE liner to sides and bottom of raw water storage ponds to eliminate exfiltration and leakage.
3. **Water Treatment Building:** Replace building roof. Rehabilitate the filter treatment units. Upgrade and modify water plant piping, including flow meters and valves. Replace ventilation system. Upgrade plant PLCs and provide backups. Designer to perform a qualitative observation of foundation issues. Replace cabinets in Laboratory Room.
4. **Blower Building:** Build new blower building. Match exterior architecture of the new building with adjacent buildings.
5. **Old Clarifier:** Demolish old clarifier, and add paving here and behind Tank #1.
6. **Control Building:** Replace control building with metal building, replace chemical feed pump, relocate laboratory, upgrade SCADA control system, and remove out-of-date electrical equipment. Upgrade miscellaneous piping. Add overhead beams for pump maintenance.
7. **Storage Tank #2:** Move discharge/effluent piping from the tank interior to the exterior and upsize to 16 inches. Remove the fill pipe from tank interior to the exterior, and add a flow meter to this pipe. Connect the new 16-inch future use stub to the nearby 20-inch-diameter distribution line. Add a flow meter to the 16-inch portion of the pipe. Connect the existing 16-inch pipe stub o the distribution pipe in Cedar Street. Entire tank needs to be recoated (interior and exterior). Tank #2 rehabilitation will be a separate drawing package so it can be bid separately from water treatment plant rehabilitation.

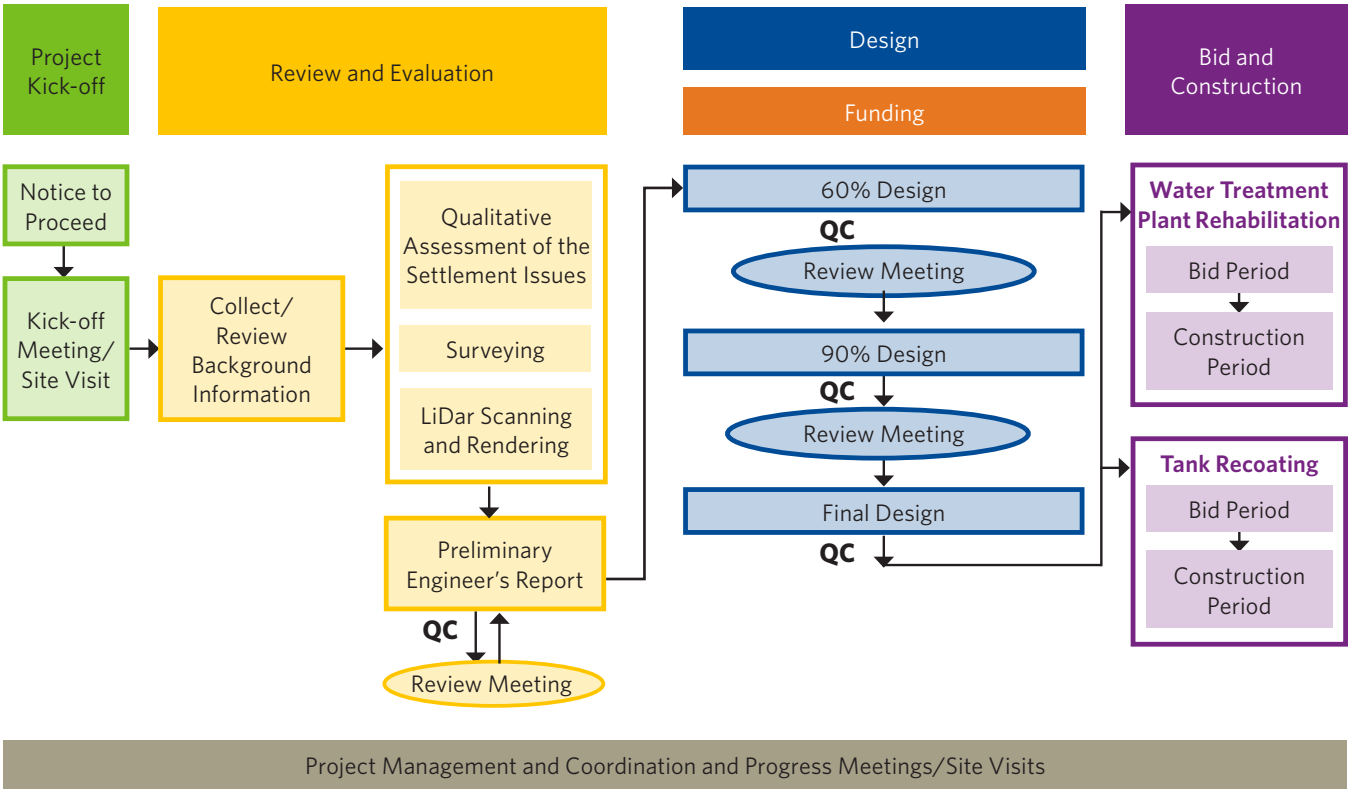


Figure E-2. Proposed Workplan

Task 1 - Project Management, QA/QC, and Meetings

Subtask 1.1 - Project Management and Coordination

This subtask includes the management activities needed for on-time and on-budget project completion, and to address the City's concerns. A project management plan will be developed to serve as a communication tool for City and HDR staff (and our subconsultant). HDR will prepare invoices, progress reports, and decision log updates on a monthly basis. The monthly progress reports will summarize budget and schedule status in measurable terms. Other activities include coordination with City staff and our subconsultant through all phases of the contract work, scheduling of staff, and coordinating the quality assurance effort.

Deliverables: PDF of monthly invoices and progress reports, project management guide, and decision log.

Subtask 1.2 - QA/QC Program

HDR will institute and maintain a QA/QC program for the work performed on this project. For objectivity, senior technical staff, not involved in the project, will perform internal QA/QC upon completion of the deliverables before they are submitted to the City.

Deliverables: To be incorporated into the deliverables.

Subtask 1.3 - Kick-off Meeting/Site Visit

HDR will meet with City staff to introduce the project team, collect background information, discuss the City's project goals and objectives, and establish lines of communications. The kick-off meeting will focus on getting the remaining issues on the table, discussing potential alternatives and resolutions, and preparing a detailed and concise action plan, list of needed information and data, defined schedule, and list of participants with their assignments. After the kick-off meeting, HDR will tour the water treatment plant site. Up to three HDR team members will attend the kick-off meeting and site visit. COVID-19 social distancing and facial mask protocols will be followed, if still applicable.

Deliverables: PDF of meeting agenda and minutes.

Subtask 1.4 - Progress Meetings

HDR will meet with City staff via web-based conferencing application to discuss comments on draft preliminary engineer's report, 60 percent design submittal, and 90 percent design submittal. A review comments log will be kept to make sure design comments are incorporated. Design review comments will be encouraged and welcome from the City's engineering and operations personnel.

COVID-19 social distancing and facial mask protocols will be followed for in-person meetings, if still applicable.

Deliverables: Meeting agenda and minutes.

Task 2 - Preliminary Design Phase

Subtask 2.1 – Preliminary Engineer's Report

HDR will prepare a preliminary engineer's report that provides the necessary information to support grant and loan applications, including for the U.S. Department of Agriculture (USDA) Rural Development Loans and Grants and State Revolving Fund (SRF).

The preliminary engineer's report will include the following:

- Project introduction and background
- Recommendations regarding key equipment, including the pumping, electrical, and instrumentation systems and structural improvements
- Design criteria for new equipment
- Qualitative assessment of settlement issues
- Schematic layouts (if required for evaluation)
- Cost estimate
- Vendor cut sheets and vendor quotes
- Plan drawings showing site layouts will be provided

This task includes time for a geotechnical engineer to perform a site visit for qualitative assessment of settlement issues.

This task assumes field geotechnical investigation including, but not limited to, test borings and follow-up lab analysis is not required. The qualitative assessment of settlement issues shall be performed by an HDR geotechnical engineer solely based on onsite visual observation only.

Deliverables: PDF copies of the draft report for review and comment by City staff, and PDF copies of the final report, which will serve as a basis for design.

Subtask 2.2 – Funding Support

HDR will investigate and provide support for funding assistance, which is assumed to involve the State Water Resources Control Board (SWRCB), SRF, and USDA. This task assumes preparation and processing of the SWRCB/SRF and USDA funding application will be handled by the City. HDR will also help coordinate inquiries between the California Financing Coordinating Committee (CFCC) and the City.

If the City would like HDR to assist in the pursuit of funding in addition to the scope grant and loan effort, the work would be performed on a time and materials basis to be agreed upon following the determination of the funding pursuit.

HDR will participate in up to three virtual meetings with funding agencies.

Deliverables: Meeting agenda and minutes.

Task 3 - Contract Documents for Water Treatment Plant Rehabilitation

Drawings will be prepared in AutoCAD. Design plans will be developed utilizing industry standard scales, in English (not metric) engineering units. Table E-1 shows a preliminary listing of drawings anticipated for the water treatment plant rehabilitation project.

At the 60% design level, plans and sections will be submitted. At the 90% design level, updated 60% drawings will be submitted. The final design will add the final design details missing from the 90% drawings and incorporate the 90% design comments.

Specifications will be prepared in Construction Specifications Institute (CSI) format using Microsoft Word. Our budget for this task assumes that the City will prepare and provide a set of General Conditions and Special Provisions, bid form, example agreement and other "front-end" sections for HDR to incorporate into the bid set, and that HDR's

The corner of the control building is settling, so HDR's geotechnical engineer will perform a qualitative assessment of the settlement issues to figure out how to mitigate.

The filter-to-waste line is too small and needs to be increased.

Pipe is settling and needs to be excavated and stabilized.

A flow meter needs to be installed.

The entire wood building needs to be demolished and replaced with a pre-engineered metal building.

Add HDPE liner to backwash ponds, while maintaining concrete bottom.

Raw water ponds are leaking and need HDPE liner.

Electrical panel (main switchgear for Plant where Pacific Gas & Electric [PG&E] Feed Comes in) needs to be replaced.

Pipe penetrations are leaking back to the raw water ponds.

TABLE E-1. PRELIMINARY LIST OF DRAWINGS FOR WATER TREATMENT PLANT REHABILITATION PROJECT

No.	Sheet No.	Drawing Description
General		
1	G1	Cover Sheet with Location Maps
2	G2	Sheet List
3	G3	Abbreviations
4	G4	Symbols Legend
5	G5	Process Flow Diagram and Design Criteria
6	G6	Construction Sequencing Plan and Details
7	G7	Contractor Staging Area, Fencing Plan, and General Notes
Civil		
8	C1	Site Key Plan
9	C2	Site Grading and Paving Plan
10	C3	Raw Water Storage Reservoir No. 1 & 2 Lining Plan and Sections
11	C4	Backwatch Pond Lining Plan and Sections
12	C5	Sections and Details 1
13	C6	Sections and Details 2
Demolition		
14	X1	Site Demolition Plan and Key Map
15	X2	Miscellaneous Pipe Demolition 1 Plan, Photos, and Details
16	X3	Miscellaneous Pipe Demolition 2 Plan, Photos, and Details
17	X4	Miscellaneous Pipe Demolition 3 Plan, Photos, and Details
18	X5	Existing Reactor Clarifier Plan and Details
19	X6	Existing Backwash Pond Plan and Sections (remove sludge and sediment)
20	X7	Laboratory Relocation Plan and Details
21	X8	Filter Treatment Unit Plan, Photos, and Details 1
22	X9	Filter Treatment Unit Plan, Photos, and Details 2
23	X10	Water Treatment Building Roof and HVAC Demolition Photos and Details
24	X11	Water Treatment Building Foundation Demolition Photos and Details
25	X12	Control Building Plan and Details
Building		
26	B1	Laboratory Relocation Plan and Details
27	B2	Blower Room Plan and Section
28	B3	Replacement Control Building Plan (Metal Building)
29	B4	Replacement Control Building Section and Details
30	B5	Building Details 1
31	B6	Building Details 2

TABLE E-1. PRELIMINARY LIST OF DRAWINGS FOR WATER TREATMENT PLANT REHABILITATION PROJECT		
No.	**Sheet No.**	**Drawing Description**
Mechanical		
32	M1	Mechanical Symbols and Legends
33	M2	HVAC and Plumbing Schedules
34	M3	Blower Building HVAC Plan and Details
35	M4	Water Treatment Building HVAC Plan and Details
36	M5	Details
Structural		
37	S1	Structural General Notes 1
38	S2	Structural General Notes 2
39	S3	Typical Concrete Details 1
40	S4	Typical Concrete Details 2
41	S5	Blower Room Plan and Section (approximate size 12' x 16')
42	S6	Water Treatment Building Roof Replacement Plan and Details
43	S7	Water Treatment Building Foundation Repair Plan and Details (designer to provide qualitative observation of potential causes)
44	S8	Control Building Upgrades Plan and Details (2 overhead beams for pump removal)
Process		
45	P1	Water Treatment Building Piping Modifications 1 Plan, Sections, and Details
46	P2	Water Treatment Building Piping Modifications 2 Plan, Sections, and Details
47	P3	Water Treatment Building Piping Modifications 3 Plan, Sections, and Details
48	P4	Blower Room Plan and Details
49	P5	Details 1
50	P6	Details 2
Electrical		
51	E1	Electrical Symbols and Legend
52	E2	Electrical Single-Line Diagrams
53	E3	Electrical Panel Schedules
54	E4	Electrical Control Diagrams 1
55	E5	Electrical Control Diagrams 2
56	E6	Electrical Control Diagrams 3
57	E7	Electrical Site Plan
58	E8	Electrical Underground Duct Bank, Conduit, and Conductor Schedules
59	E9	Blower Room Power and Lighting Plan
60	E10	Filter Treatment Unit Electrical Upgrades
61	E11	Control Building Plan and Details (Replacement Utility Meter Cabinet)

TABLE E-1. PRELIMINARY LIST OF DRAWINGS FOR WATER TREATMENT PLANT REHABILITATION PROJECT

No.	Sheet No.	Drawing Description
62	E12	Electrical Details 1
63	E13	Electrical Details 2
Instrumentation		
64	I1	Instrumentation General Notes, Symbols, and Abbreviations
65	I2	Blower - Process and Instrumentation Diagram (P&ID)
66	I3	Chemical Feed Pumps - P&ID

master specifications will be used as a basis for the technical provisions.

At the 60% design level, the major equipment specifications will be submitted. At the 90% and final design levels, the entire set of specifications will be submitted.

Engineer's opinion of construction cost will be prepared in Microsoft Excel at the 60%, 90%, and final design stages. Engineer's opinion of construction cost will be prepared in Microsoft Excel.

Assumptions:

- Building design to be performed by civil and/or structural engineer and without the involvement of an architect.
- Existing control building foundation will be capable of supporting new metal building.
- Record drawings are assumed to accurately represent as-built conditions. Scanned versions of record drawings will be used to develop contract drawings including, but not limited to, demolition, process, and electrical drawings.
- No environmental permitting required.
- No surveying required.
- Record drawings are available to be reference for all areas included in the scope of work.

Deliverables: PDF copies of half-size (11" x 17") drawings, bound copies of technical specifications, and engineer's opinion of construction cost for review by City personnel at the 60 and 90 percent design stages. Three bound sets and one reproducible original sets of half-size drawings, technical specifications, and engineer's opinion of construction cost at the final design stage.

Optional Tasks

Optional Task A - Surveying

HDR's local surveying subconsultant, Forrest Francis Land Surveyor, will perform site topographic surveys and other field investigations to refine predesign report to plans and construction documents. Existing survey information will be used to the greatest extent possible. Up to four days of crew time have been budged for this subtask. Unless required for the final bid package, property boundary surveys will not be completed.

Deliverables: Base map suitable for design.

Optional Task B - LiDAR Scanning

HDR will perform a one-day field LiDAR scan. The purpose of the LiDAR scan would be to collect accurate as-built information of the existing treatment plant areas involved with the project. The scanning work will be performed by a two-man crew. This task includes time for travel, setup, scanning and rendering of scan data. The LiDAR scans will produce high quality pictures and point cloud data for reference by designers during design. The LiDAR scans may be viewed using Autodesk ReCAP.

Deliverables: LiDAR point cloud file will be utilized for the development of the 60%, 90%, and 100% drawings.

Optional Task C - Contract Documents for Storage Tank No. 2 Rehabilitation

Drawings will be prepared in AutoCAD. Design plans will be developed utilizing industry standard scales,

in English (not metric) engineering units. Table E-2 shows a preliminary listing of drawings anticipated for the Storage Tank No. 2 rehabilitation.

At the 90% design level, drawings will be submitted. The final design will add the final design details missing from the 90% drawings and incorporate the 90% design comments.

Specifications will be prepared in CSI format using Microsoft Word. Our budget for this task assumes that the City will prepare and provide a set of General Conditions and Special Provisions, bid form, example agreement and other "front-end" sections for HDR to incorporate into the bid set, and that HDR's master specifications will be used as a basis for the technical provisions.

At the 90% and final design levels, the entire set of specifications will be submitted.

Engineer's opinion of construction cost will be prepared in Microsoft Excel at the 90%, and final design stages. Engineer's opinion of construction cost will be prepared in Microsoft Excel.

Deliverables: PDF copies of half-size drawings, bound copies of technical specifications, and engineer's opinion of construction cost for review by City personnel at the 60% and 90% design stages. Three bound sets and one reproducible original sets of half-size drawings, technical specifications, and engineer's opinion of construction cost at the final design stage.

Optional Task D - Prebid Meeting

HDR will assist the City with conducting a job walk and attend the pre-bid conference to meet with prospective contractors and answer contractor questions for the water treatment plant rehabilitation project.

It is assumed that the City to conduct a job walk and pre-bid conference for the Storage Tank No. 2 rehabilitation project without HDR's assistance.

Deliverables: Prebid meeting minutes.

Optional Task E - Bidding Services

HDR will provide assistance during the bidding period, which includes receiving and recording contractor written and e-mailed questions, issuing up to two addenda to the contract documents for distribution to plan and specification holders. The City will prepare, negotiate, and execute the construction agreement with the selected contractor.

Assumption: Scope of work does not include provisions to update contract documents to prepare a "Conformed" set of contract documents.

Deliverables: Up to two addenda to the bid set of contract documents, written clarification of contractor questions, and recommendation for award letter.

TABLE E-2. PRELIMINARY LIST OF DRAWINGS FOR STORAGE TANK NO. 2 REHABILITATION PROJECT

No.	Sheet No.	Drawing Description
General		
1	G1	Cover Sheet with Location Maps and Sheet List
2	G2	Abbreviations, Symbols and Legend
3	G3	General Details
Demolition		
4	D1	Storage Tank No.2 Demolition Plan, Photos, and Details
5	D2	Storage Tank No.2 Demolition Section, Photos, and Details
Corrosion		
6	Z1	Storage Tank No.2 Rehabilitation Plan, Photos, and Details
7	Z2	Storage Tank No.2 Rehabilitation Section, Photos, and Details

F. Budget and Schedule of Charges

Estimated Budget

Table F-1 presents the estimated work effort and cost breakdown. As shown, we propose to perform the scope of work provided in Section E of this proposal for a total not-to-exceed cost of $348,460. The estimated work effort and cost for the optional tasks are also provided.

Rate Schedule

HDR will invoice the City by HDR's employee hourly billing rate for services provided. The billing rates cover payroll cost, employee benefits, and HDR overhead and profit. The ranges of hourly billing rates shown on the following page are intended to illustrate typical rates for each billing category. These rates are effective until December 31, 2021.

TABLE F-1. ESTIMATED WORK EFFORT AND COST

No.	Task Description	Tech Specialist 4	Sr. Project Manager	Engr 2	Engr 5 (Struct)	Engr 5 (Mech)	Engr 5 (Elect)	Engr 2 (Funding)	Engr 5 (Coatings)	Engr 5 (Geotech)	CADD Tech	Admin/ Clerical	Total HDR Hours	Total HDR Labor	Total HDR Expenses	Sub Cost	Total Cost
Task 1 - Project Management, QA/QC, and Meetings																	
1.1	Project Management and Coordination		40	20								20	80	$17,900	$50		$17,950
1.2	QA/QC Program	60										8	68	$18,740	$50		$18,790
1.3	Kick-off Meeting/Site Visit		8	8			8					2	26	$6,300	$300		$6,600
1.4	Progress Meetings (up to 3)		8	20	8	4	8				8	3	59	$13,190	$1,400		$14,590
	Subtotal Task 1	**60**	**56**	**48**	**8**	**4**	**16**	**0**	**0**	**0**	**8**	**33**	**233**	**$56,130**	**$1,800**	**$0**	**$57,930**
Task 2 - Preliminary Design Phase																	
2.1	Preliminary Engineer's Report		8	80	12	8	8			12	16	8	152	$31,500	$100		$31,600
2.2	Funding Support		4	8				40				8	60	$9,620	$100		$9,720
	Subtotal Task 2	**0**	**12**	**88**	**12**	**8**	**8**	**40**	**0**	**12**	**16**	**16**	**212**	**$41,120**	**$200**	**$0**	**$41,320**
Task 3 - Contract Documents for Water Treatment Plant Rehabilitation																	
3.1	60% Design		10	106	46	30	65				186		443	$94,590	$200		$94,790
3.2	90% Design		10	80	34	23	49				139	36	371	$76,360	$200		$76,560
3.3	Final Design		10	80	34	23	49				139	36	371	$76,360	$1,500		$77,860
	Subtotal Task 3	**0**	**30**	**266**	**114**	**76**	**162**	**0**	**0**	**0**	**464**	**72**	**1,184**	**$247,310**	**$1,900**	**$0**	**$249,210**
COLUMN TOTALS		**60**	**98**	**402**	**134**	**88**	**186**	**40**	**0**	**12**	**488**	**121**	**1,629**	**$344,560**	**$3,900**	**$0**	**$348,460**
Optional Tasks																	
A	Surveying												0	$0		$3,675	$3,675
B	LiDAR Scanning			16							30		46	$8,350	$1,050		$9,400
C.1	90% Design for Storage Tank No.2 Rehabilitation		8	52					12		32	18	122	$22,840	$100		$22,940
C.2	Final Design for Storage Tank No.2 Rehabilitation		8	52					12		32	18	122	$22,840	$500		$23,340
D	Prebid Meeting		8									4	12	$2,880	$288		$3,168
E	Bid Period Services (up to 2 addenda)			12							8	8	28	$4,620			$4,620

HDR ENGINEERING, INC. RATE SCHEDULE JANUARY 2020 TO DECEMBER 2021	
Job Classification	**Hourly Billing Rate**
Architect	$160 to $175
CAD Technician	$140 to $185
Drafter	$105 to $140
Engineer 1	$105 to $135
Engineer 2	$135 to $170
Engineer 3	$170 to $210
Engineer 4	$210 to $250
Engineer 5	$250 to $295
Project Controller	$115 to $165
Project Coordinator	$75 to $125
Senior Project Manager	$250 to $295
Project Manager	$200 to $250
Technical Specialist 1	$100 to $150
Technical Specialist 2	$150 to $200
Technical Specialist 3	$200 to $250
Technical Specialist 4	$250 to $295

Expenses

In-House Expenses

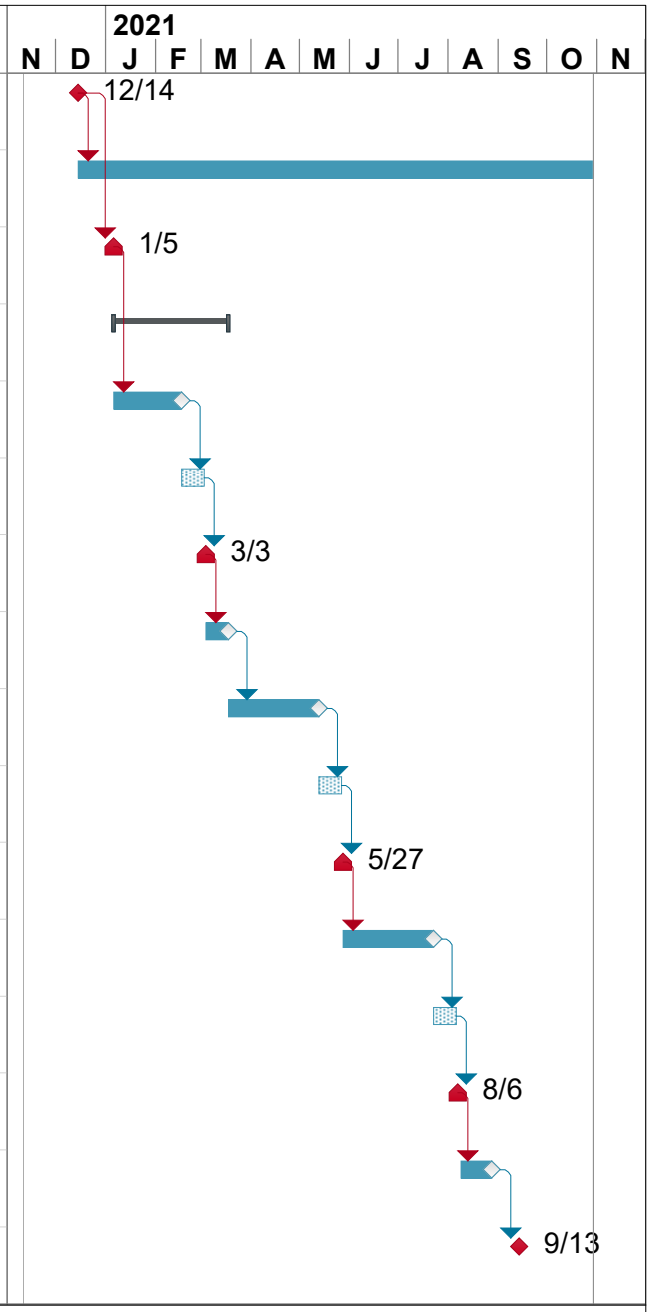
Vehicle Mileage (per mile)	Current Federal Travel Regulation (FTR)
Black/White Photocopies (per copy)	$0.05 to $0.09
Color Copy (per copy)	$0.15 to $0.30
Bond Plotting - Black & White (per square foot)	$0.15
Bond Plotting - Color (per square foot)	$0.90

Please Note: Subconsultants are charged with a five percent markup.

G. Work Schedule

Figure G-1 shows the proposed project schedule.

Task Name	Start	Finish
Consultant Notice to Proceed	*12/14/20*	*12/14/20*
Project Management	12/15/20	10/29/21
Kick-off Meeting/Site Visit	1/5/21	1/5/21
Preliminary Engineer's Report	1/6/21	3/17/21
Draft Report	1/6/21	2/16/21
Review Period	*2/17/21*	*3/2/21*
Report Review Meeting	3/3/21	3/3/21
Final Report	3/4/21	3/17/21
60% Design Submittal	3/18/21	5/12/21
Review Period	*5/13/21*	*5/26/21*
60% Design Review Meeting	5/27/21	5/27/21
90% Design Submittal	5/28/21	7/22/21
Review Period	*7/23/21*	*8/5/21*
90% Design Review Meeting	8/6/21	8/6/21
Final Design Submittal	8/9/21	8/27/21
Bid Phase Starts	9/13/21	9/13/21



City of Fort Bragg
Water Treatment Plant Rehabilitation Project
City Project No. WTR-00017

Task
Milestone
Summary
Meeting/Workshop
Review Period

Figure G-1. Project Schedule

H. Insurance

HDR will procure and maintain, for the duration of the contract, insurance against claims for injuries to persons or damages to property that may arise from or in connection with the performance of the work hereunder by HDR, its agents, representatives, employees, or subcontracts as set forth in Section 5.0 of Exhibit C of the District's standard consultant services agreement, and with the modifications stated in Section I of this proposal.

I. Consultant Agreement

HDR's legal staff has reviewed the "Professional Services Agreement" included with the request for proposal (RFP). We would like to discuss the following comments upon selection:

1.3. PERFORMANCE ~~TO SATISFACTION OF CITY~~.

Consultant agrees to perform all the work ~~to the complete satisfaction of the City as hereinafter specified~~ **in accordance with the requirements of this Agreement**. ~~Evaluations of the work will be done by the City Manager or his or her designee.~~ If **work fails to comply** ~~the quality of work is not satisfactory~~, City in its discretion has the right to:

(b) Require Consultant to repeat the work at no additional fee until it ~~is satisfactory~~ **satisfies the requirements of this Agreement**; and/or

1.4. WARRANTY

Consultant shall indemnify and hold harmless City from and against all claims, demands, payments, suits, actions, proceedings, and judgments of every nature and description including attorneys' fees and costs, presented, brought, or recovered against City for or on account of any liability under any of the above-mentioned laws, ~~which may be incurred by reason of Consultant's performance under this Agreement~~ **to the extent caused by Consultant's violation of such laws**.

1.8. CONFIDENTIALITY

City shall grant such authorization if disclosure is required by law. All City data shall be returned to City upon the termination of this Agreement**, provided Consultant may retain an archival copy of the City data for its project files subject to confidential treatment**.

2.3. METHOD OF BILLING.

Consultant may submit invoices to the City for approval on a progress basis, but not more often than monthly. Said invoice shall be based on the total of all Consultant's services which have been completed ~~to City's sole satisfaction~~ **in accordance with this Agreement**. City shall pay Consultant's forty-five (45) days from the date City receives said invoice.

3.2. EXCUSABLE DELAYS

Neither party shall be responsible for delays or lack of performance resulting from acts beyond the reasonable control of the party or parties. Such acts shall include, but not be limited to, acts of God, fire, strikes, material shortages, compliance with laws or regulations, riots, acts of war, **epidemics or pandemics,** or any other conditions beyond the reasonable control of a party. If a delay beyond the control of the Consultant is encountered, a time extension **and fee adjustment** may be mutually agreed upon in writing by the City and the Consultant. The Consultant shall present documentation satisfactory to the City to substantiate any request for a time extension **and fee adjustment**.

4.2. NOTICE OF TERMINATION.

The City reserves and has the right and privilege of canceling, suspending or abandoning the execution of all or any part of the work contemplated by this Agreement, with or without cause, at any time, by providing at least ten (10) days prior written notice to Consultant**, provided termination for cause shall be subject to the cure opportunity below**.

5.1. MINIMUM SCOPE AND LIMITS OF INSURANCE

(d) ~~Architects' and engineers' coverage shall be endorsed to include contractual liability.~~

6.8. INDEMNIFICATION AND HOLD HARMLESS

If Consultant is a design professional performing "design professional" services under this Agreement, as that term is defined in Civil Code Section 2782.8, Consultant agrees to defend, indemnify, hold free and harmless the City, its elected and appointed officials, officers, agents and employees, at Consultant's sole expense, from and against any and all claims, demands, actions, suits or other legal proceedings arising out of, pertaining to, or relating to the negligence, recklessness, or willful misconduct of Consultant ~~brought against the City, its elected and appointed officials, officers, agents and employees arising out of the performance of the Consultant, its employees, and/or authorized subcontractors, of the work undertaken pursuant to this Agreement~~.

The defense obligation provided for hereunder shall apply whenever any claim, action, complaint or suit asserts liability against the City, its elected and appointed officials, officers, agents and employees based upon the negligence, recklessness, or willful misconduct of the Consultant, its employees, and/or authorized subcontractors under this Agreement, whether or not the Consultant, its employees, and/or authorized subcontractors are specifically named or otherwise asserted to be liable. Notwithstanding the foregoing, the Consultant shall not be liable for the defense or indemnification of the City for claims, actions, complaints or suits arising out of the sole **negligence,** active negligence or willful misconduct of the City. **Additionally, in no event shall the cost to defend charged to Consultant exceed Consultant's proportionate percentage of fault.** This provision shall supersede and replace all other indemnity provisions contained either in the City's specifications or Consultant's Proposal, which shall be of no force and effect.

6.11. COOPERATION

In the event any claim or action is brought against City relating to Consultant's performance or services rendered under this Agreement, Consultant shall render any reasonable assistance and cooperation which City might require **and, unless the claim or action was caused by Consultant's breach of this Agreement, City will compensate Consultant for such assistance**.

6.15. RESPONSIBILITY FOR ERRORS

Consultant shall be responsible for its work and results under this Agreement. Consultant, when requested, shall furnish clarification and/or explanation as may be required by the City's representative, regarding any services rendered under this Agreement ~~at no additional cost to City~~. In the event that an **negligent** error or omission attributable to Consultant occurs, then Consultant shall, at no cost to City, provide all necessary design drawings, estimates and other Consultant professional services necessary to rectify and correct the matter ~~to the sole satisfaction of City~~ and to participate in any meeting required with regard to the correction.

EDUCATION
Master of Science, Civil/Structural Engineering, University of California, Davis, 1987

Bachelor of Science, Civil Engineering, California Polytechnic State University, 1982

REGISTRATION
Professional Engineer, Civil | California #39819, 1985

Professional Engineer, Civil | Nevada #13064, 1998

PROFESSIONAL ACTIVITIES
American Society of Civil Engineers

HDR TENURE
33 Years

INDUSTRY TENURE
38 Years

Craig A. Olson, PE (CA)
Project Manager

Craig has more than 38 years of project management experience in both civil and sanitary engineering, including design of water and wastewater collection, distribution, and treatment systems and storm drainage facilities. He has served as project manager, technical advisor, project engineer, or principal-in-charge for more than 60 treatment plants.

SELECT RELEVANT EXPERIENCE

Fort Bragg Wastewater Treatment Plant Upgrade | City of Fort Bragg, California
Project manager for predesign, final design, funding assistance, and bidding services, and principal-in-charge during construction of award-winning improvements to upgrade the city's 1 mgd wastewater treatment plant. Improvements included replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system, repurposing the clarifiers into emergency/flow equalization and/or storm run-off storage, treatment of on-site stormwater, solids handling (belt press), and power requirements.

Fort Bragg Modular Water Treatment Plant | City of Fort Bragg, California
Assisted with design of improvements to the 2.2 mgd, factory-built, modular treatment plant, which included a 40-foot-wide by 60-foot-long modular steel building, and new raw and finished water pumps.

Madsen Hole Pump Station Improvements | City of Fort Bragg, California
Project manager for design and construction engineering services of improvements to rehabilitate Madsen Hole Pumping Station, which included replacing pumps and its associated valves and piping to meet its permitted flow of 1.94 mgd, and electrical controls and SCADA system modifications. The project also included surge analysis using SURGE 5.2b to determine the required surge protection for the operation of this pumping station.

Gauntlett/Fitch Membrane Water Treatment Plant | City of Healdsburg, California
Project manager for predesign, design, and construction engineering services for a new 2.6 mgd (4.5 mgd ultimate) Gauntlett/Fitch Membrane Water Treatment Facility. The facility uses vendor-supplied low-pressure membrane treatment, provides treatment of raw water conveyed from the Gauntlett Reservoir, and conveys treated water to the nearby Panorama Reservoir for subsequent storage and distribution. The facility is enclosed in a building, and automated to allow for unattended operation, thus requiring periodic site visits by the city's operations and maintenance (O&M) staff. Waste flows from the facility are pumped to a nearby sanitary sewer and conveyed to the city's wastewater treatment plant for treatment.

Montecito Water Treatment Plant | Montecito Water District, Santa Barbara, California
Participated in the design of a modular water treatment plant.

Ukiah Modular Water Treatment Plant | City of Ukiah, California
Designed structural system for a new 6 mgd water treatment plant around factory built adsorption clarification/filtration modular treatment units. The plant is capable of expansion to an ultimate capacity of 12 mgd. The plant treats water from a Ranney collector installed beneath the Russian River.

Soda Bay Packaged Water Treatment Plant | Lake County Special District, Lakeport, California
Designed structural systems for this modular water treatment plant, which included raw water pumping, preozonation, modular treatment units, adsorption clarification/mixed media filtration treatment units, post filtration granular activated carbon (GAC), 150,000-gallon steel water storage reservoir, backwash water clarification, and recycle and high-service pumping.

North Lakeport Packaged Water Treatment Plant | Lake County Special District, Lakeport, California
Designed structural systems for modular water treatment plants, which included 11 miles of water pipelines. The project included two water storage reservoirs (250,000 and 500,000 gallons) at North Lakeport facility, and a 150,000-gallon steel reservoir for Soda Bay Water Treatment Plant.

Willits Packaged Water Treatment Plant | City of Willits, California
Participated in the design of the water treatment plant, which included 1.4 miles of raw and finished water pipeline, 1.5 million-gallon (MG) steel water storage reservoir, and a 160-foot-span pipeline bridge across a river.

Job's Peak Water System Improvements | Douglas County, Minden, Nevada
Project manager for siting study, predesign, design, bidding, and construction services for water system improvements at the Job's Peak Ranch gated community, which included: (1) diffused air water treatment system that treats water from both Well No. 1 and Well No. 2; (2) an automated chlorination system for the combined source of Well No. 1 and Well No. 2; (3) electrical, SCADA, controls, and standby power for existing Well No. 1 and the diffused air treatment system; (4) demolition of the existing building at the Well No. 1 site, and relocation of the well controls into the new treatment facility; (5) approximately 1,300 linear feet (LF) of 4-inch-diameter water main; (6) construction of approximately 400 LF feet of electrical and communication conduits and cables from the existing Well No. 1 site to the treatment building; (7) minor restoration site improvements to the existing Well No. 1 site; (8) modification of the site layout to show new locations for the generator and building; and (9) reinforced masonry building with pre-engineered wood trusses, and architectural treatment on the exterior.

Colfax Wastewater Treatment Plant Upgrade and Pond 3 Liner | City of Colfax, California
Project manager for award-winning predesign, NPDES permit renewal assistance, design, bidding, and construction engineering services for $9 million improvements to upgrade the wastewater treatment plant to provide a rated capacity of 0.5 mgd average day dry weather flow (ADDWF) and a peak hour flow of 2.5 mgd with flow equalization. The project included lining of Pond No. 3 with a geosynthetic liner.

Wastewater Treatment Plant Improvements | Fairfield-Suisun Sewer District, Fairfield, California
Project manager during design and construction of several improvement projects at the district's wastewater treatment plant. Improvements have included a new cogeneration system, digester gas pipe replacement, electrical system upgrade, flow equalization improvements, pumping modifications, new biofilter odor control system, primary sedimentation basin rehabilitation, and maintenance improvements for the wastewater treatment plant, outfall, and remote pumping stations.

Pinole-Hercules Water Pollution Control Facility Upgrade | City of Pinole, California
Project manager for predesign, final design, bidding, and engineering services during construction of award-winning $43 million in improvements needed for the 3 mgd (22 mgd peak) water pollution control facility to comply with the new NPDES permit.

Wastewater Treatment Plant Capacity Restoration | Oro Loma Sanitary District, San Lorenzo, California
Design manager for the $27 million upgrade of the 20 mgd wastewater treatment plant.

Easterly Wastewater Treatment Plant Tertiary Project | City of Vacaville, California
Project manager for preliminary design, final design, and bidding, and principal-in-charge during construction engineering and startup services for $74.4 million in tertiary upgrades to the 15 mgd Easterly Wastewater Treatment Plant to meet the requirements of the Regional Water Quality Control Board (RWQCB) permit.

Wastewater Treatment Plant Improvements and Expansion | Minden Gardnerville Sanitation District, Minden, Nevada
Project manager, project engineer, and structural engineer for more than 15 projects at the wastewater treatment plant to improve the reliability of operations and expand the wastewater treatment plant capacity to 5 mgd.

Uppaway Water Storage Tank Replacement | Douglas County, Minden, Nevada
Project manager for design and permitting services for replacement of the existing 135,000-gallon water storage tank with an approximately 375,000-gallon water storage tank. The project included assorted site work, including retaining wall, fencing, revegetation, and connection to existing system.

Genoa/Sierra Shadows Water Reservoir Replacement | Douglas County, Minden, Nevada
Project manager during design and construction of 450,000-gallon above-ground welded steel water storage reservoir, 1,500 LF of 16-inch-diameter water main, 1,100 LF of 10-inch-diamater water main, and SCADA system update.

Foster City Water Storage Tanks | City of Foster City, California
Provided design and construction engineering services for two 4 MG welded steel water storage tanks. The tanks were constructed on a pile-supported foundation. The project included an evaluation of piping and corrosion control alternatives.

Pond Liner | City of Healdsburg, California
Project manager for project scoping, membrane pilot testing, basis of design report, predesign, equipment prepurchase assistance, design, bidding, and construction engineering services for a new 1.4 mgd average dry weather flow (ADWF) and 7.0 mgd peak hour (with flow equalization) wastewater treatment plant, which included an effluent storage pond lined with a geomembrane (synthetic) liner. The existing ponds were dried and cleaned after the wastewater treatment plant was constructed, and an impermeable liner was installed in these ponds.

Panorama Reservoir | City of Healdsburg, California
Project manager for the design, bidding, and construction engineering services for a 2 MG glass-fused bolted steel tank, pumping station, pressure reducing valve (PRV) station, 1,000 LF of 12- to 18-inch-diameter water main, and repaving on Sunnyvale Drive.

Tayman Park Reservoir Replacements | City of Healdsburg, California
Project manager during design, bidding, and construction of two new 1.65 MG water storage tanks that replaced three existing reservoirs in the Tayman Park area. Design included two glass-fused bolted steel tanks, 1,000 LF of 12- to 18-inch-diameter water main, and site regrading

Sheridan Acres Water Storage Tank and Pipeline | Douglas County, Minden, Nevada
Project manager for predesign, design, bidding, and construction engineering services for a new 275,000-gallon welded steel water storage tank, approximately 1,500 linear feet (LF) of 12-inch-diameter water main, altitude valve, pressure reducing valve (PRV) station, access road, and residential meters. Tank options that were evaluated during the predesign phase included glass-fused bolted steel, welded steel/painted, bolted epoxy coated steel, and cast-in-place concrete.

Effluent Reservoir 5 for the North San Pablo Bay Restoration and Reuse Project | Sonoma County Water Agency, Santa Rosa, California
Project manager for award-winning, fast-track predesign, final design, bidding, and construction engineering services for a new lined effluent storage reservoir.

Pond Relining | Douglas County Lake Tahoe Sewer Authority, Zephyr Cove, Nevada
Project manager for predesign, final design, permitting, bidding, and construction engineering services for the reservoir relining project.

EDUCATION
Bachelor of Science, Chemical Engineering, California Polytechnic State University, Pomona, 2004

REGISTRATIONS AND CERTIFICATIONS
Professional Engineer – Chemical | California #CH 6291

Cathodic Protection Technologist #17978

Cathodic Protection Specialist #17978

National Council of Examiners for Engineering and Surveying (NCEES), #18-469-62

INDUSTRY TENURE
19 Years

HDR TENURE
19 Years

Brien L. Clark, PE (CA)
Corrosion/Coatings

Brien is a senior corrosion engineer and has conducted more than 100 condition assessments, external direct assessments, failure analyses, soil corrosivity studies, water aggressivity studies, cathodic protection surveys, cathodic protection/corrosion control designs, and construction checkouts for water and wastewater facilities. He has performed field surveys on varying terrain and conditions, specified or performed field tests, analyzed data and made recommendations for corrosion control measures to protect underground structures, performed continuity testing to determine spans of electrical discontinuity in buried pipelines, and performed over-the-line close interval surveys (CIS) while circulating current to identify electrically discontinuous pipe joints.

Brien has conducted lateral/side drain surface surveys to determine corroding areas of buried pipelines, performed current requirement testing on existing structures to determine adequate cathodic protection, designed cathodic protection systems and other corrosion control facilities and prepared plans and specifications, implemented quality control procedures, reviewed and revised the master drawings and specifications with respect to corrosion for large wastewater agencies, and completed cathodic protection computer modeling, He has also conducted data reduction analysis and coauthored a study on the failure of prestressed concrete cylinder pipe (PCCP) for the American Water Works Association Research Foundation.

SELECT RELEVANT EXPERIENCE

Lake Street and Railroad Water Storage Tank Interior/Exterior Coating/Rehabilitation | Elsinore Valley Municipal Water District, Lake Elsinore, California
Designed the lining/coating and cathodic protection, as well as provided engineering services during construction for the rehabilitation of two water storage tanks.

Tara Reservoir Interior/Exterior Coating/Rehabilitation | City of Thousand Oaks, California
Provided design and engineering services during construction of rehabilitation improvements to a 3 million-gallon (MG) circular welded steel water storage tank. Improvements included the removal/replacement of lead-based coatings and coal-tar coatings, cathodic protection system upgrades, seismic improvements, ventilation improvements, safety and security improvements, and measures to improve water quality. Work also included the evaluation and repair of structural damage. Prepared Impressed Current Cathodic Protection (ICCP) specifications. Assisted with contractor design review and the need for tank-bottom anodes after partial re-grouting of the floor.

Deer Valley Water Treatment Plant Reservoir 1-GS1-2 Interior/Exterior Coating Rehabilitation | City of Phoenix, Arizona
Designed the $3.2 million rehabilitation of the existing 20 MG reservoir. Rehabilitation improvements included removal and replacement of the standing

seam metal roofing system, new polypropylene membrane liner, removal and repainting of sack finish from the exterior ringwall, miscellaneous repairs, and development of a multi-year reservoir monitoring program.

Lang Ranch Interior/Exterior Tank Recoating | City of Thousand Oaks, California
Prepared contract documents and provided engineering support services during construction of rehabilitation improvements to the Lang Ranch Water Storage Tank, which included removal of tank interior coal-tar coatings, repair of corrosion damage, and recoat of tank interior, as well as removal of tank exterior painting (lead-based), and repaint of tank exterior.

Flagpole Water Storage Tank Coating System | South Tahoe Public Utility District, South Lake Tahoe, California
The reservoir holds approximately 172,000 gallons of potable water and was constructed in 1964. The brick and concrete reservoir is partially buried and is approximately 56 feet long, 56 feet wide, and 13 feet high. The rehabilitation design consisted of repairing concrete degradation and applying a coating system. Performed a coatings alternatives evaluation, and designed coating system improvements (using Xypex) including plans and specifications for construction.

Ventura-Storage Tank Coating Rehabilitation | City of San Buenaventura, California
Developed specifications for water storage tank coating rehabilitation.

Phase 2 Surface Water Improvement Project | City of Bend, Oregon
Corrosion specialist during predesign, final design, and engineering services during construction of Phase 2 surface water improvements, which include intake modifications, water transmission conduit, powerhouse facilities, and water treatment facilities. Intake modifications included: (1) two new fish screens using retractable, rotating drums, with actuated isolation gates and heated water spray wash system; (2) new fish passage, with pool, chute, and ladder; (3) new intake building; (4) standby power in outdoor weatherproof enclosure; and (5) programmable logic controller (PLC) based system monitoring and control linked to water treatment plant SCADA system. The water transmission conduit included 50,400 linear feet (LF) of 36-inch-diameter pressurized steel, ductile iron, and HDPE pipeline, two Tumalo Creek conduit bridge crossings, conduit appurtenances (including mainline isolation valves, air release and vacuum valve assemblies, blowoff assemblies, and access manways), and cathodic protection measures and corrosion provisions. For corrosion control, pre-design services included an electromagnetic conductivity survey, Wenner four pin soil resistivity testing, laboratory soil sample analysis, and generation of a preliminary design report. Corrosion control design consisted of cathodic protection test stations, bonding details, coating support, and electrical isolation. Construction support was provided in the form of assisting with requests for information (RFIs)/requests for clarification (RFCs), reviewing material submittals, and reviewing the contractor's checkout report.

18th & Kellogg Reservoir Replacement | City of Kennewick, Washington
Designed corrosion for replacement of the 10 MG concrete reservoir and 0.5 MG steel reservoir with a new 6 MG pre-stressed concrete reservoir.

Ace Bowen Reservoir No. 1, De Portola Reservoir No. 2, and Via Vaquero Reservoir Cathodic Protection | Rancho California Water District, Temecula, California
The project entailed rehabilitation of three potable water reservoirs, including relining the reservoir interiors and cathodic protection upgrades. The reservoirs were 2.7 million-gallon (MG), 3.2 MG, 5.6 MG in size, respectively. Services provided included cathodic protection design for the interior of reservoirs, creating an engineer’s cost estimate, and construction support in the form of material submittal review and RFIs and RFCs.

Buck Mesa Reservoir No. 1, Buck Mesa Reservoir No. 2, and El Prado Reservoir No. 2 | Rancho California Water District, Temecula, California
Project entailed rehabilitation of three potable water reservoirs, including relining the reservoir interiors and cathodic protection upgrades. The reservoirs were 1.6 million-gallon (MG), 5 MG, 6 MG in size, respectively. Services provided included cathodic protection design for the interior of reservoirs, creating an engineer’s cost estimate, and

construction support in the form of material submittal review and answering RFIs and RFCs.

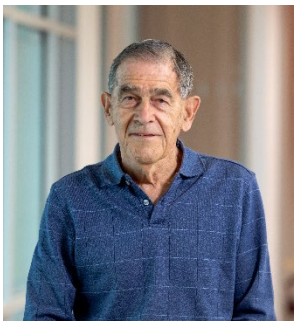
Lake Mathews Forebay Rehabilitation | Metropolitan Water District of Southern California, Riverside, California
The Lake Mathews Forebay is a reinforced concrete reservoir with a capacity of 31 acre-feet. The outlet tower is a rectangular concrete structure 60 feet in height with steel walkways and a steel control building at the top of the tower. Project manager/engineer for design of cathodic protection system and forebay tower repairs. Forebay tower repairs included removing the spalled and damaged concrete down to sound concrete, replacing severely corroded reinforcing steel, repairing less corroded reinforcing steel by sandblasting and applying a corrosion inhibitor, installing a cathodic protection system on the forebay tower, replacing damaged concrete on the tower and in the forebay, and replacing the steel walkways and control building of the forebay's outlet tower.

Cathodic Protection Design | City of Glendora, California
Provided cathodic protection for two proposed Zone 4 Reservoirs, which included Reservoir 1 and Reservoir 2. Prepared cathodic protection drawings and technical specifications, and assisted in bid evaluation for the proposed cathodic protection system, 0.5 MG and 7.7 MG in size, respectively. Services provided included current requirement testing, water electrical conductivity testing, cathodic protection design for the interior of reservoirs, creating an engineer's cost estimate, and construction support in the form of material submittal review and answering requests for information (RFIs)/requests for clarifications (RFCs).

Clearwell Roof Recoating | Santa Clara Valley Water District, San Jose, California
Designed the recoating of the clearwell roofs at the Rinconada Water Treatment Plant.

Steel Water Tank Assessment and Rehabilitation | Evergreen Water and Sewer District, Kalispell, Montana
Inspected and evaluated condition of the existing coatings of the on-grade welded steel water tank and provided recommendations for rehabilitation of the tank and types of coatings products for the existing steel structure.

Montevina Water Treatment Plant Improvements Progressive Design-Build | San Jose Water Company, San Jose, California
Provided corrosion engineering services in the form of incorporating proper corrosion control design within the civil, structural, mechanical, and plumbing designs. Corrosion control entailed material selection, coatings, and cathodic protection. Galvanic anode cathodic protection (GACP) systems were designed for all yard piping and process piping. Corrosion control detail drawings and technical specifications were provided. Construction support services were provided, which included responding to RFIs and material submittal reviews.



EDUCATION
PMD 25, Executive Business Program, Harvard Business School, 1973

Bachelor of Science, Electrical Engineering, Oregon State University, 1957

REGISTRATION
Professional Engineer, Electrical | California #7625

Professional Engineer, Control Systems Engineer | California #0091

PROFESSIONAL AFFILIATIONS
Institute of Electrical and Electronic Engineers

Instrument Society of America

HDR TENURE
46 Years

INDUSTRY TENURE
60 Years

William F. Ettlich, PE (CA)

Electrical, Instrumentation, and Controls

Bill offers more than 60 years of electrical engineering, technical, and managerial experience in water and wastewater treatment facility design, in both the consulting engineering and process equipment fields. His experience includes the direction of water and wastewater treatment projects through all phases, including planning, design, construction, field services, operator training and startup. He provides process, control and instrumentation design for many of the projects he directs, and designs telemetry systems for various water and wastewater systems. Having designed and directed into operation a number of fully automated treatment plants, he is widely recognized as a telemetry and automated control specialist.

SELECT RELEVANT EXPERIENCE

Fort Bragg Wastewater Treatment Plant Upgrade | City of Fort Bragg, California
Electrical engineer during design and construction of award-winning improvements to upgrade 1 mgd wastewater treatment plant. Improvements included replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system, repurposing the clarifiers into emergency/flow equalization and/or storm run-off storage, treatment of on-site stormwater, solids handling, and power requirements.

Fort Bragg Modular Water Treatment Plant | City of Fort Bragg, California
Electrical engineer during design of improvements to the 2.2 mgd factory-built, modular treatment plant. The project included a 40-foot-wide by 60-foot-long modular steel building, raw water and finished water pumps, and extensive electrical and instrumentation modifications.

Madsen Hole Pumping Station Improvements | City of Fort Bragg, California
Provided design and construction engineering services for electrical, controls, and SCADA system modifications for the Madsen Hole Pumping Station, which included new electrical service panel, meter, and motor control center (MCC), and minor configuration to the existing SCADA and remote terminal unit (RTU).

Sewer Lift Station Rehabilitations | City of Fort Bragg, California
Electrical engineer during design of improvements to convert three existing sewer lift stations from dry well pump configuration to submersible type. This work included removal and replacement of the MCC and modifications to the plumbing to allow for bypass pumping at each location.

Folsom Prison Packaged Water Treatment Plant | California Department of Corrections, Folsom, California
Participated in the electrical and instrumentation design of the 4 mgd modular water treatment plant expansion serving Folsom Prison.

Columbia Packaged Water Treatment Plant | Tuolumne Utilities District, Sonora, California
Provided electrical design for a new 1 mgd factory-built modular water treatment facility. This new water treatment plant replaced an obsolete pressure sand filtration plant that could no longer provide sufficient capacity or meet filtered water quality standards.

Ebbetts Pass Modular Water Treatment Plant | Calaveras County Water District, San Andreas, California
Electrical engineer during design and construction phase services for a 4 mgd modular water treatment plant that replaced aging non-complying facilities. The project included a 20-inch-diameter pipeline, 500,000-gallon steel clearwell tank, high-service pumping station, backwash treatment lagoons, and site improvements. Separate specifications were developed for prepurchase of equipment to accelerate the project.

Soda Bay Modular Water Treatment Plant | Lake County Special Districts, Lakeport, California
Electrical engineer during site evaluation, preliminary design, final design, bidding, and construction administration for the 0.6 mgd Soda Bay Water Treatment Plant. The plant was designed around packaged Microfloc treatment units using ozone and granular-activated carbon for taste and odor control. Facilities for this plant included raw water pumping, preozonation, modular treatment units, adsorption clarification/mixed media filtration treatment units, post filtration granular activated carbon (GAC), 150,000-gallon steel water storage reservoir, backwash water clarification, and recycle and high-service pumping.

Lakeport Modular Water Treatment Plant | Lake County Special Districts, Lakeport, California
Electrical engineer during design and construction phase services for a new 1.5 mgd treatment plant around a package modular adsorption clarifier unit. The new facility produced drinking water free of taste and odor, and met all Safe Drinking Water Act (SDWA) water quality standards. Both ozone and activated carbon was used in the treatment process to remove taste- and odor-causing organic compounds. Water is distributed through 11 miles of pipeline. Project design also included two storage reservoirs of 250,000- and 500,000-gallon capacities, and a raw water pumping station.

Modular Water Treatment Plant | City of Ukiah, California
Electrical engineer during provided predesign, final design, and construction phase services for a new 6 mgd water treatment facility around factory built adsorption clarification/filtration modular treatment units. The plant is capable of expansion to an ultimate capacity of 12 mgd. The plant treats water from a Ranney collector installed beneath the Russian River.

Willits Modular Water Treatment Plant | City of Willits, California
Electrical engineer during predesign, final design, and construction of a new 2.2 mgd water treatment facility constructed around factory-built modular treatment units. The new facility provides additional capacity required while drastically reducing the operating costs that would have been associated with upgrading the old facility. The project included a raw water pumping station, 1.5 million-gallon (MG) storage reservoir, about 6,500 linear feet (LF) of raw and finished water transmission main, and a 160-foot-span pipeline bridge across a river. Electrical and control system design included control panels, motor control centers (MCCs), variable frequency drives (VFDs), and a telemetry system for a remote water reservoir.

Foothill Water Treatment Plant Expansion | Placer County Water Agency, Auburn, California
Provided design and construction engineering services for electrical, instrumentation, and control improvements for the Foothill Water Treatment Plant expansion from 25 mgd to 60 mgd, which included filtration plant control and SCADA upgrade. The plant SCADA system consists of an Allen-Bradley programmable logic controller (PLC)-based system and PC-based operations stations, with interface to the agency’s telemetry system. Design included filter consoles, central control panel with PLC hot-standby, and interface to existing equipment.

El Dorado Hills Water Treatment Plant Control Modifications | El Dorado Irrigation District, El Dorado Hills, California
Provided design and construction engineering services for improvements to the 4 mgd El Dorado Hills Water Treatment Plant. The project involved automation of the plant's startup and shutdown systems, rehabilitation of the plant valves and

controls, and control modifications for raw water pumping.

Stafford Lake Water Treatment Plant | North Marin Water District, Novato, California
Provided electrical, instrumentation, and control design and construction engineering services for improvements to the Stafford Water Treatment Plant. Improvements include electrical service replacement and upgrade, complete PLC-based control system, chlorine and chlorine dioxide facility and scrubber, chemical feed systems, buildings, filter-to-waste, variable frequency drives (VFDs), blower and lake tower gate controls for Stafford Lake, SCADA system update, raw water pumping, backwash pumping, sludge thickener mechanism in existing clarifier for backwash waste settling, high-service pumping station modifications, clearwell, and distribution flow meter.

Sunset Water Treatment Plant Improvements | Placer County Water Agency, Lincoln, California
Provided electrical, instrumentation, and control design of improvements at Sunset Water Treatment Plant. Improvements include new PLC- based control system and panel, new plant wiring, filter-to-waste system, alum feed and storage system, lime storage and feed system, powered activated carbon feed system upgrade, rapid mix system upgrade, and other miscellaneous improvements related to the control system upgrade.

Lake Davis Water Treatment Plant Improvements | Plumas County Flood Control and Water Conservation District, Portola, California
Provided electrical, instrumentation, and control design services for the Lake Davis Water Treatment Plant improvements project. A SCADA system was included in the designed, as well as provisions for integration of this system into the existing city SCADA system.

Roseville Water Treatment Plant Expansion | City of Roseville, California
Designed the electrical and instrumentation for the water treatment plant expansion.

Ukiah Water Treatment Plant Improvements | City of Ukiah, California
Provided predesign, design, and engineering services during construction for electrical service, controls, instrumentation, telemetry system, SCADA system, and standby generator replacement improvements for the water treatment plant expansion from 6 to 12 mgd. During predesign, evaluated associated instrumentation needed for flow control and process control, revisions to plant operational and flow control logic needed for plant improvements, SCADA system and PLCs to automate plant operations, controls and VFD controllers for two treated water storage reservoirs, RTUs throughout the distribution system, integration of the RTUs into the new SCADA system, plant power distribution system improvements, including sizing and installation of alternatives associated with a new standby power system consisting of a stationary diesel generator with an automatic transfer switch and power system modifications to meet expanded plant design criteria. SCADA equipment interfaces with Wonderware InTouch software.

Bryte Bend Water Treatment Plant Expansion | City of West Sacramento, California
Performed an electrical load system study, then subsequently provided design and construction engineering services for improvements for the plant's electrical and control system. The electrical load was divided into three 480-volt transformers and switchgear. The intake pumping station is rated for 1,600 ampere and the existing 750 kW standby generator was relocated to provide emergency power for four pumps. The main plant load is divided between a refurbished intake pumping station and a new intake pumping station. Each switchboard is rated for 2,000 amperes and has a 1,500 kW standby diesel generator to provide emergency power for the entire facility. The new generators required new fuel tanks mounted in the base of the generators. Project included a new SCADA system for the expanded water treatment plant, and integration into the existing city-wide system. Plant improvements also included 36-inch-diameter water main to provide increased capacity to the Southport area, new fish screens, installation of five 12 mgd vertical turbine pumps (with a sixth pump waiting in standby), installation of a parallel 42-inch-diameter raw water pipeline from the intake across the river levee and the Union Pacific Railroad to the plant, ACTIFLO raw water clarification system, conventional gravity filtration system including conversion of existing traveling bridge filters, two 4 million gallon (MG) prestressed concrete clearwell tanks to replace

existing 1.2 MG tanks, low lift pumping station to fill clearwells above the water level of the existing reservoirs, chemical storage and feed system, disinfection system modifications, conversion of the sedimentation basins to washwater recovery basins, new washwater recovery pumping station, operations building/lab modifications, new administration building, and electrical and plant control system improvements.

Tank Rehabilitation and SCADA System | City of Burbank, California
Provided electrical, instrumentation, and control design, construction engineering, and periodic site inspections services for a new 0.35 mgd water booster pumping station, and modifications to the 5 million-gallon (MG) cast-in-place concrete reservoir, 12,000 gpm pumping station, and SCADA system. Three existing pumps with 4,160-volt synchronous motors were rehabilitated. One new 480-volt pump with a VFD was added. Electrical rehabilitation included dual 4,160 volt services and 4,160 volt switchgear and motor starters for 1,800 horsepower water pumping station, reservoir, and disinfection station. A new stepdown transformer was added to serve the new pump. The SCADA system controls the pumping station, reservoir, disinfection facilities, blending facilities, and distribution system connections. SCADA modifications included two SCADA terminals that communicate over telephone lines using Modbus protocol. One terminal consists of two RTUs, using PLCs, plus a complete operator terminal with Factory link software. The other terminal consists of a PLC, which controls the pumping station and reports data to the central SCADA.

Water Filtration Plant and Tank Upgrades | South Tahoe Public Utility District, South Lake Tahoe, California
Project manager for design, construction engineering, and periodic site inspection services for numerous improvements to the water supply system, which included 2.6 mgd water filtration plant improvements; roof replacement for water storage reservoir; new booster pumping station; new 100,000-, 500,000-, and 1,000,000-gallon elevated storage reservoirs; and two ground-level steel water tanks (1 MG and 150,000 gallons), each with outside architectural treatment.

Filter Rehabilitation at Water Treatment Plant Improvements | City of Yuba City, California
Electrical engineer during design and construction of fast-track improvements to the water treatment plant. Improvements included increasing the reliable filtration capacity to 24 mgd by upgrading the plant electrical system; Design and construction was completed in nine months, and contract incentives and penalties were used to assure the contractor successfully met the fast-track schedule.

Yuba City Water Treatment Plant Improvements and Expansions | City of Yuba City, California
Provided electrical, instrumentation, and control design, construction engineering, and periodic site inspection services for several projects at the water treatment plant. Filtration improvements project included SCADA system improvements that included upgrade of the old BIF filter controls to PLC-based controls, and integration of the improvements into the water treatment plant SCADA system; automation of the backwash process; improved remote monitoring and control of the plant's raw water pumping station; new instruments and pneumatic valve controls for monitoring and controlling plant processes; upgrading existing filters by replacing the media and underdrains; adding air scour; replacing piping; and adding filter-to-waste; upgrading the sedimentation basins with new baffles and cross collection; and new polymer feed pumping. The water treatment plant expansion to 48 mgd project included: (1) treated water piping modifications to the existing clearwell to achieve chlorine contact time (CT) after filtration; (2) new 4 MG buried clearwell; (3) chemical feed system and chlorine disinfection modifications; (4) backwash water disposal; and (5) electrical and control system upgrades. Also performed an electrical coordination study for current and future conditions.

Water Storage Tank Rehabilitation | City of Glendale, California
Performed study and design services for rehabilitation of an existing water pumping station and storage reservoir.

Rio Oso Tank Rehabilitation | Rancho Murieta Community Services District, Rancho Murieta, California
Provided electrical, instrumentation, and control design for rehabilitation of the 1.2 MG welded steel Rio Oso Tank.

EDUCATION
Doctor of Philosophy, Civil Engineering, University of Colorado, Boulder, 2011

Bachelor of Science, Civil Engineering, Sharif University of Technology, 2000

Master of Science, Civil Engineering, Sharif University of Technology, 2002

REGISTRATION
Professional Engineer, Civil | California #83799

HDR TENURE
5 Years

INDUSTRY TENURE
21 Years

Mehdi Farsad, PhD, PE (CA)

Structural

Mehdi has more than 21 years of experience as a structural engineer for water and wastewater facilities, and is skilled in project management, structural design of steel and concrete structures, and seismic evaluation of existing structures. As structural engineer, he is responsible for structural design of tanks, basins, buildings, vaults, and other miscellaneous structures for hydropower and wastewater treatment plant projects. He has extensive knowledge of computational mechanics, continuum mechanics, constrained mixture theory, finite element method (FEM and XFEM), and non-linear dynamic analysis of structures.

SELECT RELEVANT EXPERIENCE

Fort Bragg Wastewater Treatment Plant Upgrade | City of Fort Bragg, California
Structural engineer during final design and engineering services during construction of award-winning improvements to upgrade 1 mgd wastewater treatment plant. Improvements included replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system, repurposing the clarifiers into emergency/flow equalization and/or storm run-off storage, treatment of on-site stormwater, solids handling, and power requirements.

Packaged Water Treatment Plant | City of Watsonville, California
Structural engineer during design of a complete 1.25 mgd pre-fabricated packaged water treatment system with chemical injection located upstream of the packaged units. The packaged water treatment system process includes pretreatment (static mixing chemical injection, mechanical flocculation, clarification using tube settlers, and sedimentation in the new package plant units), dual media gravity filtration, air scour blower, chlorine gas disinfection, coagulant and polymer feed systems and controls, water quality monitoring instrumentation, and programmable logic controller (PLC) based automatic control system and related wiring with human machine interface (HMI). The project also included modifications of the 4-inch-diameter raw water Browns Valley intake to connect to the 14-inch-diameter raw water pipeline from Eureka Canyon intake, backwash pumping station, backwash waste handling, and solids handling using soil cement drying beds. The estimated construction cost of the packaged water treatment plant project is $3.2 million.

Foothill Water Treatment Plant No. 2 Capacity Expansion Improvements | Placer County Water Agency, Auburn, California
Structural engineer for miscellaneous structural improvements to expand the permitting capacity Foothill Water Treatment Plant from 58 to 63 mgd. Improvements included: (1) replacing the filter media to better accommodate the increased loading to 7.1 gpm/sf; (2) replacing the horizontal paddle flocculators with vertical mechanical turbine flocculators to allow for easier maintenance; (3) adding tube settlers to the sedimentation basins to increase

plant capacity within the existing footprint; and (4) providing new hoseless sludge scraper system for the sedimentation basins.

Water Treatment Plant | San Benito County Water District, Hollister, California
Structural engineer during design of a new surface water treatment plant, which includes pretreatment, filtration, chemical feed and storage, backwash handling, solids handling, and water storage.

Truckee Meadows Water Reclamation Facility Nitrification Valve Replacements, Phase 2 | City of Reno, Nevada
Structural engineer during design of improvements to replace the nitrifying trickling filter isolation valves and installation of vaults and actuators. All direct valves were installed in vaults with adequate service clearance, electric above ground motor actuators and backup manual hand operator. For valves located in traffic areas that were unable to be relocated, electric actuators were installed inside the vaults with remote control stations.

Easterly Wastewater Treatment Plant Completion Phase | City of Vacaville, California
Structural engineer during design and construction of a storage building for mobile equipment used by operations and maintenance (O&M) personnel, lining the existing emergency storage basin with reinforced concrete, and repairing the structural section at North sludge drying beds.

Seismic Retrofit of Russian River Secondary Treatment Clarifiers | Sonoma County Water Agency, Guerneville, California
Structural engineer during design of seismic retrofit improvements to the internal mechanisms of the three secondary clarifiers located at the Russian River County Sanitation District Wastewater Treatment Plant.

Nick C. DeGroot Water Treatment Plant Concrete Drying Beds | South San Joaquin Irrigation District, Oakdale, California
Structural engineer during design of two new concrete drying beds at the Nick C. DeGroot Water Treatment Plant, which included influent piping and decant structures flowing via gravity into an existing sump basin

Water Pollution Control Plant Upgrade | City of Sunnyvale, California
Designed miscellaneous structural improvements at the 14 mgd water pollution control plant.

Return Activated Sludge (RAS)/Waste Activated Sludge (WAS) Pumping Improvements | City of Reno, Nevada
Structural engineer during design of improvements to increase and RAS/WAS pumping capacity.

Solids Handling Facilities Improvements | Central Contra Costa Sanitary District, Martinez, California
Provided structural design of improvements to wastewater treatment plant solids handling processes. Structural design was provided for the sludge blending/storage, lime addition, centrifuge dewatering system, multiple hearth furnaces, wet scrubber and air pollution control, seismic retrofit to the solids condition building, and control room upgrade.

Nutrient Removal and Wet Weather Flow Management Upgrade and Expansion | City of San Mateo, California
Structural engineer during design and construction of $400 million in improvements to the San Mateo/Estero Municipal Improvement District (EMID) Wastewater Treatment Plant.

Hypochlorite Conversion and Continuous Recycled Water Production Facilities | City of Sunnyvale, California
Structural engineer during design and construction of improvements to convert the gaseous chlorine facility to liquid chlorine to reduce risk and improve safety at the 14 mgd water pollution control plant.

Disinfection Chemical Storage | Sacramento Regional County Sanitation District, Elk Grove, California
Structural engineer during design and construction of the replacement of the existing gaseous chlorine and gaseous sulfur dioxide facilities with a new liquid sodium hypochlorite and liquid sodium bisulfite chemical storage and feed system at the Sacramento Regional Wastewater Treatment Plant.

Wastewater Treatment Plant Primary Sedimentation Expansion and Improvements | Dublin San Ramon Services District, Dublin, California
Structural engineer during design and engineering services during construction of primary sedimentation expansion and improvements at the wastewater treatment plant. Improvements included a new primary sedimentation tank and partially demolishing and replacing an existing one (including deepening it from 10 feet to 14 feet), adding an additional grit tank, replacing internal mechanisms of the three remaining/existing primary sedimentation tanks, and replacing the motor control center (MCC).

Headworks Equipment Replacement | Napa Sanitation District, Napa, California
Structural engineer during design and construction of headworks equipment replacement improvements to the Soscol Water Recycling Facility.

Montevina Water Treatment Plant Improvements Progressive Design-Build | San Jose Water Company, San Jose, California
Structural engineer for design of miscellaneous structural improvements to convert the 30 mgd plant from direct filtration to polymeric membrane filtration.

Montevina Water Treatment Plant Hypochlorite Dilution System Upgrades | San Jose Water Company, San Jose, California
Structural engineer during design of hypochlorite dilution system upgrades at the Montevina Water Treatment Plant.

Mare Island Pump Station (MIPS) 3W Effluent Bypass | Vallejo Flood & Wastewater District, Vallejo, California
Structural design of a new chlorine contact tank, replacement of the Carquinez pumps, replacement of the 3W pumps, and replacement of the existing MIPS at the wastewater treatment plant. The project included State Revolving Fund funding support.

FORREST FRANCIS, PLS

LAND SURVEYING AND MAPPING

Registered Land Surveyor #5121

Forrest has been Land Surveying for 40 years, and has been a licensed Land Surveyor in the State of California since 1982. He started with I. L. Welty and Associates in 1976 and took charge of the surveying department in 1978. He has worked in all aspects of surveying, including aerial survey control, subdivisions, site development, construction surveys, right of ways and boundaries. Mr. Francis has also appeared as an expert witness in several court cases. He is a member of the American Congress of Surveying and Mapping along with the California Land Surveyors Association.

GENERAL SURVEY WORK

PUBLIC WORKS PROJECTS

Partial List of Projects and Clients:

Wastewater Treatment Plant Upgrade	City of Fort Bragg
Highway 1 Signal & Intersection Widening	City of Fort Bragg/Caltrans
Cypress St. & Highway 1 Signal & Widening	City of Fort Bragg/Caltrans
Chestnut Street Widening & Storm Drain	City of Fort Bragg/Caltrans
Sewer Line Bore Under Highway 1	City of Fort Bragg
Sewer Force Main Feasibility Study	Community Development
Water System Analysis & Proposal	Community Development
Road Repair / Parking Lot	Mendocino Unified Schools
Cypress Street Storm Drain Project	Townsend Brothers Const.

SITE DEVELOPMENT PROJECTS

Partial list of projects and clients:

McDonalds Restaurant	McDonald's Corporation
Fort Bragg Police Facility	City of Fort Bragg

Skunk Depot Parking Lot	City of Fort Bragg
Sanderson Way Housing	Hirshen Trumbo Architects
Stanford Inn By The Sea	Big River Limited
Albion River Inn	Albion River Inn
Surfwood IV Subdivision	Embarcadero Development Corp.
Longs Drug Store	Longs Drug Stores
Aquatic Center	Mendocino Rec. & Park Dist.

MAJOR SUBDIVISIONS

Partial List of Projects and Clients:

A.L.T.A Survey Hills Ranch Subdivision	FDIC
Surfwood IV Major Subdivision (50 lots)	Embarcadero Development Corp.
Noyo Heights Subdivision (15 lots)	Sharron Tepper
Cypress Terrace Subdivision (12 lots)	Duane Strawther
Pacific Bluffs	Jack Tubbs
Hare Creek Village	Bill Patton

OTHER SURVEYING SERVICES

Partial List of Projects and Clients:

Frog Pond Road Easement	Multiple Property Owners
Aerial Mapping, Holly Ranch	Community Development
Flood Plane Analysis Eel River	Steve Nelson
Topographic Survey/Stream Course, Garcia River	Huffman & Associates
Boundary Survey Albion School	Mendocino Unified School Dist.

EDUCATION
Bachelor of Science, Electrical Engineering, University of California, Irvine, 1993

REGISTRATION
Professional Engineer - Electrical, California, No. E-17995, 2006

PROFESSIONAL MEMBERSHIPS
Instrument Society of America, ORANC, Member, 2005-Present

Water Environment Association, LABS, SARBS, Member, 2005-Present

Water Environment Federation, Member, 2005-Present

HDR TENURE
13 Years

INDUSTRY TENURE
27 Years

Raymond I. Genato, PE (CA)

Electrical, Instrumentation, and Controls

Ray has more than 26 years of experience providing electrical, instrumentation, and control engineering services for water, wastewater, and transportation facilities. He has provided engineering and construction services on several SCADA projects. His primary responsibilities have included detailed design specification and process and instrumentation diagram (P&ID) review, programmable logic controller (PLC) and human machine interface (HMI) standards generation and implementation, PLC programming, systems testing integration and maintenance, troubleshooting software and relay logic, field modifications of engineered designs, system design and planning, installation quality assurance/quality control (QA/QC), consulting, and operator training. He has had experience with Modicon, Allen Bradley, Tesco, Siemens, G.E. Fanuc, Square D, Bristol Babcock, and other microprocessor-based PLC controllers. He also has experience with the configuration, report and alarm generation, and database maintenance of the TIS4000, Wonderware, Intellution iFix, and Factory Link SCADA systems.

SELECT RELEVANT EXPERIENCE

Fort Bragg Wastewater Treatment Plant Upgrade | City of Fort Bragg, California
Provided quality assurance/quality control (QA/QC) of the electrical improvements upgrade of the 1 mgd wastewater treatment plant, which included replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system, repurposing the clarifiers into emergency/flow equalization and/or storm run-off storage, treatment of on-site stormwater, solids handling, and power requirements.

Nunes Water Treatment Plant Filter Upgrades | Coastside County Water District, Half Moon Bay, California
Provided quality assurance/quality control (QA/QC) review of the electrical preliminary design of upgrades to the Nunes Water Treatment Plant, which included: (1) rehabilitation of filter equipment, including replacement of the underdrains, installation of a new air scour system including blower(s), replacement of the filter media, and new instruments; (2) replacement of existing orifice plate flow meters with magnetic flow meters at new locations, replacement or refurbishment of valves, new actuators, and appurtenances, and miscellaneous improvements; (3) new filter-to-waste (FTW) piping and pumping system to allow for higher FTW flows; (4) new concrete coating for the filters and clearwell; (5) addition of a new 2,500-gallon sodium hydroxide (caustic) tank on a concrete pad, piping with related appurtenances, and a canopy for tank protection; and (6) miscellaneous electrical and instrumentation and control (I&C) improvements as required to support the project components described above. The project also included a conceptual evaluation of adding a new 1 mgd sedimentation basin to provide redundant capacity to the existing sedimentation basin.

Yucaipa Valley Regional Water Filtration Facility | Yucaipa Valley Water District, Yucaipa, California
Electrical engineer for design and construction of the new $37.4 million Yucaipa Valley Regional Water Filtration Facility, a microfiltration facility (with provisions to add nanofiltration equipment) located on a 32-acre site, with an initial capacity of 12 mgd and an ultimate capacity of 36 mgd. The facility includes microfiltration using Pall membranes, nanofiltration and blending facilities, residuals handling facilities, disinfection using sodium hypochlorite, 6 million-gallon (MG) partially-buried prestressed concrete finished water storage tank, 5,000 linear feet (LF) of 4- to 48-inch-diameter finished water pipeline to convey treated water to the city's distribution system, influent flow control, security features, and slope protection for the adjacent flood control channel. Aesthetics and architectural design were key project issues.

Pony Creek Water Treatment Plant Expansion | Coos Bay / North Bend Water Board, Coos Bay, Oregon
Provided electrical design services for $10 million expansion of the 8 mgd Pony Creek Water Treatment Plant to 12 mgd. Improvements addressed major water quality and supply, treatment, distribution, structural, energy, site piping, security, distribution, and permitting issues. Improvements included installation of rapid mixing and mechanical flocculation; conversion to high-rate clarification using plate settlers and high-rate filtration using deep dual media; expansion of backwash pumping station and upgrades to low-lift pumping station; conversion of the backwash storage tank to a clearwell for primary disinfection; finished water distribution improvements, and construction of a new building that houses a new high-service pumping station, blower, and chemical feed facilities.

Cienega Selenium Treatment Facility | Irvine Ranch Water District, Irvine, California
Provided electrical design services for the new Cienega Selenium Treatment Facility, which uses General Electric's (GE's) Advanced Biological Metals Removal (ABMet) technology. The ABMet system is used to reduce total selenium mass loading in Peters Canyon Wash prior to the confluence with San Diego Creek. A portion of the Peters Canyon Wash water is diverted from Peters Canyon Wash through an intake system, and routed through the ABMet system. Treated water returns to the wash just downstream of the intake system. The Cienega Selenium Treatment Facility includes an infiltration gallery, cleanouts, valves and valve boxes, manholes to collect water from Peters Canyon Wash into a common header to flow to the new influent pumping station, a discharge structure, backwash system, equipment building, sewer pipeline, and associated piping. The influent pump station is buried at grade and equipped with two 3 cfs submersible pumps. The backwash system consists of four fiberglass storage tanks (two for backwash and two for spent backwash storage), a backwash pumping station, and a spent backwash pumping station. The equipment building consists of the ABMet bioreactor tanks, piping gallery, and equipment area. The equipment area includes the odor control system, blowers, nutrient feed system, nutrient storage tanks, chemical storage tanks for odor control, electrical/control room, and storage room.

River Mountains Water Treatment Facility | Southern Nevada Water Authority, Las Vegas, Nevada
Drafted final control strategy documentation. Reviewed the work done on the plant video wall. Reviewed and analyzed system alarms of entire system to suppress nuisance alarms and make alarm generation and notification more significant and efficient.

River Mountains Water Treatment Facility Ozone Facility | Southern Nevada Water Authority, Las Vegas, Nevada
Built and verified the operator graphics interface and coordinated with the migration and standardization of input/output (I/O) between the vendor-supplied programmable logic controller (PLC) and OIS systems. Met with authority's operations manager and staff to develop and implement human machine interface (HMI) graphic screen standards.

River Mountains Water Treatment Plant Facility Expansion, Phase II | Southern Nevada Water Authority, Las Vegas, Nevada
Designed input/output (I/O) termination layout for integration with plant human machine interface (HMI). Project involved familiarization with existing standards and developing new standards by which I/O points would be assigned, terminated, and documented.

EDUCATION
Bachelor of Science, Civil Engineering, Case Western Reserve University, 1978

REGISTRATION
Professional Engineer – Civil | California #C40716

Professional Engineer | Colorado #37477

HDR TENURE
32 Years

INDUSTRY TENURE
42 Years

Jeffrey B. Glover, PE (CA, CO)

Technical Advisor and Quality Assurance/Quality Control (QA/QC)

Jeff is a seasoned designer of municipal and industrial wastewater and water treatment plants, with projects ranging in size from 100 gpm to 100 mgd. His experience also includes advisory and QA/QC roles on control systems, operations, structural design, collection and conveyance, and membrane treatment facilities.

SELECT RELEVANT EXPERIENCE

Fort Bragg Modular Water Treatment Plant | City of Fort Bragg, California
Provided fast-track design and construction engineering services for the City's new 2.2 mgd modular water treatment plant, which replaced an obsolete plant. The factory-built modular units provided the City with bid documents in less than 100 days. The new plant was housed in a 40-foot-wide by 60-foot-long modular steel building. The project included new raw and finished water pumps and extensive electrical and instrumentation modifications.

Soda Bay Modular Water Treatment Plant | Lake County Special Districts, Lakeport, California
Provided site evaluation, preliminary design, final design, bidding, and construction administration for the 0.6 mgd Soda Bay Water Treatment Plant. The plant was designed around packaged Microfloc treatment units using ozone and granular-activated carbon for taste and odor control. Facilities for this plant included raw water pumping, preozonation, modular treatment units, adsorption clarification/mixed media filtration treatment units, post filtration granular activated carbon (GAC), 150,000-gallon steel water storage reservoir, backwash water clarification, and recycle and high-service pumping.

Lakeport Modular Water Treatment Plant | Lake County Special Districts, Lakeport, California
Provided design and construction phase services for a new 1.5 mgd treatment plant around a package modular adsorption clarifier unit. The new facility produced drinking water free of taste and odor, and met all Safe Drinking Water Act (SDWA) water quality standards. Both ozone and activated carbon was used in the treatment process to remove taste- and odor-causing organic compounds. Water is distributed through 11 miles of pipeline. Project design also included two storage reservoirs of 250,000- and 500,000-gallon capacities, and a raw water pumping station.

Willits Modular Water Treatment Plant | City of Willits, California
Completed a predesign study that identified alternative treatment processes and plant sites. The study concluded that replacement of existing inadequate pressure filters with a complete treatment package plant at a new location was the most feasible alternative. Subsequently provided design and construction engineering services for a new 2.2 mgd water treatment facility constructed around factory-built modular treatment units. The project included a raw water pumping station, 1.5 million-gallon (MG) storage reservoir, about 6,500 linear feet (LF) of raw and finished water transmission main, and a 160-foot-span pipeline bridge across a river.

Modular Water Treatment Plant | Yuba County Water Agency, Marysville, California
Provided design and construction phase services for a 2 mgd water treatment plant using factory-built modular treatment units. The project included 4,200-square-foot masonry and concrete buildings, raw water and filtered water pumping stations, 500,000-gallon reservoir, chemical handling equipment, and sludge dewatering lagoons. The plant employs an adsorption clarifier/mixed-media filtration process.

Modular Water Treatment Plant Improvements | Lakeway Municipal Utility District, Lakeway, Texas
Design manager for improvements to the filtered water/clearwell system, chlorination system, chloramination system, metering pump system, and fluoridation system. Plans and specifications were prepared for the improvements to this modular water treatment plant.

Billings Water Treatment Plant Filter Building Expansion and Improvements | City of Billings, Montana
Provided QA/QC review of a $16 million expansion to the surface water treatment plant, which included the addition of four new filters, replacement of existing flumes, valving, and a new operations center and maintenance building.

Boyd Lake Water Treatment Plant Upgrade | City of Greeley, Colorado
Provided QA/QC review during preliminary design and final design of improvements to the Boyd Lake Water Treatment Plant, which included new treatment trains and improvements to existing pretreatment; filtration; chemical storage facilities; and electrical service, power distribution, and SCADA systems.

Brine Concentrator System Replacement at Deuel Vocational Institution | California Department of Corrections and Rehabilitation, Tracy, California
Provided QA/QC review during design of a new vibratory shear enhanced processing (VSEP) system capable of concentrating the brine waste from the Duel Vocational Institution's (DVI's) reverse osmosis (RO) water treatment plant. The VSEP system replaced the existing brine concentrator system, and provides full system redundancy piped in parallel to allow for continuous operation of the RO water treatment plant during maintenance and repair. The project also included the two new brine ponds totaling approximately seven acres, increasing the emergency generator capacity to allow for full operation of both the RO plant and the VSEP system, addition of two 1 million-gallon (MG) water storage tanks piped in parallel with the existing water tank, tie into existing infrastructure, a 2,000 square-foot building to house the new VSEP system, and all related controls, supporting infrastructure, and site/utility work.

Avon Drinking Water Facility | Eagle River Water & Sewer District, Avon, Colorado
Provided QA/QC review for plant improvements, which included new raw water piping to bypass the existing ozone contactor, a new rapid mix basin, a new sludge collector and tube settler system for filter backwash treatment, and modifications to the filter backwash system.

Brine Lagoon Design at Fort Morgan | Cargill Meat Solutions, Fort Morgan, Colorado
Provided civil design for a new brine lagoon cell adjacent to the existing two brine lagoon cells. The new lagoon includes two HDPE liners, leak detection/collection between the two liners, and influent piping and splash pad.

Betasso Water Treatment Plant | City of Boulder, Colorado
Provided QA/QC review for design of improvements. The Betasso Water Treatment Facility is a conventional surface water treatment plant designed for 50 mgd but could only reliably produce 28 mgd.

Submerged Membrane Retrofit Water Treatment Plant Improvements | City of Kennewick, Washington
Provided QA/QC review for upgrade of the existing 7.5 mgd water treatment plant to fit membranes in the existing fiber basins and provide a firm capacity of 15 mgd.

Newport Water Treatment Plant Improvements | City of Newport, Oregon
Provided QA/QC review during design of the expansion of its 4 mgd water treatment facility to 10 mgd.

EDUCATION
Master of Science, Civil Engineering, California State University, Sacramento, 1994

Bachelor of Science, Mechanical Engineering, California State University, Sacramento, 1990

REGISTRATION
Professional Engineer, Mechanical | California #M-029378, 1995

HDR TENURE
29 Years

INDUSTRY TENURE
29 Years

Theodore H. Kontonickas, PE (CA)

Mechanical

Ted is a process and mechanical design engineer with more than 29 years of experience in the analysis and design of HVAC, odor control, plumbing, and process systems in the areas of water and wastewater.

SELECT RELEVANT EXPERIENCE

Fort Bragg Wastewater Treatment Plant Upgrade | City of Fort Bragg, California
Mechanical engineer during predesign and design and project manager during engineering services during construction of improvements to upgrade 1 mgd wastewater treatment plant, which included replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system, repurposing the clarifiers into equalization basins, repurposing the trickling filter concrete slabs for biosolids storage, and two pumping stations (one for on-site stormwater capture and treatment), and a new building housing the blowers for the treatment process and a belt filter press.

Foothill Water Treatment Plant Expansion | Placer County Water Agency, Auburn, California
Designed all mechanical and HVAC for the Foothill Water Treatment Plant expansion from 27 to 58 mgd. Improvements were made to grit removal/screening, gravity filters, chemical feed facilities, solids handling, and filter-to-waste processes. New residuals handling facilities were also designed to effectively process waste streams and dry sludge on site through the use of a series of improved washwater recovery basins, sludge lagoons with decant structures, and sand drying beds. The project included two 20 mgd ACTIFLO treatment units, optimization of the existing filters to increase the maximum filtration rate to 10 gpm/sf, four new filters, modifications to three pumping stations, gunnite-lined ponds. Also performed an operations and maintenance (O&M) cost analysis and designed instrumentation and controls for the filter-to-waste project at Foothill water treatment plant.

Filter Rehabilitation | City of Yuba City, California
Provided mechanical design of improvements to the water treatment plant. Improvements included increasing the reliable filtration capacity to 24 mgd by upgrading existing filters by replacing the media and underdrains, adding air scour, replacing piping, and adding filter-to-waste; upgrading the sedimentation basins with new baffles and cross collection; and new polymer feed pumping.

Fresno Surface Water Treatment Plant | City of Fresno, California
Designed all HVAC and plumbing for the new 30 mgd surface water treatment plant. Raw water facilities included a new intake, pipeline, and pumping station. Process facilities included flashmix, ACTIFLO clarification, and filter backwash handling. Treated water facilities included 1 million-gallon (MG) cast-in-place clearwell, high service pumping station, distribution system piping, and off-site pressure sustaining valve stations.

Surface Water Treatment Facility | City of Lodi, California
Mechanical engineer during predesign, design, and construction of a new 11.5 mgd surface water treatment plant and associated facilities, which included process buildings, chemical and disinfection systems, pumping stations, 3 MG prestressed concrete tank, operations building and chemical building, and corrosion control.

IRP2 Water Treatment Plant Seismic Retrofit | Santa Clara Valley Water District, San Jose, California
Designed seismic retrofit improvements to the Penitencia Water Treatment Plant control building, Vasona Meter Shop, Vasona Pump building, and Rinconada Water Treatment Plant (RWTP) control building to satisfy a life safety criterion. Project also included replacement of the domestic water system piping in the Rinconada Water Treatment Plant, retrofit of the existing vacant laboratory space at the Rinconada Water Treatment Plant to provide new office space, and recoating of the clearwell roofs at the Rinconada Water Treatment Plant.

Gauntlett/Fitch Water Treatment Plant | City of Healdsburg, California
HVAC and plumbing design for the new 2.6 mgd (4.5 mgd ultimate) Gauntlett/Fitch Water Treatment Facility.

Montevina Water Treatment Plant Improvements Progressive Design-Build | San Jose Water Company, San Jose, California
Mechanical engineer for $47 million in improvements to convert the conventional 30 mgd Montevina Water Treatment Plant to a membrane water treatment plant. Plant upgrades included improvements to the existing flash mix and flocculation basins, conversion of the existing Greenleaf filters to a plate settler basin, and a new treatment building. Other improvements include replacement of the existing solids handling systems, replacement of the existing administration building, and numerous other support facility upgrades.

Canterbury and Bailey II Treated Water Reservoir Rehabilitation | Contra Costa Water District, Concord, California
Provided condition assessment, predesign, and mechanical design for rehabilitation of the Canterbury and Bailey II reservoirs. Rehabilitation work at the Canterbury Reservoir included removing/replacing the lining, modifying the inlet/outlet piping, replacing the top vents and hatches, adding davit crane mounts, demolishing the safety climb feature on the interior tank ladders, and stiffening the center column. Bailey II Reservoir improvements included sealant replacement of the floor and wall joints. The program also included installing new mixing systems at the Cowell Ranch, Nob Hill, Murchio, and North Gate reservoirs, and associated SCADA improvements, as well as design of a motorized valve in a below-grade vault with flow meter, power, telemetry, and controls on a transmission main near the intersection of Salvio and East Olivera Streets in Concord.

Seminary, Crystyl, Paso Nogal, and Taylor Treated Water Reservoir Rehabilitation | Contra Costa Water District, Concord, California
Provided HVAC and plumbing design for rehabilitation of four existing potable water storage reservoirs, including Seminary Tank (0.5 million gallon (MG) above-ground welded steel), Crystyl Ranch Reservoir (1.14 MG buried reinforced concrete), Paso Nogal Reservoir (1.2 MG buried reinforced concrete), and Taylor Reservoir (7.5 MG buried prestressed concrete). Improvements included new mixing systems, inlet/outlet piping modifications, painting and coatings replacement, custom sampling facilities with continuous flow chlorine analyzers, and other water quality improvements.

Blower Building | Orange County Sanitation District, Fountain Valley, California
Mechanical engineer during design of two new 110 HP air compressors and appurtenances in Blower Building No. 1 at Wastewater Treatment Plant 1.

Laboratory Rehabilitation Improvements | Fairfield-Suisun Sewer District, Fairfield, California
Provided construction engineering services for HVAC and plumbing component of the laboratory rehabilitation improvements project at the wastewater treatment plant.

Las Vegas Laboratory (Contract 14) | City of Las Vegas, Nevada
Designed HVAC and plumbing systems for a multiple room state-of-the-art laboratory for the water pollution

control facility expansion to 66 mgd. Project included a multi-purpose laboratory, support facility, and mechanical room. Design included a hot water and chilled water system, vacuum air system, and domestic water system.

Yuba City Water Treatment Plant Expansion to 85 mgd | City of Yuba City, California
Provided HVAC and plumbing design for the $21 million expansion of the 24 mgd water treatment plant to 48 mgd, which included pumping stations, treated water piping modifications to the existing clearwell to achieve chlorine contact time (CT) after filtration, a 4 MG buried clearwell; chemical feed system and chlorine disinfection modifications, and backwash water disposal.

Yucaipa Valley Regional Water Filtration Facility | Yucaipa Valley Water District, Yucaipa, California
HVAC and plumbing design for the new $22 million Yucaipa Valley Regional Water Filtration Facility.

Bozeman Hyalite/Sourdough Water Treatment Plant | City of Bozeman, Montana
Provided mechanical design and engineering services during construction for a new 22 mgd water treatment plant.

Phase 2 Lewis and Clark Water Treatment Plant Redesign | Lewis and Clark Regional Water System, Sioux Falls, South Dakota
Provided quality control review of HVAC, plumbing, and fire protection design of Phase 2 water treatment plant improvements, which needed to be redesign to better fit with available funding. Phase 2 improvements included treatment building, maintenance garage, four solids contact basins, media and piping for four facilities, and lime tower.

Surface Water Treatment Plant | City of Missouri City and Sienna Plantation Municipal Utility District (MUD) No. 1, Missouri City, Texas
Provided HVAC and plumbing design of a new 10 mgd surface water treatment plant.

Lake Arrowhead Water Treatment Plant Improvements | Red River Authority of Texas, Wichita Falls, Texas
Designed HVAC and plumbing for improvements to the 1.5 mgd water treatment plant. Improvements included raw surface water and backwash pumping station, two high-service pumping stations, two 50,000-gallon double ellipsoidal elevated water storage tanks located east and west of Lake Arrowhead, one 100,000-gallon ellipsoidal elevated water storage tank serving Arrowhead Ranch estates, and 10,000 linear feet (LF) of 8-to 10-inch-diameter water transmission line,

Preston Shores Water Treatment Plant Improvements | Red River Authority of Texas, Wichita Falls, Texas
Designed HVAC and plumbing for improvements to the 1.5 mgd water treatment plant. Improvements included high-service pumping station, a new 75,000-gallon composite ground water storage tank, and 10-inch-diameter raw water intake and pipeline. Design included four vertical high service can pumps, backwash pumps, and backwash return pumps.

Rio Oso Tank Rehabilitation | Rancho Murieta Community Services District, Rancho Murieta, California
Provided mechanical engineering design of improvements to rehabilitate the 1.2 MG welded steel Rio Oso Tank, which was plagued with corrosion problems.

Cienega Selenium Treatment Facility | Irvine Ranch Water District, Irvine, California
Provided mechanical design services for the new Cienega Selenium Treatment Facility, which uses General Electric's (GE's) Advanced Biological Metals Removal (ABMet) technology. The Cienega Selenium Treatment Facility includes an infiltration gallery, cleanouts, valves and valve boxes, manholes to collect water from Peters Canyon Wash into a common header to flow to the new influent pumping station, a discharge structure, backwash system, equipment building, sewer pipeline, and associated piping. The influent pump station is buried at grade and equipped with two 3 cfs submersible pumps. The backwash system consists of four fiberglass storage tanks (two for backwash and two for spent backwash storage), a backwash pumping station, and a spent backwash pumping station. The equipment building consists of the ABMet bioreactor tanks, piping gallery, and equipment area. The equipment area includes the odor control system, blowers, nutrient feed system, nutrient storage tanks, chemical storage tanks for odor control, electrical/control room, and storage room.

EDUCATION
Master of Science, Civil and Environmental Engineering, University of California, Davis, 2017

Bachelor of Science, Engineering, Harvey Mudd College, 2011

REGISTRATION
Professional Engineer, Civil | California #90031

HDR TENURE
3 Years

INDUSTRY TENURE
9 Years

Allison M. McReynolds, PE (CA)

Funding Assistance

Allison has more than nine years of water and wastewater engineering experience. Her expertise includes project funding, process design and optimization, technology alternatives analysis, and modeling projects for public districts. In addition to process design, her experience includes data evaluation, program management, permitting, and compliance management.

SELECT RELEVANT EXPERIENCE

Fort Bragg Wastewater Treatment Plant Upgrade | City of Fort Bragg, California
Prepared the Preliminary Engineer's Report that provided the necessary information to support grant and loan application to fund improvements to upgrade 1 mgd wastewater treatment plant. Improvements that were subsequently designed and constructed included replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system, repurposing the clarifiers into emergency/flow equalization and/or storm run-off storage, treatment of on-site stormwater, solids handling, and power requirements.

Nutrient Management Evaluation | Sewerage Agency of Southern Marin, Mill Valley, California
Evaluated and recommended nutrient management improvement options for ongoing trickling filter design and construction, operational optimization, and sidestream management. Evaluated and recommended technology alternatives for reducing total dissolved solids (TDS) while managing nutrients for recycled water. Evaluated funding options for recycled water improvements.

Pinole-Hercules Water Pollution Control Plant Expansion Design | City of Pinole, California
Assisted with design of award-winning upgrades at the Pinole/Hercules Water Pollution Control Plant, which included influent pumping station, headworks, primary clarifier, aeration basins, three new secondary clarifiers, return activated sludge (RAS)/waste activated sludge (WAS) pumping, disinfection, solids handling, effluent pumping, flood wall, and electrical facilities.

Nitrification Clarifiers Rehabilitation | City of San Jose, California
Assisted with alternatives analysis/conceptual design for rehabilitation, equipment replacement, and other improvements for the nitrification clarifiers at the city's 187 mgd San José/Santa Clara Regional Wastewater Facility to keep them operating for decades to come.

Seismic Retrofit of Russian River Secondary Treatment Clarifiers | Sonoma County Water Agency, Guerneville, California
Provided preliminary design, final design, bidding, and engineering services during construction of seismic retrofit improvements to the internal mechanisms of the three secondary clarifiers located at the Russian River County Sanitation District Wastewater Treatment Plant.

Sonoma Valley Headworks Rehabilitation | Sonoma County Water Agency, Santa Rosa, California
Evaluated headworks equipment replacement alternatives for influent screens, screens, conveyance, and washer compactors, and designed the recommended improvements.

Primary Clarifier and Aeration Basin Rehabilitation Improvements | South Lake Tahoe Public Utility District, South Lake Tahoe, California
Provided final design, bidding, and construction engineering services for rehabilitation improvements for Primary Clarifier 1 and Aeration Basin 2 at the 7.5 mgd wastewater treatment plant. Aeration basin rehabilitation improvements included concrete rehabilitation, aeration piping/diffuser replacement, and hydraulics improvements. Primary clarifier rehabilitation improvements included concrete rehabilitation, replacement of the clarifier mechanisms, scum skimmers, scum box, and effluent weirs.

EDUCATION
Bachelor of Science, Civil Engineering, California State University, Sacramento, 2015

REGISTRATION
Professional Engineer, Civil, California No. 90090

HDR TENURE
3 Years

INDUSTRY TENURE
5 Years

Arashdeep Singh, PE (CA)

Project Engineer and Civil/Site

Arashdeep is a professional civil engineer with more five years of experience in planning, design, monitoring, and construction of projects in the water/wastewater industry, including for the City of Fort Bragg. As an assistant project engineer working with large teams, he has assisted in technical design and construction of treatment plants, pumping stations, and conveyance projects.

SELECT RELEVANT EXPERIENCE

Fort Bragg Wastewater Treatment Plant Upgrade | City of Fort Bragg, California
Project engineer during preliminary design, final design, and engineering services during construction of award-winning improvements to upgrade 1 mgd wastewater treatment plant. Improvements included replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system, repurposing the clarifiers into emergency/flow equalization and/or storm run-off storage, treatment of on-site stormwater, solids handling, and power requirements.

Sewer Lift Station Rehabilitations | City of Fort Bragg, California
Designed improvements to convert three existing sewer lift stations from dry well pump configuration to submersible type. This work included removal and replacement of the motor control center (MCC) and modifications to the plumbing to allow for bypass pumping at each location.

Pinole-Hercules Water Pollution Control Facility Upgrade | City of Pinole, California
Project engineer during engineering services during construction of $43 million in award-winning upgrades at the Pinole/Hercules Water Pollution Control Plant. Improvements included influent pumping station, headworks, primary clarifier, aeration basins, three new secondary clarifiers, return activated sludge (RAS)/waste activated sludge (WAS) pumping, disinfection, solids handling, effluent pumping, flood wall, and electrical facilities. This project was extremely complex as upgrades needed to be made to an existing plant on a very small site. The plant had to remain on-line 24/7 without any interruptions. The existing plant did not have redundant treatment facilities, so temporary facilities had to be constructed to allow for the shutdowns. Every single treatment process had to be updated, except for digestion. As a result of tight space restrictions at the project site and the need to keep existing facilities operating during construction, considerable effort was spent with the City of Pinole, design team, construction manager, and contractor to properly phase the construction. Approximately three months were spent to work out the details on this plan and three stages of shutdowns were scheduled. Because of this careful coordination and sequencing, the plant upgrades were successfully completed without any impact to plant operations, safety violations, or permit violations.

Davis Wastewater Treatment Plant Secondary and Tertiary Improvements Design-Build | City of Davis, California
The primary objective of the project was to replace the city's outdated oxidation pond process with a modern activated sludge process that was capable of meeting new waste discharge permit requirements that would have gone into effect in October of 2017. The secondary treatment improvements required construction of four new aeration tanks, four 75-foot-diameter secondary clarifiers, two return activated sludge (RAS)/waste activated sludge (WAS) pumping stations, a scum pumping station and blower building, tertiary improvements (included new filter building), chemical disinfection building, chlorine contact basin, and effluent pumping station. This project also included construction of new dewatering facility, sludge storage area, cogeneration building, associated piping, and rehabilitation of existing administration building, maintenance building, and laboratory.

Primary Clarifier and Dissolved Air Flotation (DAF) Clarifier Rehabilitation | Napa Sanitation District, Napa, California
Provided design and engineering services during construction for recommended primary clarifier and DAF clarifier rehabilitation improvements at the Soscol Water Recycling Facility.

Headworks Rehabilitation | Napa Sanitation District, Napa, California
Provided engineering services during construction of rehabilitation improvements to the existing headworks facility at the Soscol Water Recycling Facility.

Sonoma Valley Headworks Rehabilitation | Sonoma County Water Agency, Santa Rosa, California
Evaluated headworks equipment replacement alternatives for influent screens, screens, conveyance, and washer compactors, and designed the recommended improvements.

Easterly Wastewater Treatment Plant Tertiary Upgrade Completion Phase | City of Vacaville, California
Assisted with design and engineering services during construction of a storage building for mobile equipment used by operations and maintenance (O&M) personnel, lining the existing emergency storage basin with reinforced concrete, and repairing the structural section at north sludge drying beds.

Polymer System Replacement and Rehabilitation (CIP PSH003) | Vallejo Flood & Wastewater District, Vallejo, California
Provided predesign and final design of polymer system improvements at the wastewater treatment plant.

Aeration Basin Upgrades | Douglas County Lake Tahoe Sewer Authority, Minden, Nevada
Provided preliminary design, final design, and construction services for aeration system upgrades.

Digester Piping Improvements | City of San Mateo, California
Provided final design, bidding, and engineering services during construction of digester piping Improvements, which included adding an overflow pipe from Digester #1 to the sludge storage tank, adding foam suppression pump into pump manifold, and adding suction piping manifold for digested sludge pumps (to transfer sludge from digester to sludge storage tank).

Polymer System Improvements | City of Folsom, California
Provided planning, design, bidding, and construction administration for polymer system improvements at the water treatment plant.

Belt Filter Press Addition | Minden-Gardnerville Sanitation District, Minden, Nevada
Provided preliminary design and final design of a second belt filter press located in the existing building.

Anaerobic Digester Roof No. 2 Replacement | Minden-Gardnerville Sanitation District, Minden, Nevada
Designed improvements to replace the gas floating cover roof on Anaerobic Digester No. 2 with new floating cover. Improvements included modifying internal gas piping to accommodate additional gas storage and configuration of new cover, and adding coating on the inside of Digester No. 2 concrete wall.

Richard G. Stratton, PE (CA, NV, OR)

Filter Specialist

Rich has 43 years of water/wastewater engineering experience, which includes master planning, design, and construction of treatment plants, pumping stations, pipelines, storage tanks, wells, biosolids handling, and reverse osmosis and brine management. He has decades of filter expertise and is considered one of HDR's top water and advanced wastewater treatment plant engineers, typically involved with HDR's largest and most complex projects nationwide. He has served as project manager, QA/QC reviewer, technical advisor, or project engineer on more than 90 water treatment plant projects.

SELECT RELEVANT EXPERIENCE

Nunes Water Treatment Plant Rehabilitation | Coastside County Water District, Half Moon Bay, California

Project manager for preliminary design and final design of upgrades to the Nunes Water Treatment Plant, which included: (1) rehabilitation of filter equipment, including replacement of the underdrains, installation of a new air scour system including blower(s), replacement of the filter media, and new instruments; (2) replacement of existing orifice plate flow meters with magnetic flow meters at new locations, replacement or refurbishment of valves, new actuators, and appurtenances, and miscellaneous improvements; (3) new filter-to-waste piping and pumping system to allow for higher filter-to-waste flows; (4) new concrete coating for the filters and clearwell; (5) addition of a new 2,500-gallon sodium hydroxide (caustic) tank on a concrete pad, piping with related appurtenances, and a canopy for tank protection; and (6) miscellaneous electrical and instrumentation and control (I&C) improvements as required to support the project components described above. The project also included a conceptual evaluation and design of a new 1 mgd sedimentation basin to provide redundant capacity to the existing sedimentation basin.

Foothill Water Treatment Plant Expansion to 58 mgd | Placer County Water Agency, Auburn, California

Project manager for master planning, predesign, environmental documentation, permitting, final design, bidding, and construction engineering services to expand the Foothill Water Treatment Plant capacity from 15 mgd to 58 mgd. Following the initial predesign workshops and investigations, prepared designs for a variety of improvements, including grit removal/screening, ACTIFLO, new gravity filters, chemical feed facilities, solids handling, filter-to-waste features to the original facility, and a completely new plant-wide SCADA system design that includes new programmable logic controllers (PLCs), instrumentation, and a supervisory control station to automate the entire facility and minimize operating costs. New residuals handling facilities were also designed to effectively process waste streams and dry sludge on site through the use of a series of improved washwater recovery basins, sludge lagoons with decant structures, and sand drying beds. Designed two 20-mgd ACTIFLO treatment units, optimization of the existing filters to increase the maximum filtration rate to 10 gpm/sf, and four new filters was constructed adjacent to the plant filters designed to operate at 10 gpm/sf. Modifications were made to three pumping

EDUCATION

Master of Science, Environmental Engineering, University of Illinois - Urbana, 1981

Bachelor of Science, Civil Engineering, University of Illinois - Urbana, 1977

REGISTRATION

Professional Engineer - Civil | California #37261, 1983

Registered Civil Engineer, Oregon, No. 87175PE, 2013

Registered Civil Engineer, Nevada, No. 12435, 1996

PROFESSIONAL AFFILIATIONS

American Water Works Association

Water Environment Federation

California Water Environment Association

HDR TENURE

24 Years

INDUSTRY TENURE

43 Years

stations, including 5 mgd washwater recovery pumping station, 3 mgd decant pump station, and 14 mgd backwash pumping station. Also designed gunnite-lined ponds. His innovative approach of utilizing innovative technologies, such as the ACTIFLO process and high-rate deep bed filters, allowed the 45 mgd plant expansion to occur on the existing site with a savings of more than $3 million over conventional low rate technology.

Foothill Water Treatment Plant 1 and 2 Capacity Expansions | Placer County Water Agency, Auburn, California
Project manager for final design, bidding, and construction engineering services for the recommended capacity expansion improvements. Recommended improvements to increase Plant No. 1 capacity by 2 mgd and facilitate cleaning of tube settlers included: (1) modifying filter inlets from sharp edge to bell-mouth; (2) updating PLC and supervisory control and data acquisition (SCADA) programming for the new higher flows; and (3) upgrading hose bibbs and piping in the Actiflo building. As part of the goal to increase overall Foothill Water Treatment Plant capacity from 58 mgd to 63 mgd, Plant No. 2 capacity was expanded from 18 mgd to 21 mgd. Plant No. 2 improvements included: (1) replacing the filter media to better accommodate the increased loading to 7.1 gpm/sf; (2) replacing the horizontal paddle flocculators with vertical mechanical turbine flocculators to allow for easier maintenance; (3) adding tube settlers to the sedimentation basins to increase plant capacity within the existing footprint; and (4) providing new hoseless sludge scraper system for the sedimentation basins.

West Hills Water Treatment Plant Expansion | San Benito County Water District, Hollister, California
Provided QA/QC and design support for preparation of predesign report and final design of a 4.5 mgd surface water treatment plant.

Bryte Bend Water Treatment Plant Expansion to 58 mgd | City of West Sacramento, California
Project manager for award-winning predesign, environmental documentation, permitting assistance, final design, bidding, and construction administration services to expand the Bryte Bend Water Treatment Plant from 24 mgd to 58 mgd. Improvements included conventional gravity filtration system including conversion of existing traveling bridge filters, two 4 million-gallon (MG) prestressed concrete water storage tanks that replaced the existing 1.2 MG tanks, chemical storage and feed system, disinfection system modifications, conversion of the sedimentation basins to washwater recovery basins, new washwater recovery pumping station, operations building/laboratory modifications, new administration building, and electrical and plant control system improvements.

Filter Rehabilitation at Water Treatment Plant Improvements | City of Yuba City, California
Managed fast-track design and provided construction engineering services for improvements to the water treatment plant. Developed innovative approach that deferred construction of new gravity filters and piping, resulting in a total savings of more than $2 million. Improvements included increasing the reliable filtration capacity to 24 mgd by upgrading the plant electrical system; upgrading existing filters by replacing the media and underdrains, adding air scour, replacing piping, and adding filter-to-waste; upgrading the sedimentation basins with new baffles and cross collection; and new polymer feed pumping. Design and construction was completed in nine months, and contract incentives and penalties were used to assure the contractor successfully met the fast-track schedule.

Clovis Water Treatment Plant Upgrade and Expansion to 22.5 mgd | City of Clovis, California
Project manager for award-winning predesign, final design, bidding, and construction services for necessary upgrades to the city's water treatment facility, and to have an upgraded and expanded water treatment plant that can reliably produce 22.5 mgd.

$22.8 Million Surface Water Treatment Facility | City of Lodi, California
Project manager for award-winning conceptual design, feasibility evaluation of alternatives, predesign, CEQA environmental documentation, permitting, design, bidding, and construction engineering services for a new 11.5 mgd surface water treatment plant and its associated facilities,

which included 3 MG prestressed concrete water storage tanks.

Phase 3 and 4 Water Treatment Plant Expansion | Rancho Murieta Community Services District, California
Project manager for preliminary design, CEQA documentation, permitting, and final design of $8.7 million in improvements to expand the district's water treatment plant from 3.5 mgd to 7.0 mgd to increase the maximum day capacity.

Montevina Water Treatment Plant Improvements Progressive Design-Build | San Jose Water Company, San Jose, California
Design manager for $50 million in improvements, which included structural rehabilitation of existing structures, flocculation and sedimentation pretreatment facilities, disinfection, mechanical clarifier thickening, screw press dewatering, and future fluoridation facilities.

Packaged Water Treatment Plant | City of Watsonville, California
Project manager for alternatives analysis, predesign, and final design of a 1.25 mgd pre-fabricated packaged water treatment system with chemical injection located upstream of the packaged units. The packaged water treatment system process includes pretreatment (static mixing chemical injection, mechanical flocculation, clarification using tube settlers, and sedimentation in the new package plant units), dual media gravity filtration, air scour blower, chlorine gas disinfection, coagulant and polymer feed systems and controls, water quality monitoring instrumentation, and PLC based automatic control system and related wiring with human machine interface (HMI).

Yucaipa Valley Regional Water Filtration Facility | Yucaipa Valley Water District, Yucaipa, California
Project manager for award-winning design, bidding assistance, construction engineering, and startup services for the new $37.4 million Yucaipa Valley Regional Water Filtration Facility.

Yuba City Water Treatment Plant Expansion to 48 mgd | City of Yuba City, California
Project manager for award-winning predesign, design, bidding, grant funding assistance, environmental documentation, permitting assistance, construction engineering, operations and maintenance (O&M) manuals, and testing and startup assistance for the $36 million expansion of the 24 mgd water treatment plant to 48 mgd.

Water Treatment Plant Solids Improvements, Owner's Representative Engineering Services | City of Folsom, California
Project manager for owner's representative engineering services for design-build alternative delivery procurement of a new mechanical dewatering along with other miscellaneous improvements at the water treatment plant to provide a long-term solution for managing the water treatment plant's solids. Improvements included installation of a remotely-controlled dredging system in one of the existing sludge ponds to allow for removal of thickened sludge for feeding the mechanical dewatering system, a sludge homogenization tank and dewatering system feed pumps, screw presses (including ancillary equipment) located in the area of the existing slab near Sludge Basin No., pipeline to convey filtrate to the pond decant pumping station, screw conveyors and a dewatered sludge holding bin loading station, polymer feed system, modifications to the existing solids handling sedimentation basins to minimize solids build-up in the flocculation areas, and site improvements.

New 30 mgd Surface Water Treatment Plant | City of Fresno, California
Designed process and treated water facilities for the new 30 mgd surface water treatment plant. Process facilities designed include flashmix ACTIFLO, and filter backwash handling. Treated water facilities included a 1 MG cast-in-place concrete clearwell, 30 mgd high-service pumping station, distribution system piping, and off-site pressure sustaining valve stations.

Nick C. Degroot Water Treatment Plant Concrete Drying Beds | South San Joaquin Irrigation District, Oakdale, California
Project manager for preliminary design, geotechnical investigation, final design, and bidding for two new concrete drying beds at the Nick C. Degroot Water Treatment Plant, which included influent piping and decant structures flowing via gravity into an existing sump basin.

Diatomaceous Earth Water Treatment Plant | City of Vacaville, California
Project manager/engineer for design and construction of improvements to the 12 mgd diatomaceous earth water treatment plant. Improvements designed included drum screen; new diatomaceous earth filtration, piping, valves, and controls; filter-to-waste piping; chemical feed systems; drying beds; baffled clearwell; and vertical turbine booster pumping station. In addition, provided support during construction and gained approval of the 1.5 gpm/sf filtration rate.

Packaged Water Treatment Plant for California Medical Facility, Vacaville, California
Project engineer for design of 2.25 mgd package water treatment plant for California medical facility.

Phase II Water Treatment Plant Expansion | City of Blair, Nebraska
Provided QA/QC for feasibility study and design of the Phase II water treatment plant expansion from 7 to 14 mgd. Improvements include filters to double the plant's filtration capacity, chemical mixing, and presedimentation basin modifications.

Cary/Apex Water Treatment Facility Phase III Expansion | Town of Cary, North Carolina
Provided QA/QC during predesign and final design of improvements to expand the water treatment plant from 40 mgd to 56 mgd.

Phase 1 Water Treatment Plant Rehabilitation and Upgrades | City of Shelby, North Carolina
Provided QA/QC of during preliminary and final design of improvements to the water treatment plant, which included correcting structural deficiencies at the clearwells, sedimentation basins, and main control building. The project also included a new 12 mgd high-service pumping station, replacement of the filter valves, and conversion of the existing hydraulic actuators to electric.

Phase 2 Water Treatment Plant | City of Ashland, Oregon
Served as technical advisor and provided QA/QC during water quality analysis, preliminary design, and final design of a new 7.5 mgd water treatment plant that replace the existing water treatment plant due to its capacity limitations, aging components, and current location in the floodplain of Reeder Reservoir. Recommended improvements that were subsequently designed included: (1) plate settlers with granular media filtration, with ozonation for taste and odor control; (2) relocating the flocculation and sedimentation basins as well as the filters outdoors to reduce cost; (3) a new 0.85 MG clearwell and rehabilitation of the existing granite reservoir (4) pumping stations for the backwash supply and to supply the Crowson zone (via the Crowson Reservoir); pipelines; and (5) solar arrays for energy generation at the new water treatment plant.

Pony Creek Water Treatment Plant Expansion | Coos Bay / North Bend Water Board, Coos Bay, Oregon
Provided design support for $10 million expansion of the 8 mgd Pony Creek Water Treatment Plant to 12 mgd. Improvements included installation of rapid mixing and mechanical flocculation; conversion to high-rate clarification using plate settlers and high-rate filtration using deep dual media; expansion of backwash pumping station and upgrades to low-lift pumping station; conversion of the backwash storage tank to a clearwell for primary disinfection; finished water distribution improvements, and construction of a new building that houses a new high-service pumping station, blower, and chemical feed facilities.

Weatherford Packaged Water Treatment Plant | City of Weatherford, Texas
Project engineer during design and construction for the 8 mgd vendor supplied water treatment plant, which included raw water intake, piping, building, vertical turbine booster pumping station, and chemical feed systems.

Cerrillos Filtration Plant | Lake Cerrillos, Puerto Rico
Assisted with design of a 10 mgd surface water treatment Actiflo facility.

Anacortes Water Treatment Plant Improvements and Expansion to 42 mgd | City of Anacortes, Washington
Provided technical input during preliminary design and designed upgrades to the water treatment plant, which included new gravity filters, finished water storage and pumping, and power supply and distribution.

HDR TENURE
23 Years

INDUSTRY TENURE
41 Years

Peter Van Meurs

Computer Aided Design (CAD) Technician

Peter is a computer aided designer and has prepared AutoCAD plans for hundreds of water and wastewater projects over the last 41 years, which have included modular water treatment plants, filter rehabilitations, lining of ponds, and water storage tank rehabilitations.

SELECT RELEVANT EXPERIENCE

2003 Fort Bragg Modular Water Treatment Plant Upgrade | City of Fort Bragg, California
CAD technician during design of the 2003 water treatment plant upgrade. Was responsible for developing AutoCAD drawings for the outside civil work, which included grading of four new basins with supply piping, distribution boxes, and decant return.

Modular Water Treatment Plant | Yuba County Water Agency, Marysville, California
CAD technician during design of a 2 mgd water treatment plant using factory-built modular treatment units. The project included 4,200-square-foot masonry and concrete buildings, raw water and filtered water pumping stations, 500,000-gallon reservoir, chemical handling equipment, and sludge dewatering lagoons. The plant employs an adsorption clarifier/mixed-media filtration process.

Columbia Packaged Water Treatment Plant | Tuolumne Utilities District, Sonora, California
CAD technician during design of a new 1 mgd factory-built modular water treatment facility. This new water treatment plant replaced an obsolete pressure sand filtration plant that could no longer provide sufficient capacity or meet filtered water quality standards.

Lakeport Modular Water Treatment Plant | Lake County Special Districts, Lakeport, California
CAD technician during design of a new 1.5 mgd treatment plant around a package modular adsorption clarifier unit. Both ozone and activated carbon was used in the treatment process to remove taste- and odor-causing organic compounds. Water is distributed through 11 miles of pipeline. Project design also included two storage reservoirs of 250,000- and 500,000-gallon capacities, and a raw water pumping station.

Modular Water Treatment Plant | City of Ukiah, California
CAD technician during design of a new 6 mgd water treatment facility around factory built adsorption clarification/filtration modular treatment units. The plant is capable of expansion to an ultimate capacity of 12 mgd. The plant treats water from a Ranney collector installed beneath the Russian River.

Willits Modular Water Treatment Plant | City of Willits, California
CAD technician during design of a new 2.2 mgd water treatment facility using factory-built modular treatment units. The project included a raw water pumping station, 1.5 million-gallon (MG) storage reservoir, about 6,500 linear feet (LF) of raw and finished water transmission main, and a 160-foot-span pipeline bridge across a river. Electrical and control system design included control panels, motor control centers (MCCs), variable frequency drives (VFDs), and a telemetry system for a remote water reservoir.

Ebbetts Pass Modular Water Treatment Plant | Calaveras County Water District, San Andreas, California
CAD technician during design of a 4 mgd modular water treatment plant that replaced aging non-complying facilities. The project included a 20-inch-diameter pipeline, 500,000-gallon steel clearwell tank, high-service pumping station, backwash treatment lagoons, and site improvements. Separate specifications were developed for prepurchase of equipment to accelerate the project.

Sewer Lift Station Rehabilitations | City of Fort Bragg, California
CAD technician during design of improvements to convert three existing sewer lift stations from dry well pump configuration to submersible type. This work included removal and replacement of the motor control center (MCC) and modifications to the plumbing to allow for bypass pumping at each location. At a fourth lift station, designed replacement of the MCC and plumbing modifications to allow for a sewer bypass pump.

Fort Bragg Wastewater Treatment Plant Upgrade | City of Fort Bragg, California
CAD technician during design of award-wining improvements to upgrade 1 mgd wastewater treatment plant. AutoCAD plans were prepared for replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system, repurposing the clarifiers into emergency/flow equalization and/or storm run-off storage, treatment of on-site stormwater, solids handling, and power requirements.

Nunes Water Treatment Plant Upgrades | Coastside County Water District, Half Moon Bay, California
CAD technician during design of a new sedimentation basin, filter upgrades, caustic soda storage tank system, clearwell upgrades, and miscellaneous electrical and mechanical improvements for the Nunes Water Treatment Plant.

Foothill Water Treatment Plant No. 2 Capacity Expansion Improvements | Placer County Water Agency, Auburn, California
CAD technician during design of $4.2 million in improvements to expand the permitting capacity Foothill Water Treatment Plant from 58 to 63 mgd. Improvements included: (1) replacing the filter media to better accommodate the increased loading to 7.1 gpm/sf; (2) replacing the horizontal paddle flocculators with vertical mechanical turbine flocculators to allow for easier maintenance; (3) adding tube settlers to the sedimentation basins to increase plant capacity within the existing footprint; and (4) providing new hoseless sludge scraper system for the sedimentation basins.

Effluent Reservoir for the North San Pablo Bay Restoration and Reuse Project | Sonoma County Water Agency, Santa Rosa, California
CAD technician during design of a new effluent storage reservoir on 14 acres of land that was recently acquired, located immediately north of the Sonoma Valley County Sanitation District Treatment Plant. Improvements included earth reservoir embankments, inlet piping between the reservoir and the treatment plant, outlet pumping station and connecting pipeline between the reservoir and the treatment plant, reservoir overflow outlet piping, electrical switchgear, reservoir recirculation pipe, chemical feed piping, 60-mil high density polyethylene (HDPE) liner, and a perimeter fence. This effluent storage reservoir was needed to provide maximum storage capacity of the site, and required compliance with the American Recovery and Reinvestment Act (ARRA) of 2009 agreement to receive federal funding for design and construction.

Pond No. 3 Liner Replacement | City of Colfax, California
CAD technician during design of conversion of the existing treatment ponds (Ponds No. 1 and 2) to influent flow equalization storage, and lining of Pond No. 3 with a geosynthetic liner. The existing ponds were dried and cleaned after the improvements were constructed. Minor crack repair were provided in Ponds No. 1 and No. 2 after cleaning.

Effluent Pond Liner | City of Healdsburg, California
CAD technician during design and effluent storage pond lined with a geo-membrane (synthetic) liner and conversion of the existing treatment ponds to influent flow equalization storage. The existing ponds were dried and cleaned after the wastewater treatment plant was constructed, and an impermeable liner was installed in these ponds.

Pond Relining | Douglas County Lake Tahoe Sewer Authority, Zephyr Cove, Nevada
CAD technician during design of the reservoir relining project.

Rehabilitation of Gregory Gardens, Murchio, and Midhill I Water Storage Reservoirs | Contra Costa Water District, Concord, California
CAD technician during design of rehabilitation improvements for the Gregory Gardens, Murchio, and Midhill I water storage reservoirs. Rehabilitation work included: (1) coating removal/replacement and adding a new motor operated valve to the inlet/outlet lines at Gregory Gardens Reservoir; (2) removal, disposal, and replacement of caulking compounds in Midhill 1 Reservoir; and (3) drain line improvements at Murchio Reservoir.

Basin Membrane Liner, and Control and Blower Building Modifications | City of Oakdale, California
CAD technician during design of award-winning upgrades to the 5 mgd wastewater treatment plant. Upgrades were made to two existing aeration basins, which included draining and drying each aeration basins separately, removing the existing Biolac equipment, reshaping the basin, installing a membrane liner, reinstalling the Biolac equipment, and replacing west air header with above-grade reader. Two additional blowers and controls were added in the existing blower building. The project also included electrical service from Merced Irrigation District and new diesel standby generator, a plant supervisory control and data acquisition (SCADA) system with central monitoring in the existing control building, and improvements to the existing control building, including painting, flooring upgrade in the office areas, and minor interior improvements.

Blower Building Modifications | Douglas County, Minden, Nevada
CAD technician during design of Phase II improvements to the North Valley Wastewater Treatment Plant, which included blower building modifications, and sludge storage and drying facilities.

EDUCATION

Master of Science, Civil Engineering, University of California, Berkeley, 1987

Bachelor of Science, Civil Engineering, University of California, Berkeley, 1985

REGISTRATIONS

Professional Engineer - Geotechnical, California, No. 2342, 1995

Professional Engineer, Civil, California, No. C53781, 1992

HDR TENURE

7 Years

INDUSTRY TENURE

34 Years

Edwin P. Woo, PE (CA), GE (CA)

Geotechnical

Ed has more than 34 years of experience supervising, managing and performing geotechnical investigations and construction observation services for a wide range of projects. He has been project manager or project engineer for numerous public and private sector projects, including water and wastewater facilities, buildings, slopes, levees, waterfront structures, airport facilities, bridges, roadways, and landfills. His responsibilities have included performing and overseeing field explorations, geotechnical instrumentation installation and monitoring, laboratory testing, geotechnical engineering analyses, construction monitoring, and preparing reports, contract drawings and specifications.

SELECT RELEVANT EXPERIENCE

Fort Bragg Wastewater Treatment Plant Upgrade | City of Fort Bragg, California

Geotechnical engineer for proposed improvements to upgrade 1 mgd wastewater treatment plant, which included replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system, repurposing the clarifiers into emergency/flow equalization and/or storm run-off storage, treatment of on-site stormwater, solids handling, and power requirements. The site is situated on a coastal bluff and is underlain by relatively loose sand and shallow bedrock. Geotechnical considerations include the suitability of the loose sand for foundation support and excavatability of the bedrock. Prepared geotechnical investigation report.

Lombard Street Reservoir Replacement | San Francisco Public Utilities Commission, San Francisco, California

Principal-in-charge of the construction phase aspects of the project. Lombard Street Reservoir, constructed of masonry/stone walls and earth embankment in 1860, had been deteriorating with age. The north wall of the reservoir had been settling and moving northward, and a site inspection indicated that the reservoir was leaking in at least one location. The integrity, as well as the overall safety has become an immediate concern. SFPUC decided to replace the existing reservoir with a concrete reservoir. The scope of work included: a geotechnical investigation to assess the condition of the reservoir embankment, which involved field exploration, inclinometer installation and monitoring, site inspection, and slope stability analyses; additional investigation and geotechnical consultation for the design of a new reservoir; and construction observation and consultation services for the project.

Westside Surface Water Treatment Plant | San Benito County Water District, Hollister, California

Performed geotechnical review during design of the new Westside Surface Water Treatment Plant. The plant includes pretreatment, filtration, chemical feed and storage, backwash handling, solids handling, and water storage.

Montevina Water Treatment Plant Improvements Progressive Design-Build | San Jose Water Company, San Jose, California
Geotechnical reviewer for a geotechnical investigation study performed by others for a $50 million upgrade to the Montevina Water Treatment Plant. The project includes a new membrane building, sludge processing facilities, and access road.

Ellis Creek Water Recycling Facility | City of Petaluma, California
Geotechnical project manager for a new water recycling facility. The project consisted of raising site grades by up to five feet and constructing both at-grade and below-grade facilities, including the following: secondary clarifiers, pumping stations, oxidation ditches, digesters, oxidation ponds, operations building, associated pipelines, and various smaller structures including splitter boxes, junction boxes, and electrical buildings. Another aspect of the project involved the remediation of two of the 10 existing oxidation ponds, each with plan dimensions of about 600 by 1,400 feet, which were experiencing leaking through the earth embankments. For these ponds, performed a geotechnical evaluation and provided recommendations to install PVC sheet piles through the centerline of the embankments to toe into the underlying low permeability soils to act as a water cutoff. The sheet piles were installed and were successful in stopping the leakage.

Soledad Wastewater Treatment and Disposal Facilities Upgrade and Expansion | City of Soledad, California
Principal-in-charge for a geotechnical study for upgrade and expansion of the existing wastewater treatment plant. The existing plant included a series of six ponds used for primary and secondary treatment. The original concept for the upgrade and expansion project included decommissioning two of the ponds for the construction of new facilities, which meant the facilities had to be designed as at-grade or shallow structures. Field investigation encountered potentially liquefiable soil across the entire site. To reduce the cost of an extensive soil improvement program to mitigate the potentially liquefiable soil, it was proposed to redesign the project so that many of the structures are deepened to be founded below the liquefiable soil. The new facilities included headworks, biological nutrient removal (BNR) trains, clarifiers, pumping stations return activated sludge, waste activated sludge, decant, and recycled water), and chemical feed structures bearing below the depth of potentially liquefiable soil. Flocculation tanks, ultraviolet (UV) basins, filters, electrical room, blower building, and generator and transformer pads, operations building, screw press, and screw press feed pumping station are maintained as at-grade structures for which soil improvement were required. Stone columns were installed beneath these structures to densify the soil to mitigate its liquefaction potential.

Oxidation Pond Levee Improvements at Water Pollution Control Plant | City of Sunnyvale, California
As part of the primary treatment renovation improvements for the city's 14 mgd water pollution control plant, served as principal geotechnical engineer for the assessment and upgrade of approximately one mile of levees that form a portion of the oxidation ponds at the plant. The levees are underlain by soft, compressible young bay mud soil. Improvements included raising and widening the levees, adding erosion protection, and rehabilitating 24 transfer pipes. The scope of services included performing subsurface field investigation, laboratory testing, engineering analysis (including stability and erosion analysis), preparation of a geotechnical report presenting recommendations for the upgrade of the levees, preparation of project plans and specifications, and construction observation.

Nunes Water Treatment Plant Rehabilitation | Coastside County Water District, Half Moon Bay, California
Provided quality assurance/quality control (QA/QC) review of the geotechnical investigation and report prepared for upgrades to the Nunes Water Treatment Plant, which included: (1) rehabilitation of filter equipment, including replacement of the underdrains, installation of a new air scour system including blower(s), replacement of the filter media, and new instruments; (2) replacement of existing orifice plate flow meters with magnetic flow meters, replacement/ refurbishment of valves, and new actuators; (3) new filter-to-waste piping and pumping system; (4) new concrete coating for the filters and clearwell; and (5) addition of a new 2,500-gallon sodium hydroxide (caustic) tank.

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