



February 27, 2015

Mr. Tom Z. Varga
Director of Public Works
City of Fort Bragg
416 North Franklin Street
Fort Bragg, CA 95437

RE: HDR's Proposal to Provide Professional Services for Wastewater Treatment Plant Upgrade Project

Dear Mr. Varga:

The City of Fort Bragg (City) is embarking on a major renovation and upgrade project for its wastewater treatment plant, and is in need of a consultant who knows what works and what doesn't at treatment plants, knows about future regulations impacting wastewater agencies, has innovative and cost-saving ideas, and has comprehensive offices with staffing horsepower and people who listen. HDR brings all this and more to the City's wastewater treatment plant upgrade project. Consider the following features and benefits of HDR and our team:

Comprehensive Staffing Capabilities to Serve as an Extension of City Staff: HDR has been ranked within the top 15 engineering firms nationwide for decades. We have all the disciplines in our Northern California offices to accommodate the work for your project, which include design, funding, permitting, energy efficiency, and environmental services. Having all the necessary staff and resources will improve communication and convenience for the City, ensure our ability to respond rapidly to your needs, and give you greater accountability from your consultant team.

The Right Experience: A key component of the City's project involves replacement of the existing trickling filters with an Aero-Mod activated sludge system. HDR has recently designed two award-winning wastewater treatment plants using Aero-Mod activated sludge systems, including the City of Rio Dell and City of Colfax, in addition to designing more than 100 wastewater treatment plants in California. We know the issues relating to rehabilitating 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 that things will be done right!

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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 include the recent award-winning Rio Dell wastewater treatment plant project. HDR's project manager, Craig Olson, brings proven leadership and wastewater expertise necessary to communicate and lead project teams, and generate collaborative solutions, as verified by our references and shown in the client testimonials we provided in Section C of this proposal. HDR's Northern California region is No. 1 among HDR's 225 offices. We are fortunate to staff the company's top wastewater specialists here where Craig and the rest of the team are located. Our key team leads include Dave Reardon, sustainability specialist, June Leng, disinfection specialist, and Mike Falk, wastewater regulations specialist. This team will assure that "no stone is unturned" when looking at solutions that reduce cost, improve operational efficiencies, reduce power requirements, and explore for a new revenue source for the City. No other firm can match the depth of experienced, local wastewater staff as HDR. This team is available and ready to get to work.

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 and work through key process decisions that provide confidence in the reliability of the selected strategies. The City's engineering and operations and maintenance (O&M) concepts will be incorporated into the project. The result will be a facility that addresses your needs, including providing value and ease of operation.

We have the right team, the local horsepower, a great track record with similar agencies in the region to provide outstanding service to you for your wastewater treatment plant upgrade project. If you have any questions, please do not hesitate to call.

Sincerely,
HDR ENGINEERING, INC.



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



Craig A. Olson, P.E.
Project Manager

CAO:pk/15029

A. Firm Description

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, mining, private land development, resource management, transportation, and water markets, and 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 9,200 employee-owners located in 225 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 wastewater treatment plant upgrade project, the City of Fort (City) will have at their disposal the resources of a large national firm personally delivered at the local level.

HDR is consistently ranked among the top engineering firms by leading industry publications. For example, in 2014, *Engineering News-Record* ranked HDR 11th in the Top 500 Design Firms. In the specific field of wastewater treatment plants, we were ranked 8th. 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 stands at 80 percent, an indication of client satisfaction and confidence.



No. 11 - Top 500 Design Firms

No. 8 - Top 25 Wastewater Treatment Plants

No. 6 - Top 20 Sewer & Waste



HDR is a full-service, multi-disciplined, top ranking national firm with the ability to provide the City with Staff Augmentation in All Areas:

- Water Quality & Regulatory Compliance
- CEQA & NEPA Environmental Documentation Preparation
- Permitting
- Funding Support
- NPDES Permit Negotiations
- Wastewater Engineering Design, including Electrical/Instrumentation and Control (I&C) and SCADA
- Architectural Design
- Applied Research & Technology Center
- Water Reuse (Title 22)
- Construction Management
- Operations Support from California Certified Grade V Wastewater Treatment Plant Operators
- Sustainable Solutions from Envision Sustainability Professionals and Certified ISI Envision Verifier
- Public Outreach

B. Relevant Experience

Since our first water project in 1917, HDR has established our position as a leader in the wastewater field by combining innovation with practical solutions. HDR's wastewater services include planning, regulations, alternatives analysis, design, management, and construction. HDR provides expertise in wastewater management, collection and transport, treatment, effluent management, and reclamation. Our wide range of experiences and capabilities enables us to plan and design wastewater treatment plants that are easily to operate and maintain, cost effective, and energy efficient, and meet local, state, and federal requirements.

HDR has provided design, permitting, funding, bidding, and construction services for more than 100 new or renovated wastewater treatment plant

projects throughout California and Nevada, and over 1,000 nationwide ranging from less than 1 to over 300 million gallons in capacity. As shown in Table B-1, our wastewater treatment plant projects have included all of the current and proposed improvements for the City's wastewater treatment plant, which include mechanical screening, grit handling/removal, lift stations, primary clarification, trickling filters, activated sludge systems, secondary clarification, disinfection, sludge thickening, anaerobic digestion, sludge dewatering, sludge drying, emergency/surge storage, and treatment of on-site stormwater. Our experience also include septage handling facilities.

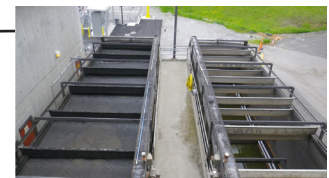
Project descriptions of relevant projects and references are provided in Section D of this proposal.

City of Rio Dell's award-winning wastewater treatment plant upgrade included Aero-Mod activated sludge system and a biosolids thermal dryer producing Class A biosolids and revenue stream for the city.



City of Colfax's award-winning plant includes Aero-Mod activated sludge system.

City of Healdsburg's award-winning wastewater treatment plant.



Central Marin Sanitation Agency's Sludge Thickener Replacement

Sonoma County Water Agency's Russian River Treatment Plant



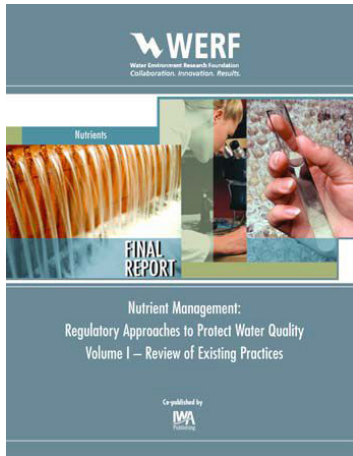
HDR is a leader in wastewater treatment plant design and construction, having providing more than 100 new or renovated wastewater treatment plant projects throughout California and Nevada, and over 1,000 nationwide. Craig Olson was the project manager on the projects pictured above.



TABLE B-1. HDR'S SIMILAR EXPERIENCE PERFORMED BY PROPOSED TEAM MEMBERS

Client	Size (mgd)	Construction Cost (\$ Million)	Screening	Grit Handling	Primary Clarification	Trickling Filters	Pumping/Lift Stations	Activated Sludge	Secondary Clarification	Disinfection	Sludge Thickening	Anaerobic Digestion	Sludge Dewatering	Sludge Drying	Stormwater Handling	Emergency/Sludge Storage
City of Rio Dell, CA	0.9	12	•		•		•	•	•	•				•	•	•
City of Colfax, CA	0.5	9	•				•	•		•	•		•			•
City of Oakdale, CA	5	12	•				•	•	•	•			•	•		•
Oro Loma Sanitary District, CA	20	27	•				•	•	•	•	•					
Douglas County, NV	1		•	•			•	•		•				•		•
City of Vacaville, CA	15	105	•	•	•		•	•	•	•		•			•	•
Minden-Gardnerville Sanitation District, NV	5		•	•	•	•	•	•	•	•	•	•	•			
Sonoma County Water Agency, CA	3.5	11					•	•	•	•					•	•
City of Healdsburg, CA	4	32	•	•			•	•		•			•			•
Goleta Sanitary District, CA	10	29	•			•	•	•	•		•		•			
Orange County Sanitation District, CA (Plant No. 1)	80	160					•	•	•				•			
Irvine Ranch Water District, CA (Michelson Plant)	18	88	•		•		•	•	•	•	•				•	
City of Placerville, CA	2	6.5	•	•			•	•	•	•			•	•	•	
City of Pinole, CA	22	33	•	•	•		•	•		•					•	•
Delta Diablo, CA	16.5	14				•			•				•			
El Dorado Irrigation District, CA (El Dorado Hills Plant)	4	54.7	•		•		•	•	•	•	•		•		•	•
City of Las Vegas, NV	91	210	•	•	•	•	•	•	•	•	•	•	•	•		
City of Sunnyvale, CA	14	55	•	•		•	•	•		•	•		•		•	
City of Yuba City, CA	9	18	•		•		•	•		•	•	•	•	•		
City of Coeur d'Alene, ID	12	50	•	•	•	•	•	•	•	•	•	•	•			
City of Newberg, OR	4	44	•	•			•		•	•			•			
City of Silverton, OR	6	10	•		•	•	•	•	•	•	•				•	•
City of San Mateo, CA	15.7	22	•				•	•	•	•	•	•				
Incline Village General Improvement District, NV	2	4.8	•	•			•	•	•	•			•			

Additional Relevant Experience



In addition to providing engineering services for more than 110 new and upgraded advanced treatment systems with nutrient/nitrogen/phosphorus removal technologies, and leading the WERF's five-year nutrient removal challenge program, HDR is currently preparing a planning-level study related to nutrient removal for BACWA, as well as annual compliance reporting for nutrients, on behalf of 37 BACWA plants that discharge to the San Francisco Bay.

HDR is at the Forefront of Research Evaluating the Technological Limits of Nutrient, Phosphorus, and Nitrogen Removal

We understand the regulatory environment, and, as a result, can guide the City to make smart decisions now. Smart = make the necessary improvements to meet today's requirements, while maintaining flexibility to meet future requirements. The money you invest now is a sound investment and will serve you for a long time, even if the goalposts shift.

No other firm can match HDR's national qualifications in phosphorus, nitrogen, and nutrient removal, as we currently oversee all nutrient-related research being conducted by the Water Environment Research Foundation (WERF), as well as nutrient studies in the Bay Area through our work with the Bay Area Clean Water Agencies (BACWA). We bring this wealth of knowledge to all of our projects, including ongoing efforts to achieve the lowest effluent Total Phosphorus seen nationwide at 0.036 mg P/L.

HDR's Funding Capabilities Can Aid the City with Acquiring Financing

HDR has the knowledge and proven experience with State Revolving Fund (SRF) financing applications to meet the City's requirements. Our experience includes:

- Assisting with the completion of SRF loan application packages.
- Preparing credit review packages.
- Reviewing or preparing project reports and preparing supplemental engineering and/or environmental report documents to comply with the loan requirements.
- Coordinating with city, district, or agency staff, legal counsel, or other consultants on acquiring the information to be included in the loan application.
- Interfacing with the State Water Resources Control Board (SWRCB) on behalf of the city, district, or agency.

Table B-2 presents a listing of HDR's state and federal funding experience. Most of the projects listed in the table were performed by HDR's in-house California funding specialist, Stephanie Shamblin Gray, who has outstanding expertise and direct experience in developing funding applications and providing funding support.



TABLE B-2. HDR'S FUNDING EXPERIENCE

Client/Project	Funding Program	Amount of Funds Received
City of Rio Dell - Wastewater Treatment Plant Upgrade and Eel River Pipeline	Clean Water SRF Loan (half-principal forgiveness)	\$5.25 million
City of Vacaville - Wastewater Treatment Plant Upgrade	Clean Water SRF Loan	\$64.3 million
Santa Margarita Water District - Recycled Water Storage Reservoir and Distribution System	SRF Low Interest Loan & Water Recycling Funding Program Grant	\$9 million
El Toro Water District - Regional Recycled Water Treatment & Distribution	Clean Water SRF Loan	\$30 million
Moulton Niguel Water District - Phase 3 Recycled Water Facilities	Water Recycling Funding SRF Loan	\$16 million
Eastern Municipal Water District	Clean Water SRF Loan	\$22 million
South Orange County Wastewater Authority	Clean Water SRF Loan	\$20 million
Santa Cruz County Sanitation District - Aptos Transmission Main	ARRA Grant	\$1.7 million
	Proposition 50	\$1,365,000
	SRF Loan	\$15 million
	Clean Beach Initiative Grant	\$490,000
Davenport County Sanitation District - Wastewater Treatment Plant Upgrades and Recycled Water Facilities	Clean Water SRF Loan	\$125,000
	Water Recycling Funding Program Grant	\$75,000
City of Williams - Wastewater Treatment Plant Upgrade	Clean Water SRF Loan	\$16.9 million

HDR staff has an excellent working knowledge of SRF requirements for financing of recycled water, drinking water, and wastewater projects, and has successfully assisted California clients with securing SRF loans.

California Water Bond

With the passage of the California Water Bond (Proposition 1) in November 2014, \$7.5 billion of funding was authorized to improve the water quality, supply, and infrastructure of the state. Specific funding is available for stormwater, water conservation, water recycling, and a small community wastewater program. HDR has relationships and expertise to help the City position for available bond funds on a matching basis, if so desired to augment your local funds.

C. Key Personnel Qualifications

Project Team Organization

Figure C-1 shows the project team organizational chart, as well as the responsibilities of key HDR team members. Brief resumes for all team members are included in the appendix.

Our project manager, Craig Olson, PE, will be supported by a strong team of engineers and technical specialists with the appropriate qualifications to successfully complete the City's wastewater treatment plant upgrade project. Under Craig's guidance, the project team will enjoy a cooperative, synergistic working relationship that will benefit the City through efficient design of optimal solutions. He will keep the team on schedule and budget while keeping City staff fully informed as to project status. Through kick-off and workshop meetings, open communication, and budget and schedule tracking, his management style leads to a "no surprises" design. He understands the importance of communication, not only with outside agencies, but also with internal staff at the City. He also has extensive expertise with construction sequencing and keeping wastewater 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.

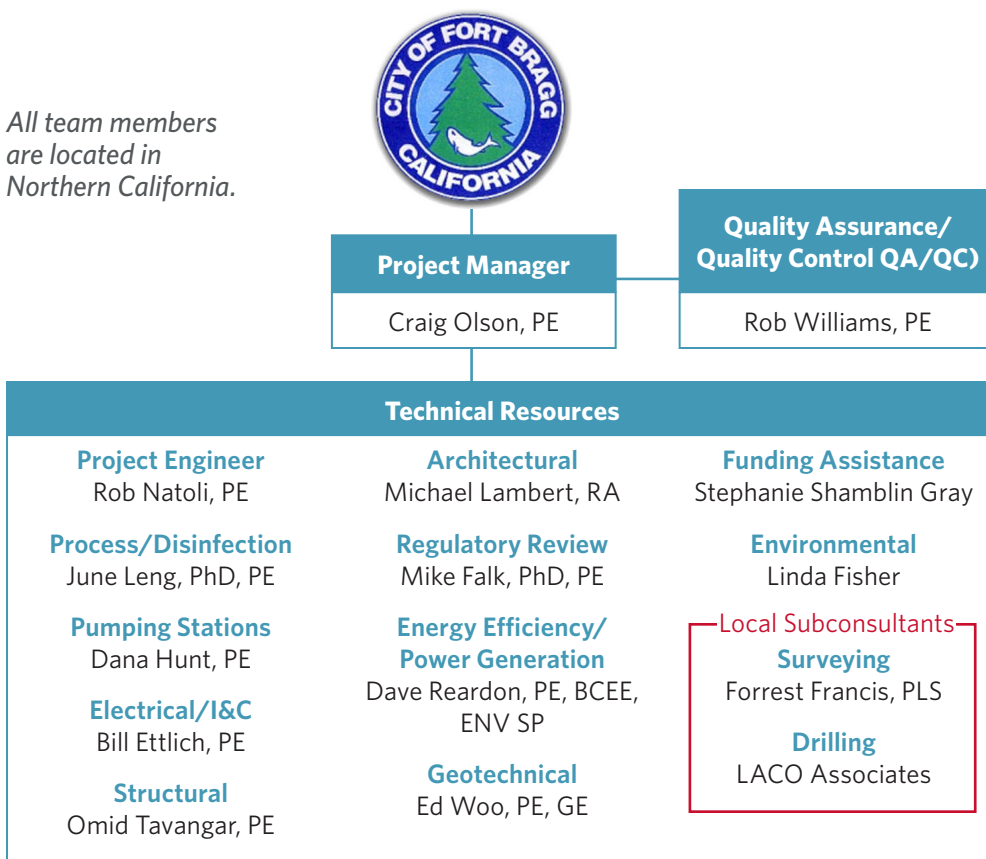


Figure C-1. Project Team Organization Chart

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

- A consistent record of successful project execution on more than 100 wastewater treatment plant projects that will give the City confidence throughout the design process.
- The same team who designed identical Aero-Mod activated sludge systems for the City of Colfax and City of Rio Dell.
- Our work with WERF and BACWA means we offer national and regional perspectives on future regulations and will help the City address nutrient and phosphorus limits now and in the future.
- Successful acquisition of \$200 million in funds for water and wastewater projects.
- A history of on-schedule and on-budget delivery.

Qualifications and Experience of Key Team Members



Craig Olson, PE

Project Manager

Craig is one of HDR's top project managers with more than 33 years of wastewater engineering experience, which includes the planning, design, and construction of more than 50 new or retrofitted/renovated wastewater treatment plants throughout California and Nevada. Craig has a consistent track record for being highly responsive to client needs, easy to work with, and managing successful quality projects on time and within budget. For more than 22 years, he has assisted Minden-Gardnerville Sanitation District with implementing phased wastewater treatment plant projects commensurate with funding capabilities. He has been project manager for 10 Sonoma County Water Agency projects, which includes a new biological nutrient removal facility at the Russian River plant. The Russian River plant is performing better than expected, surpassing the nitrogen and phosphorus removal goals. He was project manager for the City of Rio Dell's and City of Colfax's award-winning wastewater treatment plant modernization projects, which enabled these dilapidated facilities to be transformed into a state-of-the-art plant that exceeds NPDES standards across the board. Both Colfax and Rio Dell use Aero-Mod activated sludge systems.



"In 15 years of engineering in the public sector, Craig is by far the best project manager I have worked with.

Craig has always made himself available to us. Whether during design or during construction. Craig has responded to inquiries quickly. This is especially appreciated during construction where delays of any kind cost us dearly. Craig also has been very proactive in checking in with us. I have received phone calls from Craig while he was on vacation so he could be sure we were happy with the progress of a project.

An attribute that Craig possesses that makes him easy to work with is his almost unfailingly positive attitude. Can't doesn't seem to be in his vocabulary. His cheerful demeanor makes it very enjoyable to work with him.

*Mr. Cordel Stillman, Principal Engineer
Sonoma County Water Agency*



"Craig Olson is really exceptional. He has always come through for us. He does have our best interest in mind, he thinks out of the box, he is responsive, and I would love to have the opportunity to work with him again. He's easy to get along with and he's the kind of guy that you actually enjoy being in a meeting with so that always helps."

*Ms. Stephanie Beauchaine
Former City of Rio Dell Project Manager*



Robert Natoli, PE

Project Engineer/Permitting

Rob has more than eight years of wastewater engineering experience, and has provided engineering services during design and construction of 18 wastewater treatment plant improvement projects throughout California and Nevada. Many of these projects were in support of project manager Craig Olson, which include the Sonoma County Water Agency, City of Rio Dell, and City of Colfax projects included in Section D of this proposal. The Rio Dell and Colfax projects included Aero-Mod activated sludge systems, screening, and emergency storage facilities, and were award-winning wastewater treatment plant projects.



"Rob Natoli is a very energetic young engineer. He asked the right questions, and was very detail oriented."

*Mr. James Wang
East Bay Municipal Utility District*



"Rob is the project engineer and he does a lot of, I would say, the grunt work. He's really thorough with pulling meeting minutes together and pulling reports together and addressing comments that we have on the documents."

*Ms. Jennifer Johnson
Napa Sanitation District*



Rob Williams, PE

QA/QC Manager

- More than 47 years of wastewater engineering experience.
- Over 200 wastewater projects nationwide.
- His experience in providing cost-effective alternatives and solutions makes him an astute officer of the firm who encourages HDR's project teams to provide the client with the most suitable project alternatives.



June Leng, PhD, PE

Process Engineer/Disinfection

- HDR's top disinfection specialist and is called upon to assist with disinfection project nationwide.
- Over 60 disinfection evaluation and design projects utilizing liquefied gaseous chlorine (bulk and cylinder), sodium hypochlorite solution (bulk, drum, and onsite generated), and ultraviolet (UV).
- Over 20 dechlorination facilities utilizing liquefied gaseous sulfur dioxide and sodium bisulfite solution.
- Lead project/process engineer for award-winning wastewater treatment plant upgrades for the City of Colfax, City of Healdsburg, and City of Rio Dell, which included screening, grit handling, activated sludge, disinfection, and/or solids handling. Rio Dell and Colfax included Aero-Mod activated sludge systems.



Dave Reardon, PE, BCEE, ENV SP

Energy Efficiency/Power Generation

- Nationally-recognized specialist in energy conservation/efficiency at wastewater treatment plants.
- Over 125 sustainability studies nationwide that successfully identified strategies for reducing energy, demand, greenhouse gas, carbon footprint, and chemical usage at facilities, saving millions to clients.
- Project manager for alternative energy study and design/construction of improvements for Napa Sanitation District.
- More than 42 years of consulting and engineering experience.



"Dave Reardon is an energy expert and he's very impressive. He understands wastewater plants and water plants. He's an out-of-the-box thinker and comes up with great ideas to reduce energy consumption and power savings and he will make a sound recommendation."

*Ms. Stephanie Spalding
Hampton Roads Sanitation District*



Mike Falk, PhD, PE

Regulatory Review (Phosphorus and Nitrogen)

- Over 25 nutrient management projects nationwide, including for Sonoma County Water Agency's Russian River Treatment Plant.
- Performed NPDES permit reviews and identified solutions for addressing phosphorus and nitrogen limits for Central Contra Costa Sanitary District, City of Stockton, and Sacramento Regional County Sanitation District.
- Key technical lead on the BACWA's Nutrient Removal Optimization and Upgrade Study, a groundbreaking study that will shape the future of wastewater treatment for 37 publically-owned treatment plants in the Bay Area. The BACWA study will provide recommendations for each plant on optimization strategies, sidestream treatment, facility upgrades, and/or by other means to reduce nutrient load reductions to the San Francisco Bay.



Linda Fisher

Environmental

- More than eight years of experience with environmental impact assessment for compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).
- 15 water and wastewater projects in California.
- Prepared CEQA environmental documents for City of St. Helena's wastewater treatment plant, Napa Sanitation District's FOG facility, Central Marin Sanitation Agency's wastewater treatment plant, and City of Sunnyvale's sodium hypochlorite disinfection facility.



Bill Ettlich, PE

SCADA/Electrical

- More than 56 years wastewater engineering experience.
- Provides very cost-effective electrical, instrumentation, and control designs.
- Over 225 wastewater facilities nationwide, including all of the projects listed in Section D of this proposal.
- Both a California-registered electrical engineer and controls systems engineer.



"Bill Ettlich has impressed me very much. Technically, his project management and communication has impressed me. He returns calls right way and overall I am very happy with working with him. The detail of the design, the project management in helping us work with the contractor to get the job done according to his design, and getting done in a timely manner and on budget were impressive. Bill has been able to answer all of my questions, whether they pertain to the project or future projects. He's been extremely responsive and thorough."

*Mr. Jim Flessner
Sonoma County Water Agency*



Stephanie Shamblin Gray

Funding Assistance

- More than eight years of specialized expertise in developing SRF funding applications.
- Very familiar with the Water Recycling Fund Program grant process .
- Successfully acquired nearly \$100 million in funds, including for South Orange County Wastewater Authority, El Toro Water District, Santa Margarita Water District, City of Riverside, Eastern Municipal Water District, and Rowland Water District.



Omid Tavangar, PE

Structural

- More than 31 years of experience as a civil and structural engineer for wastewater facilities.
- Over 60 wastewater treatment plant projects.
- Structural engineer for all of the projects listed in Section D of this proposal.
- His experience includes new structures, conversion of existing structures into new functions, rehabilitation of existing structures, and code compliance.



Dana Hunt, PE

Pumping Stations

- Over 50 pumping station projects throughout California.
- More than 22 years of wastewater engineering experience.
- Saved the City of Petaluma \$2.3 million by identifying an alternative for upgrading their existing Pond Influent Pump Station rather than replacing the station in its entirety, as recommended by the city's previous consultant. Dana determined that the station's deficiencies could be retrofitted for as little as \$18,000. The station's reliable capacity was doubled while the station remained in operation throughout construction.
- Understands the challenges and issues with keeping pumping stations operational during construction. She has written detailed sequencing procedures and developed stringent constraints for construction that ensured the successful completion of numerous wastewater facilities with minimal risk to the owner.



Michael Lambert, RA

Architect

- More than 30 years of experience providing space planning and architectural design services for water and wastewater facilities.
- Architect of record for control building renovation for the City of Rio Dell's wastewater treatment plant.
- Designer and Architect of Record for conceptual site layout of the City of Healdsburg's award-winning wastewater treatment plant, and provided architectural review, predesign, programming, code review, design, construction documents, and construction support for a 6,000-square-foot control building and blower building.



Ed Woo, PE, GE

Geotechnical

- More than 28 years of geotechnical engineering experience.
- Geotechnical engineer for seven wastewater treatment plant improvement projects, including for City of Pinole/City of Hercules, City of San Jose, City of Sunnyvale, City of Petaluma, City of Soledad, and City of South San Francisco.
- California-registered civil and geotechnical engineer.



HDR transformed the City of Rio Dell's dilapidated wastewater treatment facilities into a state-of-the-art facility that exceeds standards across the board, saved thousands of dollars in annual operating costs, and produces a sustainable, environmentally-friendly new revenue stream.

Reference:

Mr. Rick Chicora
Wastewater Superintendent
City of Rio Dell
675 Wildwood Avenue
Rio Dell, CA 95562
(707) 764-5754
wastewater@riodellcity.com

Project Team:

- Craig Olson (project manager)
- June Leng (process)
- Rob Natoli (civil)
- Bill Ettlich (electrical/I&C)
- Omid Tavangar (structural)
- Michael Lambert (architect)

Rio Dell Wastewater Treatment Plant Upgrade

City of Rio Dell, California

HDR provided NPDES permit renewal assistance, predesign, permitting, design, SRF funding assistance, bidding, and construction services for award-winning improvements to the wastewater treatment plant to provide a rated capacity of 0.9 mgd. Improvements included: a pre-engineered activated sludge system; conversion of the existing primary clarifiers, aerobic digesters, and secondary clarifiers into influent flow equalization storage; an effluent pumping station; **biosolids thermal dryer**; effluent disposal pipeline; a spray irrigation system and tailwater return pumping system; standby generation; new site electrical service; SCADA system upgrades; and modifications of the masonry generator building. The new **Aero-Mod activated sludge system** allows the city to comply with new permit requirements by effectively removing nitrogen.

Rio Dell's wastewater treatment plant is one of the first in California to use indirect thermal drying technology. Adding thermal drying technology to the wastewater treatment system has reduced the city's sludge volume by 95 percent. The city saves \$15,000 per year since they do not need to haul sludge to the

nearest landfill, located 150 miles away (one way). The thermal dryer produces a **Class A biosolids** the city spreads at various properties and sells as fertilizer locally, generating revenue every year.



Maintenance costs have been reduced due to the new automated, updated, and compact facilities.

Bids for this project were about \$2 million lower than the engineer's estimate. The project was completed with less than one percent change orders. In addition, HDR completed the project \$164,057 under our contracted fee.

This project has won two local, one state-wide, and one national awards for its engineering achievements.



"HDR performed well from project initiation to project completion. The project was completed ahead of schedule and below budget, and the City was able to qualify for 'half principal forgiveness' funding."

~ Mr. Rick Chicora
City of Rio Dell Wastewater Superintendent

Colfax Wastewater Treatment Plant Upgrade

City of Colfax, California



"I feel that HDR Engineering is doing a good job. They keep the council and the people of Colfax informed on every aspect of the new plant."

~ Mr. Jim Albright
Former City of Colfax
Councilman

The award-winning City of Colfax wastewater treatment plant includes Aero-Mod activated sludge process.



Reference:

Mr. Steve Harvey
Councilman
City of Colfax
33 South Main Street
Colfax, CA 95713
(530) 346-2313
steve.harvey@colfax-ca.gov

Project Team:

- Craig Olson (project manager)
- June Leng (project engineer/process)
- Rob Natoli (civil)
- Bill Ettlich (electrical/I&C)
- Omid Tavangar (structural)

HDR initially provided peer review services of the completed engineering facilities plan and Environmental Impact Report (EIR). HDR then provided predesign, NPDES permit renewal assistance, design, bidding, and construction engineering services for 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 wastewater treatment plant utilizes an **Aero-Mod activated sludge process**, followed by filtration and UV disinfection prior to discharge. Improvements included new headworks facility with coarse screen and flow measurement, pre-engineered biological treatment facility, low-lift influent pumping station and equalization basin diversion structure, effluent filtration system utilizing Title 22 approved technology, a new UV disinfection system for final effluent disinfection, belt filter press for

dewatering of aerobically-digested sludge, conversion of the existing treatment ponds (Ponds No. 1 and 2) to influent flow equalization storage, lining of Pond No. 3 with a geosynthetic liner, return pumping system to return flows from Pond No. 3 storage for full treatment prior to discharge, and standby power generator. Flows in excess of 1.0 mgd are diverted to equalization storage. The belt press is housed in a concrete masonry unit (CMU) building, which also includes a bin for dewatered sludge storage to reduce the overall quantity of solids handling requirements at the wastewater treatment plant. Pond No. 3 is used as a secondary and tertiary effluent storage pond. The facility is also automated to allow for reduced attendance by city operations and maintenance (O&M) staff.



Wastewater Treatment Plant Modernization

Minden-Gardnerville Sanitation District, Minden, NV

Reference:

Mr. Frank Johnson, Superintendent
Minden-Gardnerville Sanitation
District
P.O. Box 568
Minden, NV 89423
(775) 782-3546
frankjohnson@mgsdistrict.org

Project Team:

- Craig Olson (project manager on 10 projects)
- Bill Ettlich (electrical/I&C for all projects)
- Rob Williams (project manager, QA/QC, or Principal-in-Charge on 12 projects)
- Omid Tavangar (structural)
- Michael Lambert (architect for administration building)

Since 1983, HDR has served as the district's consultant, providing engineering services on more than 15 projects at the wastewater treatment plant, and successfully transforming the plant to a state-of-the-art facility that successfully meets all permit requirements.

HDR first developed a master plan that identified phased capital costs and an capital improvements plan to upgrade and expand the plant over the next 15 to 20 years. HDR has provided predesign, design, bidding, construction, and startup assistance for all recommended improvements identified in the plan, which included trickling filter modifications, primary and secondary clarifier modifications and additions, anaerobic digester, headworks (with mechanical bar screens) modifications, new

sodium hypochlorite disinfection system, hydraulics and process improvements, solids handling improvements (includes belt press), new and renovated pumping stations (includes influent, effluent, and raw sludge pumping stations), odor control system, grit removal facility, emergency generators, new 3,500-square-foot administration building, relocation of the solids contact aeration basin and blower building, expansion of the chlorine contact basin to meet regulatory requirements for disinfection, new thickened waste activated sludge (TWAS) storage basins and pumping facilities in the existing aeration basins, and plant-wide electrical and instrumentation improvements. For all projects, the plant remained operational during construction of the improvements.

Russian River County Sanitation District Wastewater Treatment Plant Upgrade

Sonoma County Water Agency, Guerneville, California



"They've done their job very well."

~ Mr. Tom Hammond
Former Sonoma County
Water Agency Engineer

Sonoma County Water Agency's biological nutrient removal facility at the Russian River County Sanitation District wastewater treatment plant has been in operation since May 2014 and has consistently surpassed the nitrogen and phosphorus removal goals.



Reference:

Mr. Kent Gylfe
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa CA 95406
(707) 547-1900
kgylfe@scwa.ca.gov

Project Team:

- Craig Olson (project manager)
- June Leng (process/disinfection)
- Rob Natoli (civil)
- Mike Falk (regulatory review and process)
- Bill Ettlich (electrical/I&C)
- Omid Tavangar (structural)

HDR has provided predesign, final design, bidding, and construction engineering services for three projects at the Russian River County Sanitation District Wastewater Treatment.

The first treatment plant upgrade project involved \$4.6 million in modifications to provide a total treatment plant capacity of 3 mgd average dry weather flow and 3.5 mgd maximum wet weather flow. Modifications included a third unit process (extended aeration basin, secondary clarifier, and tertiary filter system), influent pumping station, medium-bubble diffuser aeration system for the third aeration basin, additional blowers, piping, and blower building.

The second project involved a \$4 million disinfection system upgrade to UV disinfection.

Our most recent project involved a new \$2.8 million biological nutrient

removal facility. HDR identified a cost-effective solution that utilized the existing secondary treatment basins and avoided construction of new tankage at the plant. The existing aeration basins were retrofitted to incorporate ammonia removal and denitrification (nitrogen removal) to meet permit limitations using the Modified Ludzak Ettinger (MLE) process. Provisions for enhanced biological phosphorous removal were also included, based on HDR's recommendations, due to potential future phosphorous discharge limitations. Providing enhanced biological phosphorous removal now was determined to be more cost-effective than constructing additional upgrades in the future. The biological nutrient removal facility has been in operation since May 2014 and has consistently surpassed the nitrogen and phosphorus removal goals by 90 percent.

Healdsburg Wastewater Treatment Plant Upgrade

City of Healdsburg, California



"HDR has maintained a close relationship with City, consistently checking in on our operational process and equipment status. HDR has always responded to all of the City's questions or concerns, responding in a timely manner, and assisting to resolve operational concerns."

~ Mr. Ryan Kirchner
Former City of Healdsburg
Superintendent



Reference:

Mr. Ryan Kirchner
Former City of Healdsburg
Operations and Utilities
Superintendent
Recently Joined Sonoma County
Water Agency
(707) 547-1900

Project Team:

- Craig Olson (project manager)
- June Leng (project engineer/
process)
- Bill Ettlich (electrical/I&C)
- Michael Lambert (architect)
- Omid Tavangar (structural)

HDR provided multi-award-winning predesign, design, bidding, and construction engineering services for a new 1.4 mgd (7 mgd peak) state-of-the-art wastewater treatment plant. Improvements included: headworks facility consisting of coarse and fine screens, grit removal, flow measurement, equalization basin diversion structure, and odor control; biological treatment facility that includes aeration basins, aerobic digesters, anoxic zones, membrane immersion tanks, splitter boxes, odor control, walk-on aluminum covers, and pre-engineered metal building that is opened on two sides; membrane bioreactor (MBR) facility; masonry operations building containing the control room, laboratory, locker room(s), and employee break room; UV disinfection for final effluent disinfection; sludge storage and handling, which utilizes the Cannibal® process to reduce the overall quantity of solids handling requirements at the plant; effluent storage pond; a reclaimed water pumping station; and conversion of the existing treatment ponds to influent flow

equalization storage. The solids handling system includes a solids storage tank (digester), fine screens, and centrifuge dewatering housed within a masonry building. Using MBR technology allows the city to maximize long-term system value that extends beyond the initial capital cost because of benefits like better use of existing space, simplified operation, and consistently higher quality effluent.

A technology evaluation was performed and a cost analysis was conducted to compare the capital and operation costs between the Cannibal® process and conventional aerobic digestion. There were no full-scale municipal wastewater treatment plants using both MBR and the Cannibal® process at the time of the project. The Cannibal® sludge reduction system has significantly decreased the biosolids produced by the wastewater treatment plant, as well as the costs associated with sludge wasting and removal, by less than half of the industry average.

Sludge Thickening System Replacement

Central Marin Sanitation Agency, San Rafael, California



To aid in selecting a recommended sludge thickening system alternative for Central Marin Sanitation Agency, site visits were performed at neighboring plants to evaluate different technologies and modes of operation.

HDR provided predesign and final design of sludge thickening system replacement improvements at the agency's 7 mgd wastewater treatment plant. Gravity belt thickener and rotary drum thickener alternatives were evaluated, which included: co-thickening with a gravity belt thickener; co-thickening with a rotary drum thickener; waste activated sludge (WAS) thickening with a gravity belt thickener; and WAS thickening with a rotary drum thickener. WAS thickening with a rotary drum thickener was the selected alternatives that was subsequently designed. HDR is currently providing construction engineering services for the recommended improvements.

Reference:

Mr. Brian Thomas
Engineering Manager
Central Marin Sanitation Agency
1301 Andersen Drive
San Rafael, CA 94901
(415) 459-1455 extension 122
bthomas@cmsa.us

Project Team:

- Craig Olson (project manager)
- Rob Williams (QA/QC)
- Bill Ettlich (electrical/I&C)
- Omid Tavangar (structural)
- Rob Natoli (civil)

Soscol Water Recycling Facility Energy Alternatives Study

Napa Sanitation District, Napa, California



Wind power turbines were evaluated, but a new FOG facility was ultimately designed that provided the Napa Sanitation District with a 13 percent reduction in energy cost and approximately \$125,000 in annual income from tipping fees by FOG haulers.

HDR evaluated alternative energy technologies for increasing sustainability and reducing long-term energy use and cost, the carbon footprint, and greenhouse gas emissions at the 8.7 mgd Soscol Water Recycling Facility. Alternative energy technologies that were evaluated included **solar photovoltaic, wind powered turbines**, and reciprocating engines and fuel cells powered by digester gas, in either a cogeneration or non-cogeneration mode. HDR subsequently provided predesign, CEQA environmental documentation, permitting, final design, bidding, and construction engineering services for a new FOG receiving station at the Soscol Water Reclamation Plant.

Reference:

Ms. Jennifer Johnson
Associate Engineer
Napa Sanitation District
935 Hartle Court
Napa, CA 94559
(707) 258-6000 x504
JJohnson@napasan.com

Project Team:

- Dave Reardon (project manager)
- Rob Williams (QA/QC)
- Linda Fisher (environmental)
- Bill Ettlich (electrical/I&C)
- Omid Tavangar (structural)

E. Scope of Work

Innovative Ideas

Our project team has studied the City's request for proposal (RFP), reviewed pertinent background information provided the City, examined the project site, and discussed the project with City staff. Based

on this effort, we have developed some ideas for approaching some of the key issues identified by the City that addresses your project objectives and will deliver a successful project.

Class A Biosolids is Possible and Will Provide a New Source of City Revenue

Issue:

The City is interested in examining solids handling and alternative power generation options as part of the project. Natural gas is not available at the plant site, and use of propane gas can be cost prohibitive. The City is having to haul away biosolids to Novato for landfill disposal, approximately 140 miles away.

Idea/Approach:

Using the gas from the City's anaerobic digesters provides an opportunity to add thermal drying. Propane gas can be used to supplement the drying system, if needed. Use of a thermal dryer will enable the City to produce Class A biosolids and provide a potential new source of revenue.



The City of Rio Dell experienced a similar issue with its biosolids. Rio Dell had to haul 6 to 9 yards of biosolids a week to a landfill located 145 miles away. Installation of the thermal dryer has saved the City of Rio Dell \$15,000 per year in hauling cost, and produces a sustainable Class A end product that is used as fertilizer throughout the community.

Additional Idea/Approach:

Increased gas from the City's anaerobic digester provides an opportunity to add FOG facilities. Implementation of a FOG system is an alternative energy solution that will reduce energy costs. In addition, a FOG facility will provide the City with a new revenue source from grease haulers who currently haul and dispose at a remote facility. Increasing gas production from FOG receiving/processing facility could provide energy for a thermal drying system.



Napa Sanitation District's FOG facility has reduced energy cost by 13 percent and provides approximately \$125,000 in annual income from tipping fees by FOG haulers.

Lowering the Grade of Activated Sludge Units is Possible

A large industrial wastewater treatment facility featuring several rectangular concrete basins. The basins are interconnected by a network of metal walkways and railings. In the background, a large green dome-shaped structure is visible. The facility is situated in a natural setting with trees and a rocky hillside in the background.

For the City of Rio Dell, HDR was able to successfully lower the Aero-Mod activated sludge system due to unsuitable materials and reduce pumping costs for the life of the project.

Idea/Approach:

The soils under the proposed Aero-Mod facility are susceptible to liquefaction in a seismic event and must be removed. A conceptual diagram of the lowered activated sludge system is shown in Figure E-1. By lowering the activated sludge system, pumps can possibly be eliminated.

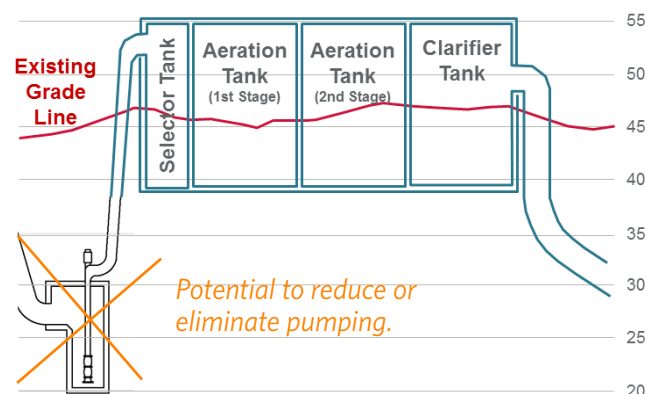


Figure E-1. Lowered Activated Sludge Units

Eliminating On-Site Stormwater Pumping

Issue:
The City would like the consultant to investigate the possibility of eliminating the on-site pumping of stormwater.

Idea/Approach:
The excavated materials from the Aero-Mod facility can be used to regrade the site west of the existing clarifiers. This will eliminate construction of a new pumping station. The existing clarifiers could be converted to stormwater/flow equalization storage. A pump would need to be installed in an existing adjacent structure to pump back into the treatment process stream.



Figure E-2. Regrading Site to Eliminate On-Site Stormwater Pumping Station

High-Efficiency Blowers

Issue:

Aeration blowers are the most energy intensive unit at wastewater treatment plants.

Idea/Approach:

Installing new high-speed turbo blowers will significantly reduce energy costs, reduce noise, and increase energy efficiency at the plant. We have discussed this approach with Aero-Mod.



HDR successfully installed new high-speed blowers at Sonoma County Water Agency's Russian River Plant that reduced energy costs and improved energy efficiency.

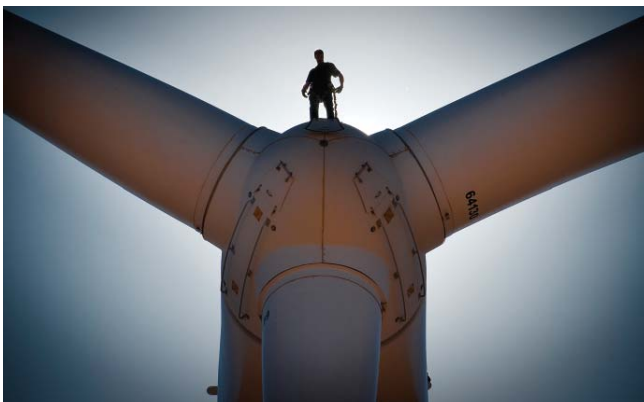
Alternative Power Generation

Issue:

The City would like to investigate power generating options, including wind and solar.

Idea/Approach:

HDR leads the industry in helping our clients evaluate the best option to meet their energy portfolio goals. Our understanding of energy generation and storage has produced more than 30,000 megawatts of win power and 2,000,000 kW of solar power. Our experience includes the successful implementation of solar panels at Pacific Coast locations subject to corrosive marine conditions.



HDR is a top wind consultant in the U.S.



HDR designed and constructed solar panels on the iconic Alcatraz Island prison building. The solar photovoltaic system produces 305 kW of power under average conditions, dramatically reduced the island's dependence on diesel generators, and significantly reduced negative greenhouse gas emissions.

HDR's Alternative Power Products Has Generated:

30,000 MW of Wind Power
2,000,000 KW of Solar Power

Key Project Goals

- **Extension of City's Staff:** We understand the City is planning on hiring an additional engineer who may be assigned to perform SRF tasks, and an outside consultant to perform environmental documents. HDR is a full-service company with in-house resources to assist or perform these tasks if needed.
- **Reduce Project Capital and O&M Costs:** HDR is known for identifying improvements that save clients millions in construction cost.
- **Reduce Power Requirements:** HDR is a leader in sustainability for water and wastewater facilities, and have assisted more than 225 clients nationwide in reducing chemical, energy, and demand. The industry's leading sustainability specialist, Dave Reardon, is conveniently located in Folsom and is available to identify strategies for reducing power requirements, as well as determining whether alternative power technologies, such as wind and solar, will be feasible for the City.
- **Provide Revenue Generating Options:** HDR will identify technologies that have been proven to provide an alternative form of income for clients, which includes use of a thermal dryer that will provide sustainable Class A biosolids that can be used as fertilizer in the community and will eliminate the cost associated with hauling biosolids to a landfill. FOG, solar, and wind can also be considered.
- **User-Friendly Facility:** The City's O&M staff will ultimately be required to operate this facility for many years. Their participation and input to the design process will ensure a facility that meets the needs of the City. Operator convenience and safety will be critical.

Scope of Work

HDR's work plan (see Figure E-1) for the City's project is designed to be efficient, but flexible and responsive. We have shown the wastewater treatment plant design, environmental documentation/permitting, 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.

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 guide will be developed to serve as a communication tool for City and HDR staff (and subconsultants). 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 subconsultants through all phases of the contract work, scheduling of staff, and coordinating the quality assurance effort.

Deliverables: *Monthly progress reports, invoices, project 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. To ensure 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,

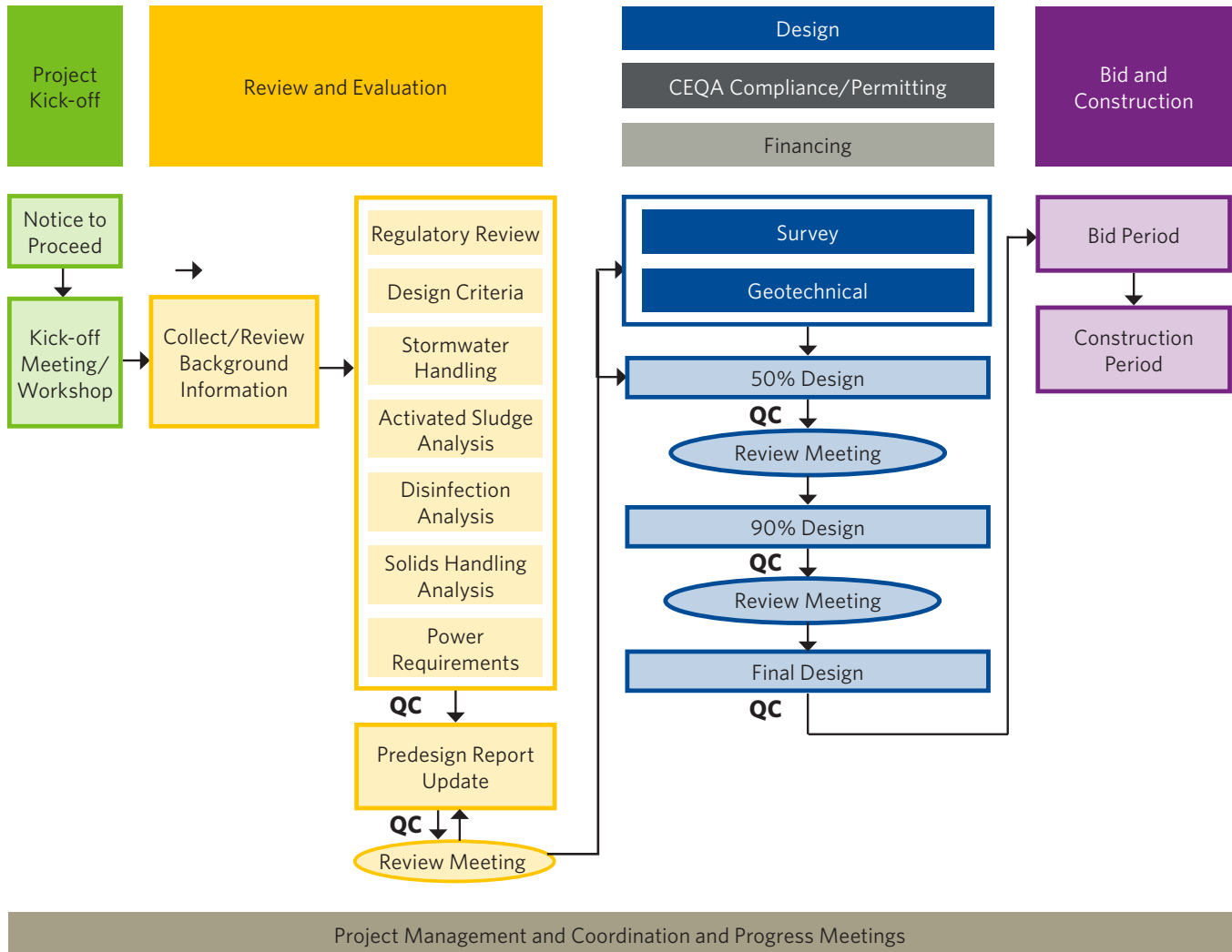


Figure E-1. Proposed Workplan

and list of participants with their assignments. After the kick-off meeting, HDR will tour the wastewater treatment plant facilities.

Deliverables: *Meeting agenda, minutes, action plan, and schedule.*

Subtask 1.3 - Progress Meetings/Site Visits

HDR will meet with City staff to discuss comments on draft predesign report, 50 percent design submittal, and 90 percent design submittal. A review comments log will be kept to ensure all design comments are incorporated. Design review comments will be encouraged and welcome from the City's engineering and operations personnel.

In addition, our budget assumes up to five addition meetings with City staff, Fort Bragg City Council,

or committees to discuss options and present project status.

Deliverables: *Meeting agenda and minutes.*

Task 2 - Preliminary Design Phase

Subtask 2.1 - Background Information Review

HDR will review the background information collected, which is expected to include:

- Predesign Summary Report, Volumes 1 and 2, dated September 2013.
- Development of Design Criteria Technical Memorandum dated February 2013.

- Evaluation of Aero-Mod System Technical Memorandum dated May 2013.
- Previously developed improvement drawings for wastewater treatment plant improvements.
- Regulatory Review Technical Memorandum dated February 2013.
- Evaluation of On-Site Stormwater Handling Requirements Technical Memorandum dated March 2013.
- 2013 and 2014 wastewater treatment facility analytical data (monthly averages).
- Monthly Operations Summary dated January 2015.
- Estimated growth in loading and/or flows, supplemental to the data in Table 4-1.
- Evaluation of Options for Collection System Pump Station Upgrades Technical Memorandum dated March 2013.
- Geotechnical Investigation Report dated May 2001 and 1987 geotechnical investigations.
- Available surveying and mapping that defines improvements or project site.

Deliverables: *To be incorporated into predesign and design documents.*

Subtask 2.2 - 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 budgeted for this subtask. Unless required for the final bid package, property boundary surveys will not be completed.

Deliverables: *Base map suitable for design.*

Subtask 2.3 - Predesign Report Review/Update

The predesign report will be reviewed for opportunities to improve design, which may include construction cost decrease, operation cost decrease, improved efficiencies, reduced power requirements,

and reasonable anticipated regulatory changes. A series of memorandums will be prepared for sections that needed update from the Predesign Summary Report, Volumes 1 and 2, dated September 2013. The following updates are anticipated:

SUBTASK 2.3.1 - REGULATORY REVIEW UPDATE

HDR will review recent and reasonably anticipated actions of the North Coast Regional Water Quality Board (RWQCB) for regulations that may have short- and long-term implications for this project. Reasonable anticipated regulatory changes will be identified.

The RWQCB has noted that a possible modification to the Ocean Plan may trigger future standards for phosphorus and/or nitrogen limits. HDR will ascertain if this is a reasonable likelihood.

HDR's nutrient management staff, which includes Mike Falk, PhD, PE, have consulted with clients nationwide and regulators (federal, state, and regional) regarding regulatory issues and related designs. Their perspective on this project will help the City properly plan this project for existing nutrient limits as well as potential future changes. The result will be a plant that optimizes capital and O&M investment now, but has the flexibility to meet nutrient regulations that may become more demanding in the future.

Deliverables: *Memorandum summarizing reasonable anticipated regulatory changes and impacts to modification of Ocean Plan on phosphorus and/or nitrogen limits.*

SUBTASK 2.3.2 - UPDATED DESIGN CRITERIA FOR 20-YEAR DESIGN LIFE

HDR will update the design criteria to reflect a 20-year design life. The design will consider process system redundancy that can be economically provided to ensure reliable plant performance, and will account for wet weather, and low BODs and TSS concentration that may reduce effluent reduction processes.

Deliverables: *Memorandum summarizing the updated design criteria for 20-year design life.*

SUBTASK 2.3.3 - UPDATE STORMWATER HANDLING

HDR will update the stormwater handling analysis to address the grading that was completed for the perimeter of the existing wastewater treatment plant site to eliminate run-on water from adjacent lands. Opportunities to improve design, which include construction cost decrease, operation cost decrease, improved efficiencies, and reduced power requirements will be addressed, such as:

- Considering infiltration trenches or similar improvements in-lieu of tight line storm drain pipes. The intent is minimize the amount of stormwater to be conveyed on-site and treated.
- Possibility of eliminating on-site pumping of stormwater. If needed, pump efficiencies shall be optimized. **As explained earlier in this section, use of excavated materials can be used to regrade the demolished facilities.**
- Reviewing and minimizing stormwater handling pipe layout to minimize the size and scope of this piping system.
- Explore California Water Board funding opportunities.

Deliverables: *Memorandum summarizing the updated stormwater handling analysis.*

SUBTASK 1.3.4 - ACTIVATED SLUDGE ANALYSIS

HDR will identify opportunities to improve the activated sludge design, which include construction cost decrease, operation cost decrease, improved efficiencies, and reduced power requirements. Our analysis will include:

- Identifying the constraints created by other elements of the treatment process elements affecting the expansion of the activated sludge system.
- Reviewing the hydraulic profile will be reviewed and identifying improvements
- Determining if lowering the grade(s) of activated sludge units could potentially eliminate pumping as well as cost.
- Analyzing the feasibility of achieving Title 22 water recycling status.

- Evaluating the control systems for the new improvements to the wastewater treatment plant for ease of incorporation into a future Supervisory Control and Data Acquisition System (SCADA).



HDR recently designed Aero-Mod activated sludge systems for the City of Colfax and City of Rio Dell, which have successfully met the NPDES permit limits for nitrogen removal across the board.

Deliverables: *Memorandum summarizing the updated activated sludge analysis.*

SUBTASK 2.3.5 - DISINFECTION ANALYSIS

HDR will evaluate whether replacement of the existing chlorine contact basin provide a more viable disinfection alternative that will reduce construction and operation costs, improve efficiencies, and reduce power requirements.

Deliverables: *Memorandum summarizing the chlorine contact basin replacement alternative.*

SUBTASK 2.3.6 - SOLIDS HANDLING:

HDR will analyze the feasibility of what may be necessary (e.g. extra treatment) to reach a Class A biosolids standards for the sludge. HDR will analyze and make recommendations for other, practical re-use of the treated sludge as a raw material or finished product. One such alternative that will be evaluated will be the use of a thermal dryer. A biosolids thermal dryer is currently being used at the City of Rio Dell's wastewater treatment plant.

As explained earlier in this section, thermal dryer facilities may be economically possible by using enhanced gas produced from the existing anaerobic digesters.

HDR will also evaluate options for providing sufficient dewatering of solids, which shall include centrifuge, screw press, and volute press. An appropriate dewatering method shall be recommended for incorporation into the design.

Deliverables: *Memorandum summarizing the solids handling analysis.*

SUBTASK 2.3.7 - POWER REQUIREMENTS:

HDR shall review overall energy needs for new plant and make recommendations for practical efficiency improvements to be incorporated into the design. In addition, HDR will analyze alternative methods for generating energy at the plant, which includes using wind power or solar on site.

HDR is the leader in providing sustainability solutions at wastewater treatment plant, resulting in more than 200 facilities achieving lower energy demand and usage. Dave Reardon is known to be the top sustainability specialist nationwide, and frequently presents his "Top Ten" list of Energy Savings Measures for Water and Wastewater Facilities to individual clients and



national conferences.

Deliverables: *Memorandum summarizing the power requirements.*

SUBTASK 2.3.8 - UPDATED PREDESIGN REPORT

After City review of the draft memorandums, HDR will assemble the updated predesign report (30 percent design document). The predesign report will include all of the recommendations regarding key equipment, including the pumping, electrical, and instrumentation systems. Plan drawings showing site improvement layout will be provided. A construction

sequencing plan will be prepared. HDR also will prepare a preliminary construction cost estimate and preliminary construction schedule.

Each memorandum will serve as a chapter to the predesign report, and will be updated based on City review comments on the draft version. The report will include a table of contents, executive summary, and appendices.

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

Task 3 - Contract Documents

Subtask 3.1 - Main Project Design

Once consensus has been reached on the recommended project, HDR will proceed with design. The budget for this task assumes the following will be designed:

- Replacement of the existing trickling filters and clarifiers with an Aero-Mod SEQUOX activated sludge system. The activated sludge system will address the updates identified in Subtask 1.3.4.
- Repurposing the clarifiers into emergency/flow equalization storage.
- Treatment of on-site stormwater, including the updates identified in Subtask 2.3.3.
- Sodium hypochlorite for disinfection, and sodium bisulfate for dechlorination (new facilities will be incorporated into the design).
- Solids handling recommendation identified Subtask 2.3.6.
- Power requirements recommendations identified in Subtask 2.3.7.

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 project.

TABLE E-1. PRELIMINARY LIST OF DRAWINGS ANTICIPATED FOR THE 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	Hydraulic Profile
7	G7	Standard Details - Divisions 5 through 14
8	G8	Standard Details - Division 15-1
9	G9	Standard Details - Division 15-2
10	G10	Standard Details - Pipe Supports
Civil		
11	C1	Site Key Plan
12	C2	Site Grading and Paving Plan 1
13	C3	Site Grading and Paving Plan 2
14	C4	Yard Piping Plan
15	C5	Contractor Staging Area, Fencing Plan, and General Notes
16	C6	Site Sections and Details 1
17	C7	Site Sections and Details 2
Demolition		
17	X1	Site Demolition Plan and Key Map
18	X2	Existing Primary Biofilter Demolition Plan and Details
19	X3	Existing Secondary Biofilter Demolition Plan and Details
20	X4	Existing Sludge Building Equipment Demolition Plan and Sections
21	X5	Existing Sludge Building Equipment Demolition Sections and Details
22	X6	Existing Sludge Drying Beds Demolition Plan, Sections, and Details
23	X7	Existing Sludge Drying Beds Demolition Sections and Details
24	X8	Existing Chlorine Contact Basin Demolition Plan and Sections
25	X9	Existing Primary Clarifier Demolition Plan and Details
26	X10	Existing Secondary Clarifier Demolition Plan and Details
27	X11	Existing Miscellaneous Structure Demolition Plan and Sections
Architectural		
28	A1	Architectural Site Code Plan
29	A2	Blower Building Exterior Elevations
30	A3	Dewatering Building Exterior Elevation
31	A4	Architectural Door, Window, and Room Finish Schedules and Details
32	A5	Architectural Details 1
33	A6	Architectural Details 2

TABLE E-1. PRELIMINARY LIST OF DRAWINGS ANTICIPATED FOR THE PROJECT

No.	Sheet No.	Drawing Description
Mechanical		
34	M1	Mechanical Symbols and Legends
35	M2	HVAC and Plumbing Schedules
36	M3	Blower Building HVAC Plan
37	M4	Blower Building Plumbing and Drainage Plan
38	M5	Dewatering Building HVAC Plan
39	M6	Dewatering Building Plumbing and Drainage Plan
Structural		
40	S1	Structural General Notes 1
41	S2	Structural General Notes 2
42	S3	Typical Concrete Details 1
43	S4	Typical Concrete Details 2
44	S5	Typical Concrete Details 3
45	S6	Typical Concrete Walls Details
46	S7	Typical Block Wall Details
47	S8	Typical Grading Details
48	S9	Opening and Penetrations
49	S10	Metal Star and Railing Details
50	S11	Biological Treatment Facility Structural Plan
51	S12	Biological Treatment Facility Structural Section 1
52	S13	Biological Treatment Facility Structural Section 2
53	S14	Biological Treatment Facility Aluminum Stair Plan and Sections
54	S15	Steel Canopy Plans, Sections, and Details
55	S16	Steel Canopy at Generator Plan and Sections
56	S17	Biological Treatment System Influent Pumping Station Plan
57	S18	Biological Treatment System Influent Pumping Station Sections and Details
Structural/Process		
58	SP1	Biological Treatment Facility Process Connection Location Plan
59	SP2	Biological Treatment Facility Pipe Connection Sections
60	SP3	Existing Headworks Modification Plan and Sections
61	SP4	Blower Building Foundation Plan and Sections
62	SP5	Blower Building Floor Plan and Sections
63	SP6	Blower Building Roof Framing Plan and Details
64	SP7	Existing Chlorine Contact Basin Modification Plan and Sections
65	SP8	Dewatering Building Foundation Plan and Sections
66	SP9	Dewatering Building Floor Plan and Section
67	SP10	Existing Effluent Pump Station Demolition and Modification Plans and Sections

TABLE E-1. PRELIMINARY LIST OF DRAWINGS ANTICIPATED FOR THE PROJECT

No.	Sheet No.	Drawing Description
Electrical		
68	E1	Electrical Symbols and Legend
69	E2	Electrical Single-Line Diagrams
70	E3	Electrical Panel Schedules
71	E4	Electrical Control Diagrams 1
72	E5	Electrical Control Diagrams 2
73	E6	Electrical Control Diagrams 3
74	E7	Electrical Site Plan 1
75	E8	Electrical Site Plan 2
76	E9	Electrical Underground Duct Bank, Conduit, and Conductor Schedules
77	E10	Blower Building Power and Lighting Plans
78	E11	Dewatering Building Power and Lighting Plan
79	E12	Biological Treatment Facility Power Plan
80	E13	Biological Treatment Facility Lighting Plan
81	E14	Biological Treatment System Influent Pumping Station Electrical Plan
82	E15	Biological Treatment System Influent Pumping Station Electrical Details
83	E16	Electrical Details 1
84	E17	Electrical Details 2
85	E18	Electrical Details 3
86	E19	Electrical Details 4

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

The contract documents will include a requirement of contractor to supply all operations, maintenance manuals, as well as training. Bid schedule shall be developed with unit. prices. Appropriate language and provisions in the contract documents related to state or federal funding will be included.

Engineer’s opinion of construction cost will be prepared in Microsoft Excel.

Drawings, specifications, and engineer’s estimate of probable construction cost will be submitted to the City for review and approval at the 50 and 90

percent design stages. The bid set (100 percent design) will include final drawings and specifications ready for advertising for bids in accordance with the City’s final review comments.

Deliverables: *Three sets 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 50 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 100 percent design stage. CD containing electronic PDF files of bid set drawings and specifications.*

Subtask 3.2 - Chlorine Contact Replacement Design

Inclusion of the chlorine contact replacement design will add there additional drawings, which will include:

- Chlorine Contact Basin Replacement Plan

- Chlorine Contact Basin Replacement Sections and Details
- Electrical Sheet

Subtask 3.3 - Replacement of Three Existing Sanitary Sewer Lift Stations Design

Inclusion of the replacement of there existing sanitary sewer lift stations will add the drawings shown in Table E-2.

Subtask 3.4 - Septage Receiving Station Designs

Inclusion of the septage receiving station will add four drawings to the project, including:

- Septage Receiving Station Site Plan
- Septage Receiving Station Plan
- Septage Receiving Station Sections and Details
- Electrical Plan

TABLE E-2. PRELIMINARY LIST OF DRAWINGS ANTICIPATED FOR OFF-SITE PUMPING STATIONS DESIGN

No.	Sheet No.	Drawing Description
Off Site Pumping Stations		
1	C8	Lift Station 1 Site Grading and Paving Plan
2	C9	Lift Station 1 Site Details
3	C10	Lift Station 2 Site Grading & and Paving Plan
4	C11	Lift Station 2 Site Details
5	C12	Lift Station 3 Site Grading and Paving Plan
6	C13	Lift Station 3 Site Details
7	X12	Lift Station 1 Site Demolition Plan
8	X13	Lift Station 1 Site Demolition Section and Details
9	X14	Lift Station 2 Site Demolition Plan
10	X15	Lift Station 2 Site Demolition Section and Details
11	X16	Lift Station 3 Site Demolition Plan
12	X17	Lift Station 3 Site Demolition Section and Details
13	S19	Schedule of Precast Structures
14	SP10	Lift Station 1 Site Piping Modification Plans
15	SP11	Lift Station 1 Site Piping/Mechanical Details
16	SP12	Lift Station 2 Site Piping Modification Plans
17	SP13	Lift Station 2 Site Piping/Mechanical Details
18	SP14	Lift Station 3 Site Piping Modification Plans
19	SP15	Lift Station 3 Site Piping/Mechanical Details
20	E20	Lift Station 1 Electrical Plans and Details
21	E21	Lift Station 2 Electrical Plans and Details
22	E22	Lift Station 3 Electrical Plans and Details

Task 4 - Environmental Support

Based on discussions with City staff, the City is planning on hiring a separate environmental firm to develop the CEQA an environmental documents needed for this project. HDR will provide project support to aid with environmental review and environmental document preparation, which includes:

- Coordination with the City's environmental consultant.
- Coordination between the environmental consultant and design team to make sure modifications to project description would not affect the integrity of the environmental document.
- Review of the draft environmental documents prepared by the City's environmental consultant.

HDR has the in-house resources (located in Folsom, California) to develop the required environmental documents to satisfy the CEQA requirements.

Subtask 7.2 - Bidding Services

HDR will provide assistance during the bidding period, which includes receiving and recording contractor written and faxed questions, issuing addenda to the contract documents for distribution to plan and specification holders, assisting the City with evaluating the bids, reviewing the bids for conformance with the bid documents, and assisting the City by providing input in the awarding of the contract. The City will prepare, negotiate, and execute the construction agreement with the selected contractor.

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

Task 5 - Permitting Support

HDR will provide project support, (including preparation of technical materials) to prepare permits. It is assumed that HDR will not prepare any permit applications for standby power generation.

Task 6 - Funding Support

HDR will provide project support for funding assistance. HDR will provide documentation, as required, to assist the City's funding efforts.

Task 7 - Bid Period Services

Subtask 7.1 - Prebid Meeting

HDR will assist the City with conducting a job walk and attend the prebid conference to meet with prospective contractors and answer contractor questions.

Deliverables: *Prebid meeting minutes.*

G. Budget and Schedule of Charges

Estimated Budget for Non-Optional Tasks

We propose to perform the scope of work provided in Section E of this proposal for a total not-to-exceed cost of \$792,831.

Table G-1 presents the estimated hours by job description.

Job Description	Estimated Hours
QA/QC	120
Project Manager	388
Project Engineer	664
Process Engineer	250
Structural Engineer	160
Mechanical Engineer	48
Electrical/I&C Engineer	252
Architect	24
Regulatory Specialist	20
Sustainability Specialist	20
Geotechnical Engineer	44
Funding Specialist	16
Environmental	24
Computer Aided Design (CAD) Technician	1,420
Administration/Clerical	248
Total Hours	3,708

Estimated Budget for Alternative Tasks

The estimated budget to design the alternate tasks is shown in Table G-2.

Alternative Task	Budget
Chlorine Contact Replacement Design	\$38,865
Replacement of Three Sewer Lift Stations Design	\$119,715
Septage Receiving Station Design	\$37,614

Assumptions for Optional Tasks:

- Design(s) will be included in one bidding package. Separate bid packages (plans and specifications) are not included.
- Budget for the replacement of three sewer lift stations assumes packaged Gorman-Rupp lift stations.
- Septage receiving station will be specified as a manufactured pre-engineered system.

Rate Schedule

HDR will invoice the City by HDR's standard 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, 2015.



HDR ENGINEERING, INC. RATE SCHEDULE JANUARY 2015 TO DECEMBER 2015	
Job Classification	Hourly Billing Rate
Architect	\$160 to \$175
CAD Technician	\$120 to \$180
Drafter	\$95 to \$125
Engineer 1	\$100 to \$130
Engineer 2	\$130 to \$165
Engineer 3	\$165 to \$200
Engineer 4	\$200 to \$250
Engineer 5	\$250 to \$295
Project Controller	\$125 to \$155
Project Coordinator	\$75 to \$120
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

Technology Charge per Direct Labor Hour	\$3.70
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: Technology charges include computer, computer aided design and drafting (CADD), network, software, and other related technology services. Subconsultants are charged with a five percent markup.

H. Work Schedule

Figure H-1 shows the proposed time schedule for completion of the work.

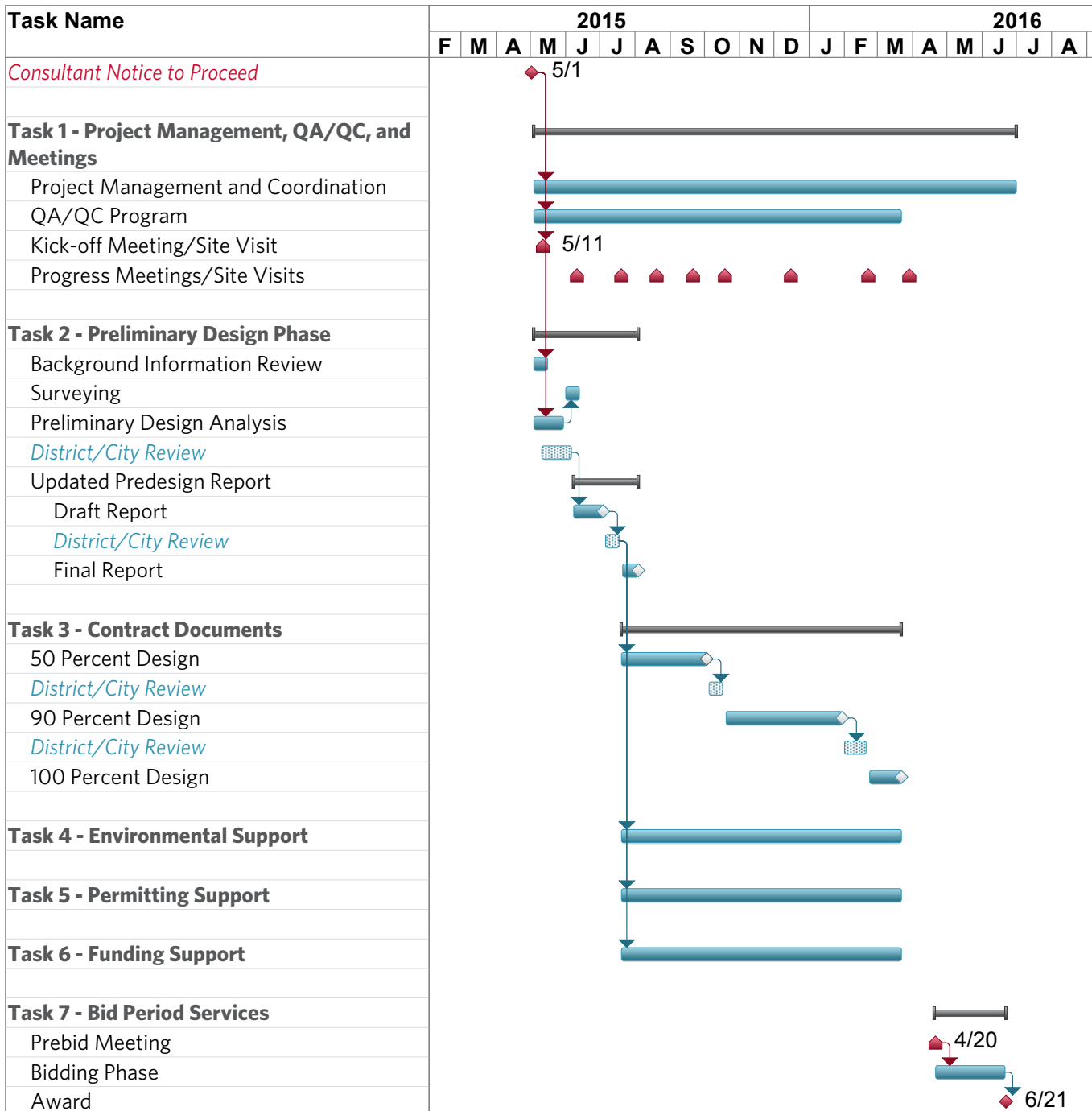


Figure H-1. Proposed Project Schedule

I. 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, his representatives **and** employees, ~~or subcontracts~~ as set forth in Section 11 of the District's standard consultant services agreements, and with the modifications stated in Section J of this proposal.

J. Consultant Agreement

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

- RECITALS, second paragraph. We would like to remove "and warrants" from the first sentence of this paragraph.
- 10. INDEMNITY: We would like to modify the first paragraph as follows: "To the maximum extent permitted by law, Consultant shall, at its own expense, indemnify, defend with counsel acceptable to the District, (which acceptance will not be unreasonably withheld), and hold harmless District and its officers, officials, **and** employees, ~~agents and volunteers~~ ("Indemnitees") from and against any and all liability, loss, damage, claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings, civil penalties and fines, expenses and costs (including, without limitation, claims expenses, **reasonable** attorney's fees and costs and fees of litigation) (collectively, "Liability") of every nature, whether actual, alleged or threatened, **to the extent caused by and** arising out of or in connection with the Services or Consultant's **negligent** failure to comply with any of the **material** terms of this Agreement, regardless of any fault or alleged fault of the Indemnitees."
- 10. INDEMNITY: We would like to delete the third paragraph in this section.
- 11. INSURANCE: We would like all references to "agents" and "volunteers" from this section.
- 13b. OTHER LICENSES AND PERMITS: We would like to delete "and warrants" from this paragraph.
- CONFLICT OF INTEREST PROHIBITION: Please replace "warrants" with "represents" in the third paragraph of this section.