



## Bob Frchetti, P.E. | Principal

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Bob has over 29 years of project management and technical experience in virtually all areas of water and wastewater engineering including facilities planning, permitting, design, construction, facility commissioning, performance evaluations, and energy efficiency audits. His strengths include process modeling and design, technology and equipment selection, detailed design engineering, energy efficiency upgrades, hydraulics, and construction engineering and management. He also has significant experience with integrated project delivery methods including design-build, CMAR, and performance contracting.

### Project Experience

#### SELECT WASTEWATER ENGINEERING EXPERIENCE

**Colorado Springs Utilities (CSU) Biogas Utilization Study.** Principal Engineer / Project Manager for 1000 CFM anaerobic sludge digestion biogas utilization study. Led alternatives evaluation to identify the most economically viable project to beneficially use biogas. Conducted preliminary design of gas conditioning and cleaning technology, connection to natural gas pipelines, "green-gas" market assessment including RIN analysis, evaluated potential for food-waste diversion to co-digestion, and alternate project delivery models including privatization, public private partnerships, design-build, and design-bid-build. Preliminary design of recommended facilities including food waste receiving and processing for increased gas production.

**St. Vrain Sanitation District WWTF.** Principal Engineer / Project Manager for the #31 MM WWTF Expansion, which increased the existing facility capacity from 3 to 6 MGD with new influent pumping, headworks, new advanced BNR oxidation ditch process, high-speed turbo blowers, 2nd generation ATAD biosolids, UV disinfection, administration building, and laboratory. Responsible for the utility plan amendment, facility performance evaluation (CPE), basis of design, preliminary engineering, final design, and construction engineering and administration.

**Town of Crested Butte WWTF.** Principal Engineer / Project Manager for WWTF expansion from 0.6 to 0.75 MGD on small site in mountain climate. Project converted/retrofitted existing oxidation ditch secondary process to a 3-train MLE process for total nitrogen control with anaerobic selectors, high-efficiency automated screw compressors with DO control, diffused aeration system, IMLR pumping, UV disinfection, new headworks, updated controls, electrical and SCADA. Responsible for preliminary design, permitting, final design, and construction engineering. Also directed the rate analysis and funding consulting to obtain DOLA grant & SRF loan.

**Town of Bennett WWTF.** Principal Engineer/Project Manager for new WWTF project to replace existing aerated lagoon facility with state of the art SBR facility with full biological nutrient removal, including secondary treatment process, influent pump station, headworks, biosolids handling including screw press dewatering, and UV disinfection. Responsible for preliminary design, permitting, final design, and construction engineering.

**Town of Lyons WWTF.** Principal Engineer/ Project Manager for the design-build of this new 0.4 MGD advance SBR treatment facility. As part of the energy performance contracting effort, the upgrade improved technical processes and operation and allowed for significant cost savings following the destruction of the 2013 flooding. Facility included influent pumping, headworks, SBR, solids handling and dewatering, UV, SCADA, odor control.

**City of Boulder IBM Lift Station.** Principal Engineer / Project Manager for 2.8 MGD Lift Station retrofit/upgrade with innovative conversion of an existing aged station to a new submersible pump arrangement with self-cleaning trench-style wetwell and expanded emergency overflow and back up pumping. Responsible for pre-design, permitting, design, and construction administration.

**Mt Crested Butte WWTF Comprehensive Performance Evaluation (CPE).** Principal-in-Charge / Project Manager. Led multi-disciplinary engineering CPE team to perform a complete facility audit for 1.2 MGD WWTF to identify performance limiting factors, define unit process capacities, and evaluate operations and capital improvements alternatives to achieve effluent limits and performance goals.

### Experience Highlights

Project Manager/ Principal in Charge and Engineer of Record for numerous water and wastewater treatment facility projects

Construction experience as a General Contractor and Resident Engineer

Process design expertise and process equipment and technology specialist

Alternative project delivery experience: design-build; CMAR; public private partnerships

### Education

B.S. Civil and Environmental Engineering  
Clarkson University Potsdam, New York, 1990

Graduate Level Coursework:

Syracuse University Environmental  
Chemistry and Analysis, 1992

SUNY Environmental Science and Forestry  
Water Pollution Engineering, 1992

### Licensing

Professional Engineer Colorado, 1994  
Professional Engineer, New Mexico, 2007  
(inactive)

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### Project Experience (continued)

**Town of Erie WWTF Facilities Plan and Comprehensive Performance Evaluation (CPE).** Principal-in-Charge / Project Manager. Led multi-disciplinary engineering CPE team to perform complete WWTF facility audits on the Town's two facilities to identify performance limiting factors, define unit process capacities, and evaluate operations and capital improvements alternatives to assess consolidation and expansion options achieve capacity, effluent limits, and performance goals.

**Nederland WWTF.** Principal Engineer / Project Manager for the preliminary design phase for a 0.5 MGD WWTF that replaced the Town's aerated lagoon. The new facility is designed for total nitrogen and phosphorus control for a total project cost within the Town's budget. The facility includes an advanced hybrid SBR process with jet aeration and phosphorus removal.

**Vail WWTF. Instrumentation Upgrades (Eagle River Water & Sanitation District)** - Project Manager / Principal Engineer. The Vail WWTP project included: a dynamically automated equalization basin return flow system, D.O. based airflow control system to aeration selector cells, in-situ ammonia analyzer / monitoring system, and nitrification filters airflow metering. Project was of a design-build format, requiring engineering, and management and coordination of vendors and contractors. Owner realized total project cost and significant energy cost savings.

**Town of Ault WWTF** - Principal Engineer to upgrade the existing lagoon treatment facility. Project included planning and funding assistance, project management, agency coordination, design, and construction management. Helped the Town obtain a \$2M CDPHE Loan for 0% and \$2M Grant from DOLA.

**Avon WWTF Blower Control Project Eagle River Water & Sanitation District** - Project Manager / Principal Engineer. The Avon WWTP project included a new fully automated five centrifugal blower control system, incorporating energy-saving techniques from D.O. based airflow control, blower inlet valve throttling, and blower discharge manifold modifications. Owner realized total project cost and significant energy cost savings with a three-year payback on their investment.

**Town of Georgetown WWTF** - Project Manager / Principal Engineer for a \$5.8 Million facility retrofit and capacity expansion to 0.8 MGD. Existing extended air activated sludge facility converted to an integrated fixed film activated sludge (IFAS) system with full biological nutrient (nitrogen and phosphorus) removal to low levels at low temperatures of < 6 deg C. Plant achieves TIN levels of less than 6 mg/L and TP levels < 0.3 mg/L. Designed moving bed sand filter for combined phosphorus and metals (zinc) removal by chemical addition/pH adjustment and filtration. Construction completed in 2011. Project received the 2012 ACEC Honor Award for Engineering Excellence.

**City of Idaho Springs WWTF** - Project Manager / Principal Engineer. The project involved replacement of grit removal system, jet aeration equipment, new high-speed turbo blowers, new chemical & office building addition, among other operational controls and facility improvements. The CMAR delivery method was employed to maximize the amount of improvements allowed by the fixed budget (EPA STAG grant funding)

**Clearwater Water Reclamation Facility** - Project Manager and lead design engineer for the design of a new 0.165 MGD membrane bioreactor (MBR) water reclamation facility and reclaimed effluent pump station. Supervised and managed all design engineering disciplines including civil, structural, mechanical, electrical, process and architectural engineering. This project is the first approved in Colorado to distribute Category 3 reclaimed effluent under CO Regulation 84.

**Tabernash Meadows Water & Sanitation District Biosolids Handling Improvements** - Project Manager / Principal Engineer. Due to high annual costs for long-distance liquid biosolids hauling the District sought a solution to decrease their solids disposal costs. Designed a screw press dewatering process and headworks fine screen.

**Squaw Creek WWTF (Eagle River Water and Sanitation District)**- Lead design engineer and onsite construction engineer/ manager for a \$16 million expansion project to increase the capacity and treatment capabilities for nitrification. Project also included 1st Generation ATAD for solids stabilization. Bob provided construction management and resident engineering during construction.

**Town of Kersey WWTF** - Project manager and lead design engineer for a 0.4 MGD new advanced sequencing batch reactor (SBR) facility to replace the Town's oxidation ditch system. Managed or performed all permitting, design and construction engineering services for the project. The design included influent sludge conditioning, influent equalization, and an integrated high-rate denitrification reactor.

**Ute Lake Ranch Wastewater Reclamation Facility** - Project Manager and lead design engineer for a new advanced 0.165 MGD SBR facility. Provided or managed all engineering services for the design and construction of four community pump stations and the central treatment facility. Facility process design included the headworks, SBR process, effluent equalization, solids dewatering, chlorine disinfection, instrumentation and controls, and reclaimed effluent pumping.

**Boulder County / Eldorado Springs Wastewater System** - Project Manager, lead design engineer, and construction engineer for a \$1.8 MM project to provide a new community wastewater collection and treatment system. Prepared the CDPHE Site Application, a Utility Plan, and a Boulder County 1041 Permit, Prepared Final Design Documents. Project delivered using Design-Build approach.

**Wolf Creek Ski Area WWTF.** Project Manager and lead design engineer for the retrofit and upgrade to the existing WWTF to a hybrid sequencing batch reactor (SBR) activated sludge process. Prepared Final Design (plans and specifications) and managed office and field engineering.

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### Project Experience (continued)

**West Jefferson County WWTF.** Design engineer for \$2.3 million WWTP expansion for West Jefferson County Metro District. Responsibilities included process design; aeration basin modifications, plant hydraulics, and aerobic digester design below a sludge processing building and maintenance garage; and biofilter design for odor control.

**Tri-Lakes WWTF.** Project Engineer for design of capacity expansion to 4.2 mgd. New facilities included a simultaneous nitrification/denitrification (Parkson BioLac) aeration basin and a secondary clarifier. Responsibilities included process equipment layout and design and hydraulic profile

**Plum Creek WWTF.** Design engineer for expansion of WWTP from 2.3 mgd to 3.55 mgd for Plum Creek Wastewater Authority. Responsible for process design, hydraulics, design and retrofit of aeration system. During construction performed resident engineer observation, submittal review, construction schedule review, pay request approval, and administration of weekly progress meetings.

**Broomfield WWTF Odor Control Assessment Study/Design.** Design Engineer on study to identify potential odor-generating WWTP processes and identify immediate, near-term, and long-term odor control improvements. Designed ferric chloride storage and feed system, biofilter, and assisted with headworks and grit facilities design for treatment of foul air.

**201 Facility Plan Amendment: Sludge Management Plan Madison Metropolitan Sewerage District.** Project Engineer. Evaluated alternatives for a 450 wet-ton/day sewage sludge management program for the Nine Springs Wastewater Treatment Plant (36 MGD design capacity). Performed 20-year present worth economic analysis and cost comparison on each of the short-listed alternatives.

### SELECT WATER ENGINEERING EXPERIENCE

**Town of Bennett Water System Improvements.** Principal-in-Charge/ Project Manager. Managed and performed engineering for multiple projects including complete water system infrastructure audit and assessment, capital improvement plan, water system hydraulic model, new storage tank alternatives evaluation, multiple well house upgrades (pumps and SCADA), new groundwater well drilling, permitting, treatment, and connection to distribution system. Engineer of Record for new 0.5 MG elevated water storage tank and distribution system improvements project including planning, permitting, design, construction engineering.

**Town of Georgetown WTF Improvements.** Principal-in-charge for a \$3.6 million improvements project including a new 0.63 MGD membrane filtration facility; micro hydroelectric facility; replacement of an existing 1.5-mg storage tank; a new 1,500-gpm pump station; and a new 400,000-gallon welded steel storage tank with 2,000-lf distribution main extension. Design phase services were completed under strict deadline requirements enabling Town to secure \$3.34 million of loan forgiveness and 0% loans made available through the American Recovery and Reinvestment Act (ARRA) and Colorado state revolving funds.

**Tabernash Meadows W&S District.** Project Manager for new ground water well permitting and chlorination project.

**Lookout Mountain Water District Membrane Filtration Upgrade.** Principal-in-Charge for membrane filtration CL2 disinfection upgrades including process improvements for pretreatment of iron, manganese, and total organic carbon; installation of three Siemens Memcor membrane units (total capacity of 550 gpm); design of chlorine disinfection facilities; preparing regulatory applications; and, providing construction engineering services. The total project cost was \$1.25 million.

**Briggsdale Water Storage Tank and Booster Pump Station.** Project Manager and lead design engineer for design and construction of a new bolted steel water storage tank and booster pump station. Project was funded by the USDA grant. Prepared Final Design (plans and specifications) and managed office and field engineering.

**Gateway Village Water Storage Tank and Booster Pump Station.** Project Manager for design and construction of new 0.5 MG bolted steel water storage tank and booster pump station.

**United Water & Sanitation District / Brannan Pit Raw Water Pump Station.** Project Manager / lead design engineer for 25 cfs raw water pumping station. Vertical turbine pumps and controls. 36" DIP discharge piping.

**Lake Forrest Mutual Water Company.** Project Manager / lead design engineer for RO water treatment system for fluoride removal.

**Dukes West MHP Water System Improvements.** Project Manager/ lead design engineer for well upgrades, chlorination, and storage tanks.

**Henderson Mill Water WTP.** Project Manager/ lead design engineer for new 0.25 MGD membrane water treatment plant.

**Columbine Lake Water District.** Project Manager/ lead design engineer for water treatment system upgrade to remove iron and manganese.