Daniel Christodoss, PhD, PE

URS Corporation

Education:

PhD, Civil Engineering, University of Tennessee, 1990
Master of Science, Public Health Engineering, Bharathiyar University, 1986
Bachelor of Science, Civil Engineering, Madras University, 1980

Registration:

Professional Engineer, TX, No. 86016, 1999

General Summary

Summary

I have extensive experience (over 20 years) in innovative technology development in water and wastewater treatment, laboratory and pilot studies, design, construction, full-scale application and optimization. I have made numerous client presentations, submitted and won awards based on several proposals and have performed extensive business development for securing new clients. I have extensive experience with TCEQ and EPA regulations as well as Federal regulations related to water and wastewater treatment and residuals management.

2.0 Technical proficiency and knowledge in the areas of water treatment, recycle, and membranes. Expertise in water processing technologies, membranes, membrane bioreactors, desalination, waste water, hydrology and cost economics. Demonstrated expertise in fundamental laboratory studies (chemical and microbiological) as well as scale-up pilot, and field studies. Expert in technology transfer, establishing partnerships and/or interfacing with internal business units and external vendor companies. 20 or more years of experience in water technologies.

- Expertise in areas listed above are described below which include experience in technology development in the laboratory, piloting in the field, design, construction and technology optimization in full scale commissioned plants.
- Operations engineer and upgrade project design and construction engineer for a reverse osmosis membrane plant in Granbury, Texas. Taught operators on acidic and basic cleaning cycles, pressures, and frequency of cleaning. Performed membrane autopsies to identify the cause for fouling of membranes and identified manganese oxides. Performed technology evaluation and pre-treatment design for reverse osmosis membrane water plant in the DFW area.
- Submitted proposal to the client for technology development pilot study, design and construction. Performed pilot study at the Trinity River Authority Water Treatment Plant using an innovative pilot bio-filter for removal of nitrates from Lake Livingston clarified water. Submitted patent application for development of this new innovative technology in drinking water treatment. Designed bio-filter for 12 MGD plant. Made

presentations to the client on the water treatment plant upgrade design and the results of the pilot study.

- Received proprietary Bechtel Global Technical Grant Award for development of innovative technology in Hazardous Waste Sludge Minimization.
- Developed innovative technology in the laboratory for sequestration of iron and manganese in groundwater. Utilized colloidal particle charge measurement meters, atomic absorption spectrophotometers, x-ray diffraction and x-ray fluorescence laboratory equipment for analysis.
- Received the American Water Works Association (AWWA) award for work in water quality.
- Lead Engineer for the regional 37.5 MGD wastewater plant 3-month full scale stress testing/study to support plant up-rating to 45 MGD and prevent down-rating to 30 MGD. Presented paper on "Activated Sludge Plant Field/Model Capacity Evaluation", at the Texas AWWA Conference.
- Lead Engineer for Waco WWTP modifications to treat high BTU wastes from industries and FOG to minimize sewer clogs, produce methane to run the sludge to soil-conditioner bio-solids reuse plant to save natural gas costs, and co-generate 1/3rd of the plant's electricity requirements. Received the Texas Environmental Excellence Award for the City of Waco for pollution prevention and waste to energy.
- Lead Engineer for sludge dewatering technology feasibility study at Windermere WWTP. Several technologies were evaluated and the technology with the best return on investment was proposed for implementation.
- City of Waco FOG to Biodiesel: Provided a detailed proposal with schematics for converting oil and grease (used cooking oil from restaurants and oil and grease from grease traps) to biodiesel. The proposal includes the location and the schematics of the process. The concept was approved by the Waco Metropolitan Area Regional Sewer System Board. Process proposed included an enzymatic process that can tolerate oil and grease with a higher fat content. Proposal included public meetings and promotions for increasing the amount of used cooking oil recycled to biodiesel for operating city fleet.
- City of Houston FOG to Biodiesel: Provided a presentation to City Staff on the concept for conversion of oil and grease to biodiesel along with return on investment (ROI) calculations. Concept included a central location for receiving oil and grease from commercial waste haulers and City revenue from tipping fee.
- City of Fort Worth FOG to Biodiesel: To move the City further along towards being a net-zero energy model, concepts were presented on converting used cooking oil to biodiesel with an enzymatic process to run generators at the plant to generate electricity. Concept presented included conversion of oil and grease with high fat content to biodiesel. Schematics of the process and ROI calculations plus return on investment from reduction of stop-ups in the sewer collection system and reduction in operation and maintenance expenses were presented.
- Southwest Water Company: Designed a zero cost innovative technology for in-situ removal of TTHMs in purchased surface water at Pottsboro, to attain DBP compliance by modifying existing process configuration.
- Enhanced process efficiency at a 37.5 MGD regional WWTP to supply effluent water to power company for reuse in cooling towers.
- Lead engineer for TCEQ compliance support to innovative technology vendor for development of technology to desalinate water and harvest minerals for reuse-marketing.

- Performed Technical review for City of Redlands, CA, conventional and tertiary WWTP Operations Efficiency Initiatives and provided comments for revision and upgrade fo the technical report.. The WWTP produces secondary treated water for land disposal and tertiary treated California Title 22 recycled water for re-use. To accomplish both treatment objectives, the liquid treatment processes and facilities at the WWTF have two separate treatment trains, conventional and MBR.
- Technical review of Compliance Study for South Bay International Wastewater Treatment Plant, San Diego, CA. Since startup of the secondary plant in early 2011, there have been several National Pollutant Discharge Elimination System (NPDES) permit exceedances for total suspended solids (TSS) and carbonaceous biochemical oxygen demand (CBOD5), believed to be caused by solids washout from the secondary clarifiers. Recommended dye tracer, pH and coagulant dose optimization along with establishment of a pre-treatment program so domestic sewage is not mixed with industrial effluents.
- Lead Engineer for West District and Upper Brays WWTP Service Areas Sewer and Odor Control Systems Master Plan, City of Houston (COH): Prioritized O&M and Capital Improvement Project Recommendations including Chelford City facility consolidation projects. Evaluation criteria were developed for sewer basins and condition assessment was performed basin by basin. Criteria next presented were those considered to prioritize the sewer basins; those in bold were selected as criteria to use for this master plan to prioritize the sewer basins for inspection and rehabilitation/replacement: age of sewer, excessive inflow/infiltration (I/I), Number of excursions for sewer basin, Number of sewer related service calls/311 calls for sewer basin, brick manhole construction, presence of concrete pipe in sewer basin, pipe diameter, slope of pipe, InfoWorks ICM Model predicted surcharge violations and excursions by sewer basin, frequency of inspection or maintenance, CCTV Ratings, sewer line location in back lot easements, presence of open ditches vs. curb and gutter streets.
- Lead Engineer City of Beaumont Collection System Optimization with InfoWorks ICM to determine optimum operating conditions to maximize the collection system capacity and additional storage needs to minimize wet weather impacts.

3.0 Widely recognized as a technical leader and expert in the area of water treatment and water technologies through publications and awards. Demonstrated expertise and proficiency of accomplishments through publications and patents (if you can just let me know how many current patents and pending patents would be all the information I would need).

PUBLICATIONS & AWARDS & PATENTS

- 1 Pending patent.
- Texas Environmental Excellence Award for Waste to Energy and Wastewater Pollution Prevention at Waco WWTP
- *AWWA Award* for contribution to research and development of innovative technologies in water treatment.
- Bechtel Technical Grant Award for development of innovative technology in sludge reduction during water treatment.
- Tangential Flow Filtration (TFF) Membrane Applications, Texas A&M Short Course, Dept. of Food Sciences, April 2013.

- Water Reuse: Technologies for Industrial & Municipal, Texas A&M Short Course, Dept. of Food Sciences, October 2013
- Anoxic Selector Single Stage Nitrification Process, Texas Commission on Environmental Quality Annual Water Quality Training, Waco, TX, (2006)
- Paper: "Capping Options for Low-Level Radioactive Mtrl Storage Pile, Waste Management Symposia '93
- Wastewater: Heavy Metals Removal-Enhancing the Process-Part I & II, Environmental Technology Journal of Advanced Science & Engineering (1999)
- Remedial Action Alternatives for Containment of the Source and the Centroid of the Northwest Plume of Groundwater Contaminants Originating from the Paducah Gaseous Diffusion Plant in Kentucky, USA, 2nd International Symposium on Environmental Contamination, Budapest '94, Hungary
- Turning Wastewater Treatment Sludge into Revenue by Bio-transformation (Bio-Fuel: Methane Generation, Optimization, Electricity Production/Reuse), Texas AWWA Conference Proceedings, Austin, TX, April 2006/Texas Public Works Association, Mesquite, TX (2006)
- Activated Sludge Plant Field/Model Capacity Evaluation, Texas AWWA Conf', Austin, TX (2006)
- Meeting O&M and Capital Investment Challenges in Wastewater Treatment, ASCE, Temple, TX (2006)
- Activated Sludge Plant Field Study, Texas Public Works Association Meeting, Mesquite, TX (2006)
- Groundwater Manganese Sequestration by Silicates-Polyphosphates with Oxidants, Ph.D. Dissertation, Univ. of Tennessee, August, 1990
- Silicate Effects on Iron Colloids in Groundwater Sequestration, ASCE Conference on Environmental Engineering, Washington, DC, (1990)
- Sequestration of Iron in Groundwater by Polyphosphates, AWWA Annual Conference, Cincinnati, OH (1990)
- Sequestering Methods of Iron and Manganese Treatment in Groundwater, AWWA Research Foundation Project Report (1989)
- Fluoride Analysis and Treatment of High Fluoride-Bearing Water Sources, MS Thesis, Madras University (1985)
- Tangential Flow Membrane Filtration (TFMF) Applications in Wastewater Reuse plus Brackish Groundwater and High Chloride Surface Water Treatment, March 2014 Membrane Technology Conference, AWWA-AMTA, Las Vegas, NV

4.0 Highly developed understanding of laboratory safety principles and engagement in company-wide safety programs. To include, but not limited to, basic hazard reviews, development of standard operating procedures, and behavioral-based safety observation programs:

- Have extensive experience in developing standard operating procedures (SOPs) for EMS-ISO 14001 Implementation at a Water Utility and am familiar with laboratory safety principles having developed innovative technologies in the laboratory.

5.0 Demonstrated knowledge of techniques and methods associated with detection and interpretation of Microbiologically Induced Corrosion.

- Submitted an odor control master plan which included methods and techniques used to identify source of correction, and provide engineering controls and design for remedy.

6.0 Extensive knowledge with the use and applications of various analytical laboratory methods.

- Have used Zeta Meters, Atomic Absorption Spectrophotometers with Nitrous Oxide, Colorimetric Spectrophotometers, Streaming Current Detectors, X-ray Diffraction and X-ray fluorescence spectrophotometers.

7.0 Experience in the petroleum, petrochemical or chemical industries.

- Field engineer for optimization of the Unipure industrial heavy metals co-precipitation treatment plant, performing a comprehensive study of process parameters for enhancing treatment performance and meeting NPDES limits. The technology was used for treating wastes from several industries which included aircraft maintenance and testing, electroplating and degreasing operations.
- Provided a proposal for optimization of a chemical plant's Industrial Wastewater Treatment Plant in the Houston Area.