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SUMMARY

Over twenty five years experience in operations management and engineering services fields, including twenty-three years in public works, water/wastewater utility operations, engineering design and construction management. City Engineer at City of Temple, Program Manager at City of Waco Water Utilities, Project Engineer at Kelly Air Force Base, and Project Manager/Engineer at Alan Plummer Associates, Fort Worth.

HIGHLIGHTS

Project Manager/Engineer for the Denver Trail Road and Bridge Project, Huntsville Water Treatment Plant Expansion, numerous roads, utilities, and pump/lift stations, subdivision developments, innovative pilot studies in water and wastewater treatment technologies, and environmental remediation. Submitted patent application for an innovative biological denitrification system with applications to water and wastewater treatment.

AWARDS

-  *Award for effective team building-technical excellence* in key SAIC projects, 1994.
-  *Bechtel Award of Merit* for technical excellence in 1990, 1992 and 1993.
-  *Bechtel Technical Grant Award* for winning proposal on innovative technologies
-  *SAIC Year 2000 Environmental Excellence Award* (part of team that helped in facilitating the Air Force Base Closure Agency's acquisition of Kelly Air Force Base through innovative remediation-related cost-reduction efforts and outstanding record-keeping).
-  *AWWA Award* for contribution to research in water treatment.

PROFESSIONAL EXPERIENCE

ALAN PLUMMER ASSOCIATES INC. – Fort Worth, Texas

2007 - Present

Project Manager/Engineer/Client Manager: Managed and designed projects involving road and bridge construction (\$5M), drainage and water/wastewater utility improvements (\$1M), and water treatment plant improvements (\$10M) and made presentations at City Council and Client meetings. Provided marketing support for numerous prospects and won over \$5M (construction estimate) in projects for the company. Developed and implemented an innovative water treatment technology, as well as met with potential clients and consulting engineers to discuss and develop plans to employ the technology on projects. Completed pilot study and submitted patent application for bio-filter denitrification technology. Following are the projects for which I performed project engineering design and project management.

Huntsville Water Treatment Plant:

- Prepared construction plans for expansion of the plant from 6 MGD to 12 MGD.
- Designed the new innovative 11 MGD GAC de-nitrification filters for nitrate and taste and odor removal combined with conventional filtration. Completed an online pilot study at the plant, prepared a pilot study report and submitted a patent application for this innovative technology.
- Designed a new backwash pump station for the existing and new filters.

- Designed the 1.2 MG clear well with four (4) 350 HP low energy vertical turbine high service pumps to replace the high energy horizontal split case centrifugal pumps. Use of the clear well for chlorine contact time in conjunction with the existing clear well and mounting of the high service pumps on the roof of the clear well eliminated the need for a separate pump station.
- Designed the new liquid ammonium sulfate (LAS), acetic acid, lime, caustic, alum and ferrous chloride chemical feed systems with pumps, containment and tanks.
- Incorporated baffles into the existing clear well.
- Performed preliminary design of a parallel 30 and 42 inch 10 mile long transmission main with booster pump station.

Mansfield Water Treatment Plant:

- Evaluated GAC pressure filters vs. gravity filters for the plant expansion from 15 MGD to 30 MGD (current) and 45 MGD (2020). Based on detailed value engineering analysis, gravity filters were recommended over pressure filters. Documented findings in a preliminary design technical memorandum.

TRA Central Diamond Filters:

- Project Engineer for the high flow and small footprint diamond cloth filters to replace the existing sand filters at the TRA Central wastewater treatment plant.

Amarillo Wastewater Treatment Plant (WWTP) Masterplan:

- Project engineering and management for performing a feasibility study of new satellite WWTP vs. upgrade of existing Hollywood Road and River Road WWTPs with reuse cooling water to the power plant.

Highway 199 Lift Station:

- This lift station serves an area which includes a large undeveloped section of land along State Highway 199 west of the lift station site. Peak flows are expected to increase from 280 gpm to 800 gpm at ultimate development.
- This project involved abandoning the existing lift station and construction a new lift station with new access from Highway 199 capable of meeting ultimate development needs. The new lift station involved design of triplex pumps with space for a future pump in a 10 ft diameter basin.

Highway 199 Sewer line Crossing:

- This project involved designing the replacement of an existing 8 inch aged sewer line with a new 12 inch line by methods other than open cut since the line crosses a busy highway. The purpose of this replacement is rehabilitation in conjunction with design for future capacity to serve the developing area.

Ash Creek Sewer line Relocation:

- An existing 12 sewer line built along Ash Creek was replaced and rerouted with a new 15 inch sewer line. The objective in rerouting and replacing existing line is for rehabilitation, design modification to avoid an undesirable existing route along Ash Creek, and design for future capacity.

Turpin and Conwell Water Lines:

- This project involved abandoning an existing 2 inch water line and replacement with a 6 and 8 inch line along Conwell and Turpin streets to provide adequate service capacity and pressure to the residents residing on these two streets.

Ash Creek WWTP Effluent Pump Station Upgrade:

The objective was to increase the capacity of this line from 2 MGD to approximately 3 MGD.

A preliminary design report (PDR) was prepared summarizing evaluation of the following three alternatives

- replacing existing triplex pumps to better match the existing system curve and adding a new booster pump station (a)

- same as alternative "a" except adding two - booster pump stations,
- replacing existing triplex pumps to better match the proposed pumping conditions; and constructing a new effluent flow equalization/ storage basin at the Ash Creek WWTP, that will link to the existing effluent/storage basin, and will normalize peak discharge flows;

During the evaluation it was discovered that the effluent main was not functioning as designed. Further discussions with City Staff indicated a gradual decline in pumping capacity from installed conditions over the last few years of operation.

The following possible scenarios that may be limiting pumping capacity were provided in the report:

- Air release valves are malfunctioning,
- The pump curves provided are inaccurate,
- One or all of the pumps are having mechanical problems,
- Lower C-factor due to restrictions of the effluent piping system.

To verify the existing system curve and the C-factor, additional field testing was recommended with the following sequence of operations:

- Replace, or repair, the existing (6) air release valves (ARV).
- Conduct a pressure-flow test with 1, 2, and 3 pumps running.
- Plot the system head curve.
- If no significant improvement is noticed in the system curve, evaluate and clean the existing 10" effluent line, if required.
- Conduct the pressure-flow test again with 1, 2, and 3 pumps turned on.
- Plot the system head curve.
- If no significant improvement is noticed in the system curve, have the manufacturer check the pumps and perform maintenance.
- Plot the system head curve

The results of this field test and subsequent evaluation should identify the limitation (pipe size, pressure rating or the pump capacity) of the existing system. In the case that the pump size or the capacity is a limiting factor, recommendations will be made based on an evaluation of the three alternatives.

Grant Support to Cities and Authorities:

Assisted City of Azle and Trinity River Authority in applications to the Texas Water Development Board for Water Treatment Plant Expansion and Wastewater Treatment Plant Upgrade Funding (approximately \$25M combined).

Spinnaker Drainage Improvements:

This task is in design and involves erosion protection and channel relocation to the existing easement. The existing channel is outside the legal easement and is currently eroding properties. A preliminary jurisdictional determination has been made that the existing channel is within the definition of waters of the US. Therefore, a section 404 permit has been obtained for this project from the Corps of Engineers.

Flooding Hot Spots:

In lieu of doing a drainage master plan, the focus of this project is to identify drainage solutions and prepare conceptual designs for 10 of the 25 flooding hot spots in the City of Azle. These 10 hot spots are flood prone areas ranging from businesses and residents to streets that have to be closed frequently during rainstorms. Conceptual design plans have been submitted and further design is in progress.

Denver Trails:

A 3,000 ft long road with a 900 ft bridge over the floodway of Ash Creek is being designed with drainage improvements to relieve existing and future traffic conditions on several collector streets during peak hours.

Water Treatment Plant Evaluation:

Performed a plant evaluation to identify possible causes for the high turbidity at the transfer station. The investigation revealed that caustic was being fed directly into the transfer lift station without adequate mixing causing calcium and other salts to precipitate. Recommended that the caustic feed be relocated to a zone of high mixing upstream of the transfer station. The recommendations were implemented cost effectively with just the feed relocation. This simple process modification provided substantial savings to the City which was in the process of evaluating major facility designs to eliminate the high turbidity problem.

Development/Construction Plan Reviews:

Reviewed development and construction plans for conformity with City of Azle Ordinances and acceptable engineering practices. This has been a key area in which I ensured that future residential and commercial construction is completed in accordance with established engineering standards so City budget can be dedicated towards expansions and improvements to accommodate growth rather than remediation of problem systems.

CITY OF WACO – Waco, Texas

2004 – 2007

Program Manager: Operations and maintenance manager for about 900 miles of waterlines and 800 miles of sewer at Waco. Designed and constructed an emergency 36 inch sewerline across a major arterial road which collapsed due to a sinkhole. Budget constraints led to in-house design-build at 50% of the cost of contract bids.

Responsible for managing the construction and preventive maintenance sections of the water distribution system and the wastewater treatment plant. The water distribution and sewage collection system spans an approximately 100 square mile service area and serves a population of about 150,000 residents. The monthly average water supply demand is 30 mgd.

Periodically assisted in engineering feasibility studies, design and construction for the water and wastewater treatment plant, water distribution, wastewater collection, and utility system reviews while constantly striving to integrate City Engineering and Planning Officials during design and development.

Saved approximately \$20 Million by doing a stress test to retain the WMARSS wastewater treatment plant capacity at 37.8 mgd and eliminate downgrading to 31 mgd. Made presentations to TCEQ on the highlights of the stress test and received approval for maintaining the existing rating.

Stabilized operations budget during a previous energy crisis (natural gas @ \$13/mmbtu) by waste to energy initiatives. Implementation of these initiatives decreased natural gas and electricity usage by 30% using cogeneration (generating electricity from methane production at the anaerobic digesters and producing sludge pellets for agricultural use).

Evaluated and modified Standard Operating Procedures (SOPs) for utility construction and preventive maintenance functions.

Worked with consultants on Sanitary Sewer Evaluation Studies (SSES), evaluated the Waco GIS system, and performed engineering calculations for drainage areas and specific collection systems to identify inflow and infiltration problem areas. The findings were used to decide on the appropriate course of action choosing between maintenance, rehabilitation, or replacement.

Prepared a program plan for daily field operations to provide 24/7 water and sewer service for 150,000 population including:

1. Line Cleaning Program
2. Water and Sewer Mains and Lateral Repair/Replacement
3. Sanitary Sewer Overflows Prevention & Correction
4. Stop-ups Prevention & Corrective Action
5. Pipe leaks Prevention & Corrective Action
6. Air Release Valves, water valves, hydrants, flushing
7. Valve Exercise Program

KILLEEN ENGINEERING – Killeen, Texas**2004 –2005**

Development Engineer: Performed residential and commercial subdivision/lot designs for lot layout, roads, water and sewer in compliance with Drainage Criteria and Design Manual and TCEQ/Local water and sewer development codes. Prepared standard spreadsheets for drainage, water and sewer designs to quicken and standardize the design process.

CITY OF TEMPLE – Temple, Texas**2002 - 2004**

City Engineer (CIP, Development, and Building Inspection & Flood Plain Manager): Direction/Management: Directed public works activities, including the design, construction, and operation of roads, traffic engineering and road alignment feasibility studies, water/wastewater utilities, and City developments; coordinated maintenance of road and drainage systems and traffic control functions with Director of Services. Served as the City Flood Control Engineer. Managed public works (roads, drainage, water and sewer) and subdivision infrastructure projects including residential and commercial permits in excess of \$400 Million

Presentations: Made presentations to City Council and Planning/Zoning Commission on Zoning Applications, Plats and Construction Plans. Performed site visits for future development project locations to assess infrastructure needs. Integrated all city departments to streamline design, construction, inspection, permitting and city services. Instrumental in the dismantling of an unsafe huge antenna structure at the Hawn Hotel. Presented my engineering opinion on safety to the Building Standards Advisory Board (BSAB). Within 5 minutes, the BSAB was able to reach a conclusion and directed that the unsafe structure be dismantled safely within 30 days. Previously, this process had dragged on for many years because a definitive opinion was not provided.

Storm water: Managed all environmental activities associated with storm water permits; identified and recommended solutions to water pollution issues; coordinated with local businesses to achieve compliance related to storm water pollution prevention plans, inspection and enforcement.

Plan/Design Review: Reviewed site development and building permit plans, subdivision plats, construction plans, water quality, traffic control, storm water drainage, and land use controls. Reviewed engineering designs and specifications for improvement projects. Prepared/updated AutoCAD plans.

Public Works Design (Infrastructure): Prepared Specifications and RFPs for infrastructure design and construction projects. Prepared Drainage Criteria and Design Manual for Dual Use Facilities (Detention Ponds and Parks) and received commendations from the Planning Director, Parks Director and Asst. City Manager on the outstanding product. Designed road and drainage projects, reviewed building permit applications and coordinated with code enforcement officials.

Planning & External Coordination: Provided consultation and direction in developing future projects and resolving current engineering problems with developers, contractors and construction managers. Evaluated issues and concerns raised by citizens and city officials.

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION – San Antonio, Texas**1997 - 2002**

Senior Project Engineer: Kelly AFB: Performed design upgrade to the existing Groundwater Treatment Plant (GWTP) in a design-build process, and oversaw construction. Functioned as the general contractor for the project. Prepared concept for radio monitoring and control from 7 automated remote pump stations. Integrated 1,000 gpm industrial plant into 500 gpm GWTP to reduce costs and utilize both infrastructures effectively.

MP, S4, S8, D2, E3 and CS2NB Interim Remedial System Optimization: Performed design and construction oversight of lift/pump station, recovery well pumps, silt traps, below ground piping, mechanical and instrumentation components. Brought in new work through consistent technical support to AFB client via AFCEE/AFB programs.

300 Area Groundwater Recovery Trench: Designed two recovery trenches 28 ft. deep, 500 ft long, and the associated infrastructure to convey contaminated groundwater to the GWTP.

Evaluated *Interim Stabilization Measures (corrective action program)* for Sites A, B and C that were contaminated with Heavy Metals from Plating Operations, Free Product, Chlorinated Solvents in soils and groundwater at

concentrations exceeding TCEQ limits in source areas beneath former buildings and in the shallow groundwater plume (less than 30 feet below ground surface) that extends off base, and also contained DNAPLs. Prepared the interim stabilization report for these sites.

Corrective Measures Implementation-CMI (Design and Detailed Construction Cost Estimate) for Sites Contaminated with Heavy Metals and Chlorinated Solvents. Since the Corrective Measures Study was completed, I was responsible for the design of sheet piling around the site to prevent contaminant migration during construction which involved installation of the Six-Phase Electrical Heating System to Enhance Soil Vapor Extraction of chlorinated solvents and excavation of hot spots. I prepared detailed cost estimates based on my design.

Waste Treatment Process Optimization: Field engineer for optimization of the Unipure heavy metals treatment plant. Performed a comprehensive study of process parameters for enhancing treatment performance and meeting NPDES limits.

Brooks AFB: Resident Support Engineer, Brooks AFB Operations and Maintenance: Conducted engineering evaluations and system cost analysis and recommended, designed, and oversaw reengineering projects as required to ensure optimal operation.

JACOBS ENGINEERING – Oak Ridge, Tennessee

1994 – 1997

Senior Feasibility Engineer: *Coal Ash Pond Remediation Task Manager.* Prepared feasibility studies, proposed plan, ROD, construction oversight and monitoring plan for 5-year CERCLA review. Provided support to DOE in public meetings. Received written commendations from DOE for escalation of milestones resulting in savings of over \$2M in overall costs leading to finalization of a Feasibility Study, Proposed Plan, ROD, Remedial Design, and Remediation 7 years ahead of the original schedule.

Chanute AFB, IL Environmental Cleanup Plan Sr. Feasibility Study Engineer. Prepared the demobilization, closure and spill control/discharge plan for remediation of a landfill and a test site contaminated with metallic and organic contaminants.

Task manager for the K-25 Project. The task involved preparation of an FS, proposed plan, and ROD for a classified and contaminated burial ground, engineering studies for in situ vitrification and chemical oxidation of a pit contaminated with volatile organics and radionuclides, and remediation of PCB-contaminated ponds.

Lead Engineer for the Portsmouth Corrective Measures Study (CMS) for radiologically and chemically contaminated soil, groundwater, surface water and sediment. Provided justification on the use of alternative cleanup levels for PCBs and PAHs.

Senior Engineer for restoration of contaminated auto salvage sites: Prepared Engineering Evaluation/Cost Analysis and Technical Specifications for Magnetometer Surveys to identify buried objects, Soil Sampling with Geoprobe Sampling Systems for site contaminated with PCBs, radiological constituents, organics and heavy metals including mercury.

Feasibility Study Engineering Group Leader: Conducted weekly meetings for engineering staff and prepared presentations on emerging treatment technologies for contaminated soil, groundwater, and sediment. Commended for effective communication and presentation of geological, hydrogeological and engineering principles relevant to remediation.

NEW JERUSALEM NEWS – Knoxville, TN

1994 – 1997

Administrator/Senior Internet Programmer: *Interactive design (nights/weekends):* Designed creative interactive data driven web sites utilizing macromedia products and other state of the art popular design tools. In-depth knowledge of image optimization techniques, web design constraints, download times, web-safe palettes; computer animations/simulations, digital imaging, photo manipulation, video-audio production including streaming solutions, capturing and editing. Proficient in HTML, DHTML, and CSS. Extensive experience working with Web graphics packages: Adobe Photoshop, Macromedia, Macromedia Flash, and GIF Animation.

Senior Environmental Engineer: Project manager for an *Engineering Evaluation/Cost Analysis-Environmental Assessment (EE/CA-EA)* for the Colonie site, New York under the Formerly Utilized Sites Remedial Action Program (FUSRAP). Prepared regulatory requirements package for Creek Environmental Impact Statements.

Performed an *environmental audit* of the Paducah Gaseous Diffusion Plant (PGDP), Paducah, KY, which is an uranium enrichment facility. Audited plant for compliance.

Prepared *Integrated Waste Management Plans* for organic, nuclear and mixed wastes for the Y-12 inactive nuclear weapons production plant, K-25 inactive gaseous diffusion plant, X-10 active research facilities, Paducah and the Portsmouth Gaseous Diffusion Plant.

Performed a *Focused Feasibility Study* for identification, preliminary screening and evaluation of interim action engineering alternatives for containment of the Northwest trichloroethylene (TCE) and technetium (99Tc) Plume at PGDP. Received commendations from the client for an outstanding quality product.

Performed *conceptual designs and analysis* for remediation of the WAG 22 Burial Grounds at PGDP. The DOE site manager for the WAG 22 Feasibility Studies provided a written commendation applauding the team's determination in finding cost-effective ways for environmental cleanup and stabilization. Performed Feasibility Studies for remediation of the burial areas at WAG 22, Solid Waste Management Unit (SWMU) contaminated with a wide range of organic (TCE, PCB), inorganic (heavy metals) and radiological (99Tc, uranium, pyroforic) constituents.

As the project lead, prepared a *treatability study program plan* for WAG 23 (a site contaminated with PCBs, volatile organics, metals and radiological constituents) at PGDP. Commended by project manager for accelerated responses to project needs.

Prepared *conceptual designs* for air strippers, ion exchange and activated carbon treatment units for the Portsmouth site groundwater *corrective measures study (CMS)*. Prepared a feasibility study Work Plan for remediation/decontamination of WAG 17 radiologically contaminated concrete rubble pile sites at Paducah Gaseous Diffusion Plant.

BECHTEL ENVIRONMENTAL INC. – Oak Ridge, TN

1989 – 1992

Civil Engineer: Principal Investigator for development of an *innovative technology* in hazardous waste treatment/waste minimization.

Performed *conceptual design of sewer and treatment systems* for a private firm: FMC Jacksonville, Florida site, to convey water (via railroad crossing) from blow-down, tank farm sinks, metal frame warehouse and a 2 story concrete block warehouse to a sanitary sewer after being treated in an activated carbon unit. Designed a storm sewer system, sumps and catch basins based on a 25 year storm.

Performed *structural analysis of manholes* for a FUSRAP project to prepare specifications for purchasing the appropriate manhole to accommodate site-specific requirements. Performed calculations for determining the bearing pressure, buoyancy, uplift force, AASHTO soil load on the manhole structure, bending stress, maximum moment and shear on manhole roof.

Calculated the maximum slope angle based on the angle of internal and the cohesion "c" (for various factors of safety) for a *low level radioactive waste storage pile covered* with clean soil and riprap on the slope. Prepared the conceptual design for a soil cover and riprap configuration for the FUSRAP project.

Performed *engineering studies of existing piles* on DOE sites (FUSRAP Project) and prepared several designs for both soil and geomembrane pile covers and anchor systems. Performed detailed structural analysis for the designs.

Prepared Budget, Schedule and *Field Investigation Work Plans*, and provided RI/FS support for EPA ARCS RI/FS Projects. Completed a *solidification/stabilization 100% design* for the EPA ARCS Remedial Design/Remedial Action Project.

Designed *Covers for Hazardous Waste Storage Areas and Surface Impoundments* and prepared Permanent

Closure and Interim/Temporary Storage Plans and *Closure Plans/Permit Applications* for GE, Mt. Vernon, Indiana.

UNIVERSITY OF TENNESSEE – Knoxville, TN

1986 – 1989

Graduate Teaching/Research Assistant: Researched and developed *iron and manganese sequestration techniques* applied to groundwater treatment. Used atomic absorption spectrophotometers, X-ray diffraction, streaming current detectors, laser-zee meters, colorimeters, amperometric titrimeters and various other scientific instruments. Tested various commercially available chemicals to compare treatment effectiveness. Optimized treatment effectiveness and developed scientific approach to the investigation.

MADRAS STATE WATER SUPPLY AND DRAINAGE BOARD – Coimbatore, India

1980 – 1986

Assistant Engineer: Verified design and performed construction oversight/O&M for a 101.4 LPD water treatment plant and control building in an elephant forest 2,500 ft above msl to convey and provide drinking water to a metropolitan city (in the valley 40 miles away). System included a surface water intake, spray nozzle aeration chamber, chemical house, clari-flocculator, filter house with shell roof, pump house/main control station, and clear water reservoir.

Performed structural design of residential and commercial buildings. Verified design and oversaw construction of control building for the 101.4 MGD water treatment plant.

Performed field investigations for laying water supply mains and designed water/waste systems.

EDUCATION

Ph.D. – Civil Engineering, University of Tennessee – Knoxville, TN - 1990
M.S. – Public Health Engineering – Bharathiyar University - Coimbatore, India - 1986
B.S. – Civil Engineering - Madras University – Coimbatore, India - 1980

PROFESSIONAL CERTIFICATIONS

Professional Engineer – PE Texas - 1999

PROFESSIONAL AFFILIATIONS

American Water Works Association

PUBLICATIONS/PRESENTATIONS

- ✚ Anoxic Selector Single Stage Nitrification Process, Texas Commission on Environmental Quality Annual Water Quality Training, Waco, TX, 10/18/06
- ✚ Published Paper: "Capping Options for a Low-Level Radioactive Material Storage Pile, Waste Management Symposia '93.
- ✚ Wastewater: *Heavy Metals* Removal-Enhancing the Process-Part I & II, Environmental Technology Journal of Advanced Science & Engineering, 1-4/1999
- ✚ 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, Second International Symposium and Exhibition on Environmental Contamination in Central and Eastern Europe, Budapest '94, Hungary.
- ✚ Turning Wastewater Treatment Sludge into Revenue through Bio-transformation, Texas AWWA Conference Proceedings, Austin, TX, April 2006
- ✚ Activated Sludge Plant Field and Model Capacity Evaluation, Texas AWWA Conference Proceedings, Austin, TX, April 2006

- # Meeting O&M and Capital Investment Challenges in Wastewater Treatment, Central Texas ASCE Meeting, Temple, TX, February 2006
- # Turning Waste into Revenue, Texas Public Works Association Meeting, Mesquite, TX, June 2006
- # Activated Sludge Plant Field Study, Texas Public Works Association Meeting, Mesquite, TX, June 2006
- # Investigation of Manganese Sequestration by Silicates and Polyphosphates with Oxidants, Ph.D. Dissertation, Univ. of Tennessee, August, 1990
- # Silicate Effects on Iron Colloids in Sequestration, ASCE, National Conference on Environmental Engineering, Washington, DC, July 1990
- # Sequestration of Iron in Groundwater by Polyphosphates, AWWA Annual Conference, Cincinnati, Ohio, June 1990
- # Sequestering Methods of Iron and Manganese Treatment, AWWA Research Foundation Project Report, 1989
- # Fluoride Analysis and Treatment of High Fluoride-Bearing Water Sources in Coimbatore District, MS Thesis, Madras University, 1985
- # Streamlining Cleanup Decisions at Filled Coal Ash Pond, Proceedings for the Air and Waste Management National Conference, Nashville, June '96.
- # Retaining and Replenishing Water Utility Operators for Long Term Operational Sustainability of Critical Infrastructure, Utility Management Journal (abstract submitted), 11/06