



## DR. RAUL MCQUIVEY, PRESIDENT & CEO

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### EDUCATION

- Ph.D. Civil Engineering, Hydraulics, Hydrology, and Fluid Mechanics, Colorado State University, 1967
- M.S. Civil Engineering, Hydraulics, Colorado State University, 1963
- B.S. Civil Engineering, Utah State University, 1961

### EXPERIENCE

#### 1975 - present Sutron Corporation

Since 1989 Dr. McQuivey has been the President and Chief Executive Officer of Sutron Corporation, the world's leading environmental monitoring and control company. From 1981 to 1989 he was the Chief Operations Officer at Sutron Corporation. Currently, Sutron Corporation has over 25,000 remote monitoring stations in operation worldwide.

Dr. McQuivey has also been called as an expert witness for litigation involving

- Texas-Oklahoma boundary dispute on the Red River in the vicinity of Denison Dam
- Water quality and sedimentation impact of strip mines along the Black Warrior River in Alabama
- Thermal regime impact of increasing the size of the Potomac Generating Plant on the Potomac River
- River migration impact on the Omaha Indian Reservation boundary along the Missouri River
- Environmental impacts of the Cornwell Pump Storage Project, Hudson River

As Vice President for Environmental and Water Resources Engineering from 1976 to 1980, Dr. McQuivey was responsible for the completion of projects dealing with

- Modeling of water and sediment transport processes
- Water quality investigations
- River mechanics and geomorphic studies
- Modeling of mixing processes in rivers
- Computer applications in hydrology and hydraulics
- Hydrology and water quality
- Real time hydrological and meteorological data collection programs including instrumentation, data evaluations and network design

Dr. McQuivey has also published many documents which are industry standards, including

- "Regulations of the Hydrologic Impacts of In Situ Fossil Fuel Recovery" as member of Laramie Energy Technology Center In Situ Hydrology Task Force



- State-of-the-art report for the Test and Evaluation Laboratory, National Oceanic and Atmospheric Administration, on taking mean and fluctuating measurements in a marine environment, primarily to study the micro and macroscale dynamic effects on current measuring transducer

## 1964 - 1975 United States Geological Survey

Beginning as a research hydraulic engineer at Fort Collins, Colorado, Dr. McQuivey progressed to Assistant Chief of the Gulf Coast Hydrosience Center at Bay St. Louis, Mississippi. He also served as Project Manager for several technical studies at the national headquarters in Reston, Virginia. Projects included:

- Flood frequency studies of natural streams, regulated streams, tsunamis and hurricane surges
- Streambank erosion survey study and selection and design of counter measures to reduce bridge losses caused by scour and bank erosion
- Develop instrumentation used for determining and assessing available water resources in the coal and oil shale regions of the United States
- Mathematical modeling of such factors as flow routing, step backwater, rainfall runoff, dispersion, diffusion, heat transfer, sediment transport, water quality, etc.
- At the Gulf Coast Hydrosience Center he managed a project that incorporated the most recent knowledge of hydraulics, fluid mechanics, and computer techniques to model transport processes of heat, mass and momentum.

At Fort Collins, Colorado Dr. McQuivey managed a project to determine flow and transport characteristics of several natural streams and conveyance channels.

Dr. McQuivey has taught undergraduate and graduate courses in hydrology open channel flow, strength of materials, fluid mechanics, dynamics and statistics at Colorado State University, as well as seminars in

- Sedimentation processes at the River Mechanics Institute, Colorado State University
- Mathematical modeling of water resources systems (including flow routing, rainfall runoff, water quality reservoir systems and groundwater) for the Ministry of Mining and Energy, Rio de Janeiro, Brazil
- Sedimentation and erosion, flow routing, controls and instrumentation, dispersion and diffusion, and hydrologic techniques for the USGS
- Computer applications in hydrology and river mechanics

## PUBLICATIONS

Richardson, E.V., McQuivey, R.S., Sandborn, V.A. and Jog, P.M., "Comparison between Hot Film and Hot Wire Measurements of Turbulence," Proc. 10th Midwestern Mechanics Conference, Colorado State University, Fort Collins, CO, 1967



McQuivey, R.S., and Keefer, T. N., "The Relation of Turbulence to Deposition of Magnetite Over Ripples," USGS Prof. Paper 650-D, 1969.

Bennett, J.P., and McQuivey, R.S., "Comparison of a Propeller Flow Meter with a Hot-Film Anemometer in Measuring Turbulence in Movable-Boundary Open-Channel Flow," USGS Prof. Paper 700-B, 1970.

Nordin, C.F., and McQuivey, R.S., "Suspended Load: River Mechanics," vol.1, edited and published by H.W. Shen, Colorado State University, Fort Collins, CO, 1971.

McQuivey, R.S., and Keefer, T.N., "Turbulent Diffusion and Dispersion in Open-Channel Flow," Internet. Symposium on Stochastic Hydraulics, Pittsburgh, PA, 1971.

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Shirazi, M.A., McQuivey, R.S., and Keefer, T.N., "Submerged Heated Water Jet Discharge, into a Coflowing, Turbulent Stream," Journal Hydraulics Div., ASCE, vol. 100, no. HY7, 1974.

McQuivey, R.S., and Keefer, T.N., "A Simple Method for Predicting Dispersion in Streams," Journal Environmental Div., ASCE, vol. 100, no. EE4, 1974.

Keefer, T.N., and McQuivey, R.S., "A Multiple Linearization Flow Routing Model," Journal Hydraulics Div., ASCE, vol.100, no. HY7,1974.

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McQuivey, R.S., and Keefer, T.N., "Application of Simple Dam Break Routing Model," 16th Congress of the International Association for Hydraulic Research. vol. 2, 1975.

Keefer, T.N., and McQuivey, R.S., "Simplified Routing of Dam Break Waves," 16th Congress of the International Association for Hydraulic Research. vol.2, 1975.



McQuivey, R.S., "Larvae-Scale Turbulence in Open-Channel Flows," 16th Congress of the International Association for Hydraulic Research vol.5, 1975.

McQuivey, R.S., and Keefer, T.N., "Dispersion—Mississippi River Below Baton Rouge, Louisiana," Jour. Hydraulics Div., ASCE, 1975.

McQuivey, R.S., and Keefer, T.N., "Convective Model of Longitudinal Dispersion," Jour. Hydraulics Div., ASCE, 1975.

Keefer, T.N., Shearinan, J.O., and McQuivey, R.S., "Discussion of 'Nonlinear Channel Routing by Computer,'" Jour. Hydraulics Div., ASCE, 1975.

Russo, T.N., and McQuivey, R.S., "Water Quality Model—Plantation Canal," USGS Open-File Report, 1975.

McQuivey, R.S., and Keefer, T.N., "Dam Break Routing Models," Rivers 76 sponsored by the Waterways, Harbors and Coastal Engr. Div., ASCE, at Colorado State University, 1976.

McQuivey, R.S., and Keefer, T.N., "Modeling Longitudinal Dispersion," Hydraulics Division Specialty Conference, ASCE, Purdue University, 1976.

Preble, D.M. and McQuivey, R.S., "Real-Time Hydrologic Data Collection System for Flood Control and Management," U.S. Committee on Irrigation, Drainage and Flood Control, Seventh Technical Conference, Spokane, WA, 21-23 October 1976.

Mero, T., Appell, G., and McQuivey, R.S., "Marine Dynamics and Its Effects on Current-Measuring-Transducers," National Bureau of Standards Flow Measurement Symposium, Gaithersburg, MD, 23-25 February 1977.

McQuivey, R.S., "Mean and Fluctuating Measurements in the Marine Environment," The Sutron Corporation, Arlington, VA, March 1977.

Keefer, T.N., Simons, R.K., and McQuivey, R.S., "Mathematical Model of the Lateral and Longitudinal Mixing Processes in Open Channels," U.S. Army Corps of Engineers, Omaha District, January 1979.

Keefer, T.N., and McQuivey, R.S., "Water Availability for Development of Major Tar Sands Areas in Utah," In-Situ Tar Sand Recovery Project, Laramie Energy Technology Center, U.S. Department of Energy, May 1979.

Environmental Protection Agency, Wastewater Research Division, Municipal Environmental Research Laboratory, Cincinnati, OH, EPA-600/2-79-156, November 1979.

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