

## **Introduction to David Venhuizen, P.E.**

David Venhuizen has promoted the use of “innovative” and “alternative” wastewater management concepts for almost two decades. His work initially focused upon collective wastewater systems. Recognizing problems inherent in conventional mechanical-biological technologies and the “regional” management philosophy favored by most engineers and system operators, he formulated a “decentralized concept” of wastewater management. Under this concept on-site systems, small collective systems, and more centralized systems could be integrated under a single management entity. Innovative/alternative technologies well suited to small scale application are favored in these systems, since even the more centralized portions of the system may be relatively small scale. Even when using collective treatment strategies, septic tanks at or near the source of wastewater generation comprise the first stage of treatment, allowing the use of less costly and more environmentally benign small diameter sewers to transport wastewater to further stages of treatment. Whenever practical, beneficial reuse of the system effluent would be incorporated into the system design under Venhuizen’s concept. Beginning in 1985, he produced a series of papers which detailed and explained the rationale for the decentralized concept, laying out in detail how this concept could produce wastewater management systems which are more fiscally reasonable, more environmentally benign, and more socially responsible than conventional practice. He has guided two decentralized concept systems through the permit review process of the Texas Water Commission (now the Texas Commission on Environmental Quality) and one such system through the facility planning process of the Wisconsin Department of Natural Resources.

Venhuizen has applied these innovative/alternative treatment concepts to individual on-site and small-scale “cluster” wastewater systems. In 1987-88, he designed and oversaw the installation of the first on-site system utilizing an intermittent sand filter for treatment and a subsurface drip irrigation field for reuse/dispersal. This sand filter treatment system was an early pioneering effort in the development of the denitrifying sand filter concept, a process Venhuizen later refined in the course of executing the facility plan for Washington Island, Wisconsin.

Over the years, Venhuizen has led efforts to “mainstream” the innovative/alternative system concepts and treatment and dispersal methods. He has designed and overseen the installation of many denitrifying sand filter/drip irrigation and a few constructed wetland/drip irrigation systems in Central Texas. He designed the sand filter research/demonstration project installed by Texas A&M University. He led the project on Washington Island in which several demonstration systems were installed and evaluated. Innovative shallow dispersal field designs and a management system for community-wide application of these strategies were also products of that project. Venhuizen wrote the initial draft of a manual since promulgated by the State of Wisconsin for design of denitrifying sand filter systems. He has also consulted to varying degrees on projects in California, Colorado, Massachusetts, Minnesota, Missouri, Pennsylvania, Tennessee, South Pacific islands, El Salvador, and Mexico. While some of his work has included research aspects, the major focus of Venhuizen’s efforts has been cost efficient real world implementation of innovative/alternative strategies.