

# Ronald A. Clarke, M.S.

---



## General

Ronald A. Clarke is a consulting environmental scientist located in the Gainesville office of Wetland Solutions, Inc. Mr. Clarke has experience in a number of environmental disciplines, including data management and analyses, water quality and biological monitoring, spring ecology, water quality treatment, and environmental permitting. He has particular expertise in aquatic ecology and water quality, and vegetation, biological, and water quality monitoring in wetlands.

## Education

M.S., Soil and Water Science, University of Florida (1995)

B.S., Soil and Water Science, University of Florida (1993)

## Distinguishing Qualifications

Mr. Clarke's professional experience includes many aspects of environmental study, including design and implementation of field studies, data management, analysis and interpretation, quality assurance and review. His work in wetlands includes water quality studies, botanical studies, wildlife inventories, nutrient assimilation studies, endangered species surveys, hydrological studies, wetland resource permitting, and wetland soil surveys.

Mr. Clarke was assistant project manager for the Wekiva River Pollutant Load Reduction Goal project for the St. Johns River Water Management District. In this project he designed and conducted field sampling efforts, collected stage, discharge, water quality, sediment, plant community, and ecosystem-level data, and prepared all data analyses and reports.

Mr. Clarke was the assistant project manager for the Silver Springs 50-Year Retrospective Study conducted for the St. Johns River Water Management District and the Florida Department of Environmental protection. He conducted one year of field data collection, including methods development, field sampling for water quality, macroinvertebrate emergence rates, macrophyte and particulate export rates, and ecosystem metabolism. Mr. Clarke developed an ACCESS™ database for historical and recent data related to Silver Springs.

Mr. Clarke served as assistant project manager for the Blue Spring Water Resource and Human-Use Value Assessment. He conducted all of the data collection and analyses for this project and assisted with field sampling and report preparation.

Mr. Clarke conducted all of the data collection and analysis of the study of phosphorus assimilation in lakes dominated by submerged aquatic vegetation (SAV) for the South Florida Water Management District. He also was the principal data analyst for the Blue

Spring minimum flows and levels project conducted for the St. Johns River Water Management District.

Mr. Clarke has utilized the Dynamic Model for Stormwater Treatment Areas (DMSTA) for numerous projects including: the Everglades Stormwater Project urban basins, Ten Mile Creek Reservoir and Polishing Wetland, Grassy Island STA, and the New Palm STA. He has extensive experience with all aspects of treatment wetland water quality data analysis and performance estimation.

Mr. Clarke led database management efforts for two projects for the South Florida Water Management District's Ecologically Engineered Systems Research Division. These projects, the Periphyton-based Stormwater Treatment Area (PSTA) and the Managed Wetlands Treatment System (MWTS), are research and demonstration projects designed to assess supplemental wetland-based technologies to reduce phosphorus loadings in agricultural runoff that discharges to the Everglades. Mr. Clarke was involved in the construction, operation, and performance evaluation of the mesocosm-scale and field-scale pilot treatment wetland systems for both projects.

Mr. Clarke assisted with the establishment of baseline monitoring programs for several treatment wetlands in Florida and Texas. He has also managed field monitoring efforts and data analyses required for permit compliance for several treatment and receiving wetlands located in Florida and South Carolina, including:

- The Boot Wetland, a 115-acre natural cypress dome wetland in central Florida receiving secondarily treated municipal wastewater since 1984.
- The Blacks Ford Swamp, a 311-acre natural receiving wetland located in northeast Florida receiving treated municipal wastewater since 1999. Mr. Clarke was involved in the baseline monitoring and wetland delineation of the Blacks Ford Swamp and continues to provide assistance with operational monitoring.
- The Harris County Beltway 8 Constructed Wetlands for Highway Runoff Treatment, a 180-acre treatment wetland located in Harris County, Texas to provide renovation of runoff from the Sam Houston Tollroad and to create a public amenity and wildlife habitat.
- The Great Swamp, a natural 480-acre riverine floodplain in South Carolina receiving treated municipal wastewater since 1998.
- The Pace Swamp, a 144-acre natural mixed hardwood swamp in northwest Florida receiving treated municipal wastewater since 1999.

Mr. Clarke was assistant project manager for the Wekiva River Pollutant Load Reduction Goal project for the St. Johns River Water Management District. In this project he designed and conducted field sampling efforts, collected stage, discharge, water quality, sediment, plant community, and ecosystem-level data, and prepared all data analyses and reports.

Mr. Clarke was the assistant project manager for the Silver Springs 50-Year Retrospective Study conducted for the St. Johns River Water Management District and

the Florida Department of Environmental protection. He conducted one year of field data collection, including methods development, field sampling for water quality, macroinvertebrate emergence rates, macrophyte and particulate export rates, and ecosystem metabolism. Mr. Clarke developed an ACCESS™ database for historical and recent data related to Silver Springs.

Mr. Clarke served as assistant project manager for the Blue Spring Water Resource and Human-Use Value Assessment. He conducted all of the data collection and analyses for this project and assisted with field sampling and report preparation.

Mr. Clarke assisted in the baseline data collection, including surface water quality sampling, ecological monitoring and identification of hydrologic indicators for several Demonstration Pilot Projects for the St. Johns River Water Management District. These pilot projects are part of the Avoidance of Impacts and Alternative Water Supply Strategies in the St. Johns River Water Management District. Two of the projects involve the direct discharge of raw groundwater to impacted wetlands, surface water diversion of storm water, and surface water retention through the removal of drainage ditching. These studies will provide an assessment of the feasibility of avoiding projected impacts to native vegetation resulting from the projected increases in groundwater withdrawals.

Mr. Clarke assisted in several literature reviews and in the development of electronic databases of wetland design, treatment wetland performance, wildlife habitat and human use including:

- Review of Treatment Wetlands for Livestock Wastewaters – Gulf of Mexico Program (GMP) - U.S. EPA. Preparation of a literature review and electronic database of treatment wetland design and performance data from confined animal operations; development of design criteria for treatment wetlands receiving wastewater from dairy, cattle, poultry, and swine operations
- Environmental Technology Initiative (ETI) Constructed Wetland Project – U.S. EPA, U.S. Bureau of Reclamation, and City of Phoenix, Arizona. Preparation of a technology assessment of surface flow treatment wetlands, an analyses of policy and permitting issues, and a literature review and electronic database of information on habitat and human use.

Mr. Clarke has led database design and management efforts for a number of environmental studies including bird monitoring in Port Arthur, TX, and Alachua County, FL Solid Waste Transfer Station; water supply wellfield monitoring for St. Petersburg, FL; and in the Treatment Wetlands North American Database version 2 (NADB v2).

Mr. Clarke assisted with the delineation of wetlands for a road-widening project along a 23-mile segment of Interstate 4 in central Florida. Potentially impacted wetlands were identified on aerial photographs and jurisdictional boundaries were verified in the field. Wetland Evaluation Technique (WET II) assessments were conducted of representative wetlands within the proposed corridor.

Mr. Clarke assisted with the identification, delineation, and classification of wetlands at the Florida Army National Guard's 70,000-acre Camp Blanding facility. Wetlands were

identified and delineated on digital aerial photographs at computer workstations. This delineation procedure greatly reduced the level of effort required to prepare wetland maps for the facility.

## Journal Publications

Martin, J.R, R.A. Clarke, and R.L. Knight. Ecological Characteristics of a Natural Wetland Receiving Secondary Effluent. Presented at the IWA Wetland Conference, Orlando, Florida. November 13-16, 2000.

Martin, J.R, C.H. Keller, R.A. Clarke, and R.L. Knight. Long-Term Performance Summary for the Boot Wetland Treatment System. Presented at the IWA Wetland Conference, Orlando, Florida. November 13-16, 2000.

Knight, R.L, R.A. Clarke, and R.K. Bastian. Treatment Wetlands as Habitat for Wildlife and Humans. Presented at the IWA Wetland Conference, Orlando, Florida. November 13-16, 2000.

Bays, J.S., R.L. Knight, L. Wenkert, R.A. Clarke, and S. Gong. Progress in the Research and Demonstration of Everglades Periphyton-Based Stormwater Treatment Areas. Presented at the IWA Wetland Conference, Orlando, Florida. November 13-16, 2000.

Knight, R.L, V.W.E. Payne Jr., R.E. Borer, R.A. Clarke, and J.H. Pries. Constructed Wetlands for Livestock Wastewater Management. *Ecological Engineering*. 15 (2000): 41-55.

Pries, J.H., R.E. Borer, R.A. Clarke, and R.L.Knight. Performance and Design Considerations of Treatment Wetland Systems for Livestock Wastewater Management in Cold Climate Regions in the Northern United States and Southern Canada. Submitted for publication.

Knight, R.L, V. Payne, R.E. Borer, R.A. Clarke, and J.H. Pries. Livestock Wastewater Treatment Wetland Database. Submitted for publication.

Borer, R.E., J.H. Pries, R.A. Clarke, and R.L. Knight. Assessing the Effectiveness of Treatment Wetland Systems for Pollutant Removal from Livestock Operations in the Southern United States. Submitted for publication.

Pries, J.H., R.E. Borer, R.A. Clarke, and R.L.Knight. Performance and Design Considerations of Treatment Wetland Systems for Livestock Wastewater Management in Cold Climate Regions in Southern Canada and the Northern United States. Submitted for publication.

Clarke, R.A., C.D. Stanley, B.W. MacLeod, and B.L.McNeal. 1997. Relationship of Seasonal Water Quality to Chlorophyll *a* Concentrations in Lake Manatee, Florida. *Lake and Reserv. Manage.* 13(3): 253-258.