



Everglades Geological Society

BULLETIN

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March 2001

Meeting This Month: March 20, 2001
6:00 P.M. at the French Connection Cafe
(social hour starts at 5:00)

Speaker: Cliff Harrison

Topic: Natural Treatment of Reclaimed Water in Tailing Sands
a Low-cost Aquifer Recharge
and Recovery Source?

FEATURED THIS MONTH

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This Month's Speaker

Natural Treatment of Reclaimed Water in Tailing Sands: a Low-cost Aquifer Recharge and Recovery Source?

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Abstract

One of the most important controlling factors to be considered when planning an aquifer recharge project within an Underground Source of Drinking Water (USDW) is the quality of the injected water. Injectate that meets potable drinking water standards is preferred, as many regulatory permitting requirements are easier (and cheaper) to satisfy with such water. Aquifer exemptions for water exceeding drinking water standards can add tens of thousands of dollars to the permitting fees. The cost of providing potable water to an aquifer recharge project, however, is often greater than the economics of the project would warrant. Treated municipal waste water (reclaimed water) and excess storm water can be readily available, but requires additional treatment in order to meet drinking water standards prior to injection.

A low-cost alternative treatment of reclaimed water and excess storm water has been developed and is in the operational testing stage. Existing features on mined phosphate land are used to provide a two-stage treatment system. Water is circulated through a 13 acre linear wetland ditch, where suspended sediments, nitrates, and phosphorous are reduced by the wetland plants and other biota. This partially treated water is then filtered through a 1.5 acre sand filter basin constructed of readily-available tailing sands, a by-product of the phosphate beneficiation process. This final “polishing” through the tailing sand filter basin is expected to reduce other water quality parameters to below drinking water standards. Inorganic constituents of the water, as well as microbial pathogens and endocrine disrupting chemicals are also targeted for removal. If long-term operational testing of the system demonstrates that drinking water standards can be met, the technology can be expanded to larger systems capable of purifying millions of gallons per day for use in aquifer recharge projects. Water thus returned to the Floridan Aquifer would be available for withdrawal at nearby or remote sites, allowing for additional ground water utilization within areas that would otherwise be off-limits to additional water resource development activities.

Biography

Mr. Harrison is a Florida native, and received his education at the University of South Florida. A Professional Geologist registered in Florida, Alabama and Mississippi, he has conducted water and mineral resource evaluations, subsurface contamination investigations and remediation, and water supply development projects throughout the Southeastern US and in the Bahamas. As Senior Hydrogeologist at Schreuder, Inc., Cliff is not only responsible for senior project management duties, but also serves as Vice-President - Operations. Several recent projects have involved innovative uses of mined lands, including the design and construction of a pilot project to purify storm water and municipal waste water to potable standards through a tailing sand filtration basin, the assessment of ground water quality in tailing sand deposits, and the development of a master water use plan for a proposed mixed-use development on and around former phosphate mines.