



EcoSummary

Lithia Springs, Hillsborough County.
Alafia River Watershed
August 19, 1998



BioRecon: A rapid, cost-effective screening mechanism for identification of biological impairment.

Purpose

Surface water samples were collected from Lithia Springs in order to gain further information on the ecological health of the watershed for use in the administration of Florida's Ecosystem Management Water Quality Assessment (EMWQAS) and Total Maximum Daily Loads programs. All work conducted by EMWQAS was conducted according to established DEP standard operating procedures and quality assurance plans.

Background

Lithia Springs is located in north-central Hillsborough County and flows into the Alafia River. It discharges an average of 1.4 m³/s and contributes up to 25% of the total flow in the river during the dry season. It is a large seawalled spring that has been operated as a public swimming area for many years. The basin is largely rural, with low to medium level residential development and agricultural landuse. A study published in 1993 by SWFWMD reported the average total nitrogen concentrations emanating from Lithia Springs to be 3.1 mg/l, due to excessive nitrates. The source of the nitrates was determined to be inorganic fertilizers applied to citrus groves, with minor animal-waste contributions (dairy).

Results

Water chemistry samples were taken just below the spring vent, in a shallow sandy area. No biological assessment was performed, but large numbers of grazing gastropods (*Elimnia*) were observed. The water was clear and aqua. The canopy was open and periphyton was abundant. Dissolved oxygen (DO) was below the State Standard of 5.0 mg/. However, we were sampling groundwater, so low DO would be expected. The total nitrogen (TN) concentration was excessive due to very high nitrate levels (2.9 mg/l). Total phosphate (TP) was quite low as compared to typical values of Florida streams. Total and fecal coliforms were well within the single-sample State Water Quality Standard.

Significance

The excessive level of nitrate-nitrogen emanating from the spring indicates contamination of the

surficial aquifer from current and/or historical landuse practices. The SWFWMD study identifies fertilization of citrus groves to be the main source of the nitrates. In recent years, residential development has increased in the vicinity of the Spring. The study speculates that increased numbers of septic tanks will likely affect the future concentrations and sources of nitrogen in the Spring. These high levels of nitrates, while they may not present a health hazard, provide nutrients for potential algal blooms and vegetative overgrowths that may result in an imbalance of fauna and flora, periodic dissolved oxygen depletion and eutrophication. This may not be evident in the Alafia River until the lower estuary portion where water velocity decreases and nutrients accumulate in the sediments

Suggestions

There is not much that can be done to reduce the present nitrate loading from Rainbow Springs, as it represents historic landuse practices, for the most part. It could take decades for the aquifer to flush out, and in the mean time residential development may introduce other potential sources of nitrogen. It is important for residents of the area to be conservative in the care of their lawns, refraining from excessive fertilization that would sustain the nitrate contamination. Maintaining natural vegetation and reducing grass lawn area can reduce the amount of fertilizer needed. The use of slow-release organic fertilizers, which are utilized more efficiently by vegetation, would reduce the amount of nitrogen getting in the ground water. Also, if future monitoring indicates septic tank effluent is affecting the Spring, Hillsborough County should pursue conversion to sewers or alternative on-site systems that more effectively remove nitrogen.

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