



Southeast District
Assessment and Monitoring Program
Ecosummary

Lettuce Creek

Martin & Okeechobee Counties

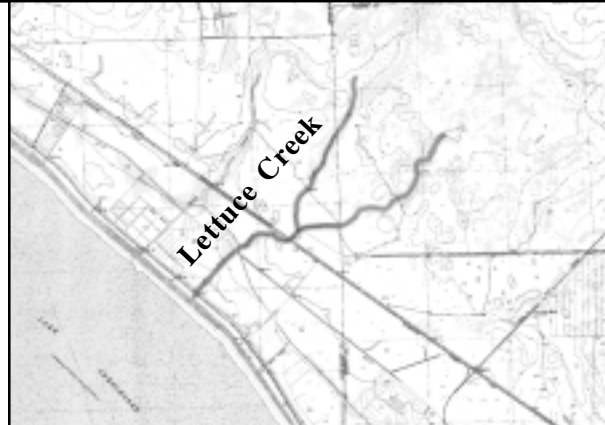
September 1999



Summary: *An excessive nutrient burden contributes to problems occurring in the receiving body of water (Lake Okeechobee) and results in a weed choked creek suffering from chronic low dissolved oxygen. Current water quality status: IMPAIRED.*

Lettuce Creek is located on the northeast side of Lake Okeechobee, where it flows into the Rim Canal on the edge of the lake southeast of the small community of Upthegrove Beach. Water control structures at S-135 and at Henry Creek Locks connect the Rim Canal to Lake Okeechobee, southeast and northwest respectively, of the mouth of the creek. Its watershed consists of a low-lying portion of southeastern Okeechobee County and northwestern Martin County.

Land use within the watershed consists of a mixture of dairy farms, cattle ranches, and small citrus groves. A narrow fringe of wetland vegetation traces its 12.5 mile



length, dominated by a thick, weedy mixture of willow, cattail, and Brazilian pepper. The surface of the shallow, turbid, eutrophic creek is generally covered with dense mats of water hyacinth, water lettuce, Salvinia, Azolla, and Hydrocotyle. The dominant large fish observed during a 1999 site inspection were spotted gar, an air-breathing species capable of tolerating chronic low dissolved oxygen conditions.

Water quality is characterized by low dissolved oxygen, averaging 3.3 mg/l for the period 1992 through 1998. However, based upon limited historical data, dissolved oxygen appears to be improving. Due to the entry of untreated runoff from adjacent landuses, phosphorus and nitrogen nutrients in the creek are elevated. Total

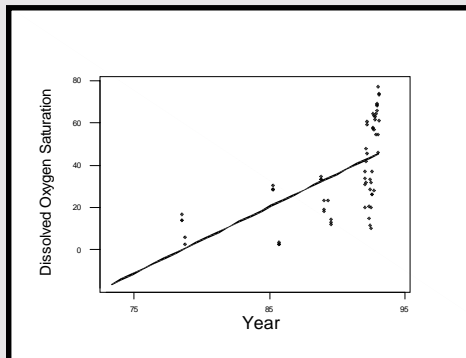
About the Lake: *Human impacts particularly in the latter part of this century have resulted in the deterioration of the Lake Okeechobee ecosystem. Excess nutrient loading has caused an increase in the frequency and intensity of algal blooms, an indicator of lake "hypereutrophication". This trend is attributed to increased total phosphorus inputs and a reduction in the lake's ability to assimilate phosphorus. Total phosphorus concentration in the lake has approximately doubled since 1973 when the lake phosphorus concentration was 0.049 mg/l.*



Myrtle Slough during the 1999 drought.

phosphorus concentration averaged 0.463 mg/l for the same period, or over four times what an acceptable phosphorus concentration might be (0.100 mg/l is often advocated as an acceptable maximum). Using historical data from as early as 1973, there is no discernible trend for phosphorus content. Inorganic nitrogen is the sum of nitrate, nitrite and ammonia nitrogen, and represents that fraction of the total nitrogen nutrient load most easily assimilable. Inorganic nitrogen is elevated, averaging 0.298 mg/l; however, there appears to be a downward trend. Within the trend of decreasing inorganic nitrogen, the fraction of nitrate-nitrite nitrogen appears to be increasing in comparison to the ammonia component. This tends to lend credence to the apparent improvements in water quality, since increased oxygen content would promote oxidation of ammonia to nitrate. These trends may be the result of implementing effective BMPs and changing landuse patterns.

The shoreline of the intermediate receiving water body, the Rim Canal, has traditionally hosted several mobile home communities and fish camps but is presently being extensively cleared and developed into more up-scale waterfront residential/resort communities. Water quality is and will continue to be an issue of concern to these communities that are oriented to fishing and other aspects of waterfront life. Controlled water exchanges between the Rim Canal and Lake Okeechobee could result in the Rim Canal becoming a sink for eutrophic stormwater discharges via Lettuce Creek and other nutrient-laden tributaries, like nearby Henry Creek. Consequently it is critical that current and future land use, such as the expanded residential developments, do not further burden an already stressed system with additional nutrients.



Historical data is spotty at best, but there appears to be an improving trend in the dissolved oxygen regime that is borne out by a similar decreasing trend in inorganic nitrogen.

Recent FDEP sample results for May 18, 1999

Dissolved Oxygen - 1.8 mg/l (violation)

pH - 6.6

Conductivity - 1313 umhos/cm

Total Phosphorus - 0.219 mg-P/l

Total Nitrogen - 0.48 mg-N/l

Inorganic Nitrogen - 0.07 mg/l

For more information: Contact the Southeast District Surface Water Quality section in Port St. Lucie at 561/871-7662, or by email:

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