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(R-5) PROJECT REFERENCE CITY OF PORT ST. LUCIE MUCK REDUCTION IN E-8 RETENTION AREA v2

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Aquatic Vegetation Control, Inc. (AVC) provided an operational evaluation reducing muck in a 10 acre Storm Water retention area (E-8) for the City of Port St. Lucie, FL.

Project Description

- Owner: City of Port St. Lucie
- Contracting Agency: City of Port St. Lucie
- Project Location: South of Saint Lucie Blvd near Darwin
- Project Size: The STA retention area was 10 acres and the treatment area was 10 acres.
- Project Purpose: Reduce the muck bottom to improve the physical characteristics of the cell including capacity, flow and aesthetics. The ultimate objective is to provide a solution to address runoff and resuspension of organics and reduce the trophic state index.



STA Description:

STAs are designed to store water and remove nutrients (mainly phosphorus) before it is moved into St Lucie River's natural ecosystems. The E8 waterbody was filling in with organic detritus. The objective for this project was to create more capacity and reduce the eutrophication of the lake

Materials:

Aquatic Vegetation Control, Inc. set up a 250 gallon Bio-Generator with a 100 watt solar panel on the shore near the treatment site. The delivery pump and aerator were put online to aid in the augmentation process.





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Bio-Incubator - Field Evaluation Methods

- **Inoculation Methods**
- **Bacteria can be incubated in a bio-incubator and distributed directly as living organisms with active enzymes.**
 - Temperature can be controlled.
 - Product can be bacteria, food, spores in sock.
 - 4.5 lb. Socks are exchanged monthly.
- **Monitoring Methods**
 - Permanent stations designated.
 - Quarterly sediment depth measurement taken with meter stick/Tube.
 - Depth measured to nearest Cm.
 - Muck and Water Sample Analyses.

Methods:

AVC installed the Bio-Zyme product in the 250 gallon tank and distributed the finished product in the 10 acre treatment area weekly for a period of eight months.

Results:

The treatment prescription was to apply 250 gallons of incubated Bio-Zyme per week to the 10 acre trial area. This continued through January of 2016. The first photo shows the clean lake surface and healthy emergent plants. The impacts of the Bio-Zyme Program moved with the flow of the water downstream covering over 3 times the acreage treated. The bottom organic sediments were reduced from 19 cm to less than 4 cm in a period of eight months. The sediments on the bottom today are too low to measure. The water clarity is greatly improved. The area is a great for birding in abundance and species of birds. The fishing is also superb, judging by the amount of fish-eating birds present.

Port Saint Lucie E8 Basin Organic Sediment Removal

(Each point is an average of 3 plots with 4 measurements per plot)

