

PUBLIC WORKS DEPARTMENT



ROADS-STORMWATER DIVISION

MEMORANDUM

DATE: October 24, 2006
TO: Kathy Moore, MSBU Program Manager
FROM: Gloria Eby, Senior Environmental Scientist
RE: Lake Amory Management Plan

On May 28, 2005, Dean G. Barber (Florida Department of Environmental Protection) and Gloria Eby (Seminole County) surveyed the aquatic plants in Loch Arbor (Lake Amory). This assessment was conducted prior to the HOA meeting that evening to address the resident's vegetative concerns. At this meeting, the MSBU Program was introduced as a funding option.

Currently Lake Amory is divided by large masses of vegetation, primarily burhead sedge (*Scirpus cubensis*) and water hyacinth (*Echnoria crassipes*). Mechanical harvesting of such biomass would be beneficial. Many undesirable plants species are present in Lake Amory (elephant ear, hyacinth, alligator weed, cattail, torpedo grass, etc.); herbicide application (with a maintenance plan) followed by shoreline native plantings would be beneficial.

Lake Amory contains a large variety of submersed native vegetation, which is presently out-competing hydrilla. By removing the native plants, hydrilla will become the dominant species, requiring more costly chemical applications and grass carp stocking. Avoidance of this scenario was stressed at the HOA meeting.

Removal of organic sediments (excavation) in Lake Amory was addressed by Dean Barber and was deemed attainable for the removal of nutrients within the lake. Since Lake Amory is 10 acres, a permit would not be required by FDEP Bureau of Invasive Plants for the removal/treatment of vegetation or the removal of up to 3 feet of organic muck.

Technical Recommendations:

1) **Mechanical Removal of Vegetation** – Remove large areas of mixed vegetation from the northwest cove into the canal to West Crystal Drive then extending south into the larger open area of Amory, removing tussock of cattails.

2) **Excavation of Organic Sediments-** Remove areas associated with vegetation to a maximum of 3 ft. or to the natural mineral substrate, whichever is less. Permit is exempted under Florida Statue Chapter 403.813.(r).

3) **Improve Shoreline Area-** Lake Amory has a large amount of exotic shoreline emergent vegetation, in particular elephant ear, hyacinth, alligator weed, cattail, and torpedo grass. A whole lake management plan should include the cost to chemically treat these exotic species and replant with beneficial natives (such as pickerel weed, duck potato, spikerush, etc.). After initial clean-up of Lake Amory, residents should concentrate efforts on shoreline restoration with funding assistance through the MSBU program.

4) **Hydrilla-** Lake Amory contains a large variety of submersed native vegetation, which is presently out-competing hydrilla. By removing these natives, hydrilla will become the dominant species, requiring more costly chemical applications and grass carp stocking. Grass carp have been stocked in this 10 acre lake in the past (1985 & 1999). There is an old grass carp barrier fence located off of West Crystal Drive that would need replacement due to extensive hurricane damage.

5) **Integration-** Using triploid grass carp as a long term management concept integrated with herbicide treatments. Using grass carp to manage hydrilla through a longer period will decrease the chance that too much aquatic plant biomass is removed too quickly, thus preventing an algae bloom. An algae bloom can reduce light getting to submersed plants, killing more aquatic vegetation than wanted which may cause the lake to stay green for an extended period of time (months, years). Stocking should be conducted during the winter months to reduce mortality. Grass carp stocking rate should be restricted to 2-4 fish per acre.

6) **Continue Lake Amory Association Meetings-** Elect a Board of Directors and/or officers, have meetings at the frequency that is necessary, monthly, quarterly or annually. Frequency could be dependent on the type of problem. Consider establishing documents for the association. Invite guest speakers to talk the group about the watershed and best management practices that can aid in the reduction of nutrient runoff. In addition, each year the Association should have an annual meeting with all of the owners around the lake, inviting the agencies (FDEP, FFWCC, County). The agency representatives should again survey the lake and make up to date recommendations. Part of the recommendations should be whether to add more grass carp or modify herbicide management. This will help insure that the maintenance level can be balanced to control the emergent and submersed vegetation insuring the success of the long term management plan.

7) ~~MSBU— Decide whether to establish an MSBU with the county (recommended) or informally collect funds among the residents to manage the lake. Completed!~~

Approximate Costs:

Seminole County Funding:

Through McClane Excavating Company, the cost of mechanically removing vegetation and organic sediments in the previously specified areas totals \$74,750.00. This will be funded through the Seminole County Lake Management Program. Hauling and tipping fees estimated at approximately \$10,000.00 will also be funded through the Seminole County Lake Management Program. Seminole County's total Lake Amory Restoration Project cost is \$84,750.00.

MSBU Funding:

Grass carp cost approximately \$12.00 per fish plus stocking/transportation fees of \$150.00. This does not include costs for the new construction of a grass carp barrier necessary for FFWCC permit compliance. The demension of the barrier is 18ft. wide by 4ft. high. Cost of construction is approximately \$1,500.00. Once installed, the barrier must be frequently inspected and maintained insuring that it is free of debris and not cause upstream flooding.

Shoreline maintenance treatments should be conducted on a monthly basis for the first year. Costs can range from \$500.00 to \$800.00 per treatment dependent on company rates.

Replanting has been recommended for 2 large areas in Lake Amory (northwest cove off of Lake Blvd. and the littoral zone by Mayfair Country Club). Due to existing conditions, these areas should receive initial herbicide treatments followed by replanting of beneficial natives. Approximate plant material costs for these areas are \$3,000.00 (uninstalled). Assistance can be provided though Seminole County's Outreach Program Coordinator, Marie Lackey (407-665-5766), by organizing planting events with the residents of Lake Amory to reduce labor costs, however lack of participation would require funding from the MSBU Program for installation services. These activities are not funded through the Lake Management Program.