



Orson
Environmental
Consulting

Consultant Team:

Nelson, Pope & Voorhis/Nelson & Pope

B. Laing Associates

Dr. Chris Gobler, SoMAS

Dr. Richard Orson



B. LAING ASSOCIATES

Feasibility Study to Eradicate Aquatic Invasive/Nuisance Species in
Canaan Lake, North Patchogue and
Upper and Lower Lakes, Yaphank



Lower
(Lily)
Lake

Steering Committee Start-up Meeting
September 16, 2009

Project Overview

September 2, 2009 – April 30, 2011

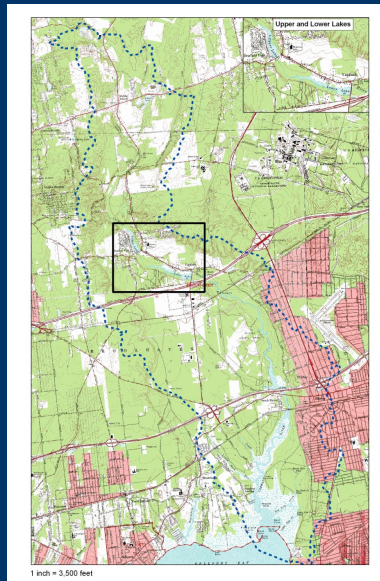
- **Task 1: Lakes Characterization & Existing Conditions** *(Draft - Spring 2010; Final - Fall 2010)*
- **Task 2: Management Alternatives** *(Draft - Summer 2010; Finalized Winter 2010)*
- **Task 3: Meetings & Stakeholder Involvement** *(Steering Committee Meetings: Interim - Winter 2010, Progress - Summer 2010, Wrap-up - Winter/Spring 2010/11, Final - Spring 2011; Public Meetings: Spring & Summer 2010, Final in late Fall 2010)*
- **Task 4: Options for Fish Passage at Upper & Lower Lakes** *(Draft - Winter/Spring 2010; Finalized Fall/Winter 2010)*
- **Task 5: Annual Reports and Public Summary** *(Finalized Spring 2011)*
- **Task 6: Establish & Maintain a Public Domain Website** *(ongoing)*

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Task 1a: Watershed Area & Characterization

- To be delineated & characterized for land use and geography
(Variety of land uses and pollutant sources within surrounding area)



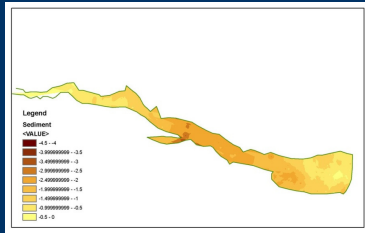
Task 1b: Water Quality Review, Monitoring & Sediment Composition

Existing Data

- 2007 Depth & Sediment Maps (A. Graves, Town)
- Sept'09 Water Quality Data (CSYL, BNL, Town, Boy Scout Troop 433)
- Oct/Dec'08 Water Quality Data at Upper Spillway (SCDHS)

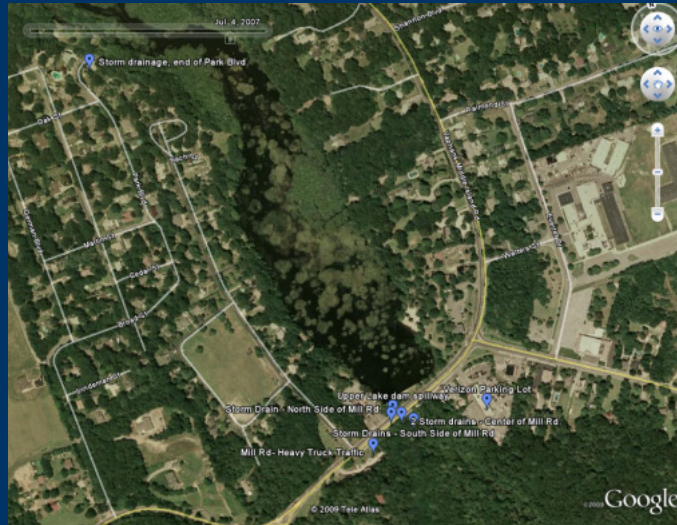
Proposed

- 4-season water quality sampling
- Potential cyanotoxins
- Sediment assessment
- Current Macrophyte Map



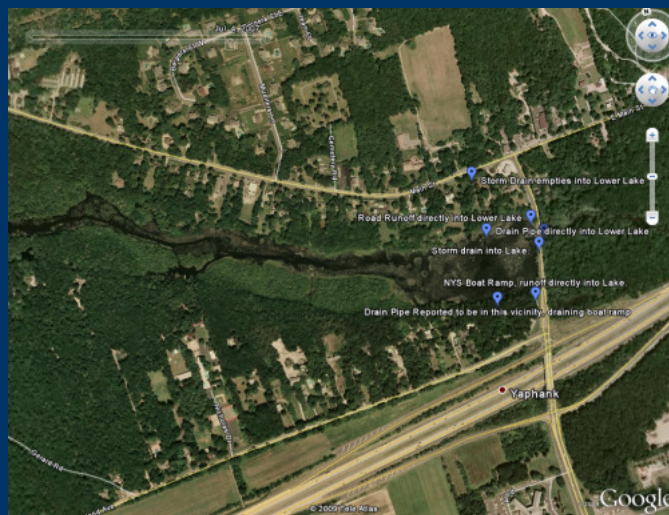
Task 1c: Bathymetry, Pollution Sources, Dams, Bulkheads & Living Resources (cont'd)

Upper (Willow) Lake – Stormdrains into River (Coalition, June 2008)



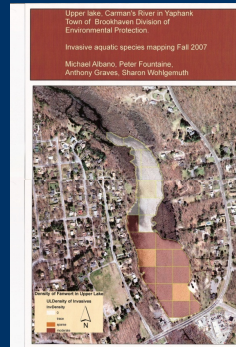
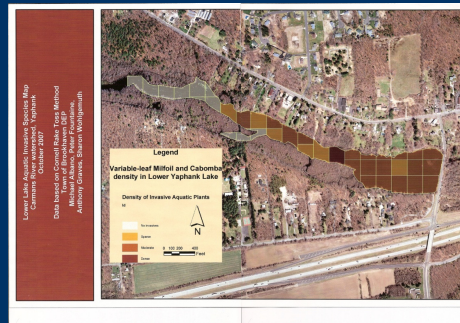
Task 1c: Bathymetry, Pollution Sources, Dams, Bulkheads & Living Resources (cont'd)

Lower (Lily) Lake – Stormdrains into River (Coalition, June 2008)



Invasive Species Survey for Upper and Lower Lake

- 2007 Invasive species surveys (Michael Albano, Peter Fountaine, Anthony Graves, Sharon Wohlgemuth – Town DEP)
- 2006 Aquatic Plant Inventories (S. and N. Kishbaugh – DEC; K. Schwager, S. Dobbertin, E. Gibson - TNC)
- Species targeted include
 - Fanwort (*Cabomba caroliniana*)
 - Variable Watermilfoil (*Myriophyllum heterophyllum*), *also...*
 - Common Reed (*Phragmites australis*) ???



Task 1d: Underwater Land Ownership, Legal Designations & Example Plans

- Research underwater ownership & designations
- Assess success of Harvester in Lily Lake
 - *Also utilized on Willow Lake?*
- Literature review of available nuisance plant alternatives and management plans
 - Genetic Lineage of Yaphank's Milfoil (lake management of similar strains)
 - NY Aquatic Nuisance Species Task Force
 - NYSDEC Invasive Species Task Force
 - Adirondack Park Invasive Plant Program
 - Invasive Plant Council of NYS
 - NY State's National Aquatic Nuisance Species Clearinghouse & Bibliographic Database
 - Lake Champlain Basin Program
 - North American Lake Management Society (NALMS)
 - CT Experiment Station Invasive Aquatic Plant Program (CAESIAPP)



Peconic: Queen on Lily Lake – April, 2009

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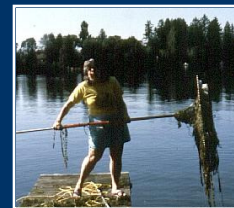
Task 2: Management Alternatives

- Matrices to assess alternatives (Pros/Cons/Costs)

- Dredging
- Aquatic herbicide
- Shading (chemical dyes)
- Mechanical harvesting (*existing*)
- Benthic barriers (blanketing)
- Hand/suction harvesting
- Drawdown
- Water level manipulation
- Biological control (grass carp)
- Dam removal/modification
- Combination
- Management of Cyanobacteria
- No action

- Impacts Analysis

- Direct/Indirect Impacts
- Maintenance Effort/Cost
 - Short & long-term control
- Regulatory Requirements/Considerations
- Community Support



Build on Existing Information – Work With Stakeholders –
Equally Assess ALL Options – Work Toward Consensus



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Task 3: Meetings & Stakeholder Involvement

- Coordination with:
 - Suffolk County
 - Carmans River Task Force
 - Town of Brookhaven
 - Local Councilperson
 - Coalition to Save the Yaphank Lakes
 - Other Stakeholders (e.g. residents)
- Public Education (& Collaboration) to
 - Tell a Story (e.g. Historical Modification)
 - Learn modes of introduction
 - Control inoculants
 - Instill responsibility
- Meetings
 - Steering Committee (for each lake)
 - 1 start-up (*September 2009*)
 - 1 interim (*January – March 2010*)
 - 1 Progress (single meeting at end of Tasks 1 & 2) (*June – July 2010*)
 - 1 wrap-up (*January – February 2011*)
 - Public Meetings (for each lake) – *County to publicize two weeks in advance*
 - 1 initial to highlight existing conditions; discuss options (*April – May 2010*)
 - 1 interim to build consensus toward preferred alternative (*July – August 2010*)
 - 1 additional final (if necessary, to assist in selecting alternative) (*Oct. - Nov. 2010*)



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Task 4: Options for Fish Passage at Upper & Lower Lakes

- Dams inventoried by NP&V in 2007 (SSER Barrier Inventory/Prioritization Project)
- Prior Engineering/DPW Rehabilitation Reports (e.g. 2007 Dam Inspection Report for Upper Lake - PWG Engineering)
- Previous options considered & funded, but never proceeded
- *Fresh Look* with public meetings to gather input & build consensus
- Partner with USFWS through formal DEC request
- Additional conceptual alternatives by N&P/OEC



Upper Lake Dam, as seen from Mill Road.

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- Task 5: Annual Reports and Public Summary
 - *Public summary to be provided with final annual report & published on website*
- Task 6: Establish & Maintain a Public Domain Website
 - *Up and running shortly!*



The Consultant Team



Nelson, Pope & Voorhis/Nelson & Pope

- SSER Fish Barrier Inventory
 - Including Upper & Lower Lake Dams
 - Habitat assessment; GIS Database; Barrier Prioritization
- Lake Agawam Comprehensive Management Plan
 - Worked with Dr. Gobler (wq & nutrient inputs)
 - Shoreline inventory, stormwater improvements
 - Heavy community involvement; public education
- Lake Ronkonkoma Clean Lakes Study Update
 - Nutrient inputs/sources; management strategies
- Mt. Sinai Harbor Management Plan
 - Balancing recreational, commercial, ecological & residential uses
 - Diverse stakeholders
- SC North Shore Embayments Watershed Management Plan
 - Strategy to achieve required nitrogen reductions (Long Island Sound TMDL)
 - wq/natural resource characterization; pollutant loading models



An Owner's Guide

Lake Agawam
It's Your Lake

Published by:
Stony Brook University
Office of Environmental
Management
100 North Street
Stony Brook, NY 11790

Your Lake Needs You

The delicate ecological balance of Lake Agawam has been upset by everyday human activities - fertilizing our lawns, feeding our birds, and driving our cars. The Village of Town of Southport are working to address some of the environmental problems around the lake, but this alone cannot ensure the lake's health. All of our actions are responsible for the lake's decline, it will take everyone's help to improve its health. Here are some suggestions:

- **REDUCE NUTRIENT**
 - Use natural sources of fertilizers and pesticides, preferably use toxic organic materials (e.g. copper, bordeaux, alk. sul.) and reduce lawn fertilizing within 125' of the lake.
- **MAINTAIN YOUR SEPTIC SYSTEM**
 - Have a septic check every 1-2 years and pump as needed.
 - Don't use additives or pour chemicals down the drain or pour them into lawns, ponds, etc.
- **RECYCLE**
 - Recycle all waste in a RECYCLING CENTER.
 - Pick up your trash.
 - Clean up any spilled fertilizer or chemicals that fall on land surfaces.
- **RESOLVE VILLAGEDIFFERENCES**
 - Don't leave it to the bitter end, unless permitted for better management.
 - Maintain a 50' natural buffer between your lake and the lake.
 - Try some of our lake cleaning suggestions inside this pamphlet!

B. Laing Associates

Artist's Lake, Yaphank, NY

- Control strategies for elodea and water milfoil (*Myriophyllum sp.*)
- Chemical, harvesting and triploid grass carp considered. Chemical selected.



Private Lake, Ossining, NY

- Problem: coontail (*Ceratophyllum demersum*).
- Nutrient/sediment controls, chemical, harvesting, dredging, water flow, water level, benthic smothering and carp considered. Nutrient/sediment controls, aqua-shade and water flow revisions recommended.



Private Lake, Sullivan County, NY

- Problem: American lotus (*Nelumbo lutea*), Phragmites, purple loosestrife.
- Water level controls, targeted bio release, spot backpack chemical controls used.

Black Pond, Bedford, NY

- Problem: coontail (*Ceratophyllum demersum*).
- Dredging, nutrient/sediment controls, water level control and open water expansion used.

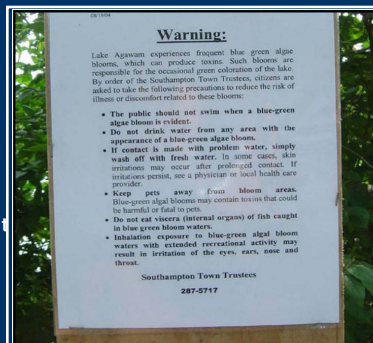
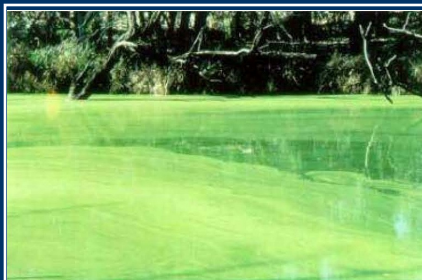
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Lake Agawam

- Water quality monitoring
- Cyanobacteria inventory
- Pollutant loading analysis

Suffolk County Cyanobacteria Study

- Not documented on Long Island until 2003
- Assessed multiple lakes throughout County
- Encountered several lakes with elevated levels at times unsafe for public health



Orson Environmental Consulting

Jordan Mill Pond Fish Passage Project, Waterford, CT (2005)

- 15 foot high stone dam at head of Jordan Cove
- Design/funding/installation of Alaskan Steep Pass Fishway

Ingham Hill Fishway, Old Saybrook, CT (2006)

- Design/installation of steep pass fishway & "elevator" in Oyster River Basin

Saugatuck River Fish Passage Enhancements, Westport, CT (2006)

- Installation of rock fish ramps and modified oil booms to direct fish to entrance pool and around obstructions

Wallace Dam, Wallingford, CT (ongoing)

- Modeled/designed denil fish pass to bypass 8' stone dam on Quinnipiac River
- Project manager for proposed installation
- Community Lake to remain
- Remote video feeds proposed to monitor fish

Supply Ponds Fish Passage, Branford, CT (2007)

- Design/funding/installation of steep pass fishway on Branford River
- Rock berm to direct fish in to entrance pool
- Automated fish counters in place

Nissequogue River Feasibility Study (in early stages)

- Restoring fish passage, beginning at North Dam
- Alternatives include relocating dam, installing fish ladder, or circumventing dam with old bypass channel



Fish Ladder at Jordan Mill Pond, Waterford, Connecticut, installed using settlement funds from the RTC 300 of spill.

