Attachment F.

Eagle Lake Invasive Species Management Plan

Problem Statement

- A satellite image showing the major infestation areas is provided in the 2003 GPS EWM survey of Eagle Lake. See page 20 of Grant Application.
- Many individuals have done formal identification of EWM in Eagle Lake over the years. Included in the application is a copy of the 2001 Army Corps letter and a copy of 1998 DFWI Baseline Aquatic Plant Survey. Both indicate EWM presence. See pages 5 and 29 of Grant Application respectively.
- EWM was first identified in Eagle Lake in the late 70's. Since that time it has spread from one site to become 49 major patches covering more than 8 acres of the lake.
- EWM grows in water depths from 2 feet to more than 30 feet; at present it impairs shoreline swimming and boating access to the lake by property owners. There are several mid lake patches that present navigational obstacles to those using the lake for water-skiing, tubing and jet skiing. Most of the patches of EWM are extremely dense and have out competed the native vegetation. At these sites the EWM has formed monoculture stands with no chance for the native vegetation to survive. Fish habitat in these areas has also been noticeable altered. See photos on pages 74 and 77 of the Grant Application.
- The unchecked spread of EWM around the shoreline and the impairments it presents to swimming and lake access by boats has produced concerns of decreased property values.
- Aquatic plant surveys in the 1980's and follow up surveys in the 1990's have found 3 plants that are on NYS RTE species list. The DEC lists one of these in their database and the 1998 DFWI Baseline Aquatic Plant Survey lists the other two. See page 29 of the Grant Application.

Management History

- The ELPOI's efforts for control over the past 25 years have focused mostly on securing adequate funding and permits to be able to deal with the extensive problem of EWM in Eagle Lake. By the time EWM was "formally identified" and its distribution in the lake surveyed in the early 80's by the DFWI, its populations were extensive enough that it was suggested that a "whole lake" treatment with an herbicide would be the only economically sound way to control the plant. In the time since various funding sources have been sought to pay the estimated $100,000 cost for this control method, some funds were gained and then subsequently lost for various reasons. The ELPOI has also worked as partners with COLAM and the LGA to seek the appropriate permits for herbicide treatment during this same time period. The discussions leading to the ultimate granting of an herbicide use permit in the Adirondacks are still on going.
- Early requests by homeowners to seek solutions such as localized hand harvesting and matting along their shoreline turned up the need for them to obtain a required permit to complete this. Early permits were cumbersome to get and very

restrictive and as such most shoreline owners allowed the plant to grow unchecked. A few property owners have practiced selective hand harvesting of isolated EWM plants in front of their own property and have been successful in preventing these isolated plants from becoming a major patch.

- Due to the inability to secure sufficient funds for a herbicide treatment and no movement towards the granting of a herbicide use permit in the Adirondacks, in 2004 ELPOI choose to present an alternate plan to its membership to spend the funds that they had secured on an attempt to hand harvest and mat some of the smaller dense patches of EWM. In 2005 Non-Jurisdictional letters were secured from the APA and DEC, surface air dive equipment and collection bags were purchased and divers were hired to start the hand harvest trial. Evaluation after 2 different early Fall dive sessions by the divers and the project coordinator showed this method to be effective for removal of isolated plants around a dense patch, but very ineffective on the dense patch itself. Matting was not attempted in 2005, as was part of the original plan, because final Non-Jurisdictional letters were not received with sufficient time to hire divers for this task. A follow-up swim over of the 2005 work site is planned in 2006 to see the effectiveness of hand harvesting. Plans in 2006 are to continue the hand harvesting of isolated plants and to start the matting process of small dense beds.
- As a result of a noticeable decline in the amount of "toping out" of EWM in the late 90's, several samples of EWM were sent to herbivore specialist Bob Johnson @ Cornell University for evaluation. Bob reported that the year 2000 samples supported "significant" populations of Acentria Moths and Weevils. A follow-up lake survey by Bob in July of 2001 yielded "no herbivore activity". Several samples of EWM have been analyzed in subsequent years with varying degrees of herbivore presence. General observations of the EWM patches show varying degrees of herbivore damage from one year to the next, but only limited control of EWM.
- ELPOI's membership as a whole has been very active in seeking solutions to the control of EWM. Members have attended various conferences around NYS and in the Northeast. They are active participants in various organizations that deal with invasives and in general have kept themselves educated with regards to EWM's spread and control. During the two different dive sessions in 2005 they contributed over 80 hours of volunteer labor to help with the removal process.
- Several ELPOI members, concerned enough about the issues related to the destruction that EWM can do to the natural balance of a lake's ecosystem, worked to form the group COLAM.
- Both towns, Ticonderoga and Crown Point, have been very involved with the ELPOI in their efforts for EWM control. Both towns were instrumental in securing the required Non-Jurisdiction letters from the DEC and APA for hand harvesting and matting, the Town of Ti paid for several plant surveys and the Town of Crown Point currently administers the $25,000 Aid to Localities Grant that was awarded to the ELPOI in 2000.
- A more detailed overview of ELPOI's past 25 year effort towards the control of EWM can be found in the "History of Milfoil 70's to 2005". See page 44 of the Grant Application.

Management Objectives

- The long-term goal for the eradication of EWM from Eagle Lake would be to remove it from the whole lake. The reality of control at the moment is localized and limited. The goal is to demonstrate that both divers and lay property owners working together can control isolated plants and small dense beds using hand harvesting and mats. It is also a goal to see that a minimal disruption to the current herbivore populations occurs so that the delicate natural balance between insects and their food supply remain. And lastly there is the goal for wide spread control of EWM using the best available herbicide to treat the largest and densest patches.
- Removal of isolated plants will slow or stop the development of dense "native vegetation killing-patches" of EWM. Knocking down the smaller dense bed with mats will make these sites more manageable for follow up with hand harvesting as necessary. It will also allow lake users to swim and boat in these areas with reduced fear of entanglement in EWM or of chopping it up with their boats, further spreading it within the lake. Treatment with an herbicide would allow this reduction in impairment on a larger scale.
- Critical areas to protect would include: the natural breading grounds for fish and native vegetation, including the rare, threatened and endangered plant spices in all shallow water to depths of 30 feet. Without adequate control measures for EWM these environments will all be lost to dense EWM monocultures.

Management Alternatives

- Ken Wagner of ENSER, completed a "Site Specific Environmental Impact Study" in the 90's as part of the plan for Eagle Lake to be a demonstration site for the use of Sonar. As part of this study ALL control measures available at that time were looked at. Ken Wagner's conclusion, based on the distribution and density of EWM then, was for a whole lake treatment with the herbicide Sonar.
- Localized control by hand harvesting and matting, as stated prior, is effective but time consuming and is best suited for use on very "limited in size" infestations.
- Altering lake levels by more than a few inches via drawdowns, etc. is not only impractical for Eagle Lake but also destructive to the native plants and aquatic life that live in the shallows in and around the lake.
- Mechanical harvesters, roto-tillers, etc., even at their best, typically do more harm than good by fragmenting and subsequently spreading EWM. Eagle Lake is not at a point yet where "paths" need to be cut to allow access to deeper plant free waters.
- Biological control through the introduction of grass carp is also not appropriate to Eagle Lake as the carp tend to eat 5 or more varieties of native vegetation before they eat EWM and would disrupt both the natural and stocked fish populations. Bob Johnson states that a lake that has EWM will eventually have Acentria Moths and Weevils. Eagle Lake fits this statement. These herbivores have knocked down "balanced out" some of the EWM found in Eagle Lake, however the number of patches and their sizes have increased dramatically since damage from the herbivores was first observed and their presence documented. Moths and Weevils

however will only bring a "limited natural balance" to the EWM, i.e.they will never consume their entire food supply and populations of herbivores and EWM will cycle.

- Chemical control with a selective herbicide in a site-specific application promises to have the greatest impact for control of EWM. The use of curtains and/ or slow release products increases the selective nature of this type of application. Site-specific treatment however will allow plants growing beyond the specific area to survive and repopulate the treated site.
- For the most part, the "no action" control of EWM has taken place on Eagle Lake for the past 25 years except for the previously mentioned limited isolated plant removal by shoreline homeowners. During this time the number of patches went from one to almost 50 documented patches, some of them covering over a ½ acre of lake bottom with nothing but a dense monoculture EWM. Continued practice of this method will eventually result in a lake that has all its shallow water area covered with nothing but EWM. Tim Ladue commentated (after a Fall 2004 swim over of several EWM patches, done to provide advice to the ELPOI for their 2005 hand harvest program) that the EWM on Eagle Lake was growing in such a manner that it was trapping sediments and producing it own growing medium in addition to growing in the "normal" silt and sand bottom.
- The integration of hand harvesting, matting, naturally occurring herbivores and the use of a selective herbicide is the preferred method of control for EWM on Eagle Lake. This approach would allow each of the methods to be exploited to its fullest potential.

Pre, During and Post Treatment Actions Planned

Monitoring

- Several aquatic plant surveys have been done on Eagle Lake one; in 1932, one in 1989 and several of them through the 90's. The 1989 survey was completed by Larry Eichler and others of DWFI, to first survey the plant diversity in Eagle Lake and secondly to map the early distributions of EWM in the lake. The follow-up surveys in the 90's were completed as part of the 1996 proposed "Sonar demonstration project" as part of a proposed whole lake treatment scheduled for the spring of 1999. The latter surveys looked at two different sites and utilized a grid pattern laid on the bottom of the lake. Plant counts in these areas were subsequently made and repeated over several years. The full report from the 1990's surveys is included in the Grant Application, see page 29.
- The ELPOI joined the CSLAP water quality-testing program in early 2000 as a way to formally document and supplement some of the water testing that the ELPOI members were completing in-house. For more than 30 years the ELPOI has consistently taken water samples at various lake locations, testing for both analytical contents and the presence of fecal coliform (a potential indicator of failed septic systems). In the late 90's the ELPOI also initiated and completed an on-site wastewater (septic) system dye test. Over 80% of the lake residents' systems were tested and none were found to be failing.
- The ELPOI plans to continue both CSLAP and in-house analytical testing. This will be supplemented as necessary and/or conditions warrant in the future.

Early Response

- Since the reality of total eradication is not possible, early response to EWM's localized re-growth is not a huge concern. A swim-over of previous work areas is however planned, with "touch up" being completed as/if necessary. Attention will be focused on training those shoreline property owners who have not yet experienced EWM growth in front of their own properties, both in plant identification and proper hand removal techniques so that a rapid response can be made should EWM be found.
- The ELPOI is active in informing current/future lake residents as well as transient lake users of what threats EWM and other invasives pose to the lake environment and the measures lake users can take to prevent their spread. ELPOI publishes a newsletter and communicates with its membership and other interested parties several times a year listing the efforts that ELPOI's membership has completed towards meeting their goals.

Source Management

- In the late 80's the ELPOI members recognized the need to inform transient lake users about the dangers of removing EWM and accidentally transporting it to other waters. In an attempt to minimize this ELPOI petitioned the State for and received permission to erect a sign-board with some "first in the state" ELPOI member-developed posters depicting EWM and how to prevent its spread at the unmanned boat launch and at the DEC, boat access only, beach. They also installed 2 small signboards near the causeway where transient users often spend time fishing.
- The NYS DOT made changes to the catch basins along route 74 in the early 2000's to better trap some of the sediment that is deposited along the lake edge from road sanding/ salting. Other than sedimentation that comes from localized wave action over all shoreline erosion is a negligible problem due to the density and extent of coverage of native shoreline vegetation.

Evaluation of Efficacy (Did it work?)

- Once a year the ELPOI holds it annual membership/ lake residents meeting. Much of the discussion is related to EWM; its spread, various control methods, funding needs, etc. The topic of fishing; fish stocking, catching, eating, etc., is also enjoyed. I'm sure that as this control project is undertaken, the members/residents will discuss the observed successes and failures as they relate to these 2 topics and many others. This dialog will provide a foundation to help the membership and others judge the success of the program.