Star Lake

Problems, Issues, and Solutions

Community Meeting, Aug 24, 2009

Friends of Star Lake (FOSL)
Dottie Finnerty & Ron Unterman

Problems

1. Overgrowth (eutrophication)
   - Invasive plants (e.g., Eurasian Milfoil)
   - “nuisance” indigenous (native) plants
2. Low water level
   - increases plant growth
   - impacts recreation
3. Dam integrity
   - safety
   - impacts water level

(4.) (Beach upkeep)

Adverse Impacts on:

- Swimming
- Boating
- Fishing (two-sided issue)
- Property values
  - both Lakeside and Community
- Beauty (albeit, subjective !)

Programs with VT DEC

- 1st 5-Year Plan (2004-2008)
  - focus was on Eurasian Watermilfoil
  - chemical treatments & handpulling
  - generally successful for E.m.
- 2nd 5-Year Plan (2009-2013)
  - continue to control E. milfoil
  - BUT, ALSO MUST focus on nuisance native plants

Our Revised Objectives

1. Establish a balance between the natural process of lake eutrophication and human (recreational) activity
2. Manage Star Lake as an open waterbody !!

- "In the view of Indiana University Limnologist David Frey... almost every fresh-water lake in the world awaits the same unhappy fate. Like humans, says Frey, lakes grow old and inevitably die, in a predictable life span that man himself is abbreviating." "...this haunt of fishermen will be gone, with nothing but a bog to mark its grave."
  - http://www.time.com/time/magazine/article/0,9171,895650,00.html


Keeping Star Lake an
open waterbody

Problems #1

1. Overgrowth (eutrophication)
   - Invasive plants (e.g., Eurasian Milfoil)
   - "nuisance" indigenous (native) plants

   We need to control BOTH

2. Low water level
   - increases plant growth
   - impacts recreation
3. Dam integrity
   - safety
   - impacts water level

In VT, 280 lakes are >20A --- 61 have E. Milfoil (& 15 rivers)

Is It Time to Turn to Herbicide?

7/27/09

By John Woodrow Cox
Valley News Staff Writer

West Fairlee — Residents in the three towns that border Lake Fairlee — Fairlee, West Fairlee and Thetford — have long resisted the use of herbicide to help eradicate an invasive plant that has taken hold there.

But after efforts to control Eurasian milfoil for several years through non-chemical means has proven marginally effective, some residents think the intruder's march through the popular vacation spot has reached a crisis point.

"I'm afraid if we don't do something drastic we will lose control," said Skip Brown, a West Fairlee resident and Lake Fairlee Association member who's headed the milfoil issue for the group in the last three years.

Fairlee residents have already reached the same conclusion about another nearby body of water, Lake Morey. In 2007, they voted 96-60 in support of using a weed-killing chemical to control milfoil. After three years of state-permitted treatment, Lake Morey Commission Chairman Don Weaver called the effort a "success story."

That success has made some Lake Fairlee supporters wonder if they should also go the way of an herbicide.

At the milfoil's peak in 2004, Weaver said, it covered about 90 acres of Lake Morey, and the weed now resides in fewer than eight. As predicted by scientific studies, Weaver said, the chemical has caused no fish kills, has promoted

See Morey — A9

Valley News — Monday, July 27, 2009

Milfoil Expanding at Lake Fairlee

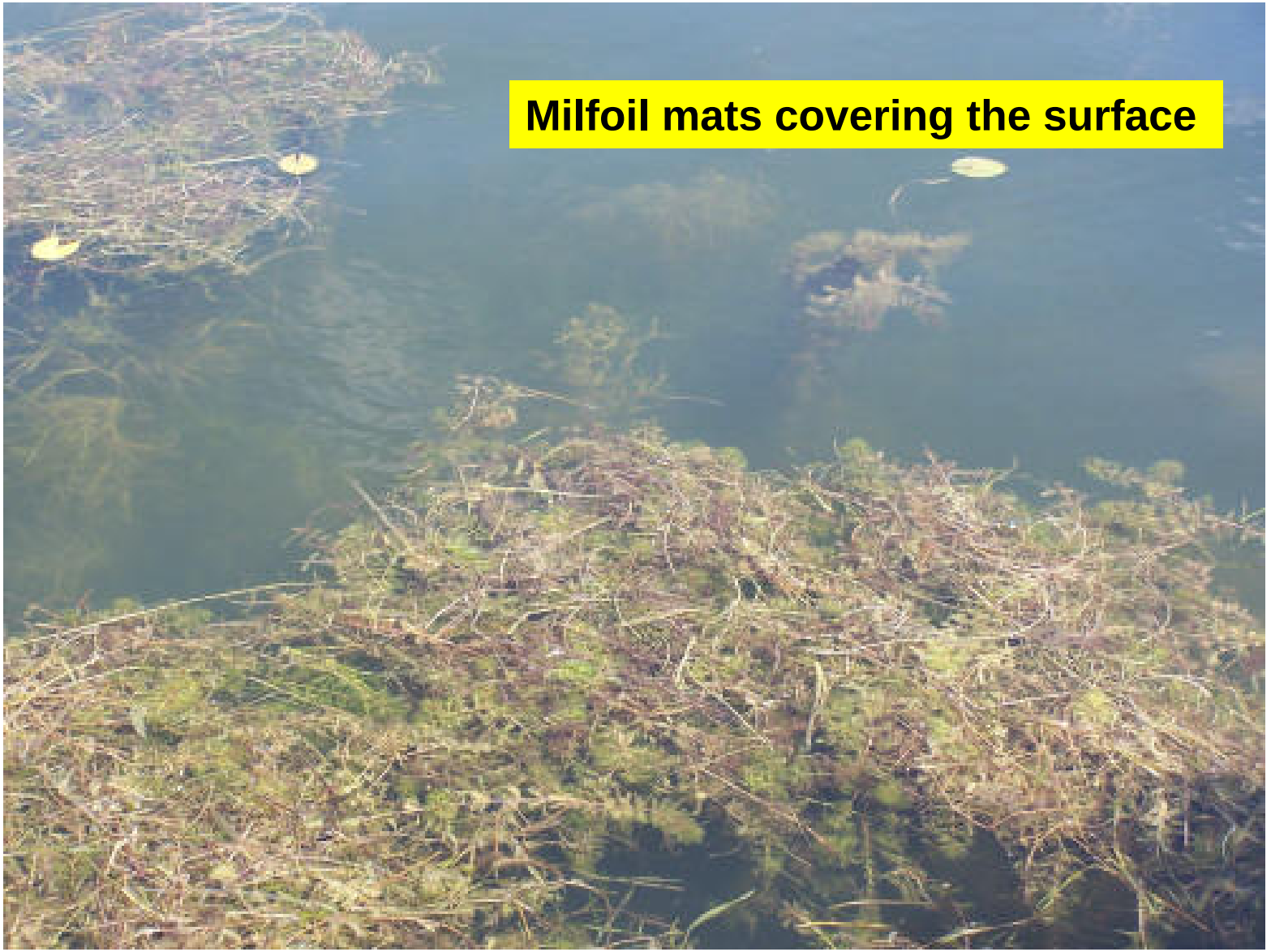
Continued from Page A1

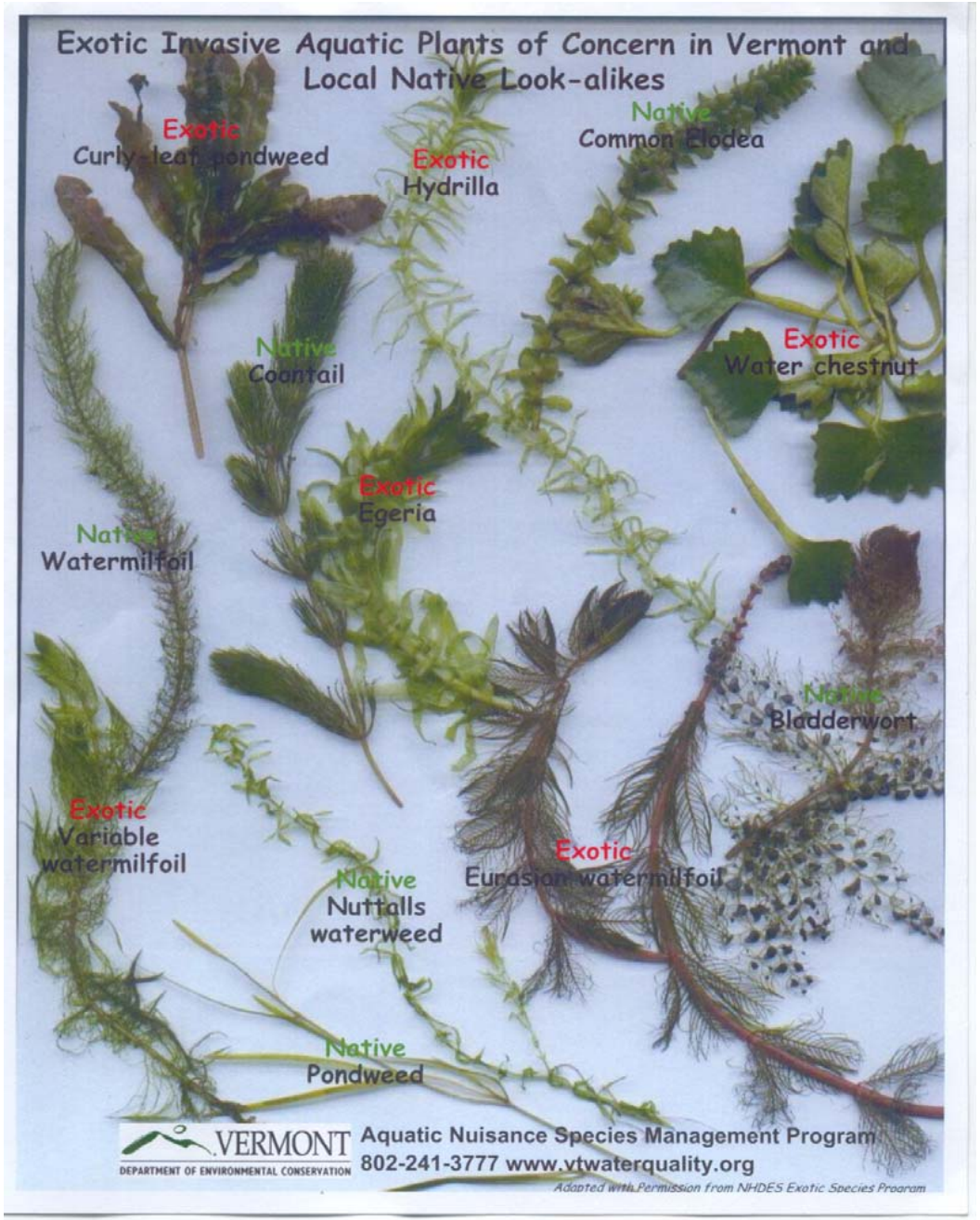
native plant growth and has freed the water of the stringy strands that once made swimming and fishing impossible in many areas.

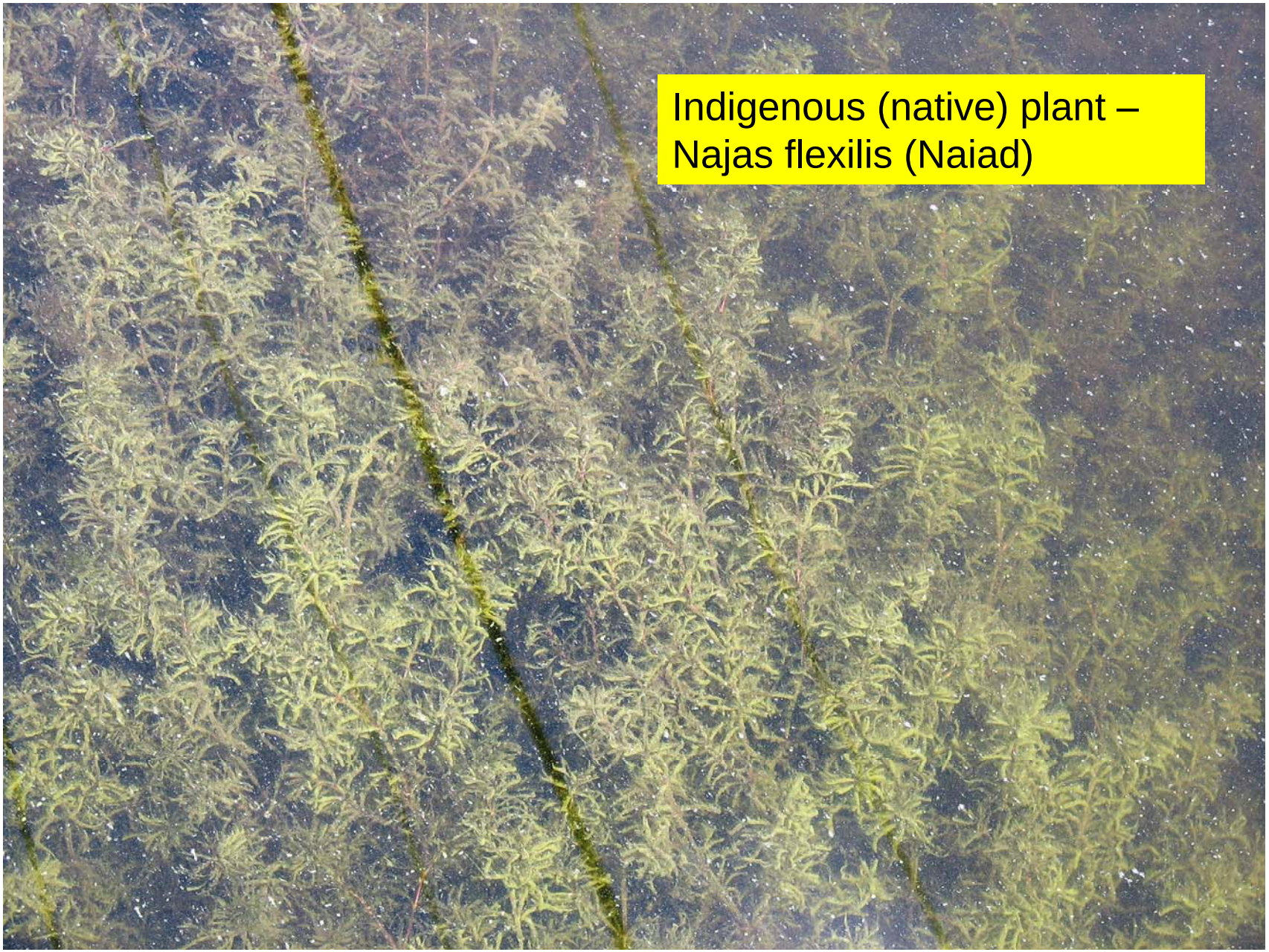
"We love this lake," Weaver said. "It's good to see it return to the way it should be."

Aaron Gilbert of Thetford, who works as a courtesy "milfoil inspector" on the weekends, checks incoming and outgoing boats for the weed and hands out information on how to prevent spreading it. He finds milfoil on three to four of the 10 to 15 boats that pull out from the boat launch each day, but said that because milfoil often fragments, it could

Eurasian Watermilfoil (“Milfoil”)


Milfoil mats covering the surface


Exotic Invasive Aquatic Plants of Concern in Vermont and Local Native Look-alikes
Exotic
Curly-leaf pondweed
Exotic
Hydrilla
Native
Common Elodea
Native
Coontail
Exotic
Water chestnut
Exotic
Egeria
Native
Watermilfoil
Native
Bladderwort
Exotic
Variable watermilfoil
Exotic
Eurasian watermilfoil
Native
Nuttalls waterweed
Native
Pondweed
VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Aquatic Nuisance Species Management Program
802-241-3777 www.vtwaterquality.org
Adapted with Permission from NHDES Exotic Species Program


Indigenous (native) plant –
Najas flexilis (Naiad)

Issues – Plant Overgrowth

- Nutrients
  - Phosphorus is the target, ("N,P,K")
  - from run-off (roads, fields, & lawns)
  - wildlife poop !! (2009 – thanks, Dottie ☺)
  - buffers
- Water level (see dam issues below)

Sherman buffer


Quinn buffer (VAST trail)
Asking residents to maintain wider lakeside buffers

Control Technologies

- Hydro-raking (1989)
- Biological treatment (~ 1999 weevils)
- Hand pulling (numerous volunteers and 2006 prof. divers)
- Chemical treatment (2004 “Sonar”; 2007 ”Renovate”)
- Suction harvesting
- Mechanical harvesting (NOT where E.m.)
- Bottom barriers (first considered in 1998; for beach area)
- Landside buffers & no fertilizer (lawns, fields)
- Dredging (won’t happen !!)
- Repair the dam – raise Lake level

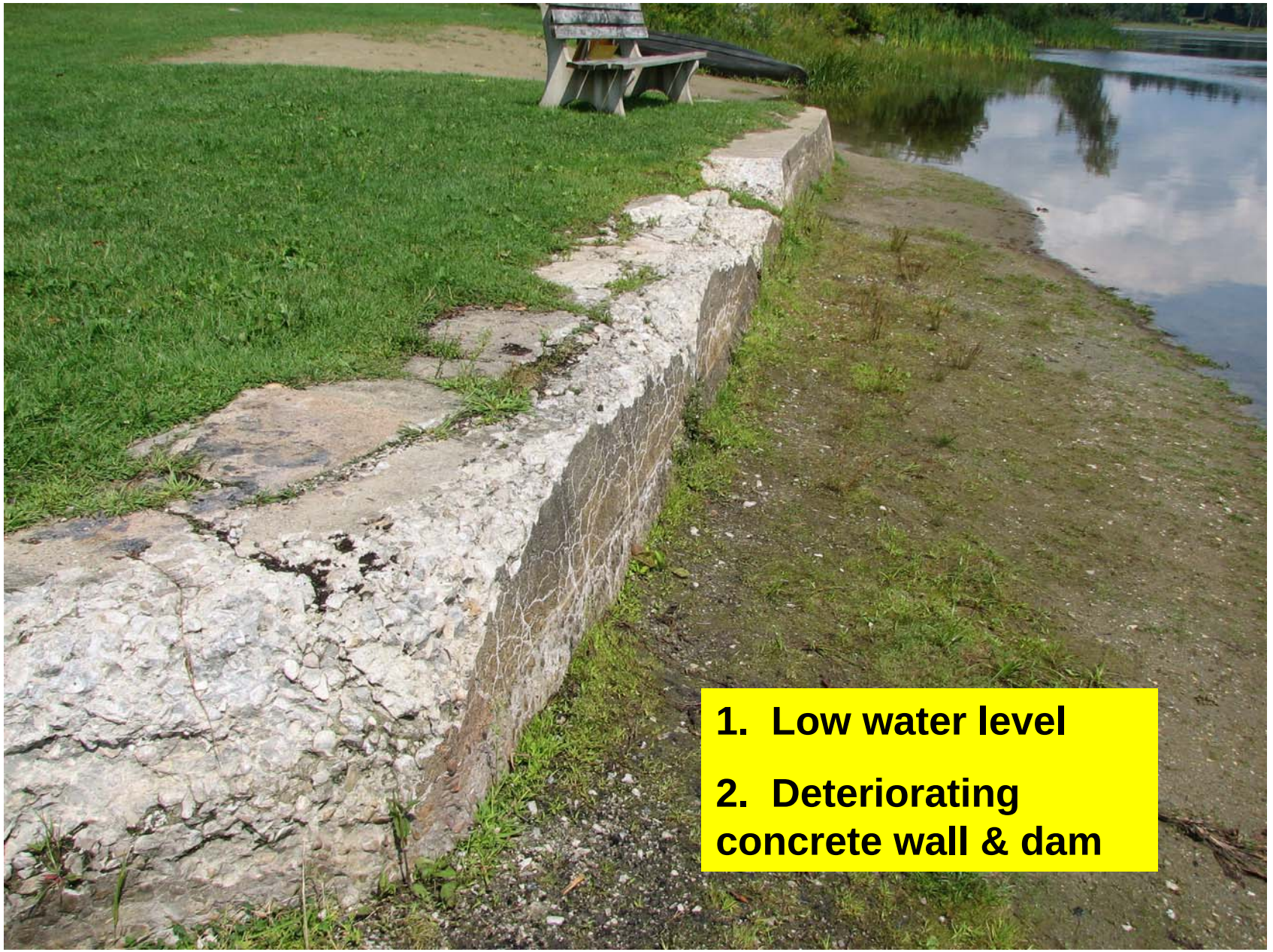
FOSL's consultant

1. harvesting
2. harvesting & herbicides
3. just herbicides

4. if needed for beach, bottom barrier

Problems #2

1. Overgrowth (eutrophication)
   - Invasive plants (e.g., Eurasian Milfoil)
   - “nuisance” indigenous (native) plants
2. **Low water level**
   - increases plant growth
     - warmer water
     - deeper sunlight
     - shorter weed length to surface
   - impacts recreation
     - swimming, boating, fishing
3. Dam integrity
   - safety
   - impacts water level


1. Low water level
2. Deteriorating concrete wall & dam


No “stop” boards so low water level

Problems #3

1. Overgrowth (eutrophication)
   - Invasive plants (e.g., Eurasian Milfoil)
   - “nuisance” indigenous (native) plants
2. Low water level
   - increases plant growth
   - impacts recreation
3. **Dam integrity**
   - safety
   - impacts water level

Issues -- Dam

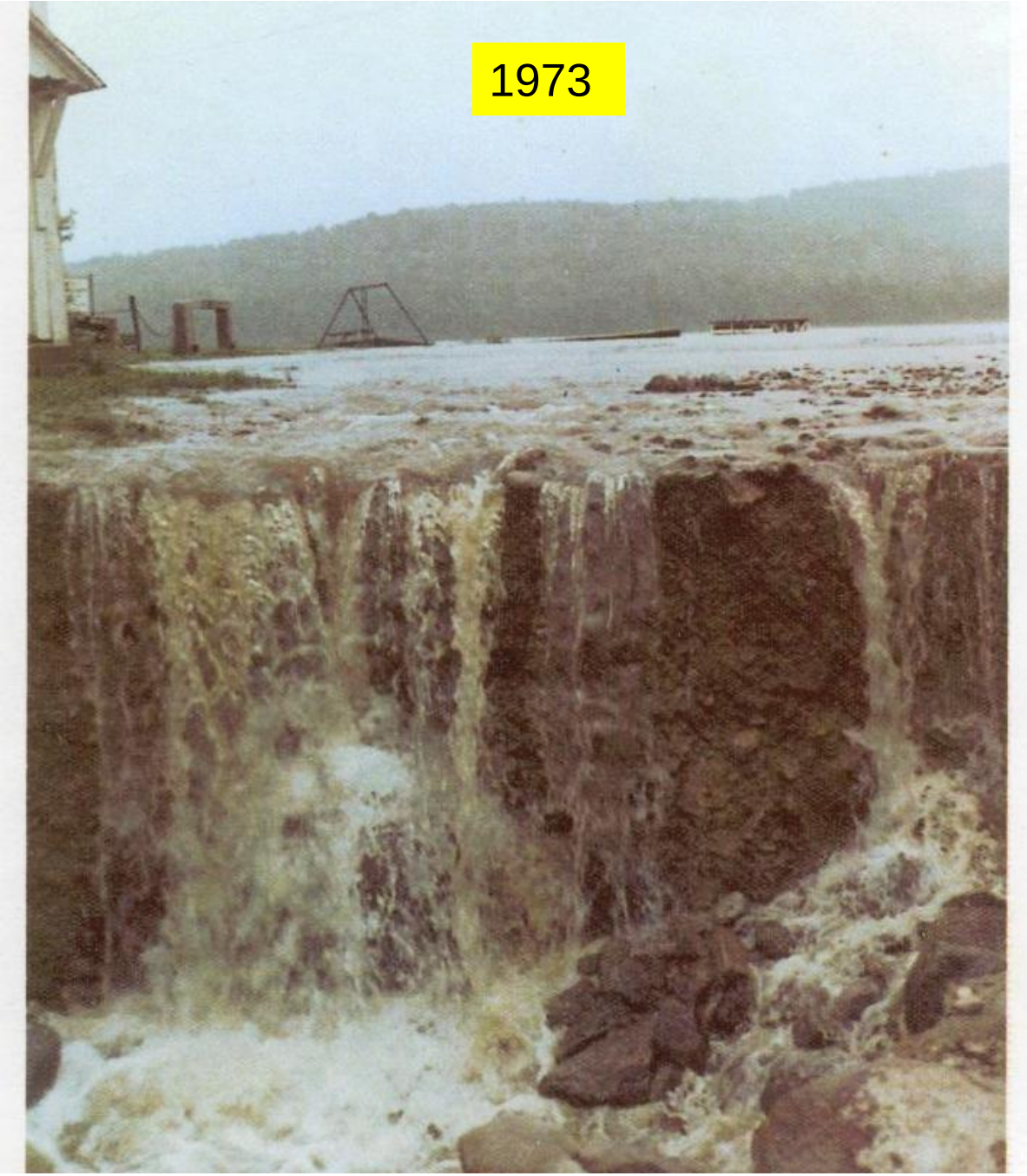
- First built in 1790, last rebuilt in 1947
- Floods of 1927, 1938, 1973 overtopped the dam
- Annual VT DEC safety inspection (2008)
  - dam is in “poor” condition


2009
LAKE STREET


1973
STAR LAKE


1973


2009


1973

Issues -- Dam

- First built in 1790, last rebuilt in 1947
- Floods of 1927, 1938, 1973 overtopped the dam
- Annual VT DEC safety inspection
  - dam is in “poor” condition
  - remove all stop logs (i.e., lower the Lake)
  - remove foot bridge (!!!) to allow full overflow


STAR LAKE
Bridge height could affect spillway flow

Issues -- Dam

- First built in 1790, last rebuilt in 1947
- Floods of 1927, 1938, 1973 overtopped the dam
- Annual VT DEC safety inspection
  - dam is in “poor” condition
  - remove all stop logs (i.e., lower the Lake)
  - remove foot bridge (!!!) to allow full overflow
  - repair cost -- $250k-500k ??

Summary

1. **Overgrowth (eutrophication)**
   - **Invasive plants (e.g., Eurasian Milfoil)**
   - **“nuisance” indigenous (native) plants**
2. Low water level -- Dam
   - increases plant growth
   - impacts recreation
3. Dam integrity -- Dam
   - safety
   - impacts water level

(4.) (Beach upkeep)

Going Forward

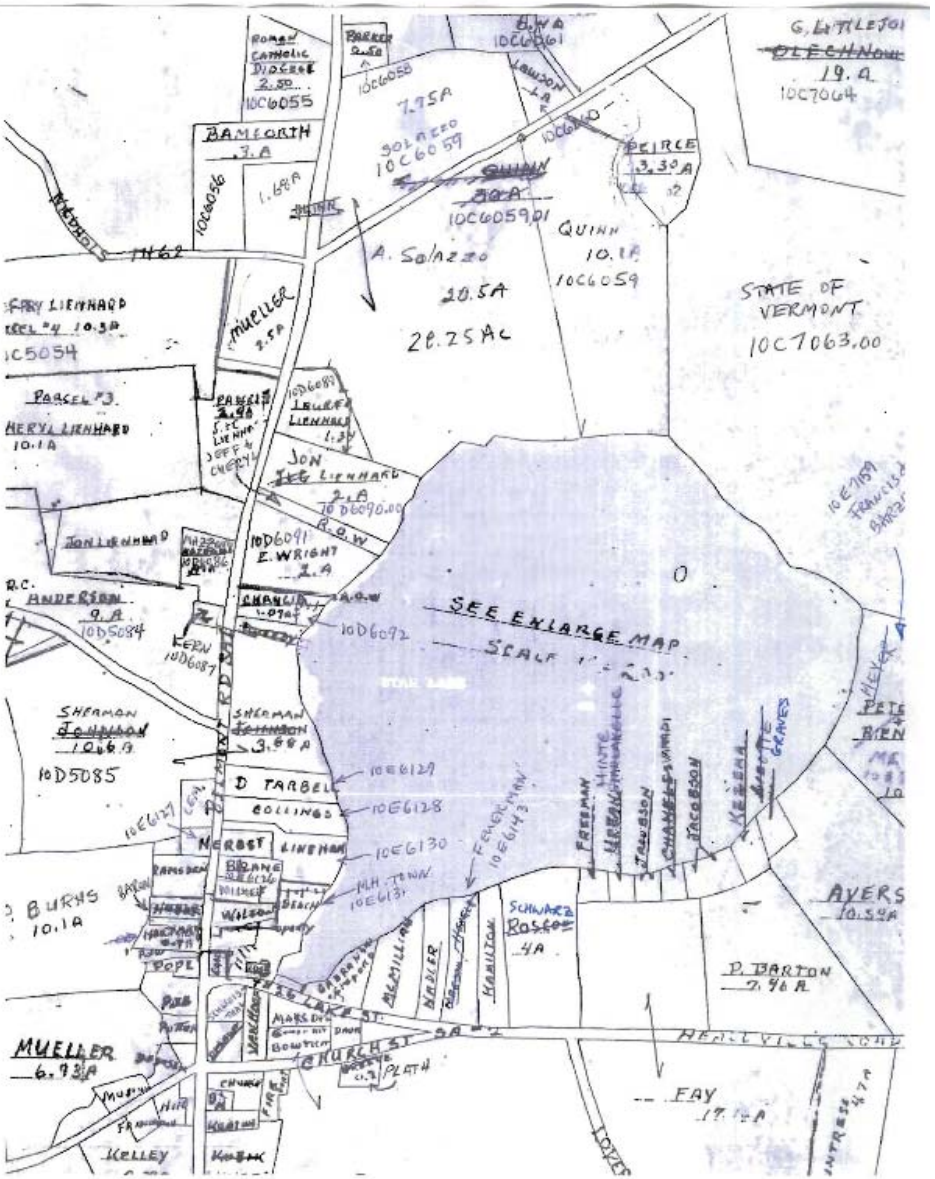
- How much can we do
  - What % of lake should be open surface
    - “canopy layer”
    - 30-40% coverage
  - What % of lake is treatable, and where
- Cost
  - This will be annual outlay
  - $10,000 to $50,000 per year
  - VT DEC grants available, but only % of cost

Control of Plant Overgrowth --- areas to focus on

- Beach & boat launch area
  - First, remove all E.m.
  - Then pull or “harvest” all indigenous invasives
- Lakefront home access points
  - keep open shorefront for lakeside residents
- Boating, Fishing & swimming
  - Keep an open access lane across the Lake
  - Limit growth in center areas
  - Objective – 60-70% open surface

What we can do.....

Lakeside residents



What we can do

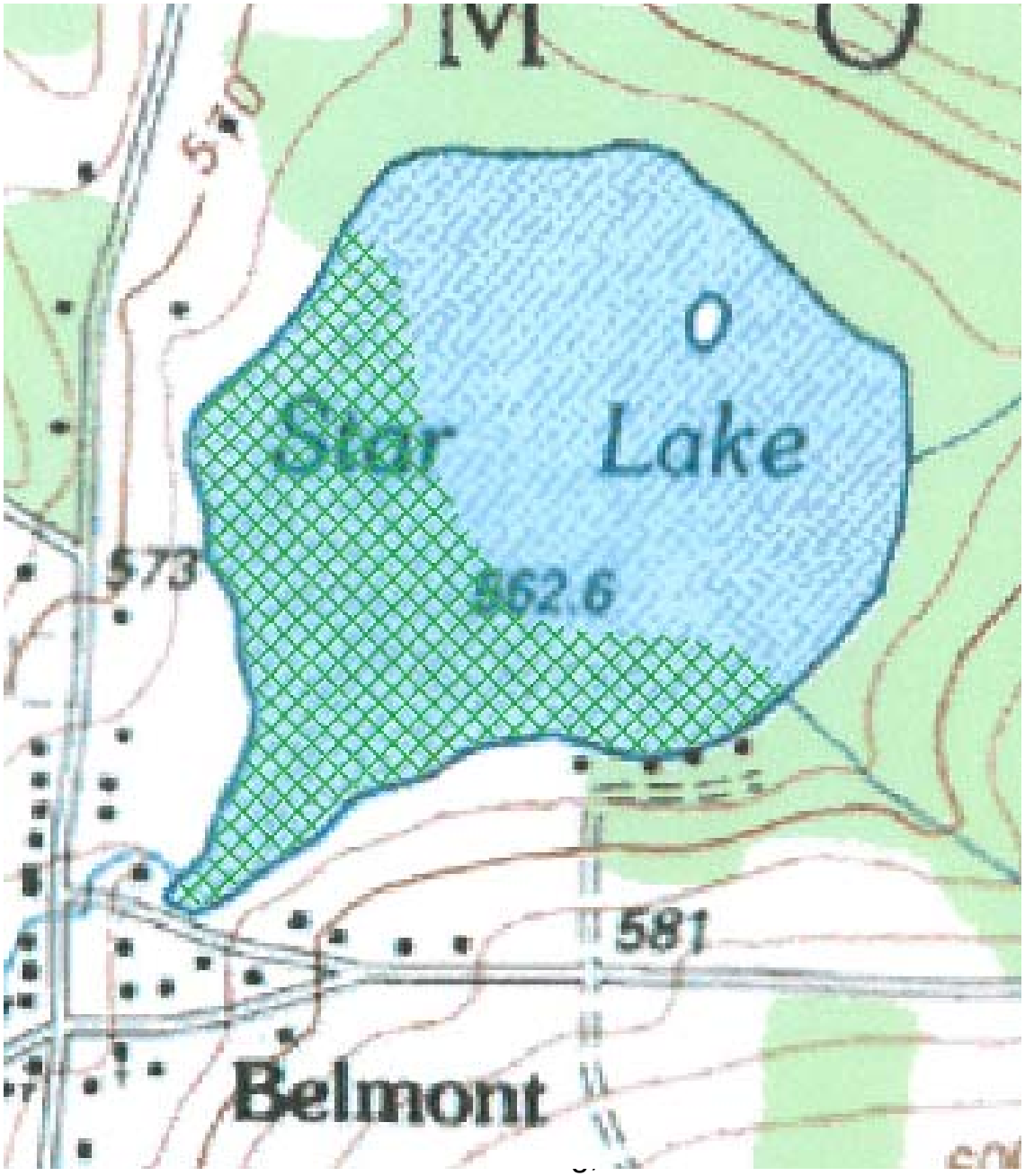
- Lakeside residents
  - Maintain a 20 ft. vegetation buffer – use a narrow corridor for boat and/or beach access
  - Don’t fertilize lakeside lawns
  - Control erosion
  - Harvest native weeds at your shoreline (****HOWEVER, if E.m. ask FOSL for help)

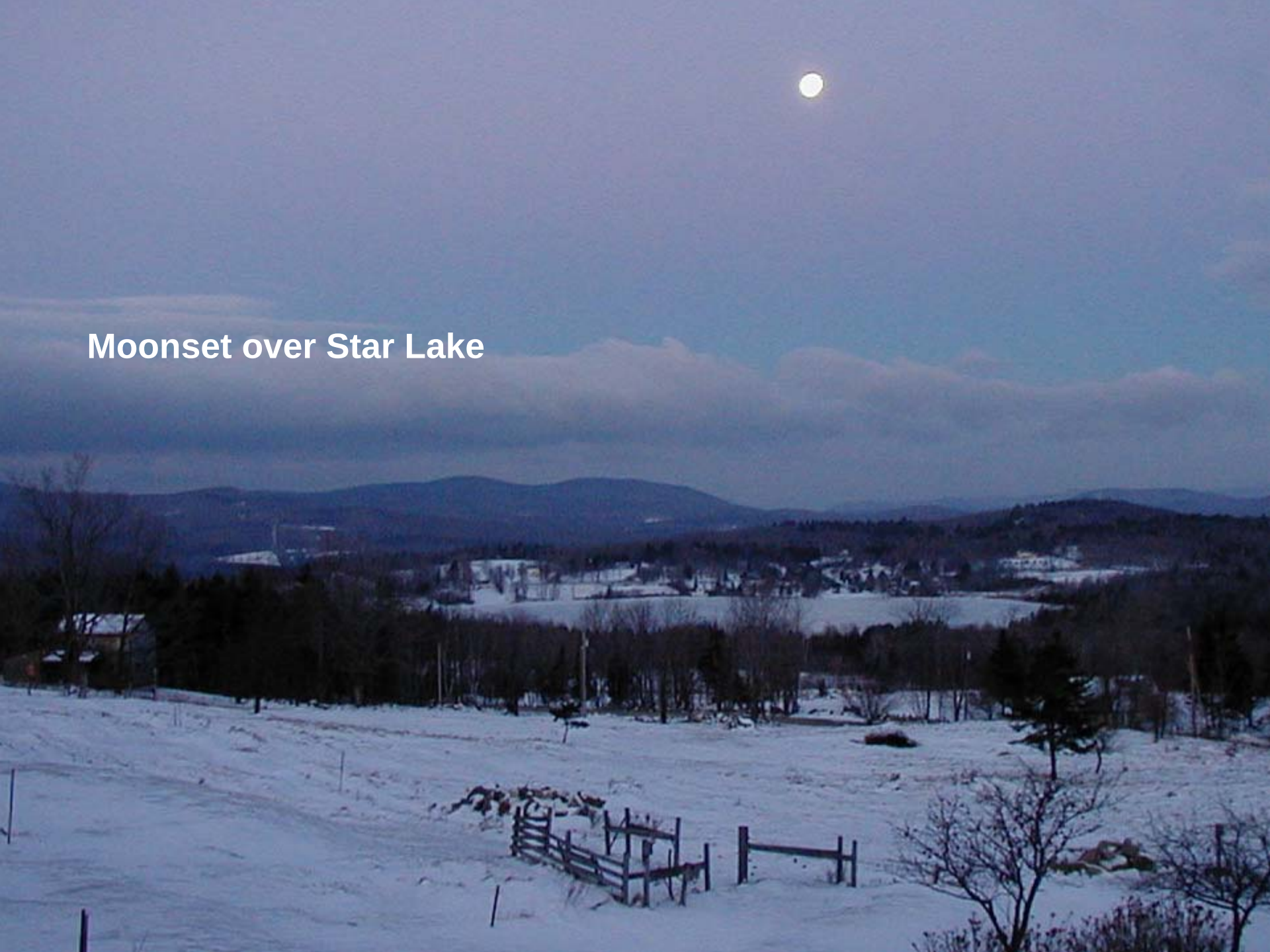
What we can do, cont.

- <u>All residents & friends</u>
  - Clean your boats to prevent invasives transfer
  - Help FOSL for swimming area weed control
  - Volunteer (hand pulling, monitoring)
  - Contribute to FOSL's funding efforts – this will take money !!

What we can do, cont.

- FOSL
  - continue working with DEC (2nd 5 yr plan)
  - obtain 2010 permit for treatments
  - 2010 Phosphorus monitoring
  - Milfoil & nuisance weed monitoring
  - contact lakeside residents re buffers
  - swimming area weed control
  - boating and shoreline weed control
  - raise funds !! (separate from State Dam funds)


570
Star
Lake
573
562.6
581
Belmont


Moonset over Star Lake

Post card dated June 6, 1915


Star Lake...
its future is in our hands
".....with nothing but a bog to mark its grave."