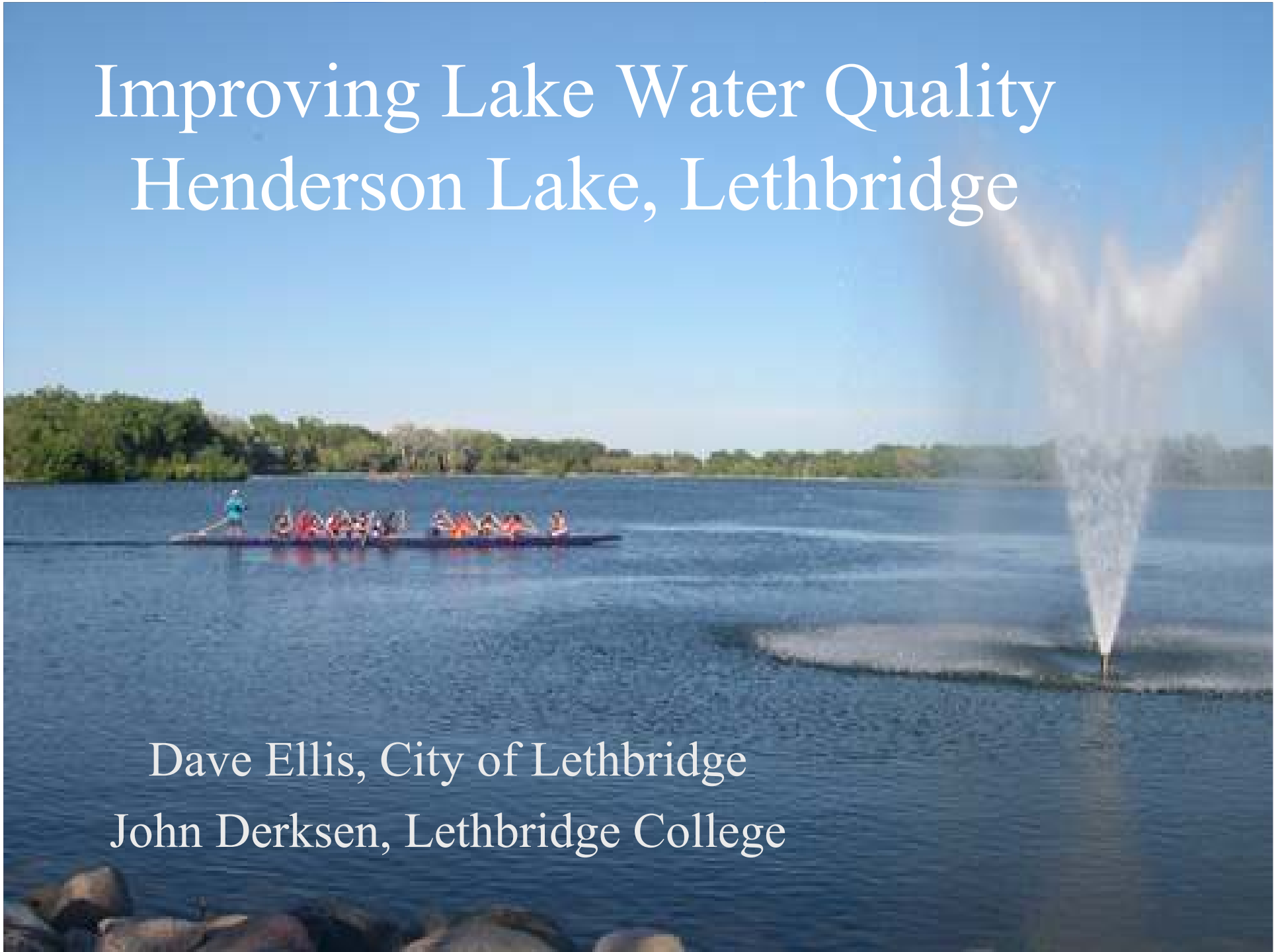


Improving Lake Water Quality Henderson Lake, Lethbridge

Dave Ellis, City of Lethbridge
John Derksen, Lethbridge College



Introduction

- History and background.
- Present status.
- Problems and concerns.
- The future outlook.

History

- 1900 – 140 acre slough (slaughterhouse).
- 1912 – City purchases lake area (280 acres)
 - slough reduced in size to 91 acres, water dammed.
 - trees planted and development of exhibition and recreational park.
- 1926 – slough received a new name.

History

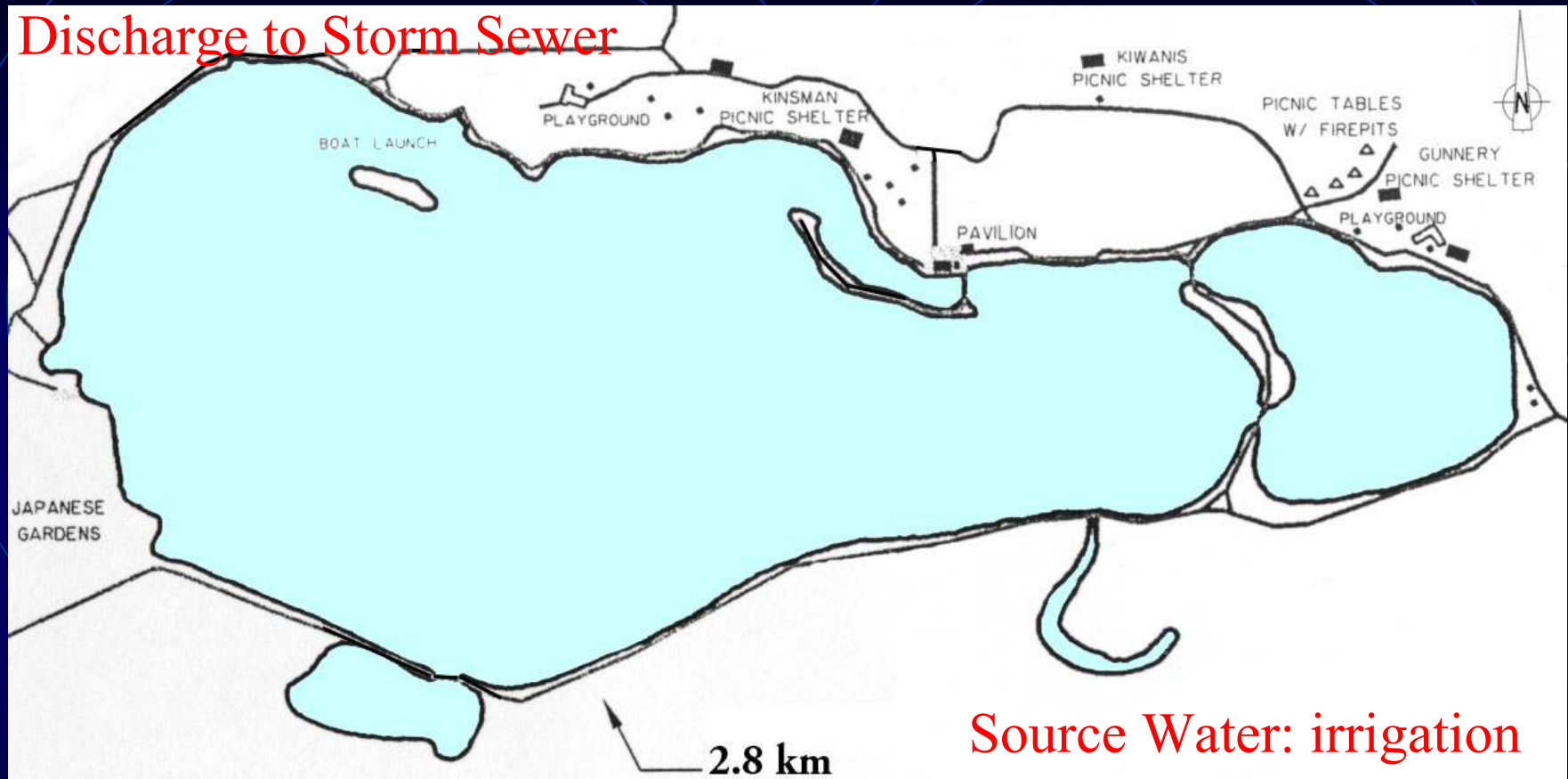
- 1961 – removal of goldfish, stocking of trout (till 1977).
- 1973 – city expansion, irrigation dev.
 - changes to inflow and shore (gabions).
- 1984-85 – major renovations (75 acres).
 - Islands, dredging and shoreline riprap.

Present Status

- Lethbridge's most popular park.
 - 2.8 km path, fishing, birding, picnicking.
- South end – golf course.
- North end – parkland.
- West end – Japanese gardens.
- All irrigated with lake water (2 pumps, one fountain).

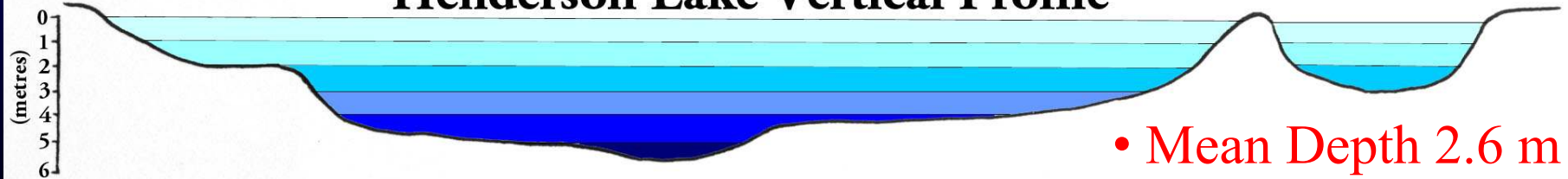
Bathymetry

Discharge to Storm Sewer



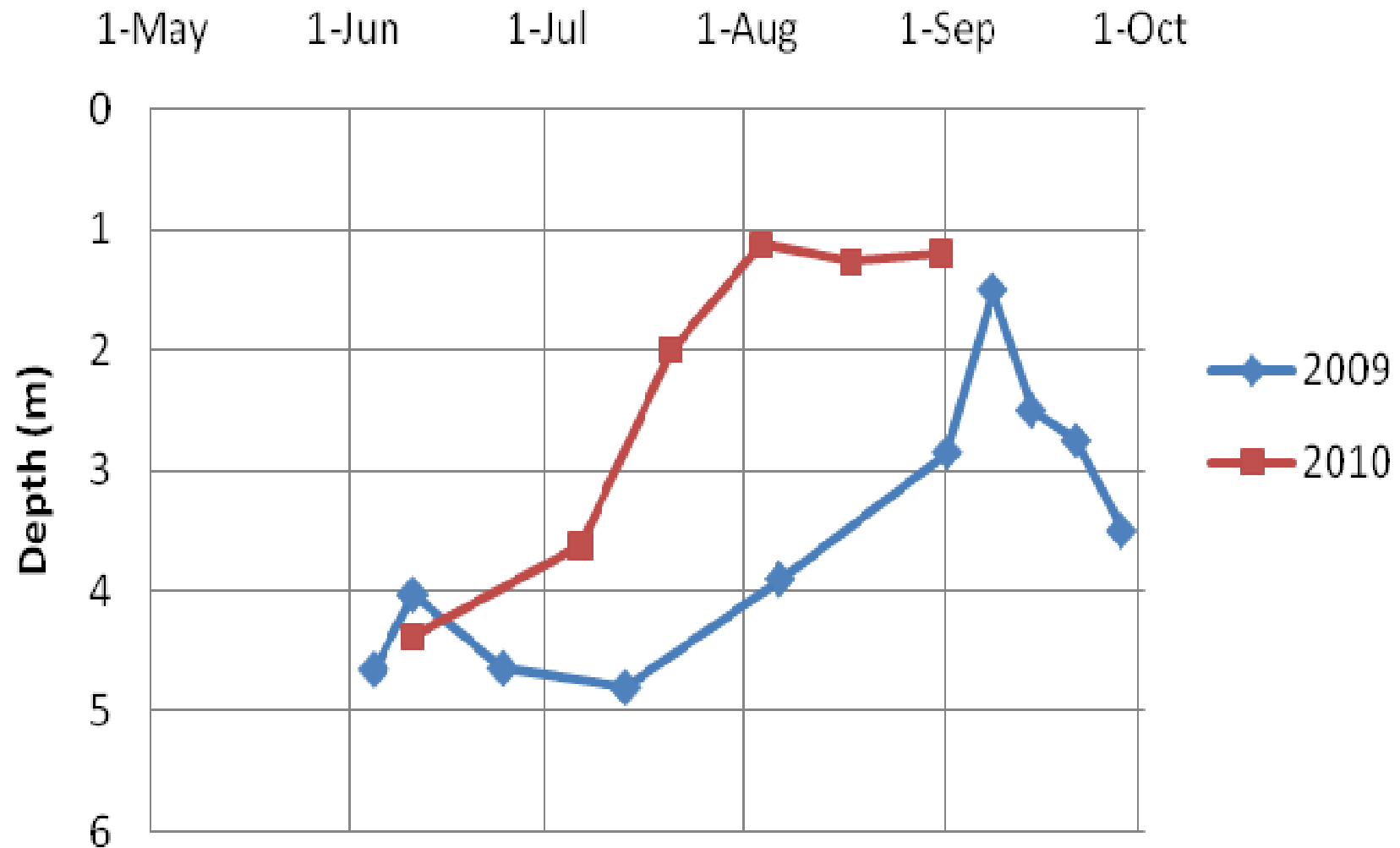
Source Water: irrigation

Henderson Lake Vertical Profile

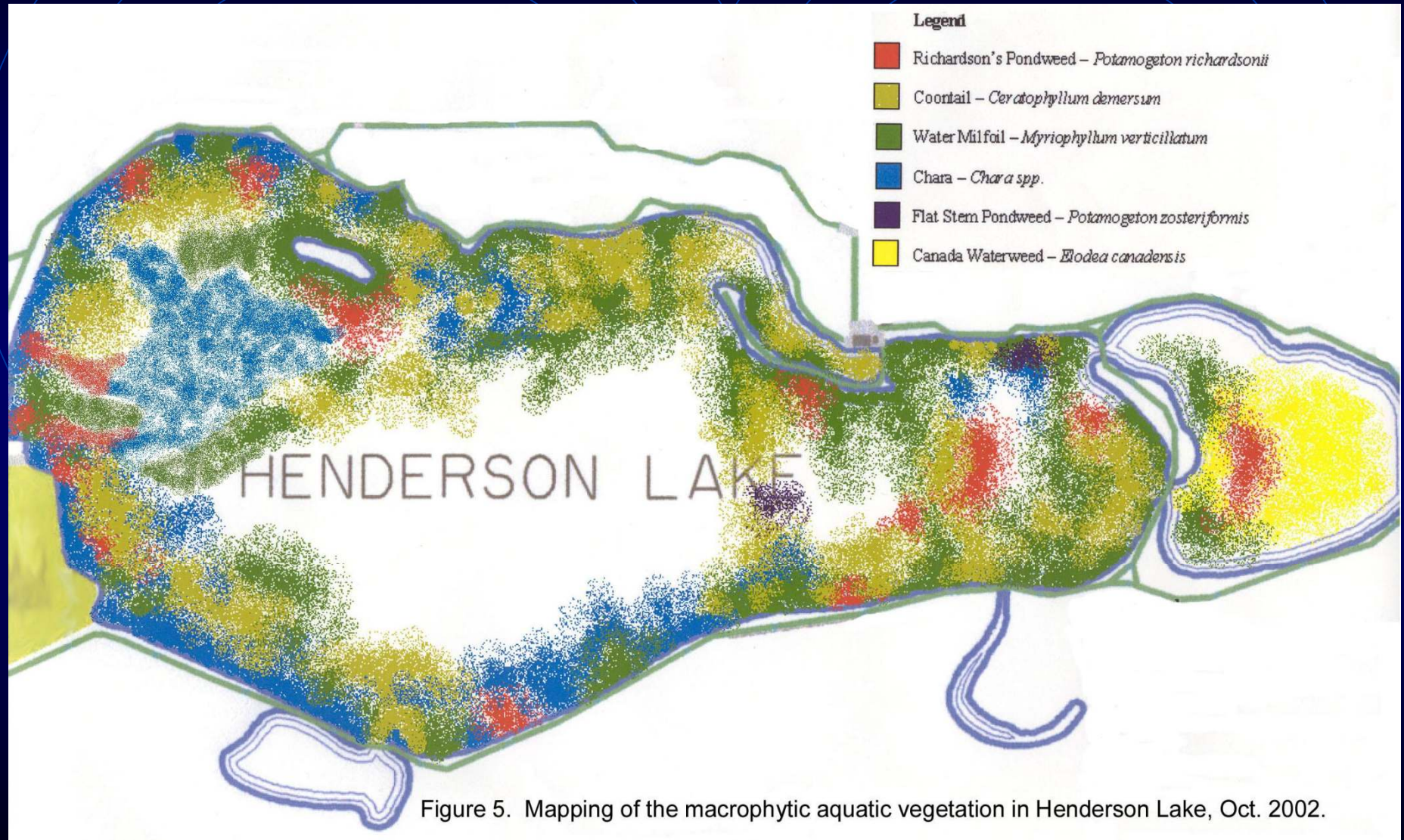


• Mean Depth 2.6 m

Biology - dissolved oxygen



Biology – fish & vegetation



Biology - Phytoplankton Abundance

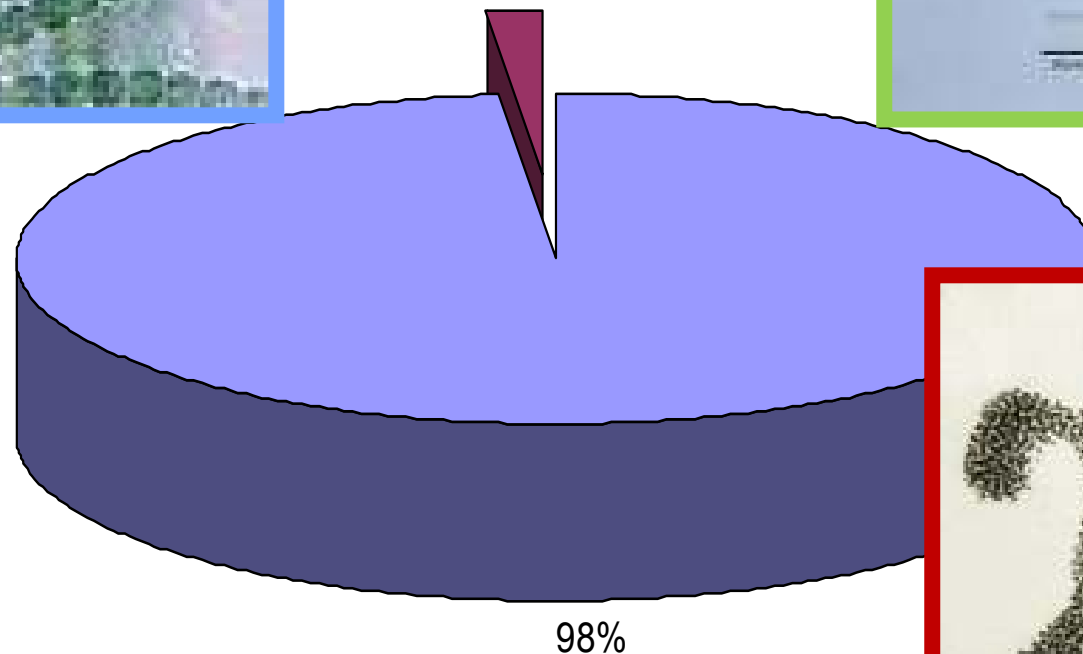


Anabaena

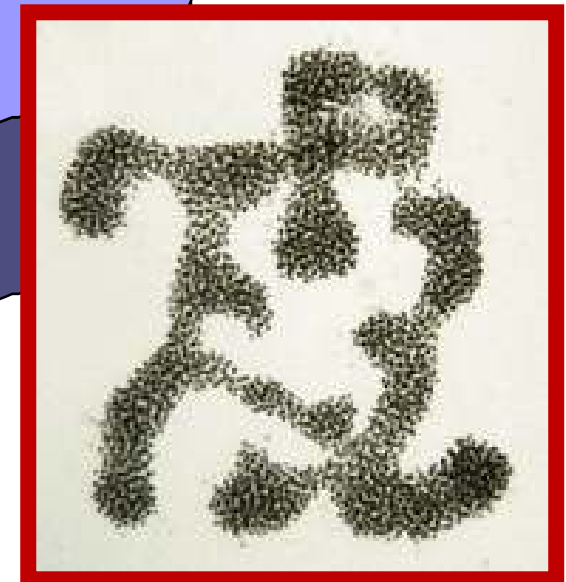
Blue green Green

Aphanizomenon

2%



Anacystis



- 92% of these are related to taste and odour.

Problems and concerns

- Overall Smell & Appearance
 - Algae: blue-greens most abundant, warm, shallow, stratification with low oxygen in bottom.
 - Rooted Vegetation: stagnates water movement, interferes with recreation, impacts oxygen availability, washes up on shore.
 - Periodic partial winter kills.

Results

- Swimming ended with bylaw.
- Boating – rental shop closed.
- Reduced use of lake and park.
- Reduced aesthetics and increased complaints.

Efforts in past 10 Yrs

- Gain knowledge of lake system – 5 yrs +
- Triploid Grass Carp introduction – 2002
 - + Mechanical & chemical control measures
- Lake management plan – 2006
- SolarBees introduced – 2006
- Bacteriological stimulation - 2010

Current Program

Mowing

Herbicides

SolarBees

Water exchange

Triploid grass carp @ 250 fish/yr

LLMO – Live Liquid Microorganisms



Results

- Noticeable improvements in appearance and odour
- Complaints have dropped off to ZERO
- Surface recreation is coming back

Questions

