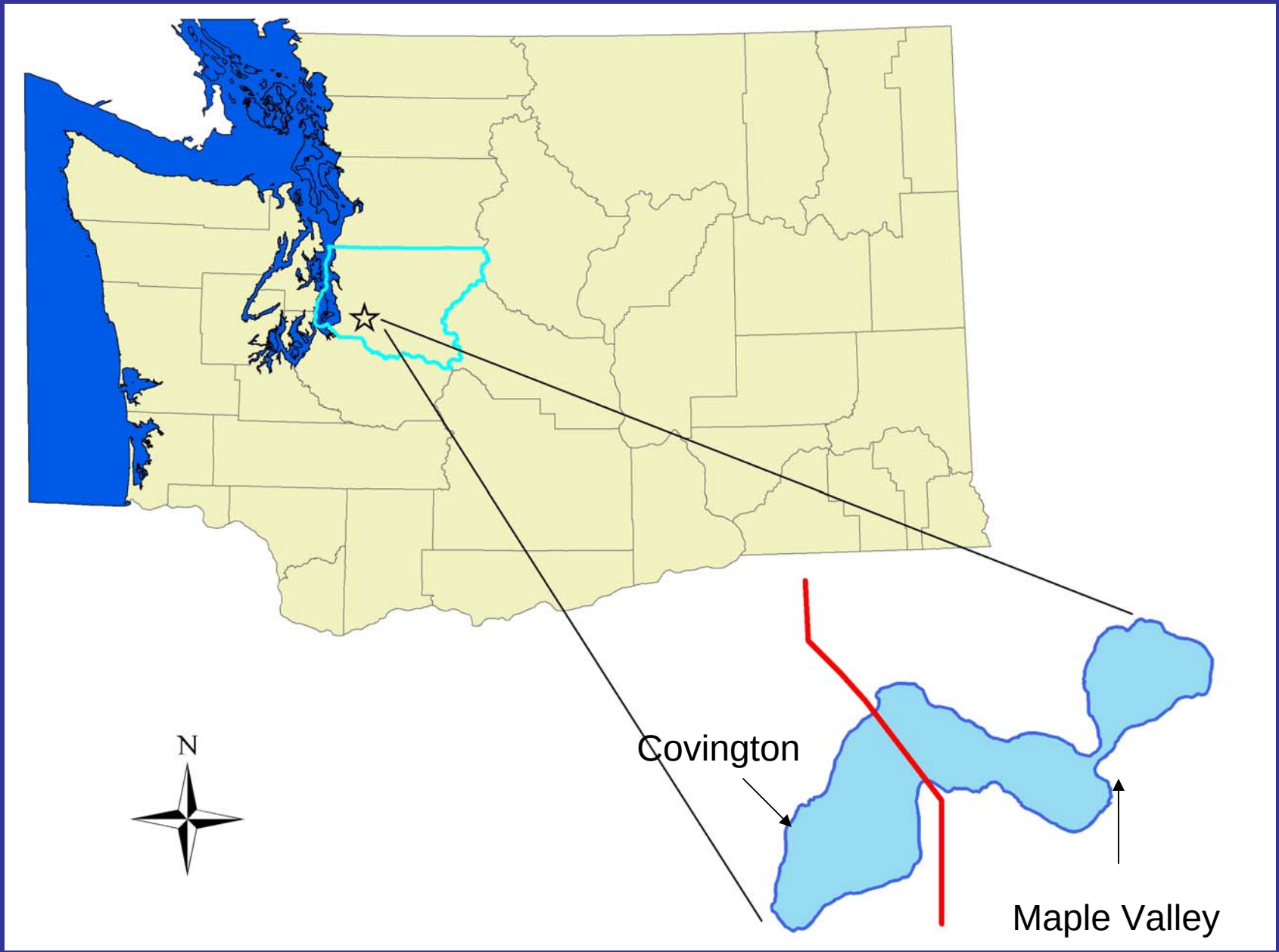
Hydrilla Eradication Project:
An exercise in patience
2003 – 2008

Murph being patient


N
Covington
Maple Valley

History of Infestation and Treatment

1994: Discovery by King County (mapping project)

1995: Positive identification, whole lake Sonar treatment (5x)

1996: Biological assessment, whole lake Sonar treatment (5x)

1997: Whole lake Sonar treatment (3x)

1998: Targeted Sonar treatment (SLR)

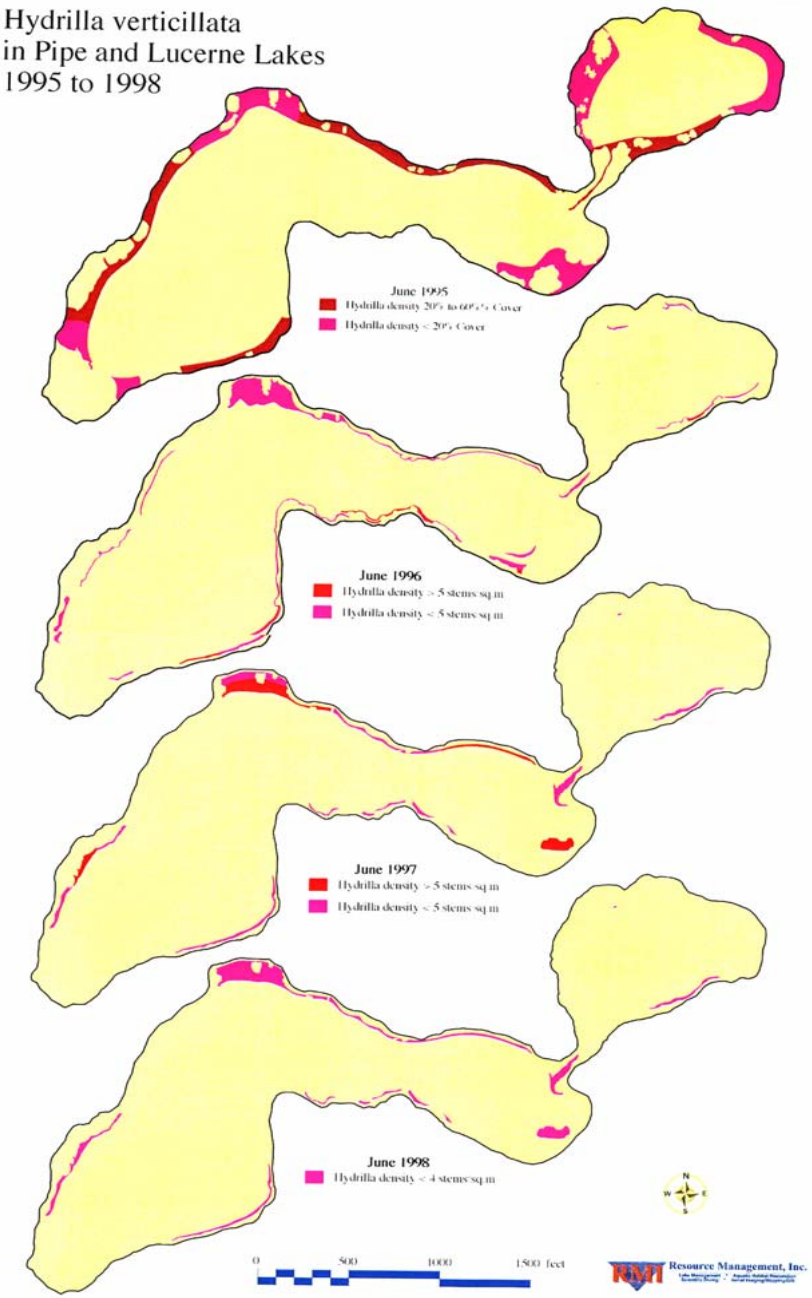
1999: Diver hand-pulling, followed by whole lake Sonar

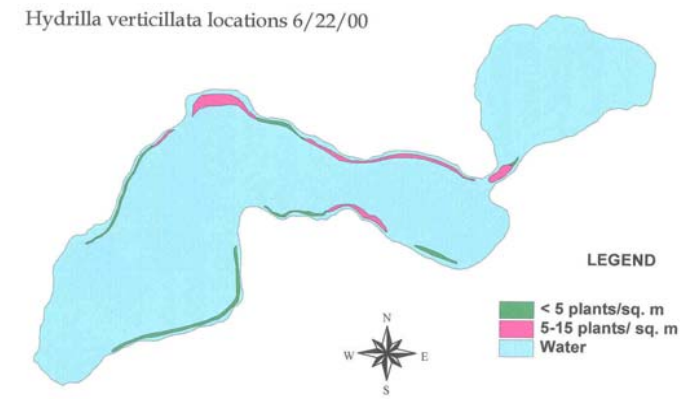
2000: Diver hand-pulling, accompanied by Sonar (SLR)

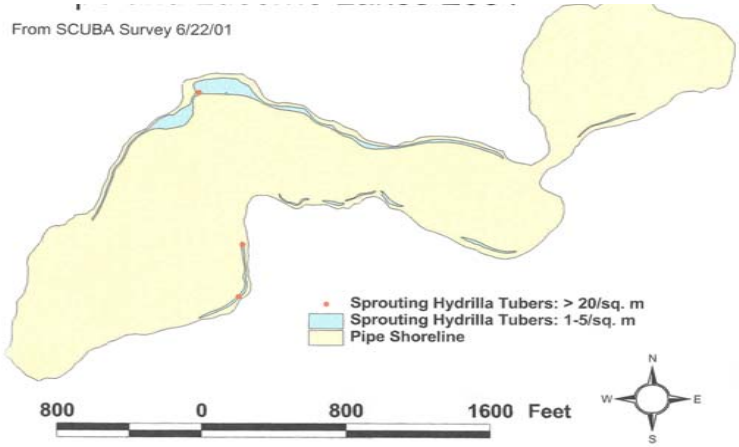
2001: Diver hand-pulling, no herbicides (NPDES permitting regulations)

2002: Diver hand-pulling, no herbicides until Oct. when small section of healthy plants were found and Aquathol was used

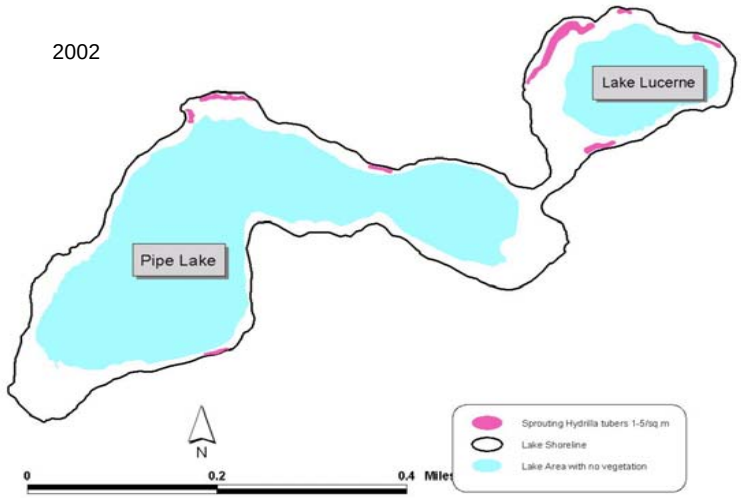
2003 - 2008: King County internalizes the project – begin herbicide treatments with Sonar PR™, diver and snorkel surveys


Hydrilla verticillata
in Pipe and Lucerne Lakes
1995 to 1998
June 1995
Hydrilla density 20% to 60% Cover
Hydrilla density < 20% Cover
June 1996
Hydrilla density > 5 stems sq m
Hydrilla density < 5 stems sq m
June 1997
Hydrilla density > 5 stems sq m
Hydrilla density < 5 stems sq m
June 1998
Hydrilla density < 4 stems sq m
0
500
1000
1500 feet
Resource Management, Inc.


Hydrilla verticillata locations 6/22/00
LEGEND
< 5 plants/sq. m
5-15 plants/ sq. m
Water
N
W
E
S

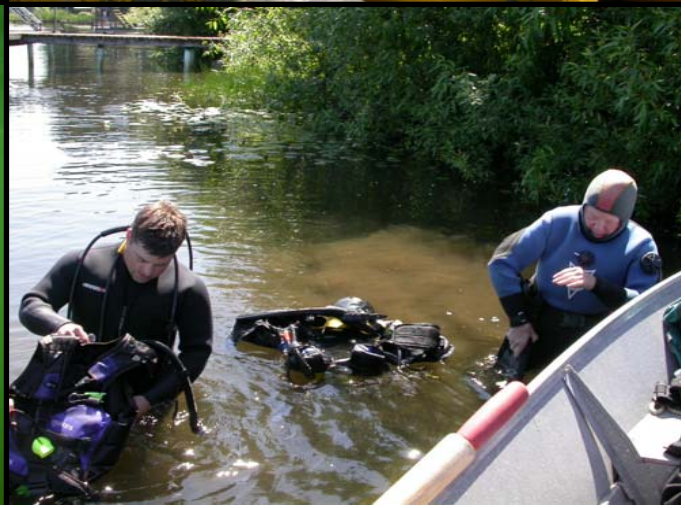

From SCUBA Survey 6/22/01
Sprouting Hydrilla Tubers: > 20/sq. m
Sprouting Hydrilla Tubers: 1-5/sq. m
Pipe Shoreline
800
0
800
1600 Feet
N
W
E
S

2002


Lake Lucerne
Pipe Lake
N
0
0.2
0.4 Miles
Sprouting Hydrilla tubers 1-5/sq m
Lake Shoreline
Lake Area with no vegetation

GOALS

Contain *Survey and Map* *Eradicate*



Containment

Sonar PR - a slow release herbicide with the active ingredient fluridone

5 ppb concentration in both lakes throughout the summer

No more than 150 ppb in any one area in one treatment season

FasTests used to evaluate fluridone concentrations

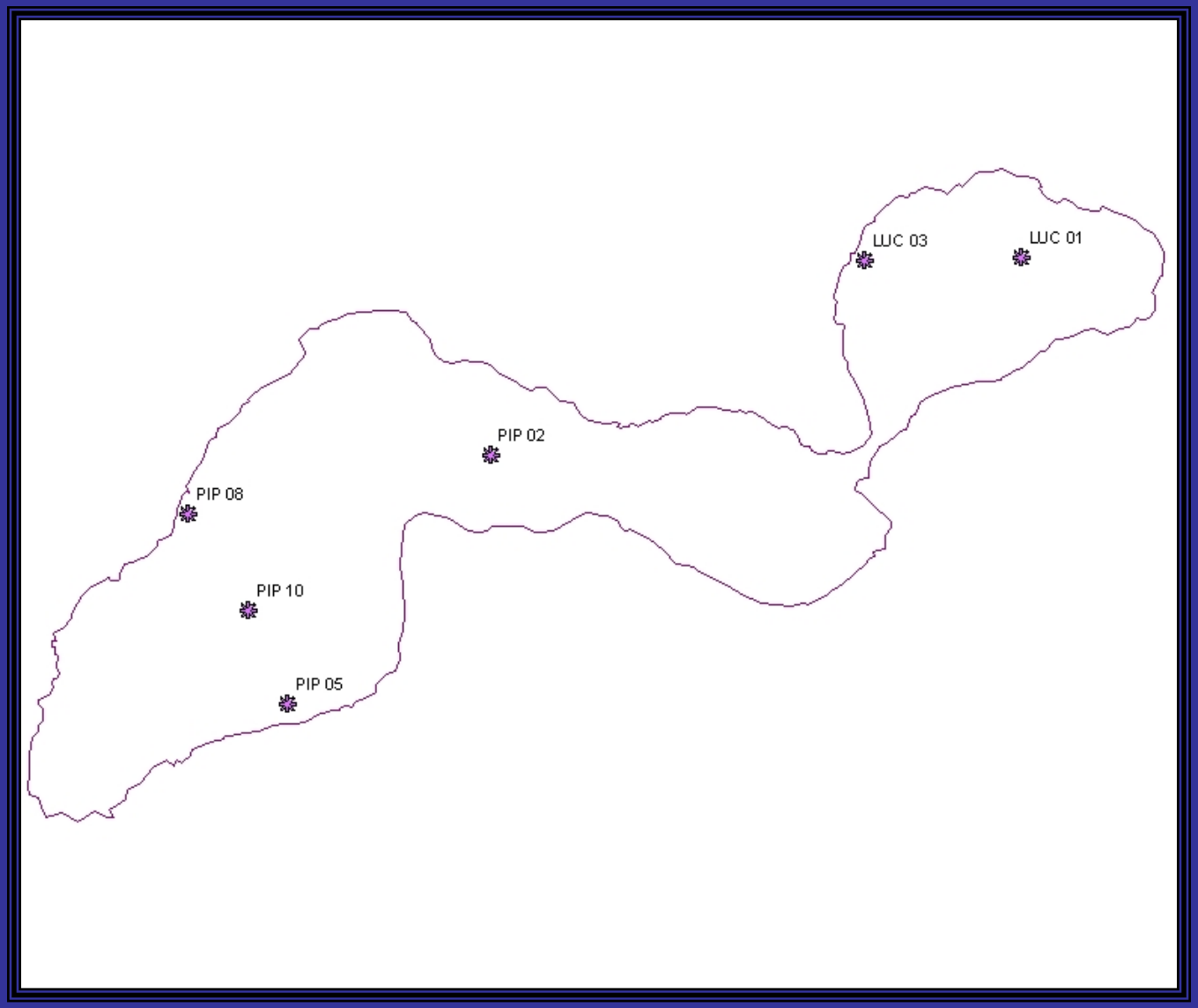
Each year, treatment areas are based on the previous year's findings

FasTests are used to determine amounts and areas throughout the season

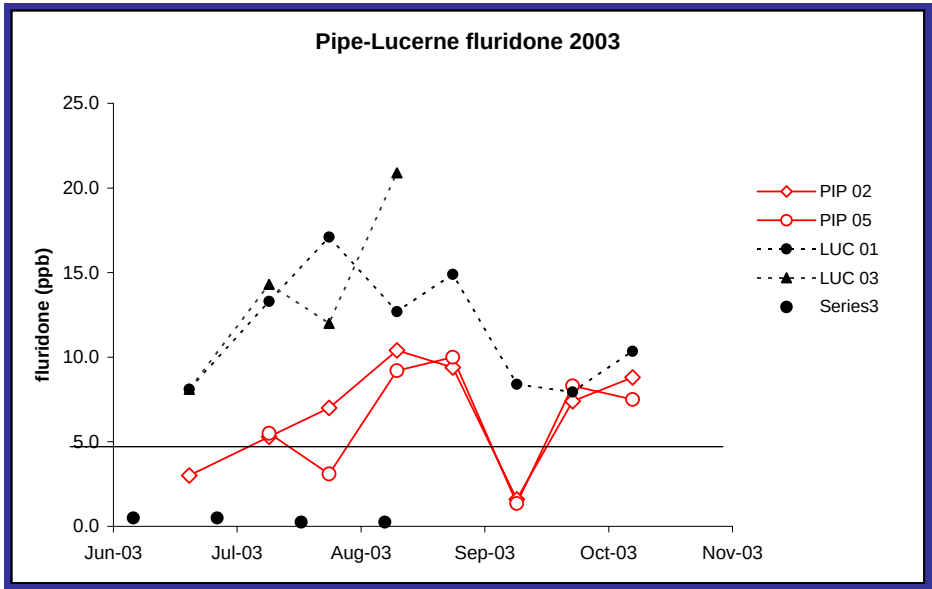
Treatment areas didn't change over the course of the season

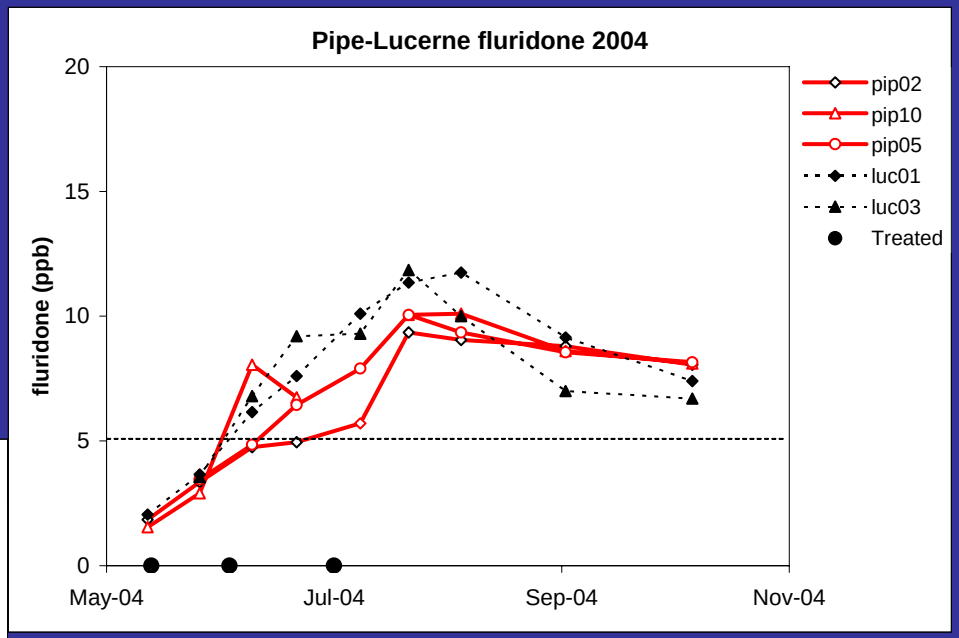
Areas of Application

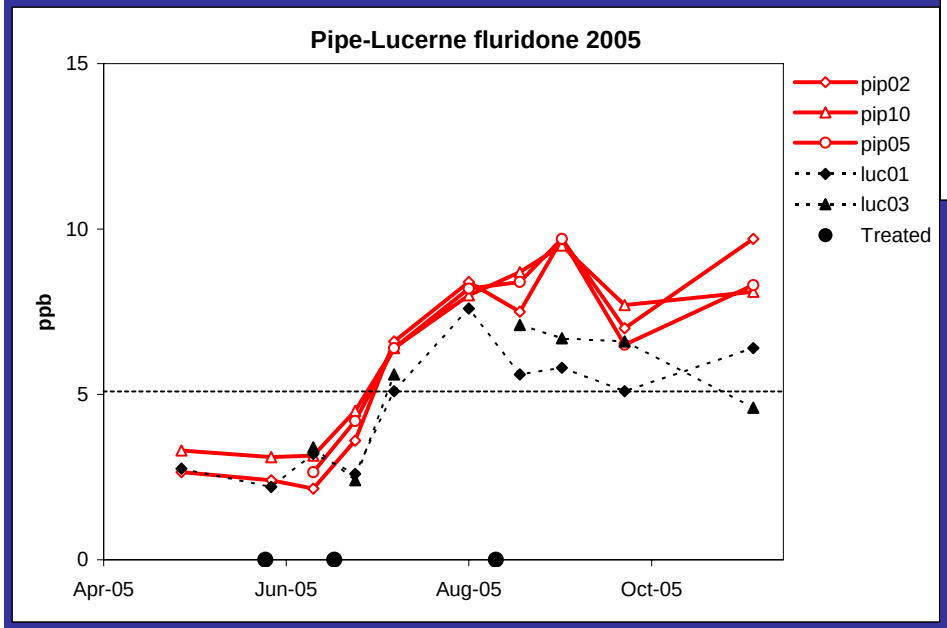
FasTest Stations



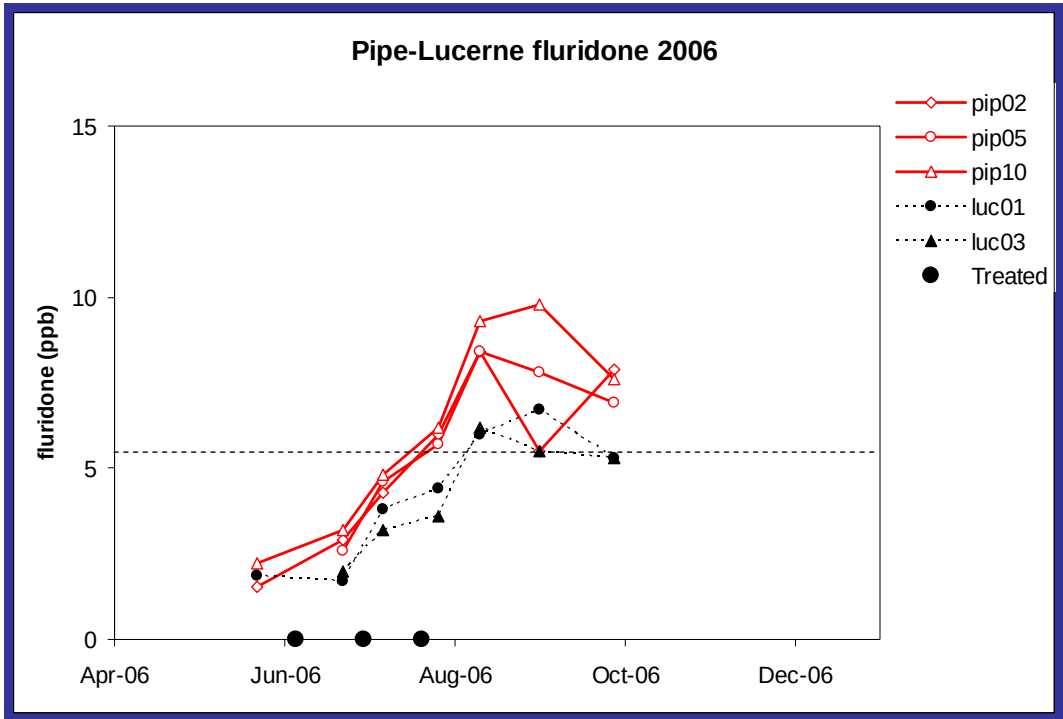
Comparison FASTest Results

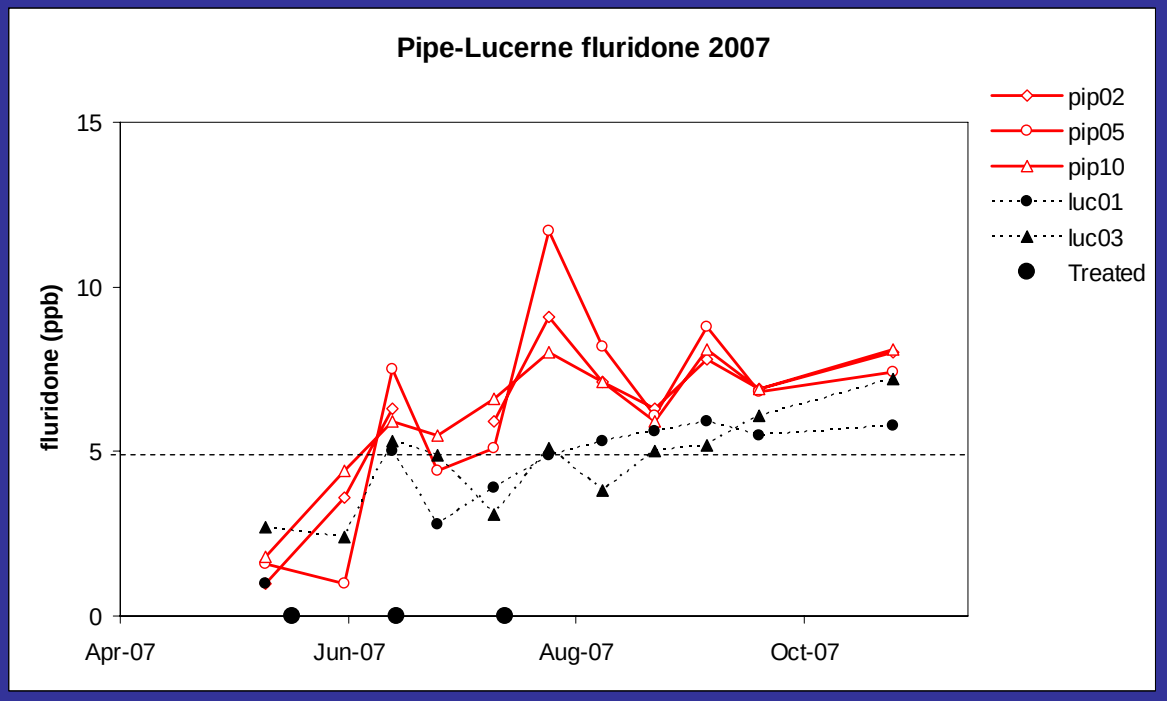




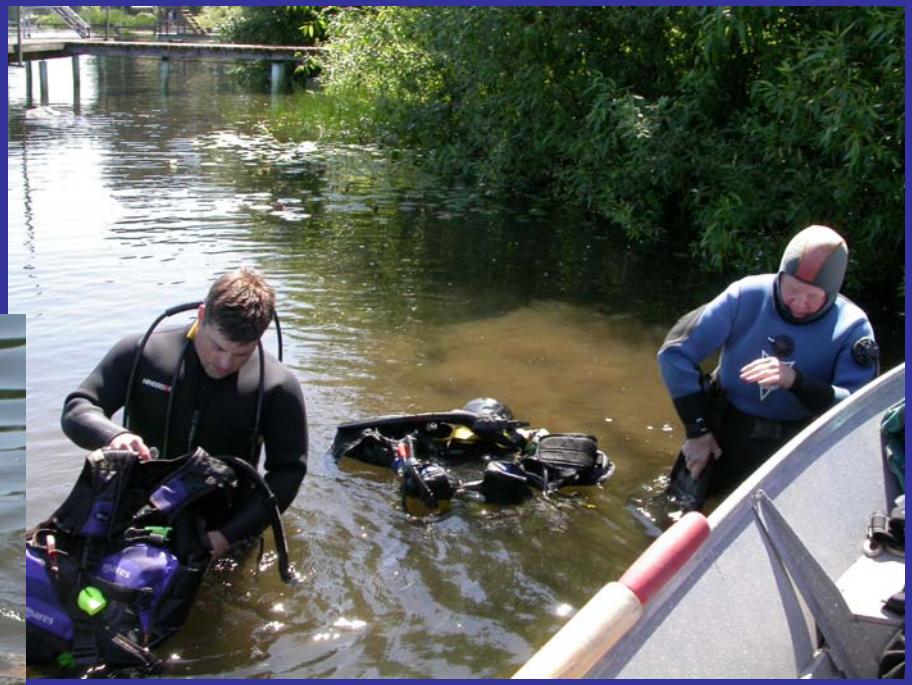


Comparison FASTest Results





Survey work



Divers

&

Snorkels

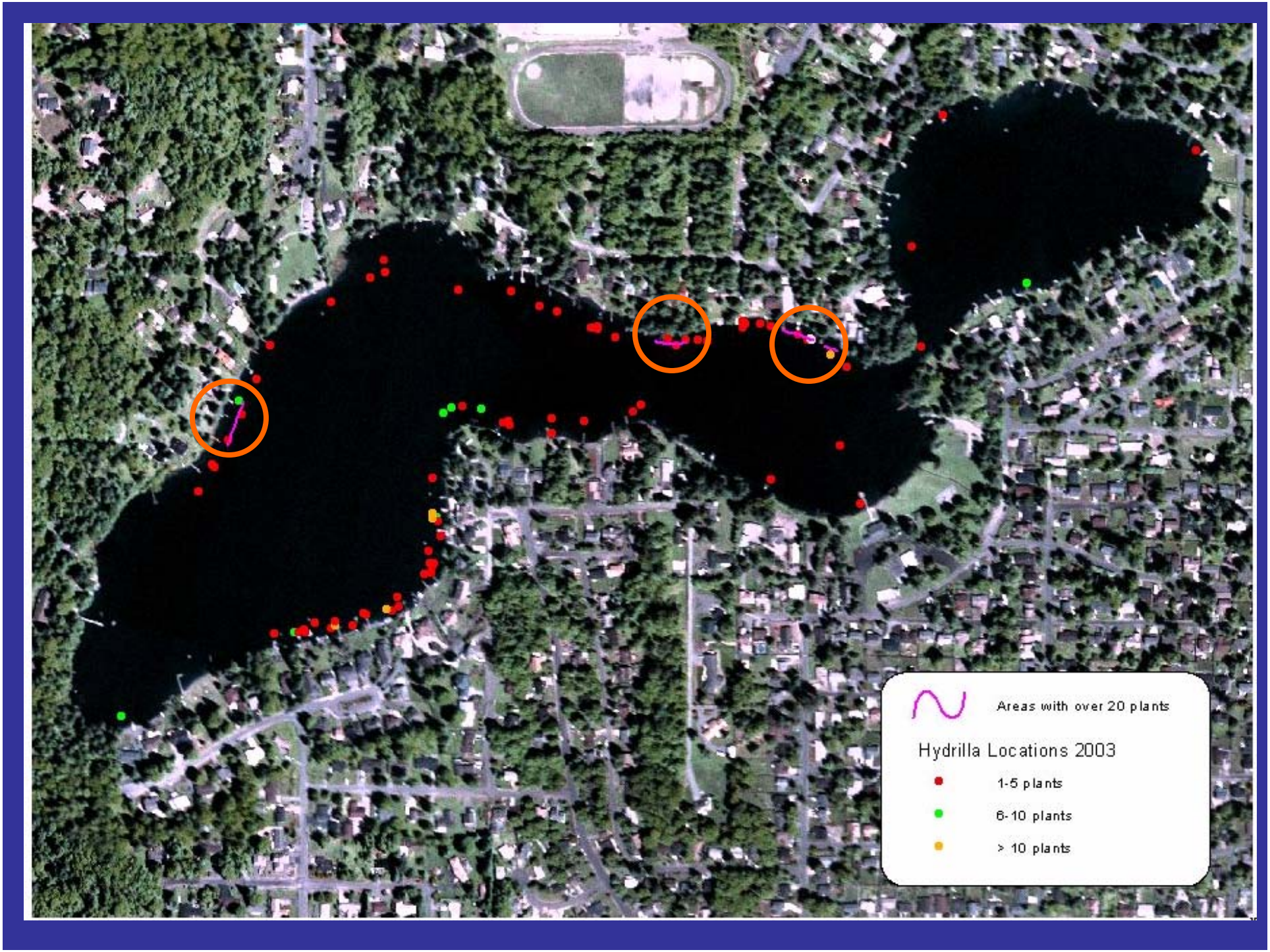
&

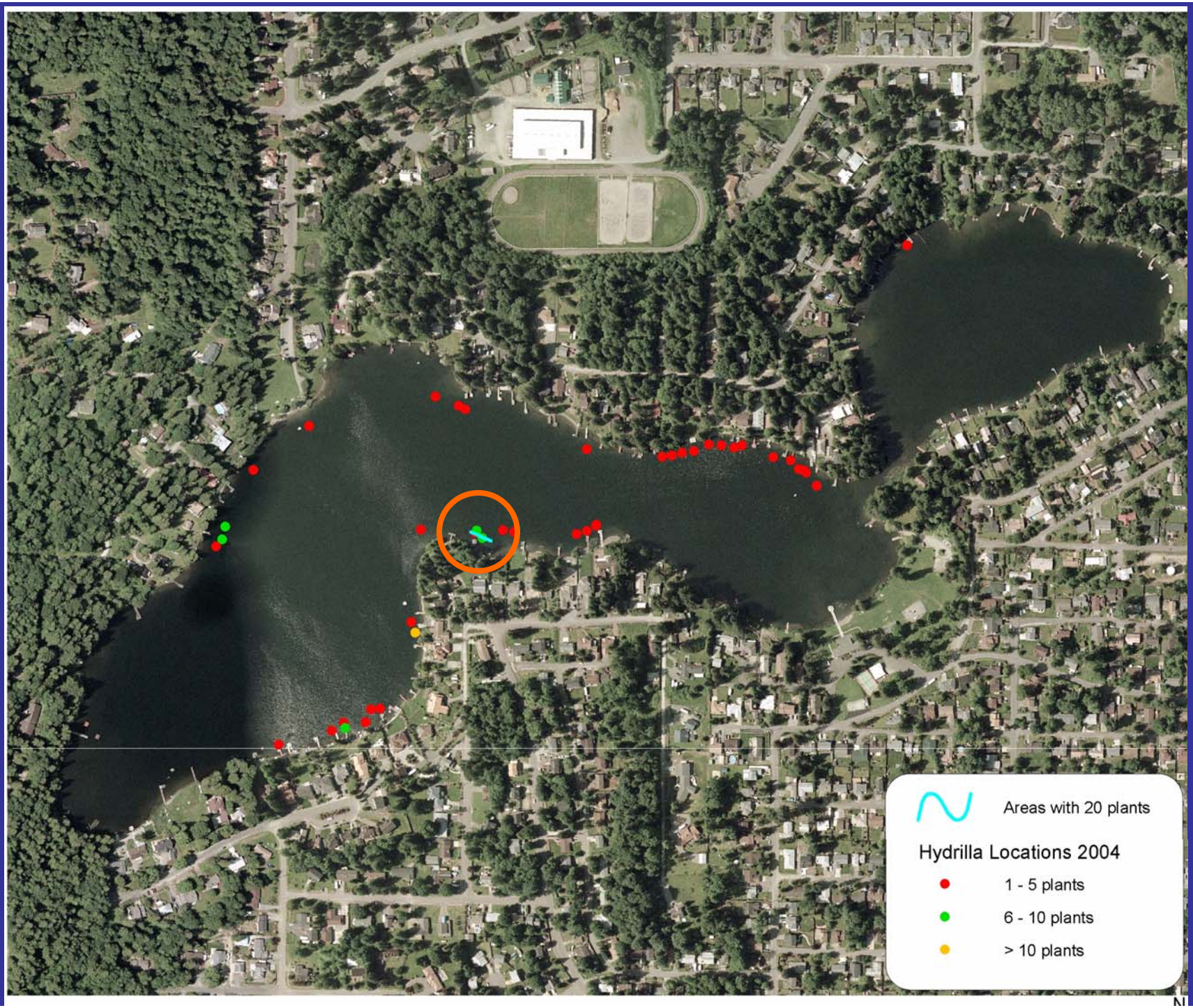
Tubers

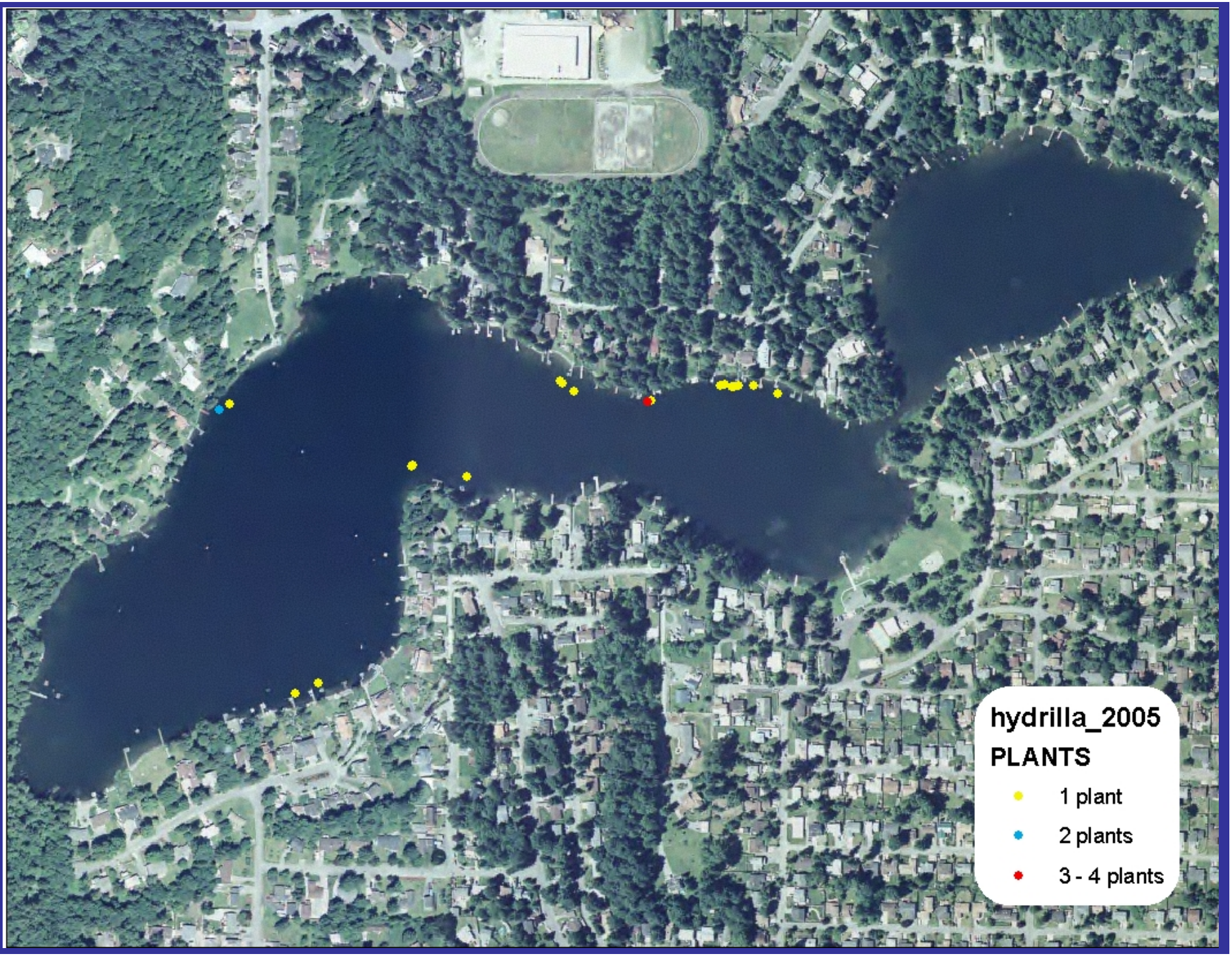
OH MY!

Survey Methods

- ***King County snorkels***
- ***Consultant dives***
- 2 divers and 2 snorkelers in water
- 2 staff in boat
- ***Snorkelers stay in shallow areas < 6 feet***
- ***Divers go in water >6 feet***
- 3 surveys during summer
- Stake and pull plants
- GPS all known locations


Areas with over 20 plants
Hydrilla Locations 2003
1-5 plants
6-10 plants
> 10 plants


Areas with 20 plants
Hydrilla Locations 2004
1 - 5 plants
6 - 10 plants
> 10 plants


hydrilla_2005
PLANTS
1 plant
2 plants
3 - 4 plants

Hydrilla locations 2006

Hydrilla locations 2007

Survey Results

In the early summer, plants are usually found shallow vs. in the late summer plants are found deeper

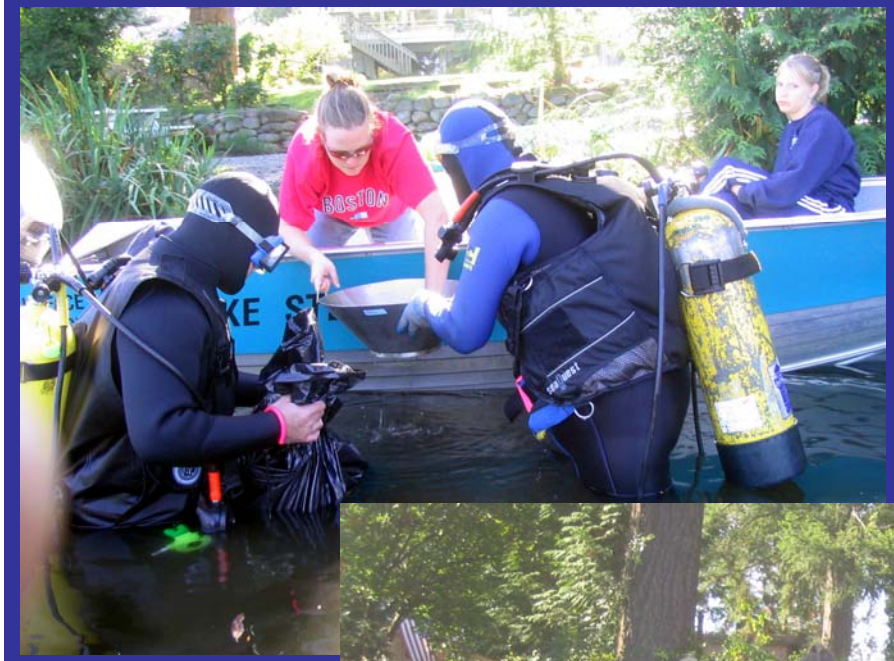
Herbicide damage turned the plants pink, making them easier to identify

Surveys more efficient when divers and snorkelers working together

Provided comprehensive maps of hydrilla

2003: 474 plants
2004: 146 plants
2005: 0 plants in Lucerne / 23 plants in Pipe
2006: 2 plants in Pipe
2007: NO PLANTS

Tuber Survey



- Excavated only staked sites
- Purpose: to determine extent of tuber bank
- No tubers found in sediment

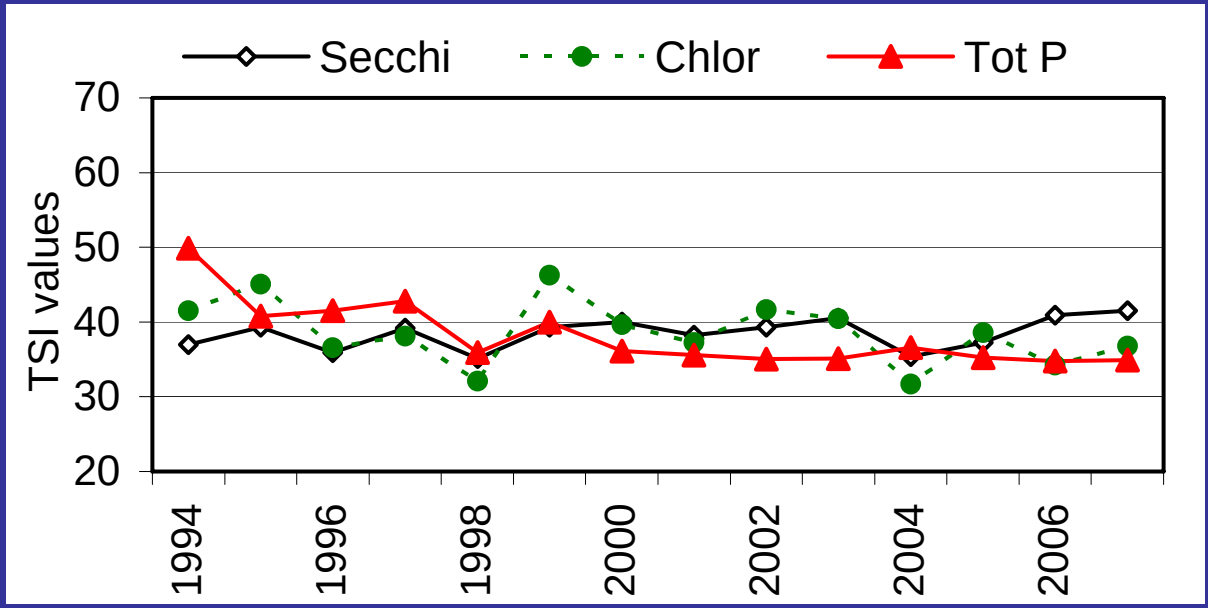
Water Quality

Believed that with so many years of treatment and the herbiciding of plant material water quality in Pipe and Lucerne would degrade. Did it?

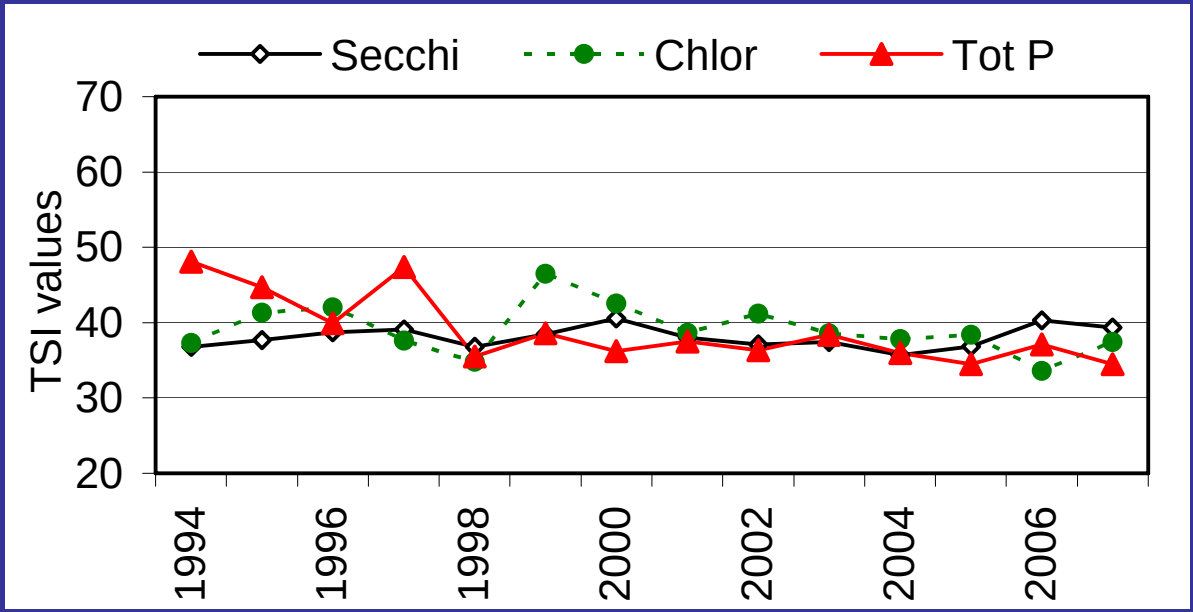
Trophic State Index (TSI) gives most comprehensive picture of water quality in the lakes.

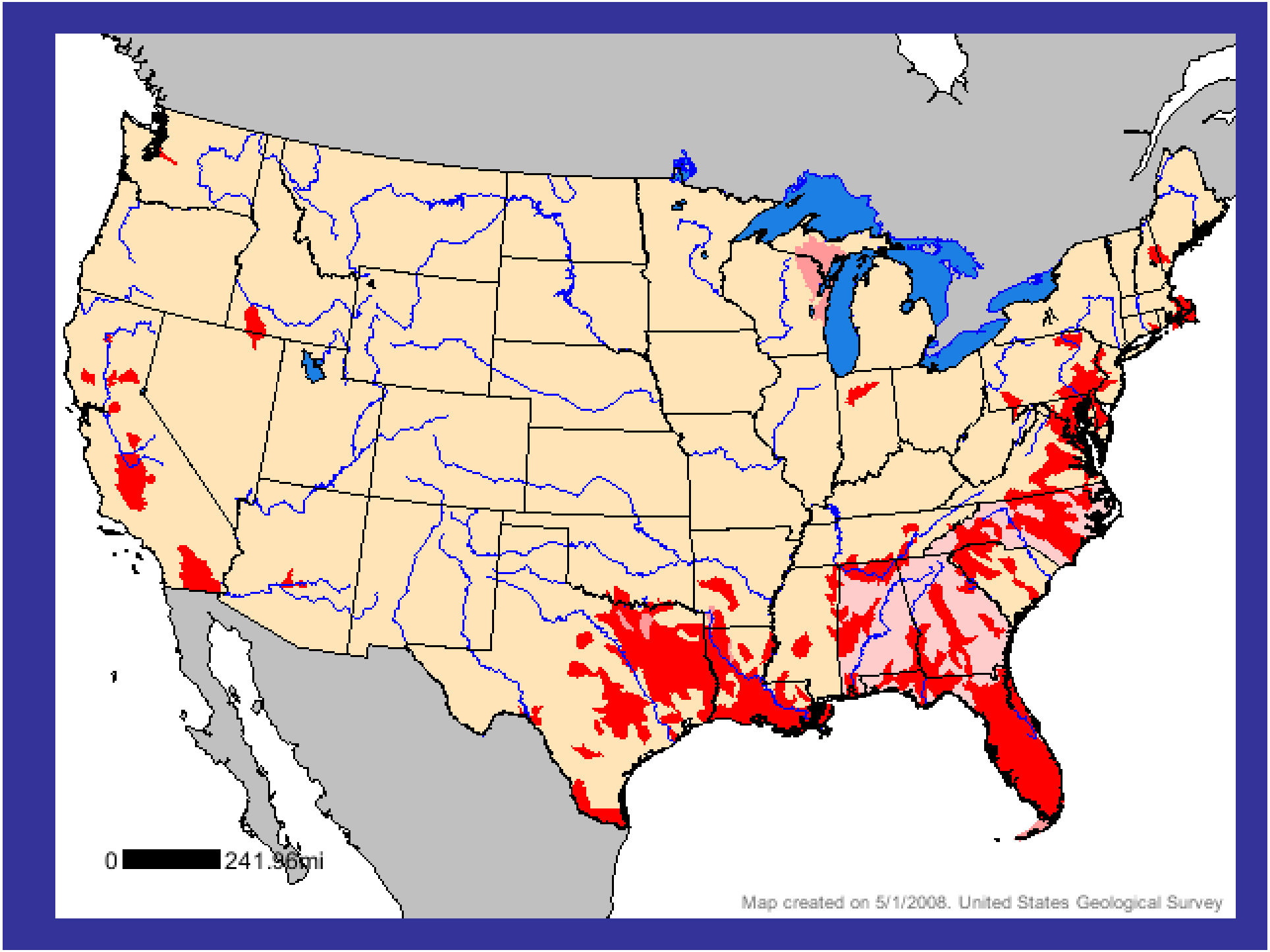
- TSI provides a standard measure to rate lakes on a scale of 0 to 100
- Each major division (10, 20, 30) correlates to a doubling of algal biovolume to various measurable parameters by linear regression and re-scaling (Carlson, 1977).
- Most commonly measured lake parameters – Secchi, total P and chlorophyll *a*
- Indices are based on the mean summer value

Lucerne



Pipe




0
241.96mi
Map created on 5/1/2008. United States Geological Survey

Acknowledgements

King County:

- Beth Cullen, King County Water Quality Planner I: Project Field Manager and Project Coordinator
- Sally Abella, King County Senior Engineer: Project Manager
- King County Interns: Field Technician
- King County Noxious Weed Program: Technical Assistance and Field Support
- Lake Stewardship Staff: Field Support
- Diving Assessment performed by Envirovision
- Kathy Hamel, Washington DOE: Technical Assistance

Project funded by:

•Washington State Department of Ecology Aquatic Weed Grant
•Matching funds provided by Cities of Maple Valley and Covington