EXHIBIT “B”

Recovery of Copake Lake's Water Quality and Control o Nuisance Aquatic Vegetatior

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Talk Overview

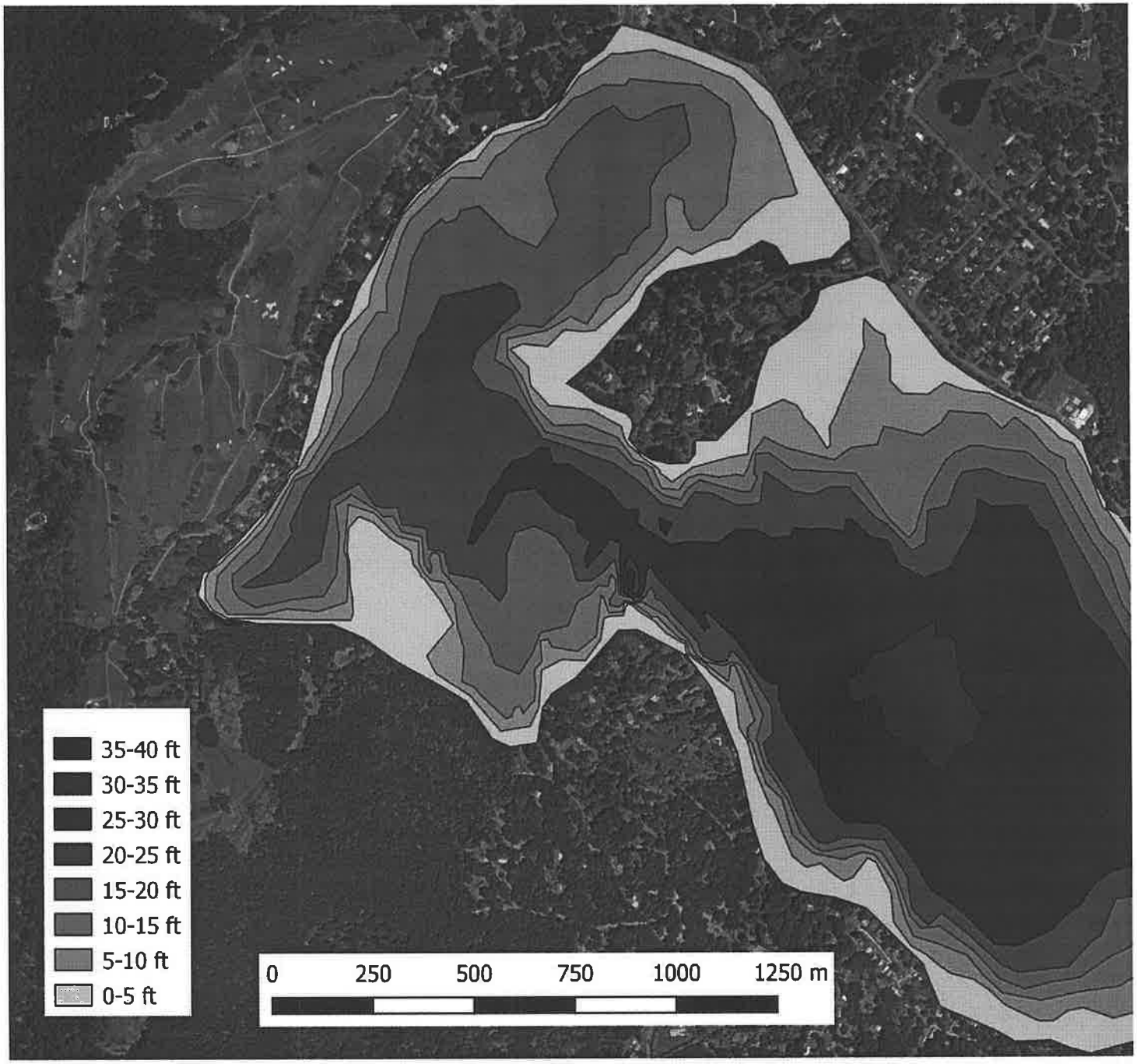
- Short History of Copake Lake
- Eurasian watermilfoil and Curly Leaf Pondweed Management
- Water Clarity and Internal Loading Dynamics
- Macrophytes and Water Quality
- Conclusions

Copake Lake

Lake Acres: 410

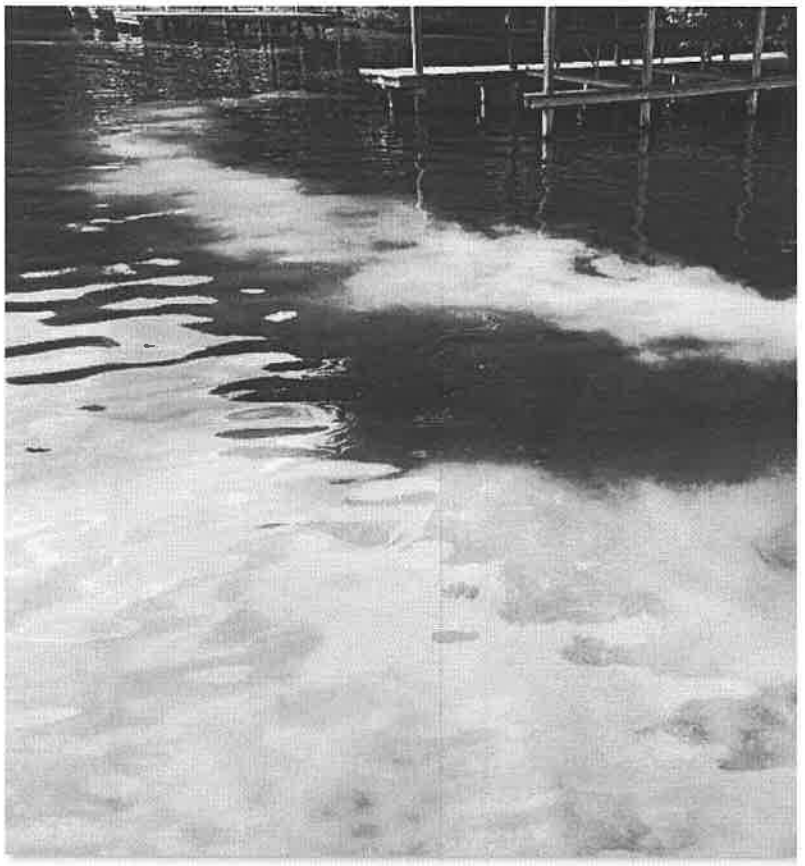
Watershed Acres: 1337

Watershed to Lake Ratio: 3.2:1



Identification of Lake Problems

- 1973 NY DEC investigated sanitation conditions around the lake
- 1974 Assemblyman Lawrence Lane declared the lake was suffering from eutrophication
- 1976 First Copper sulfate application made



Early Lake Management

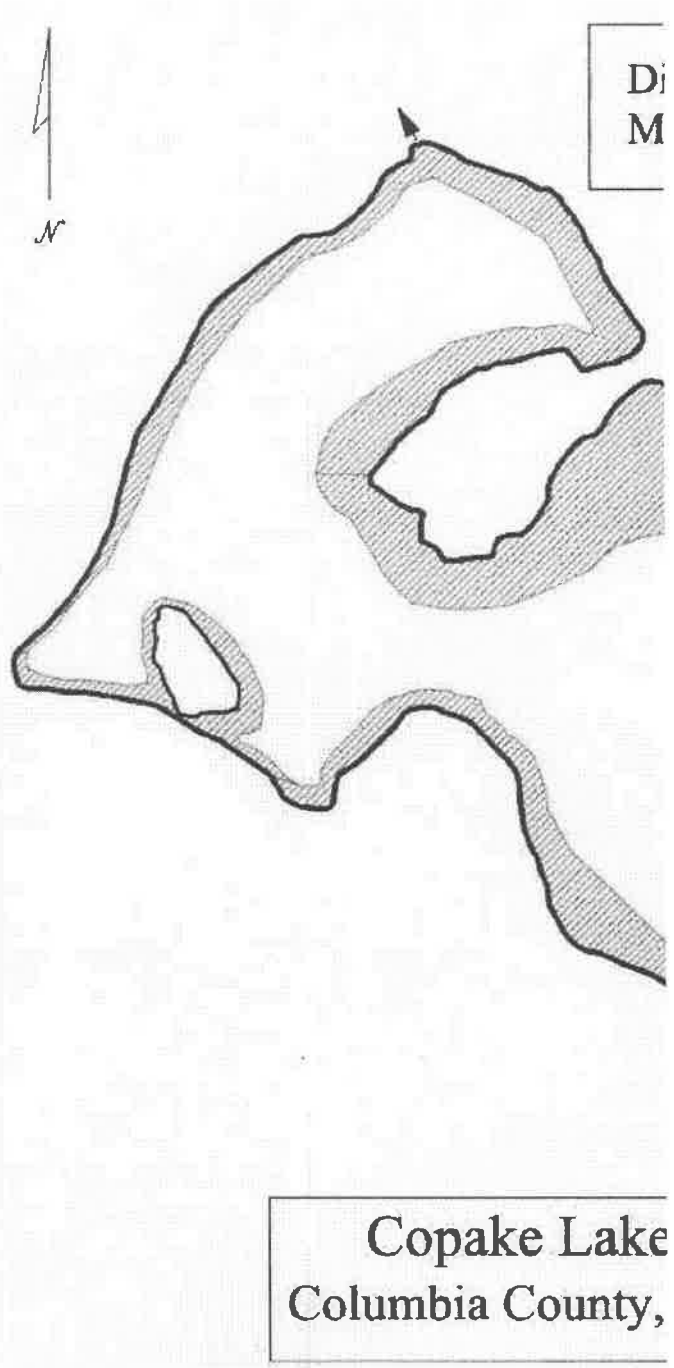
- 1979 Syracuse university reported that lake was unsafe for sv
  Columbia county health depth disputed.
- Weed harvesting was suggested by DEC, copper sulfate deem
  cosmetic.
- Weed harvesting began in 1980, operations continued until 2
- 1986 Continuous CuSO4 application twice per season.

Lake Monitoring

- 1986 to 1990, 1996 to 2000 CSLAP Sampling was done
- In 2000, NEAR contracted to conduct a diagnostic study of lal
- Results:
  - Plant nutrients were significantly high
  - Lake devoid of oxygen below 20ft
  - Two invasive weeds covered ~130 acres of lake surface, topped out

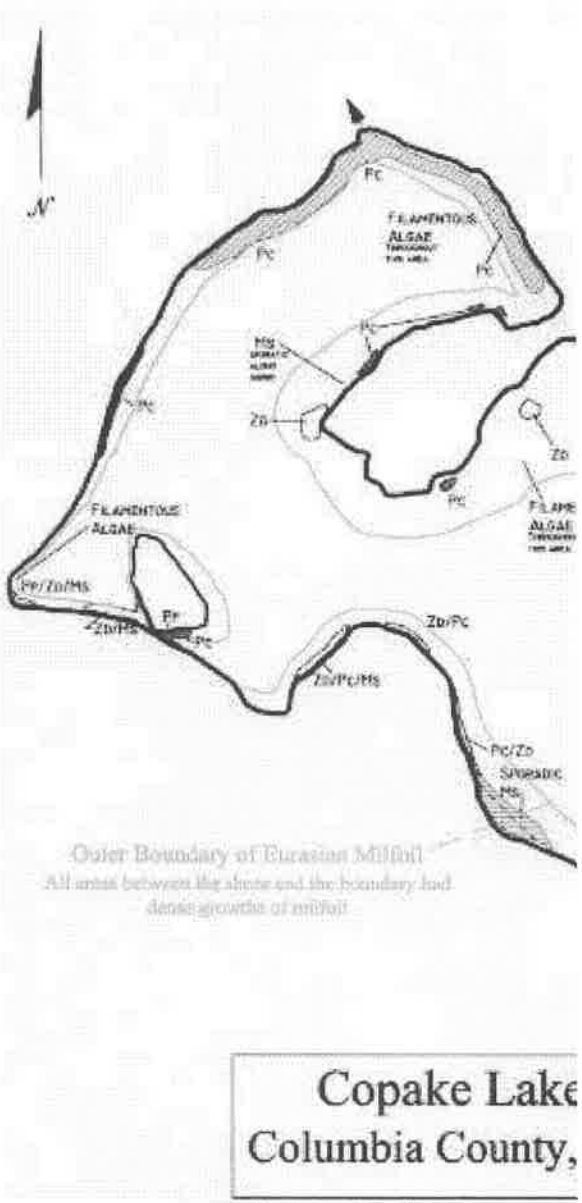
First Herbicide Treatment

- Whole lake fluridone treatment in 2002
- 30% of entire surface area was covered with Eurasian Watermilfoil.



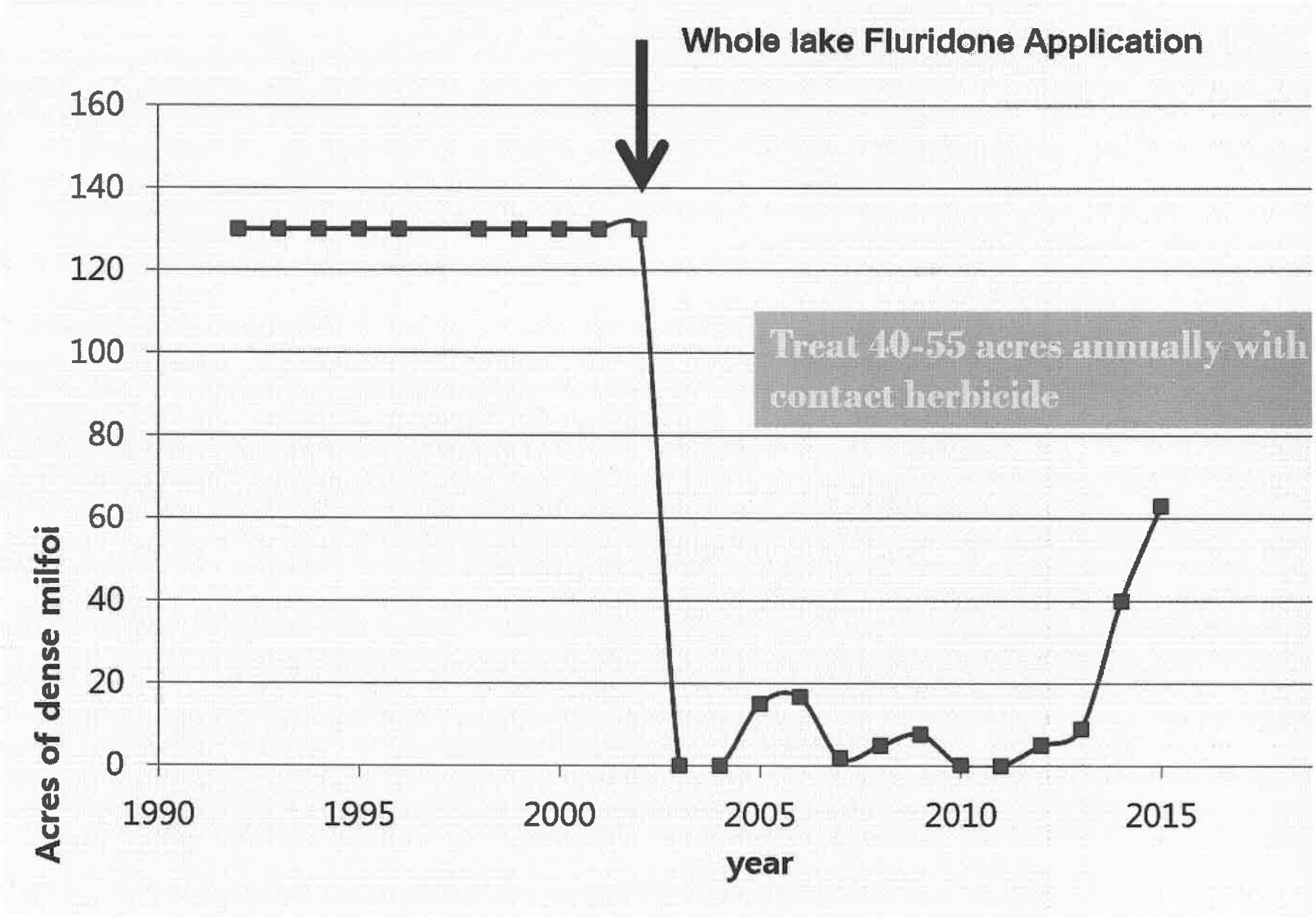
Post Fluridone Application

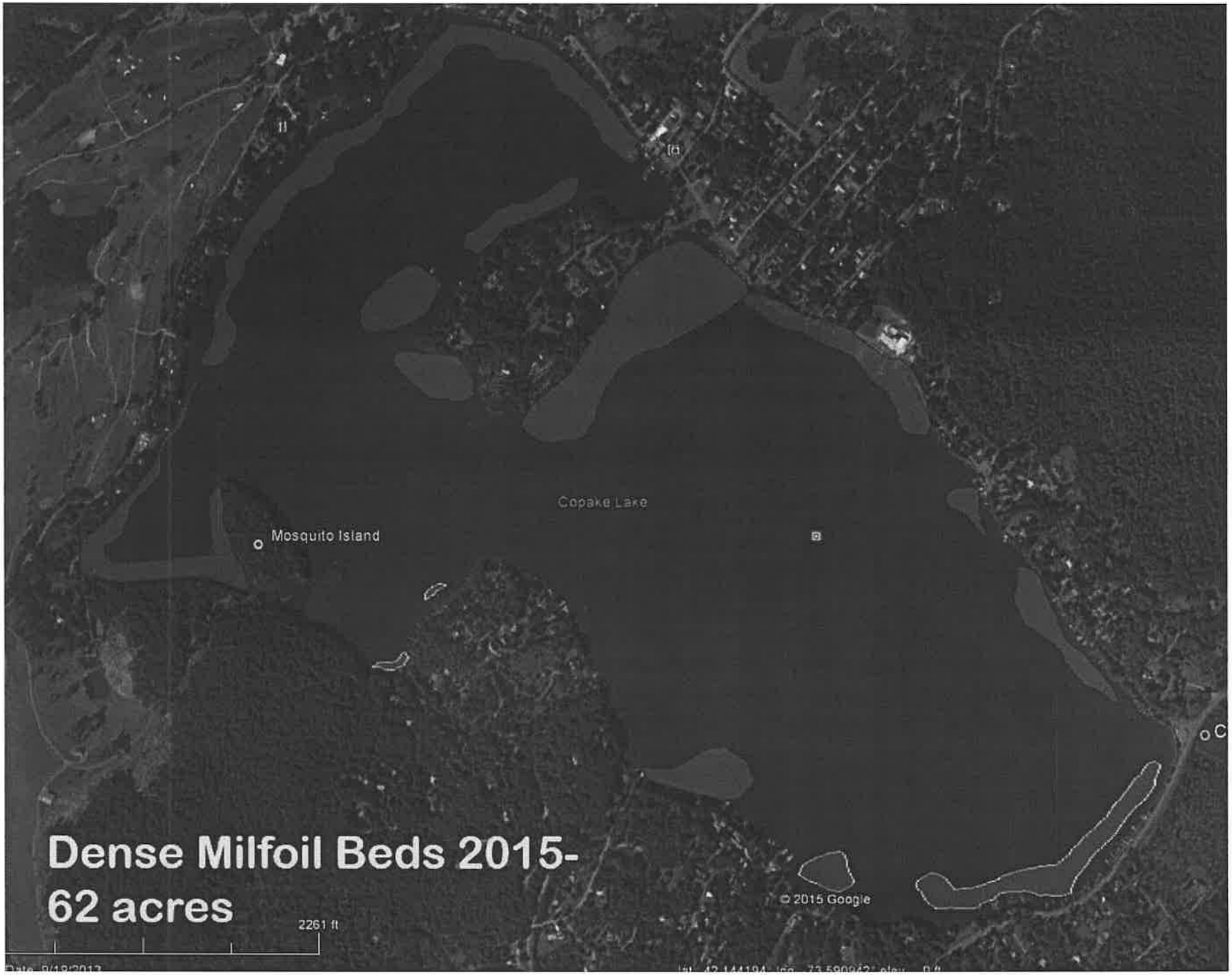
- Curly Leaf Pondweed returned in late season, with about 10 acres of coverage

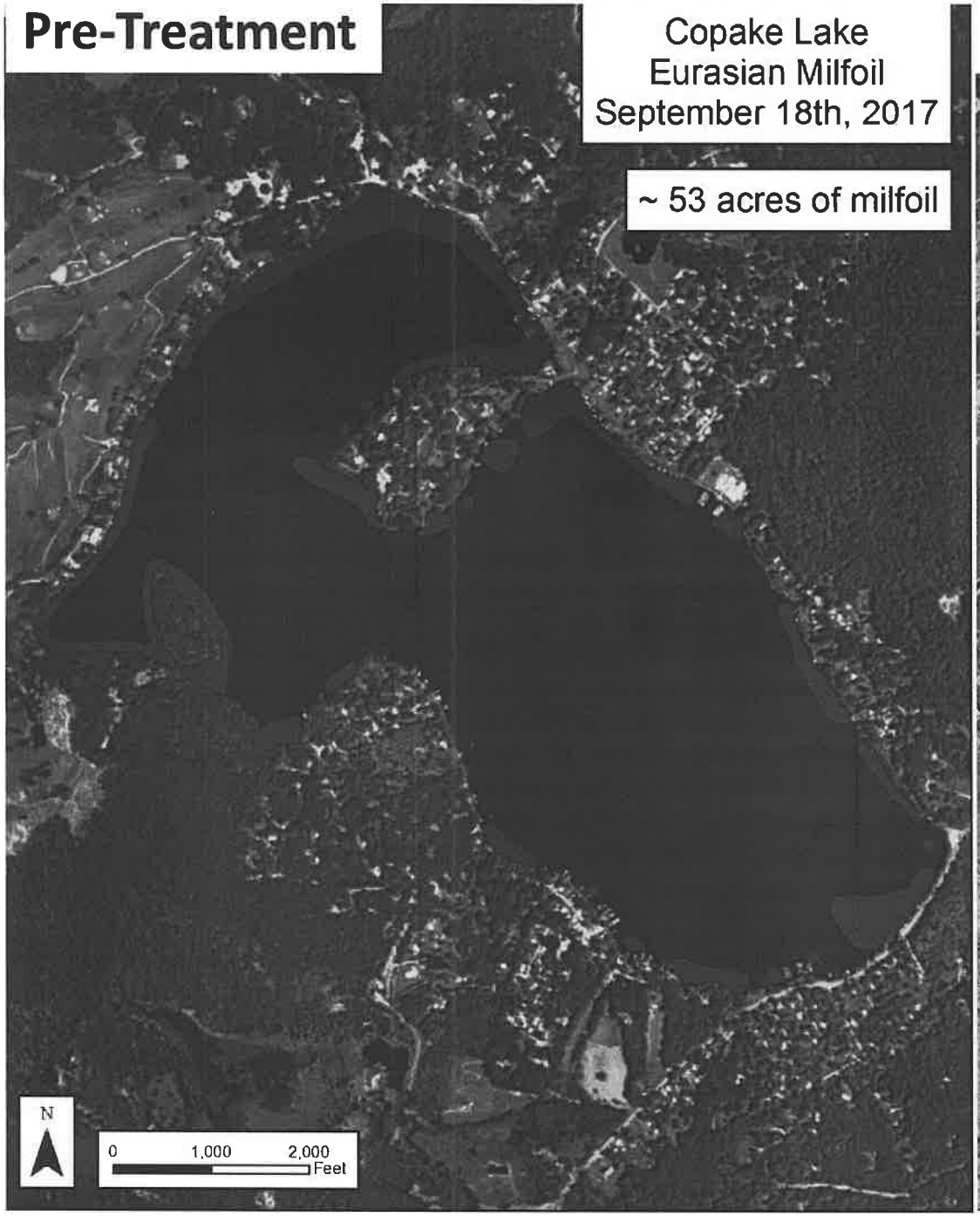


2004 to 2016

- Milfoil and curly leaf populations waxed and waned, but did not reach pre-2002 treatment levels
- Various strategies used to keep plants in check
  - Spot herbicide treatments
  - Hand pulling
  - Drawdown

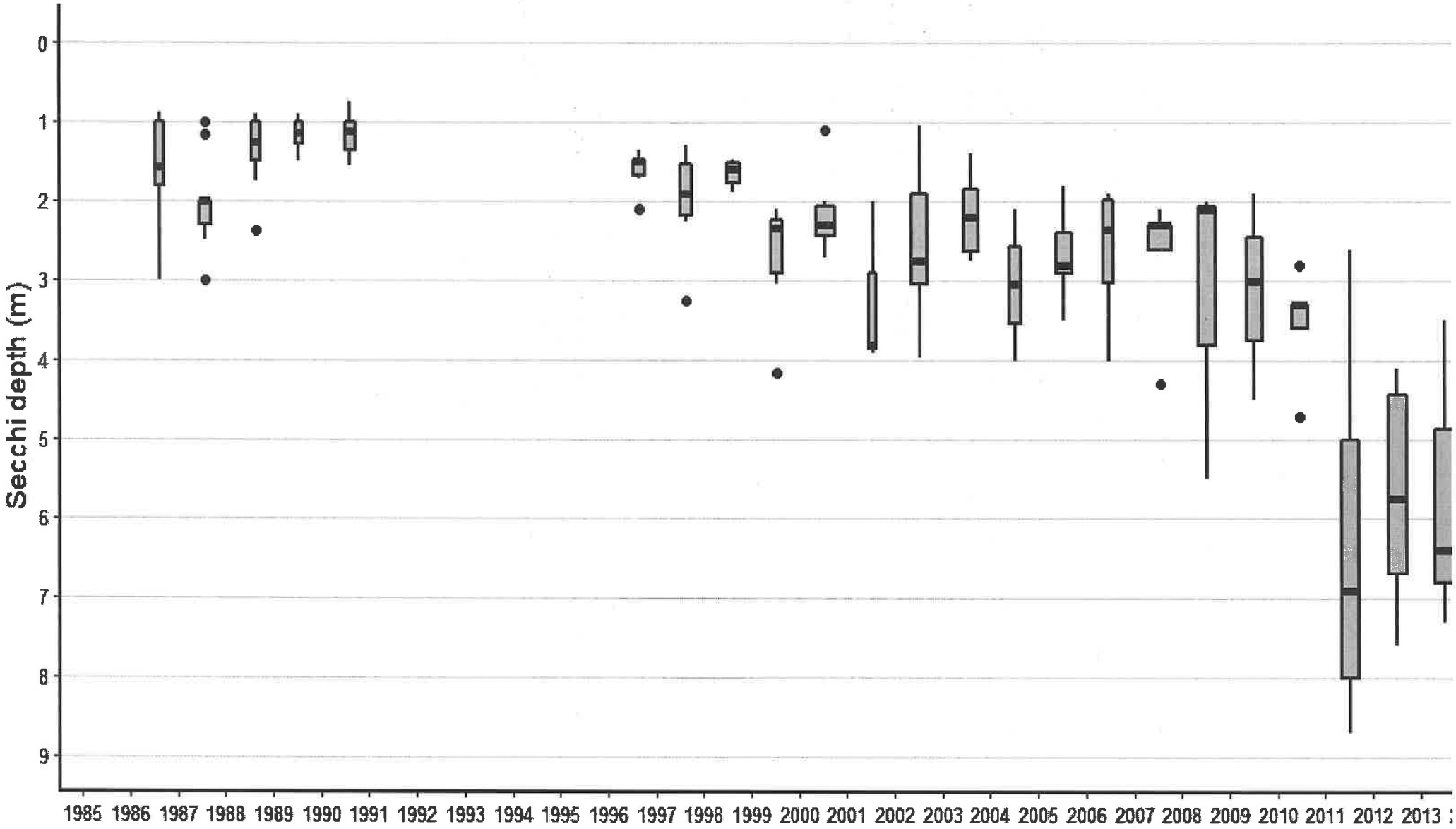

Whole lake Fluridone Application
160
140
120
100
80
60
40
20
0
Acres of dense milfoi
1990
1995
2000
2005
2010
2015
year
Treat 40-55 acres annually with contact herbicide


Copake Lake
Mosquito Island
Dense Milfoil Beds 2015-
62 acres
2261 ft
© 2015 Google

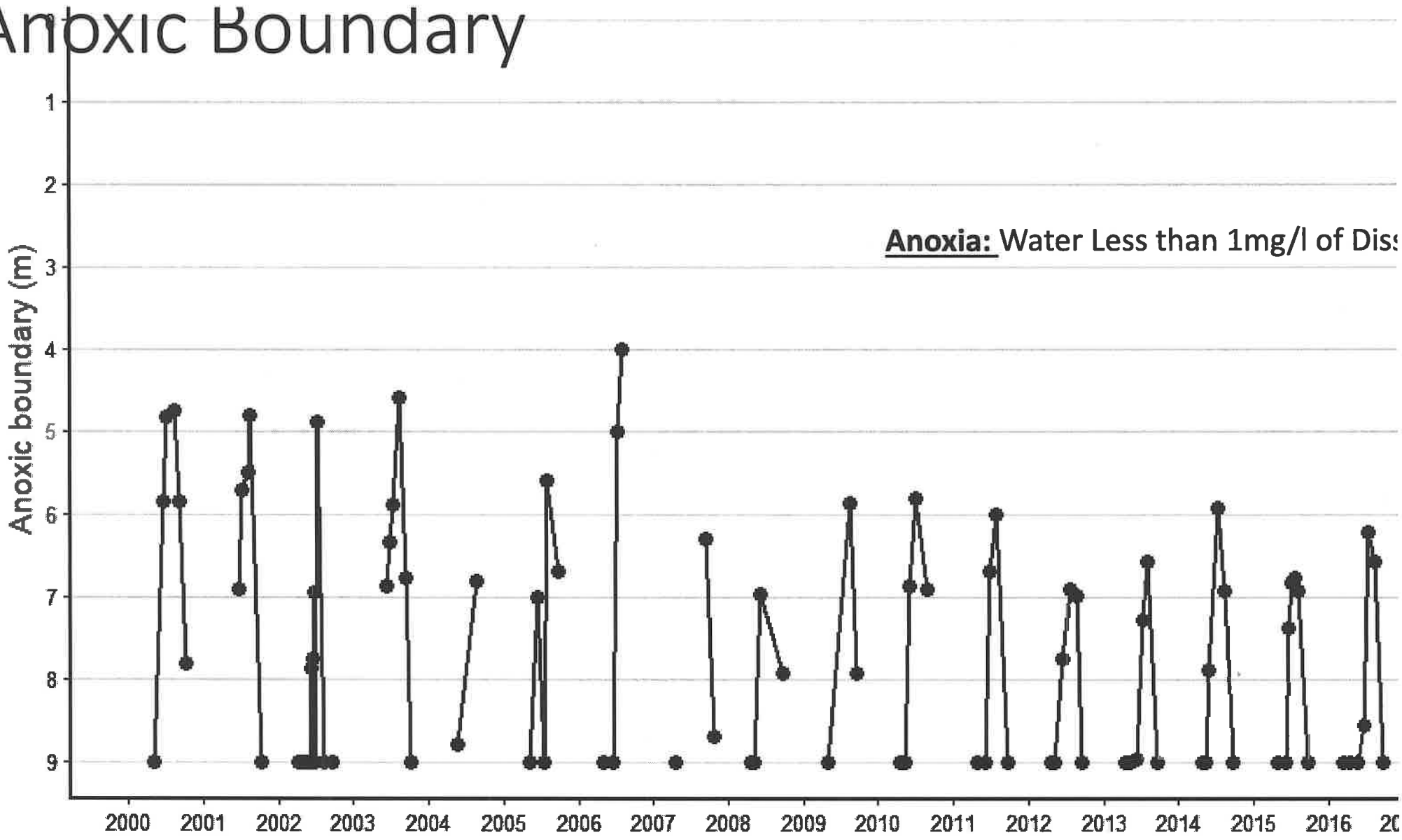

Pre-Treatment
Copake Lake
Eurasian Milfoil
September 18th, 2017
~ 53 acres of milfoil
N
0
1,000
2,000
Feet


Post Treatment
No
N
0
1,000
2,000
3,000
Feet

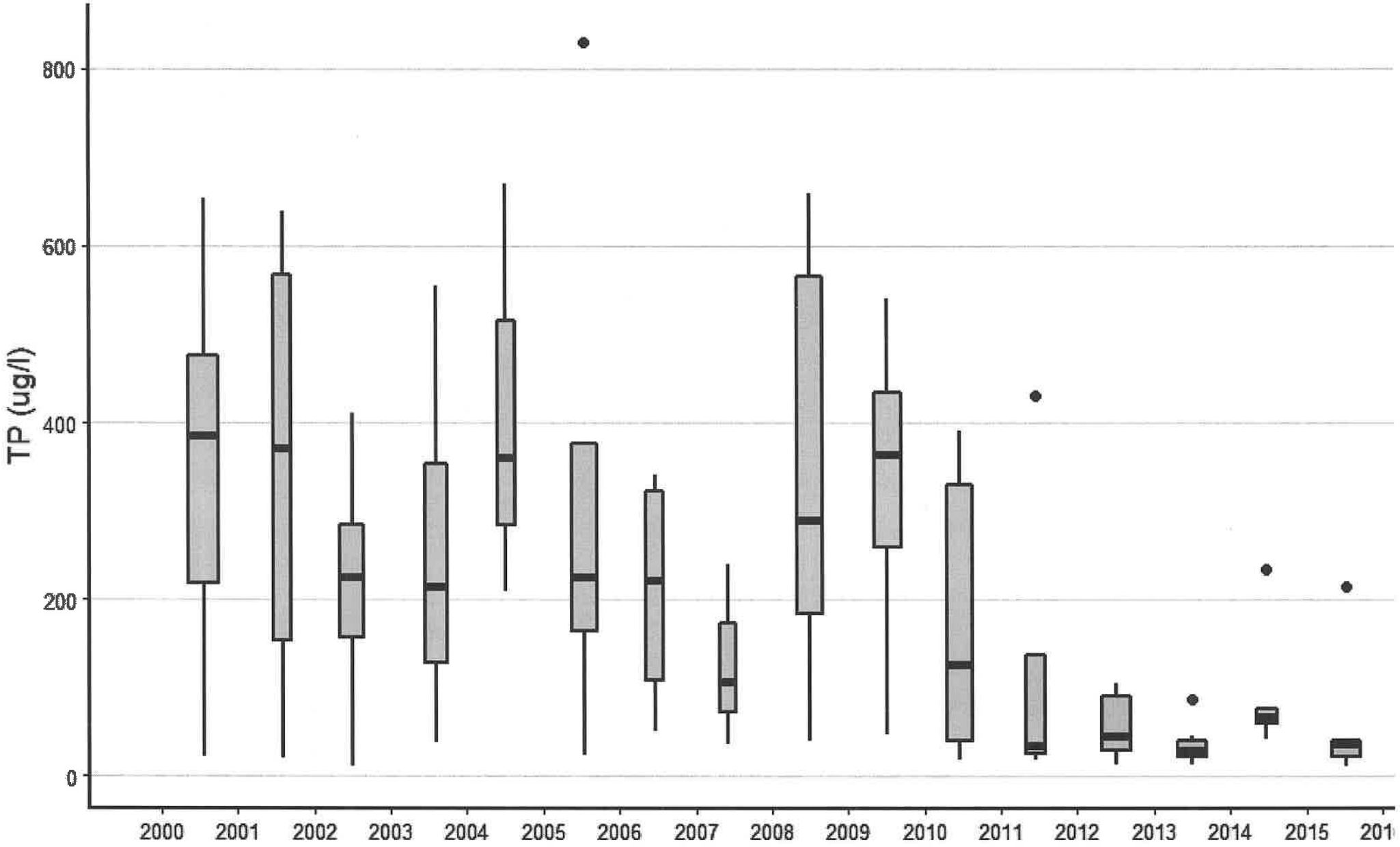
Water Clarity via Secchi Disk



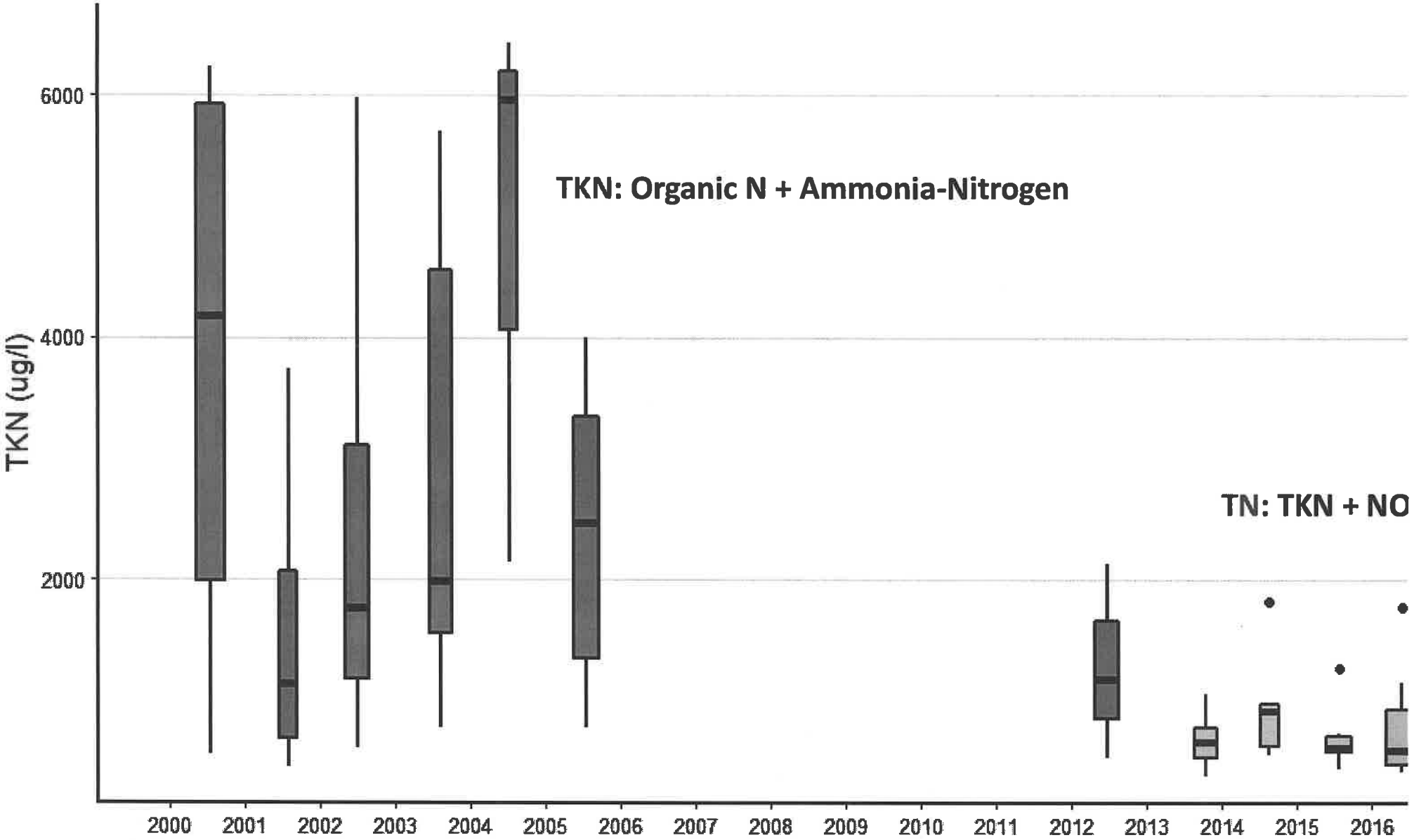
Anoxic Boundary



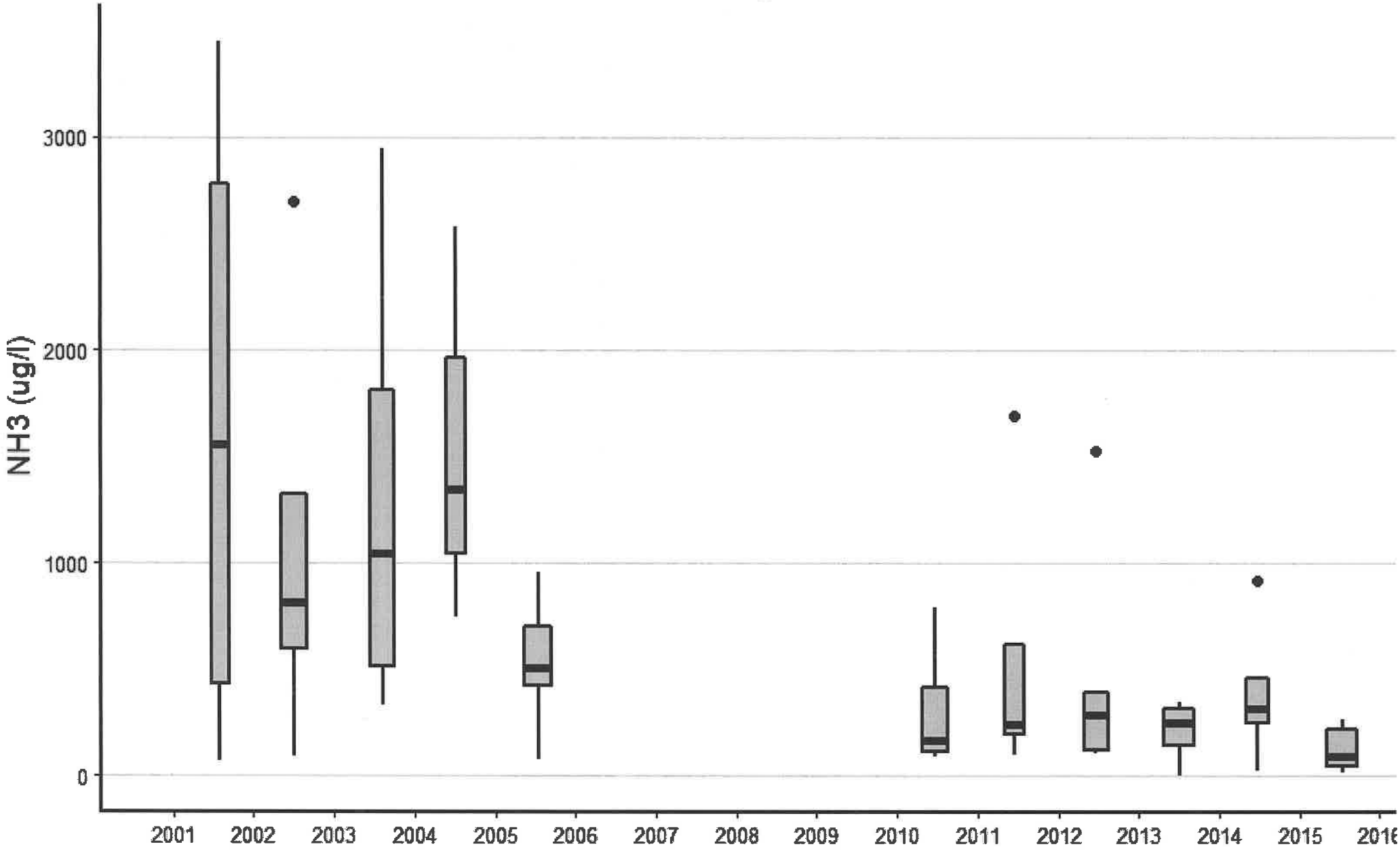
Bottom Total Phosphorus



Bottom Total Kjeldahl Nitrogen and Total N

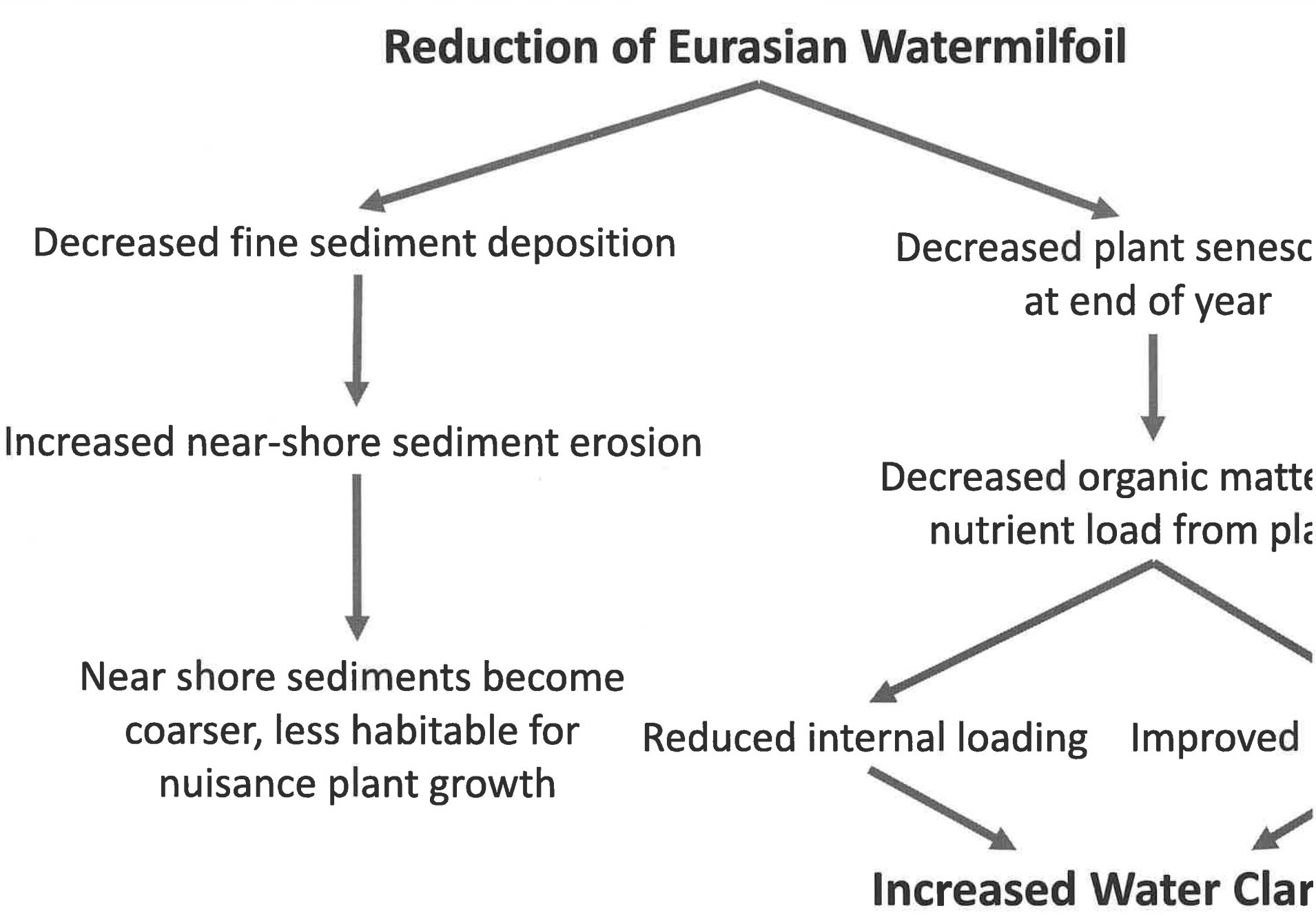


Bottom Ammonia-Nitrogen



Macrophyte impacts on lake ecosystems

- Large stands of macrophytes have significant impacts on ecosystems
  - Habitat for ephyphitic algae
    - Can add ~7 to 36% to biomass of eurasian watermilfoil (Balci and Kennedy 2003).
  - Enhance deposition of fine sediments (Carpenter and Lodge 1986)
  - Enhanced movement of nutrients from sediment to water column during the year and during senescence.


Reduction of Eurasian Watermilfoil
Decreased fine sediment deposition
Decreased plant senesc
at end of year
Increased near-shore sediment erosion
Decreased organic matte
nutrient load from pla
Near shore sediments become
coarser, less habitable for
nuisance plant growth
Reduced internal loading
Improved
Increased Water Clar

Conclusions

- Use of EPA registered herbicides effectively knocked back aqu plant coverage.
  - Not all formulations worked as intended though.
- Changes in aquatic plant coverage likely played a major role i increased water quality conditions
- Not the only source of nutrients though
  - Septic systems
  - Stormwater runoff

Looking forward....

- Copake Lake has the best clarity in years
  - 7.6m this spring!
- Still some issues remain...