Congamond Lakes Water Discussion

June 13, 2017

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LMC and CC Vice Chairman

Outline

- Review of what we are doing for water quality
  - Note: invasive weed issues are being managed by the town using the process already established – GREAT cooperation example (1/3 Southwick, 1/3 Suffield, 1/3 CRC)
- The natural seasonal cycle
- Year-to-Year Comparisons
- Water level discussion
- Typical temperature curve
- Grant applications

Water Quality –
What are doing and have been doing

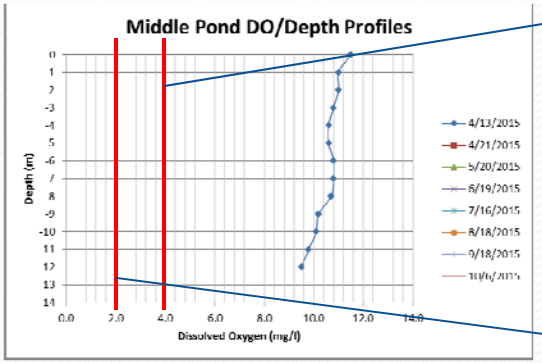
- Monitoring
  - Measurements of water chemistry vs depth in all three lakes
  - Water sampling at surface and depth and lab evaluation of these
- Management
  - Analysis of the data above and on-going reporting of conditions
  - Helping to drive rapid decision making for algae bloom management
  - Setting the stage for later actions
- Building the data we will need for later action
  - The first Oxygen demand measurements for the lakes
  - Continuous water chemistry measurements
  - Bottom sampling – coring and small dredge samples of the bottom
  - Storm water sampling
- Grant applications for action
  - Canal restoration
  - Phosphorus remediation

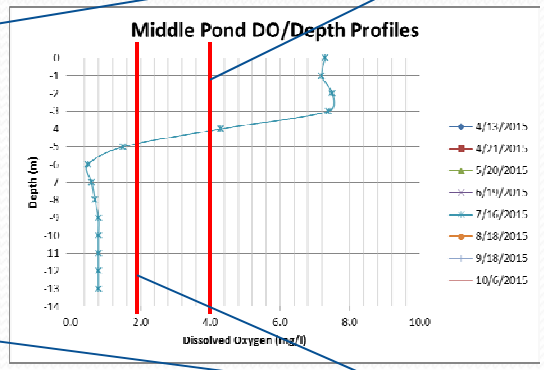
The Natural Seasonal Cycle

- At the time of Ice-Out the lakes are not stratified
- "Layers" begin to form over the next few weeks
  - Easily observable in temperature and dissolved Oxygen
- The stratification becomes very strong as the summer progresses
  - The greater the temperature difference, the stronger the layering
- As the surface cools and storms occur, the layers begin to break up
  - This allows the poor quality, Oxygen depleted, water from the bottom to mix with the better water near the surface
  - If this is too fast there can be fish kills
  - This is another time of risk for algae blooms

Below this line is very bad for fish.

Oxygen



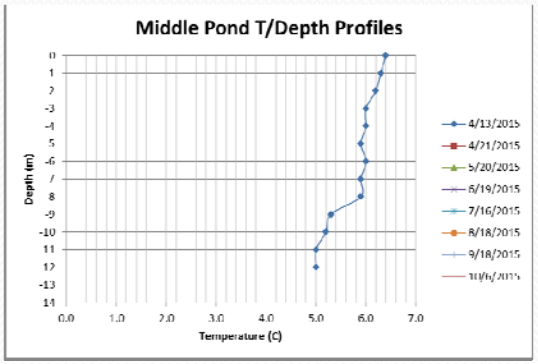


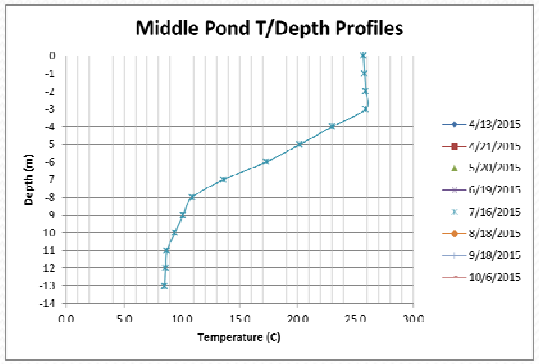
April 13, 2015

July 16, 2015

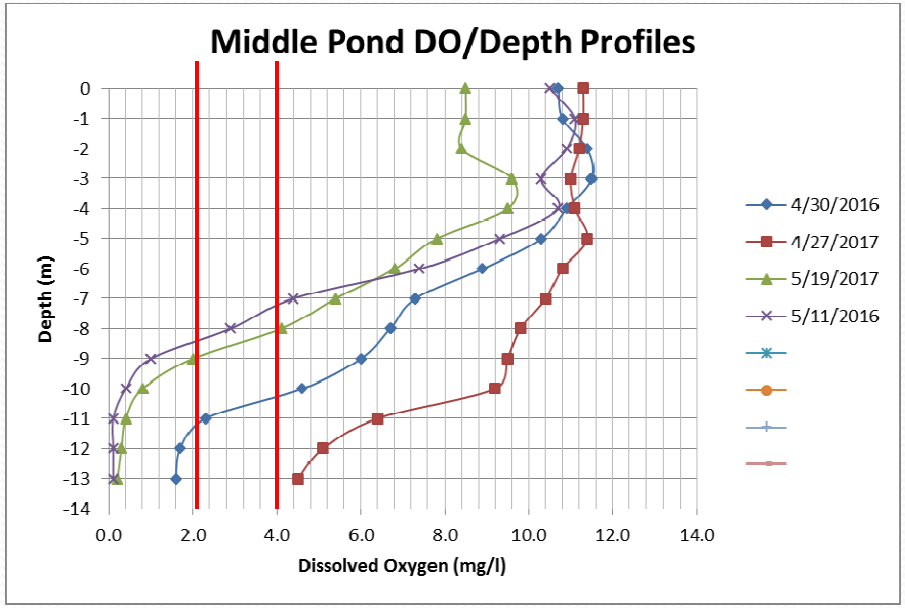
Below this line is very bad for water quality.

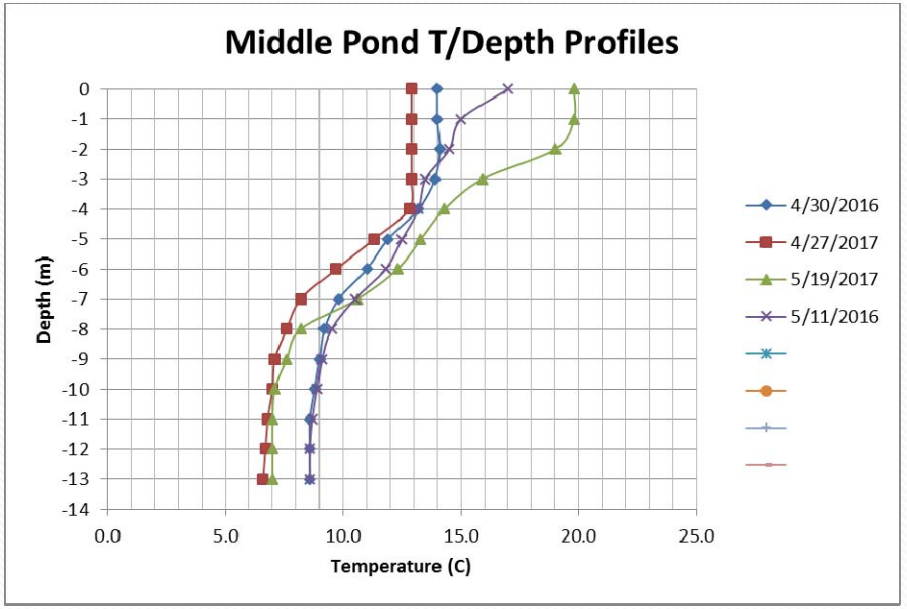
Water Temperature





Middle Pond Comparisons – 2017 vs 2016

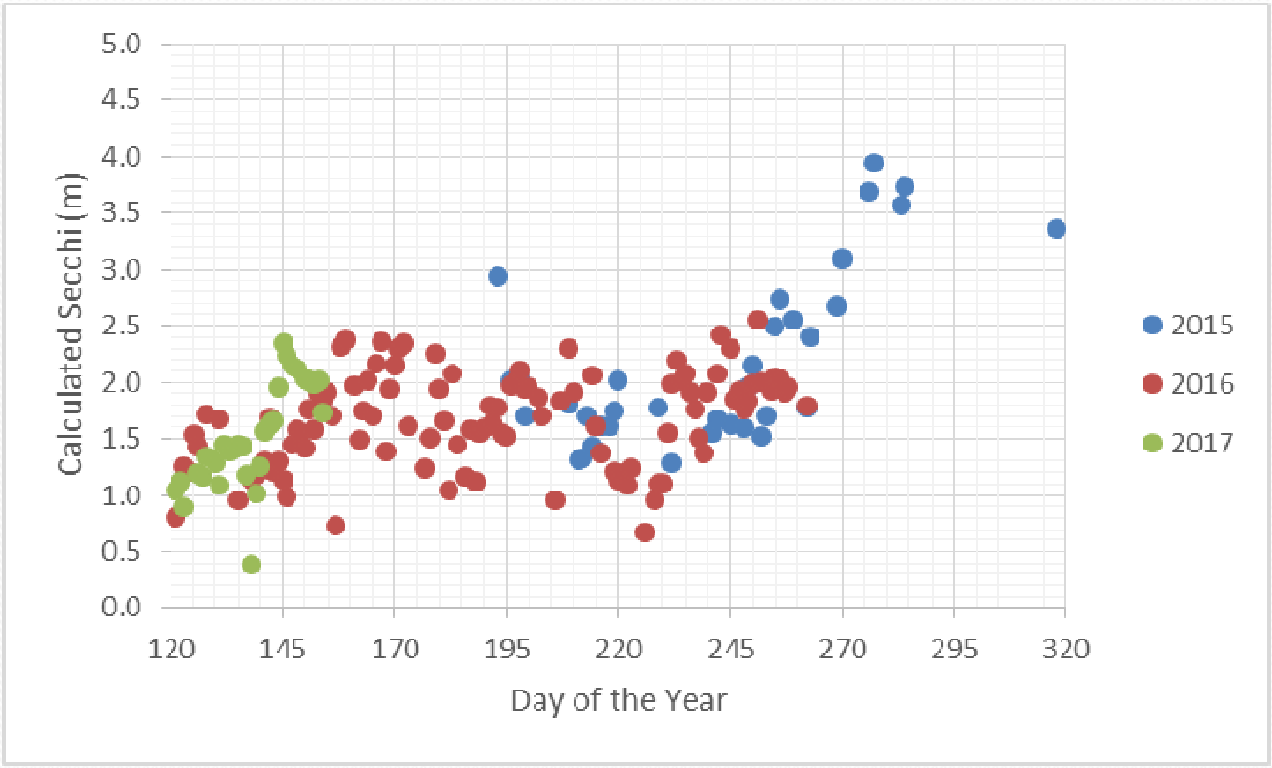




- Similar depth profiles
- Generally worse lab results – Phosphorus for example
- Again need constant monitoring – likelihood of algae bloom

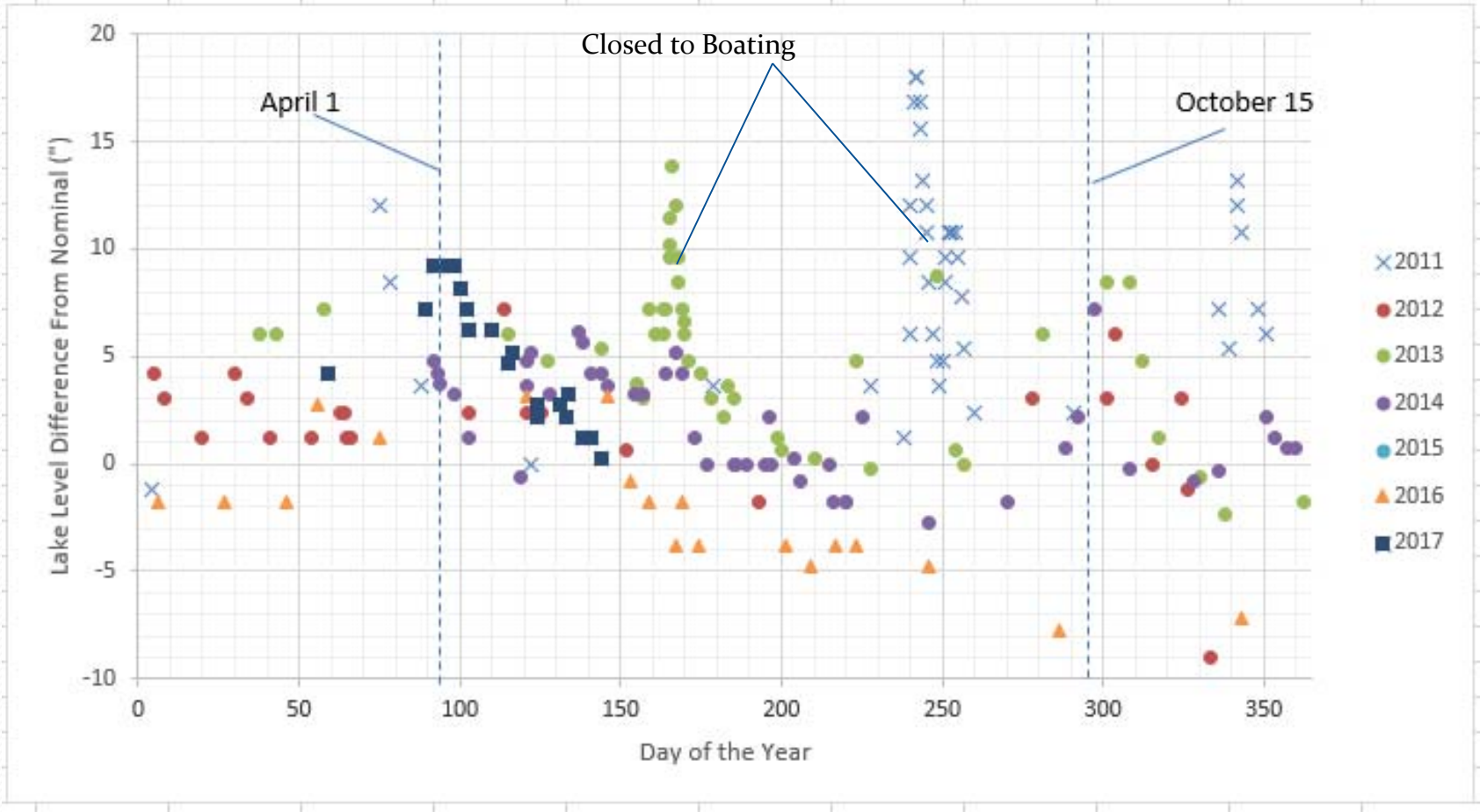
Total Phosphorus (mg/l)	4/29/16	4/27/17
South Pond – Surface	0.022	0.041
South Pond - Bottom	0.023	0.029
Middle Pond – Surface	0.013	0.023
Middle Pond - Bottom	0.22	0.069
North Pond – Surface	0.01	0.016
North Pond - Bottom	0.062	0.022

South Pond Water Clarity – 2015 - 2017



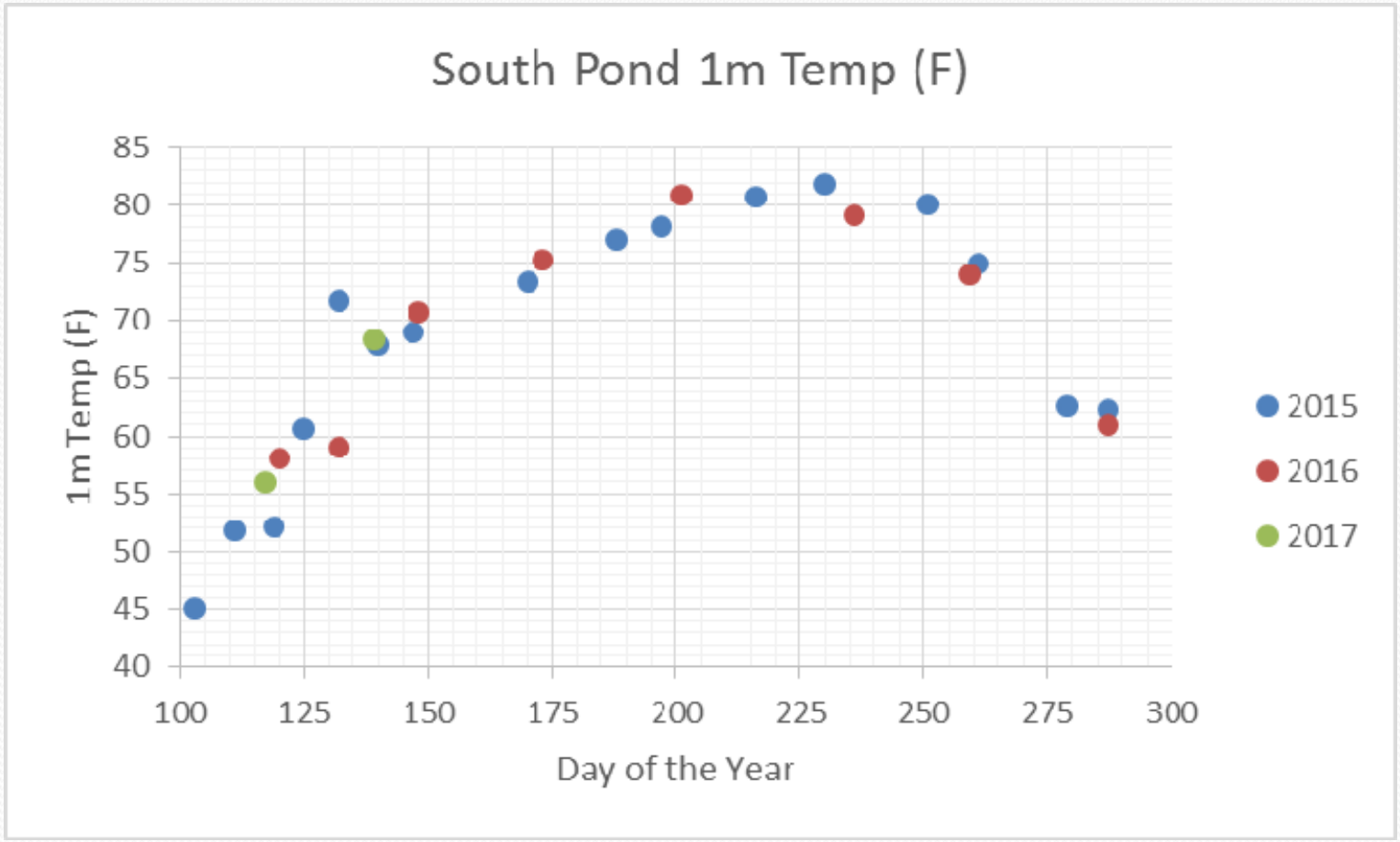
- Continuing to run in the same general range – poor
- Proposed treatment (grant application) expected to significantly improve this

Water Level vs Date – Multiple Years



- Several years have had “closed to boating” events
- Water is typically 0-5” above nominal in mid May
- 2016 was an anomalously low water year

1m Water Temperature vs Date



- So far each day of year seems to be within ~ +/- 2.5 degrees

Grant Applications

- Working with our representatives and the DEP to look to secure funding for the canal restoration grant
  - This grant application was started several years ago by the Canal Restoration Committee with extensive work by members of the Town of Southwick staff
- Pushing for state funding in the works for Phosphorus remediation for the lakes
  - Alternative would be a combined State/Federal grant – longer process