



CANDLEWOOD LAKE AUTHORITY

P.O. BOX 37 • SHERMAN, CONNECTICUT 06784-0037 • (860) 354-6928 • FAX (860) 350-5611

Minutes of Regular Meeting October 10, 2018

Attending:

P. Schaer	Sherman
G. Linkletter	Sherman
J. Hodge	New Fairfield
B. Licht	New Fairfield
C. Robinson	Danbury
M. Toussaint	New Milford
J. Wodarski	New Milford
D. Rosemark	Danbury (electronic)
J. Murphy	Brookfield
W. Lohan	Brookfield
D. Cushnie	Sherman

Absent:

E. Siergiej	Danbury
S. Kluge	New Milford
B. Brown	Brookfield
J. Main	New Fairfield

M. Howarth, Executive Director
J. Neil Stalter, Director of Ecology and Environmental Education
F. Frattini, CLA Administrative Coordinator
CLAMP – Asst Chief R. Barnard and Capt. N. Mellas

Recorder: F. Frattini

Guests: two members of the public.

Chairman, Phyllis Schaer, called the regular meeting of the Candlewood Lake Authority to order at 7:35 P.M. at Brookfield Town Hall Brookfield, CT. She welcomed the guests.

Public Comment: None

Secretary's Report: Frances Frattini advised that Khris Hall, Selectman from New Fairfield, requested that her statement that she presented at last month's CLA meeting on behalf of herself and First Selectman Pat DeMonaco (who was not in attendance) regarding their concern on the vendor change of FirstLight Power Resource be attached to the September minutes. *Jerry Murphy made a motion to accept the minutes of the September 12, 2018 meeting as amended, seconded by Bill Lohan, motion was voted with all in favor, Motion carried, and minutes have been accepted as amended and Ms Hall's statement will be attached to these minutes.*

Candlewood Lake Authority Marine Patrol: Asst. Chief Barnard advised the delegates that Chief Vane will be undergoing surgery this week. Thoughts and prayers are with him and his family. He noted that the Lake Patrol Officers have stepped up to help the family in any way they can. Mrs. Schaer advised support for Mrs. Vane and the family.

Asst Chief Barnard reported that the Patrol season will end Sunday, October 14, 2018.

Chairman's Report: Chairman Phyllis Schaer reported that the letter had been sent to FirstLight Power Resources regarding the change of vendor for the Nuisance Plant Monitoring this season. The letter is part of the Executive Director's Report that is attached to these minutes. Mrs. Schaer reported that the Executive Committee discussed sending a letter to FERC regarding this. She reported that FLPR Station Manager Stuart Piermarini has left and John Howard has taken over that position. The Nuisance Plant Monitoring reports should be done by November 30th this year. Both vendors should have them done by then. Follow up on the SMP as the review is due to FERC in March. A SMP Review Sub Committee of the Watershed Management Committee has been formed with members, Phyllis Schaer, Bill Lohan, John Hodge, Mark Toussaint, Joe Wodarski, with the Executive Director and Director of Ecology and Environmental Education consulting and advising. Mrs. Schaer asked if any other delegate would like to participate – none volunteered. She noted that the sub-committee will meet prior to the Watershed Management Committee. Mrs. Schaer advised the delegates to contact any member of the subcommittee with any ideas, concerns, items that would like considered in the SMP review. Meetings with FLPR before the March deadline will be scheduled. Dr. Kortmann will be invited to speak to the Watershed Management committee on the Water Quality Monitoring program of the CLA. She advised that Mr. Stalter is working on transferring all thirty years of water quality data to one format. She reported that FERC responded to comments on the Vegetated Buffer Report with concern over the lack of detail and the format changes of the report from year to year. As noted above, Mr. Toussaint read the draft of a letter to FERC on the change of vendor for the Nuisance Plant Monitoring. *Jerry Murphy made a motion to send the letter to FERC, seconded by Bill Licht - discussion followed.* Mr. Hodge noted that the Executive Committee had asked the Executive Director to draft a letter and he asked that the letter he wrote be shared with the delegates. Mrs. Schaer read that letter – called “Version one” for discussion purposes and the one Mr. Toussaint read was called “Version two” – discussion continued on both versions of the letter and how they were written. For the record George Linkletter noted any person on this board has a right to express their opinion. Discussion ended and *the motion to send Version two of the letter was voted with 8 in favor and three opposed (John Hodge, Chris Robinson and George Linkletter) Motion carried and the letter will be sent to FERC.*

Mrs. Schaer reported that we will be sending a note to First Selectman Steve Dunn to update him on the progress to get the Boat Wash Station program up and running.

Vice-Chairman's Report: Vice Chairman, Mark Toussaint advised he had no Vice-Chairman report.

Treasurer's Report: Treasurer Bill Lohan noted that we have completed the first quarter of the fiscal year and Profit and Loss Budget vs. Actual for September 30, 2018 has income at 74% of budget and expenses year to date are 28% of budget – Public Safety has wages at 73% of budget, gas at 52% and insurance at 86% this is high because of the seasonality of this department, There are no adjustments or transfers this month. *Mr. Lohan moved that the report for the month ended September 30, 2018 be accepted as presented, seconded by George Linkletter and voted with all in favor. Motion carried and report has been filed for audit.*

Mr. Lohan reminded the committee chairmen that their 2019/2020 budget proposals are due to the office Monday, October 15th, he hopes preliminary numbers are in for the Finance Committee meeting, then CLA review in November and approval in December.

Executive Director's Report: Mark Howarth advised his report is attached to these minutes and then noted the highlights.

- Clean Up – October 6th went well, good turnout, thank you to all who helped especially New Fairfield Public Works. Volunteers filled a 30-yard dumpster with debris from the lake. It was another successful event. But should be back to a spring Clean Up for 2019.
- He has prepared an Annual Report – changed the format this year. It has been sent to the Town CEO's.
- He and Mr. Stalter attended Still River Day with the Enviroscape
-

Director of Ecology and Environmental Education: Neil Stalter noted his report is attached to these minutes. Highlights from his report are:

- He has been working on shoreline map photos and will be going out to collect new photos
- Lake Management Plan - collecting all CLA plans as a starting point
- Organizing Water Quality Data from 1985 to present
- Started planning the first Drone Video
- Revived Onboard – finished the Grass Carp strtoymap piece
- Clean Up – planning, organizing and working
- Continue research on Boat Wash Station
- Summarized the September Water Quality Report

Ms. Schaer noted that his ideas for a Report Card for Candlewood Lake is a good idea.

Committee Reports

Public Safety Committee: Committee Co-Chairman, Joe Wodarski asked the delegates to sign up for the Annual dinner which will be Friday, November 16th at the Candlewood Lake Club. Mr. Wodarski noted that there was some concern about where gas was being purchased this season. Jerry Murphy, Committee Co-Chairman, advised that it was a wonderful season for the Lake Patrol. Mr. Wodarski noted that there is the possibility that the Chief of Marine Enforcement will probably not be returning and the Assistant Chief will be the Interim Chief.

Mrs. Schaer reminded the delegates that the Memorial Bench Dedication for Harold Mayer would be Saturday, October 13th 1:30/2:00PM at Lynn Deming Town Park.

Equipment/Facilities Committee: Doug Cushnie, Committee Chairman, reported that the buoy removal has begun. McKee I was taken out of service, the ARK II and McKee motors were swapped, and the ARK II engine is being looked at. He reported that he will be going over equipment and will evaluate all this fall. He thinks McKee I looks pretty good. He suggested that Public Safety and Equipment/Facilities meet to discuss.

Pubic Awareness Committee: Committee Chairman George Linkletter reported that they are working on content, locations vendor etc. for the drone video, discussed handouts, and improving the distribution list for the winter mailing. Mark Howarth noted the handouts would be whistles for kayaks and PWC's and micro fiber towels imprinted with logo, map, tips to encourage courteous boating – getting prices.

Preserve New Fairfield is having a presentation on Sunday October 14th (1:30 to 4:30) on the History of Candlewood Lake “Plows to Power” at the Hubble House Museum (33 Route 37)

Watershed Management Committee: Committee Chairman, Mark Toussaint noted monitoring has gone well and they will be looking for input on the program. He advised that the CLA should be proactive with recommendations on the SMP review. Dr. Kortmann will be invited to do a cursory review of the CLA Water Quality Program for recommendations and input. He added that he will keep all informed on the SMP review sub-committee.

Old/New Business: Mrs. Schaer noted the noise issue can also be a safety concern with the loud music a whistle of a kayaker cannot be heard. Review of the local ordinances, boating laws and state statues to see if an amendment could be added to help with this problem.

Jerry Murphy moved to adjourn the meeting, seconded by John Hodge, meeting adjourned at 8:52 P.M.

Respectfully submitted,

Jerry Murphy, Secretary

Frances Frattini, Administrative Coordinator

r/b/mh

*These minutes are not considered official until they have been approved at
The next regularly scheduled meeting of the Candlewood Lake Authority.*

My name is Khris Hall. I am a Selectman in New Fairfield. I am speaking on my behalf, as well as that of Pat Del Monaco, who, as First Selectmen in New Fairfield is an *ex officio* member of the CLA.

We were distressed to learn that First Light has decided to change consultants on the important issue of weed mapping. As we understand it, First Light has decided not to continue to use Greg Bugbee, who has mapped Candlewood Lake for over ten years, with George Knoechlein. We would like to understand the reasons for this replacement.

Greg's experience performing mapping for so long means he has a unique understanding of the Lake. He is a trusted resource working for a public agency. Dr. Knoechlein's past employment by First Light and well-known advocacy for the use of chemicals to address milfoil make him a controversial figure. We would like to know the reasons why First Light would make this change now. We would further like to know if First Light followed the required process of getting approval of the Technical Committee before making such a change. If that process was not followed, how are you going to correct the situation?

New Fairfield residents voted overwhelmingly last year against the use of chemical agents to address milfoil. It remains an important issue in our Town. We urge First Light to reconsider their decision and follow the required process in choosing a consultant to do weed mapping.



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October 10, 2018
Executive Director
Mark Howarth

Monthly Report:

- **Clean Up:**

When the May storm hit the area, we had to postpone the event until the fall. The last few weeks we were busy doing a lot of planning and preparation for the event on October 6th, but

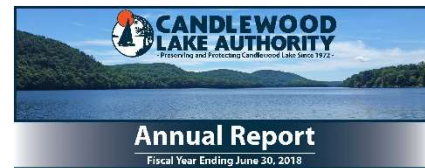


the 2018 Candlewood Lake Clean Up was a success! Even though the original forecast of nice weather never came to fruition, the overcast and somewhat cool/damp weather did not keep our volunteers from doing a great job cleaning up debris around the lake.

We had approximately 100 volunteers come out that day, where they once again filled a 30-yard dumpster with all sorts of trash from the shoreline of the lake. Following a morning of cleaning, the volunteers gathered for a cookout lunch, free t-shirt and hat, to celebrate a job well done on behalf of Candlewood Lake.

- Many thanks to all who helped make it possible:
 - Our Clean Up Volunteer Crews
 - Our Clean Up Boat Captains
 - Town of New Fairfield
 - New Fairfield Public Works Dept.
 - New Fairfield Park & Rec.
 - New Fairfield Senior Center & All Lunch Servers
 - CLA Sponsors
 - CLA Clean Up Lunch Sponsoring Restaurants
 - Allen Hinden for donating Clean Up hats for every volunteer
 - Brian Barnier from the Candlewood Lake Power Squadron for doing voluntary boat safety inspections
 - CLA Marine Patrol
 - Brookfield Volunteer Fire Department Candlewood Company Inc.

- **Annual Report:** We created and submitted the 2017-2018 Fiscal Year Annual Report. Using a new format this year, we looked to highlight some of the most important achievements of the CLA in the past year. The Annual Report is attached.



This has been a year of changes for the Candlewood Lake Authority. Our core focus remains protecting the water quality on Candlewood Lake and providing public safety, primarily through our professional Marine Patrol. While we have continued to work towards both these goals this year, we also paid forth great efforts to reconstruct our small staff as we look forward to the future of the CLA and Candlewood Lake.

It's been nearly 10 years since the Authority had a change in its staff. However this past year the CLA was in the rare position of searching for an executive director. After an extensive search, in March of 2018 the CLA named Mark Howarth as its new Executive Director of the Candlewood Lake Authority. Mark had been the CLA's Director of Education and Outreach for nearly 10 years and will now continue in a new role. Following that, the CLA set out to fill the remaining staff positions in the office, the Director of Looking and Environmental Education. The process to find the new staff member began in spring 2018, but was completed in FY2019. In addition to our staff changes, we also welcomed three new delegates to our board: Dr. Jay Jeff Min and Bill Licht from New Fairfield, and Steve Kluge from New Milford. Our staff and Board now bring decades of experience with fresh perspectives.

There is excitement here at the Candlewood Lake Authority. New ideas and goals will be shared and implemented as we strive to improve upon our history of success in protecting the Lake and those who recreate here. We are thankful for the support of all those who believe that what we do not only benefits the Lake and those who enjoy its waters, but that the important work we do extends to all those who live in the towns around the Lake. We look forward to focusing our mission in the coming year.

- Water Quality & Public Health**
- **Water Quality Monitoring:** We monitor, sample and test the water at five sites on Candlewood and Squantz monthly during the season, and have done so for over 30 years. This past year we contracted with A&J for our water quality sampling. They produced a detailed 2017 Annual Water Quality Report, and are now also submitting monthly water quality reports to us.
 - **eCell Monitoring:** We partner with the New Fairfield Senior Center on weekly eCell bacteria sampling at 18 sites around the Lake.
 - **Blue-green Algae:** Three summers ago we began to partner with Western Connecticut State University to fund a weekly "rapid" testing program at the five town beaches. Those results are posted weekly to our website and social media platforms for the public.
 - **Invasive Species:** The CLA works to control and minimize the negative effects from invasive species already in the Lake, and prevent the introduction of new invasives.
 - **CLA's Steep Grass Care Program:** To help control the invasive reed growing in the Lake, the

- **Weed Mapping:** We met with representatives from FirstLight Power Resources on September 21st regarding the change in vendors that occurred for the nuisance plant monitoring this season. In attendance from FirstLight were Stu Piermarini and Len Green and from the Candlewood Lake Authority Phyllis Schaer, Doug Cushnie and Mark Howarth.

We discussed the fact that the vendor selected and hired by FirstLight for this year's weed mapping was not approved by the Technical Committee, as required under the Nuisance Plant Monitoring Plan.

- **Still River Day:** On September 26th Neil and I attended the Still River Alliance Commission's "Still River Day", where we taught 3rd grade students from Danbury about our watershed. We used the Enviroscape, which is always makes us a popular stop with the students. Thank you to the Still River Alliance Commission for inviting us and thank you to the Danbury / New Fairfield Women's Club, whose grant this year allowed us to freshen up and upgrade our 20-year-old Enviroscape to provide a better experience for the kids.



- **Shoreline Mapping:** As a follow up to our 2006 shoreline photo mapping, the CLA Executive Committee has requested that we conduct a 2018 shoreline photo update. We have begun that process, tested the equipment and plan to complete that work this month.

- **Boat Wash:** We are continuing to work towards securing a location for our pilot boat wash station at Candlewood Lake. We have been discussing a follow-up meeting date in Hartford with the CT DEEP in the coming weeks, in addition to working on an alternate site.



CANDLEWOOD LAKE AUTHORITY

- Preserving and Protecting Candlewood Lake Since 1972 -

Annual Report

Fiscal Year Ending June 30, 2018

This has been a year of changes for the Candlewood Lake Authority. Our core focus remains protecting the water quality on Candlewood Lake and providing public safety, primarily through our professional Marine Patrol. While we have continued to work towards both those ends this year, we also put forth great efforts to reconstruct our small staff as we look forward to the future of the CLA and Candlewood Lake.

It's been nearly 10 years since the Authority had a change in office staff, however this past year the CLA was in the rare position of searching for an executive director. After an extensive search, in March of 2018 the CLA named Mark Howarth the new Executive Director of the Candlewood Lake Authority. Mark had been the CLA's Director of Education and Outreach for nearly 10 years and will now continue in his new role. Following that, the CLA set out to fill the remaining staff position in the office, the Director of Ecology and Environmental Education. The process to find the last staff member began in spring 2018, but was completed in FY2019. In addition to our staffing changes, we also welcomed three new delegates to our board this year, Jeff Main and Bill Licht from New Fairfield, and Steve Kluge from New Milford. Our staff and Board now blends decades of experience with fresh perspectives.

There is excitement here at the Candlewood Lake Authority. New ideas and goals will be shared and implemented as we strive to improve upon our history of success in protecting the Lake and those who recreate here. We are thankful for the support of all those who believe that what we do not only benefits the Lake and those who enjoy its waters, but that the important work we do extends to all those who live in the towns around the Lake. We look forward to focusing our mission in the coming year.

Water Quality & Public Health:

- **Water Quality Monitoring:** We monitor, sample and test the water at five sites on Candlewood and Squantz monthly during the season, and have done so for over 30 years. This past year we contracted with AER for our water quality sampling. They produced a detailed *2017 Annual Water Quality Report*, and are now also submitting *monthly water quality reports* to us.
- **eColi Monitoring:** We partner with the New Fairfield Senior Center on weekly eColi bacteria sampling at 18 sites around the Lake.
- **Blue-green Algae:** Three summers ago we began to partner with Western Connecticut State University to fund a weekly "rapid results" testing program at the five town beaches. Those results are posted weekly to our website and social media platforms for the public.
- **Invasive Species:** The CLA works to control and minimize the negative effects from invasive species already in the Lake, and prevent the introduction of new invasives.
- **CLA's Sterile Grass Carp Program:** To help control the invasive milfoil growing in the Lake, the



CLA started a lakewide sterile grass carp program in 2015. We plan to add to the population in

the coming years, as we continue to analyze the results of this evolving lakewide initiative. Our partnership with Western Connecticut State University to track the movements and feeding habits of 48 of the carp using radio transmitters got an unexpected bonus season when battery life in the transmitters was longer than anticipated.

- **Prevention & Education:** The CLA has continued to fight the introduction of new invasive species in the Lake through various educational efforts, including a billboard and pamphlets distributed at boat ramps. We have also been working this year to initiate a boat wash station program.

Marine Patrol: For over 45 years we have deployed a professionally trained Marine Patrol. To begin 2018



we welcomed new officers to the Patrol. Through education and enforcement we work to keep boaters safe on the Lake. Our Patrol is out from

spring to fall and regularly interacts with the public. During the 2017 season we logged 1,925 hours on and off the water, made 503 contacts on the water which resulted in 408 enforcement actions, the majority of which were verbal warnings.

Education & Outreach: A key component of what the CLA does is educating the public. We ran or participated in a number of educational and outreach programs and events:

- **2017 State of the Lake:** 5th Annual CLA event where the lake community gathers to learn about and discuss



important Candlewood Lake topics.

- **Newsletters & Social Media Outreach:** Electronic newsletters, our website, Facebook and Instagram pages reach many thousands of people with important messages annually.
- **Safe Boating Courses:** The CLA Marine Patrol held three CT DEEP-approved safe boating courses for people to get their safe boating certificates.
- **Public Events and Presentations:** We participated in a number of public events this year, often educating the public about the lake's environment and safe boating - *New Milford Village Fair Days, Home Depot "Fire Prevention Day", New Fairfield Day, Soil Testing Day (partnered with CWI), Leadership Danbury, Birch Groves Community*
- **Watershed Education:** This year we went out to educate the youth about the Lake at the following events - *Sherman Science Night, Still River Day, EdAdvance Elementary Education Program*

Working with FirstLight Power: The CLA has been working to strengthen our working relationship with FirstLight Power for the benefit of Candlewood Lake.

- **Face-to-Face Meetings:** We have initiated face-to-face meetings with FirstLight to work more constructively and actively with them.
- **Partnered Messaging:** We began a new effort to partner some of our messaging with FirstLight, CT DEEP and the CLA starting this winter with an emergency lowering of the Lake in January and later the May storm safety messaging.

Additional:

- **Safety Buoys:** Our operations department deployed, maintained and retrieved approximately 80 hazard, speed and navigation buoys to keep boaters safe as they navigate Candlewood Lake.



- **NALMS:** We attended the North American Lakes Management Society's Annual Symposium where we networked with lake management professionals around the country and kept up to date on the latest scientific developments and best

management practices for lakes.

- **Fundraising:** Our large end-of-year appeal, among other efforts, assisted the CLA in securing 25% of our budgeted funds from sources outside of the municipal appropriations.
- **Audit:** Our annual audit went smoothly and we received a very positive report from the auditor who said we didn't have any deficiencies.
- **May Storm:** The CLA responded to the May 15th storm that brought so much destruction to our towns by working on the water to clean up debris that had fallen into the Lake or broke free from the shoreline, replaced hazard buoys, alerted the

public of boating risks and provided FEMA support to three municipalities with a photo-inventory of shoreline property damage.



- **Grants:** The CLA was awarded two grants: First-Light Power HRP Grant to replace aging hazard buoys and Danbury/New Fairfield Woman's Club for education.
- **Interns:** We welcomed two high school interns from the New Fairfield SEE Program this spring.



CANDLEWOOD LAKE AUTHORITY

Member Municipalities: *Brookfield • Danbury • New Fairfield • New Milford • Sherman*

PO BOX 37 • SHERMAN, CT 06784 • P (860) 354-6928 • F (860) 350-5611

Mr. Stuart Piermarini
First Light Power Resources
PO. Box 5002
New Milford, CT 06776

September 13, 2018

Re: Annual Nuisance Plant mapping

Dear Stuart,

The FERC-approved Nuisance Plant Monitoring Plan details a number of specific responsibilities required of FirstLight most notably that “field identifications and collections of mapping data will be done with oversight from a qualified person approved by the technical committee.”

In addition, it lists other conditions of the annual mapping, including: “using GPS coordinates for each stand’s boundaries” and “using underwater video equipment, or other means necessary, to map stands of aquatic plants that may not be readily observable from the surface, in water approximately 10-feet deep.” It also states that “plant density will be recorded” and the “approximate height of fully submerged stands will also be recorded, as will approximate water depth for stands that reach the surface” among other requirements.

We are concerned because the recent change in consultants from The Connecticut Agricultural Experiment Station (CAES) to Northeast Aquatic Research (NEAR) was not approved by nor even discussed at the March 2018 Technical Committee Meeting, as required under the FERC approved Nuisance Plant Monitoring Plan. No proposal or scope of services was presented for approval or comparison with previous levels of service.

Prior to this change, The Technical Committee never received the proposal and specs for the mapping from NEAR to provide assurance that the methods and scope of work being used by NEAR meet and match the requirements of the Nuisance Plant Monitoring Plan. The accuracy and continuity of methods of the annual vegetation mapping of Candlewood Lake directly impacts the ability to analyze management effectiveness, carp stocking rates and future of the Candlewood Lake Sterile Grass Carp Program, as well as the needs placed upon the drawdowns to compliment the carp as a lake-wide milfoil control method.

The Candlewood Lake Authority does not approve of nor support this unauthorized change of consultant to conduct field research and data collection and the subsequent reports related to this work, particularly if at a reduced scope. We believe this action is not in compliance and does not meet the requirements of the Nuisance Plant Monitoring Plan.

We are troubled that we were only informed in writing by email of this change after we shared our concerns with you several weeks ago. Furthermore, the email provided by a FLPR employee on August 31, 2018, claiming this change was approved by the Technical Committee at this year’s annual meeting is inaccurate and un-true. It was not on the planned agenda or in the minutes, no proposal was presented, nor discussed or voted on at either the Nuisance Plant Monitoring meeting or the Technical Committee Meeting that followed on the same day. The approved vendor, CAES, has been doing the extensive data collection and reports for the past 10 years. A change in methods and vendor at this time would have a negative effect on the scientific research and data analysis we track to

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determine the effectiveness and requirements for the management of both our Sterile Grass Carp Program and the effectiveness of the annual drawdowns to control Eurasian milfoil.

Additionally, as members of the committee we are again requesting a written copy of the original scope of the bid sent out this year, as well as the scope of proposals for work submitted by NEAR and CAES.

Regards.

CANDLEWOOD LAKE AUTHORITY

A handwritten signature in blue ink that reads "Phyllis Schae". The signature is written in a cursive style with a large initial "P".

Phyllis Schae, Chairman

PS/MT/ff



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J. Neil Stalter

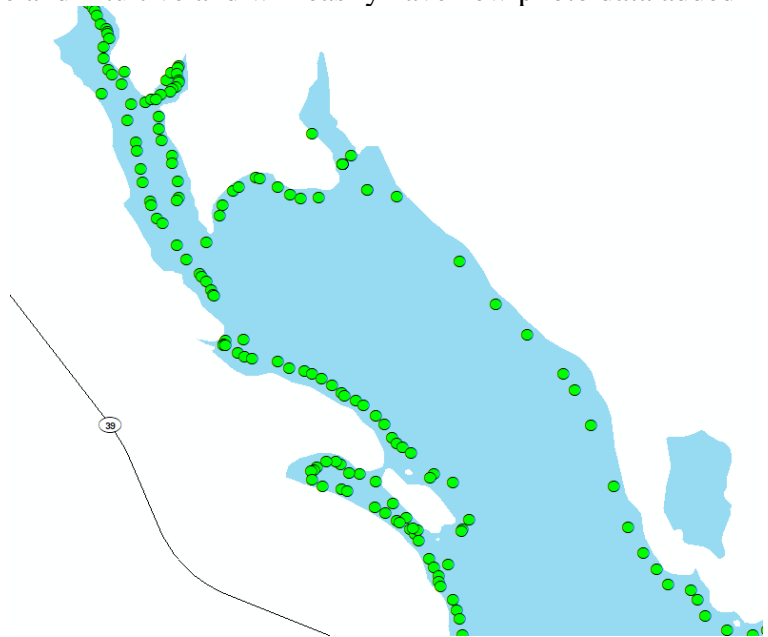
Director of Ecology and Environmental Education

Candlewood Lake Authority

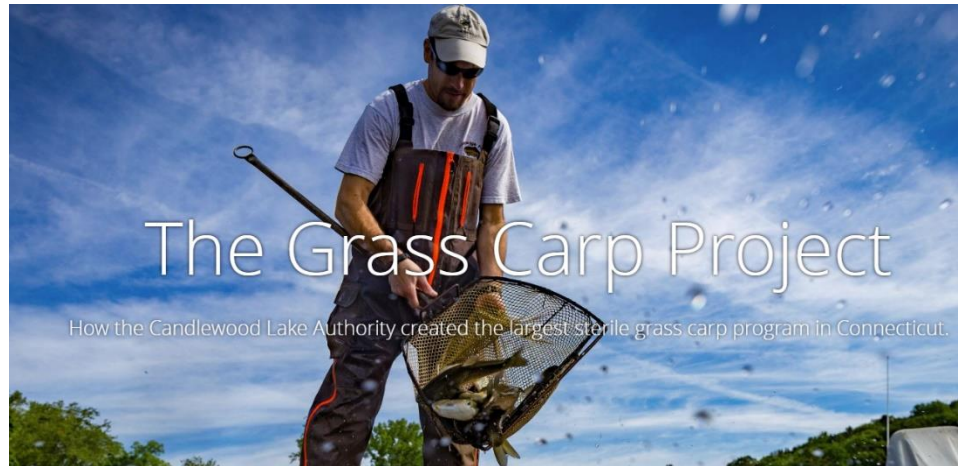
Re: October Meeting: Monthly Report

Date: 10/10/18

- **Shoreline Mapping:** Made new maps including all past shoreline map photos.
 - New maps are easy to use and intuitive and will easily have new photo data added to them so that comparisons can be made easily.
 - Went for a test run to determine GPS capabilities of cameras and decided that the office iPad has the best GPS capabilities for our needs.
 - Will go out in the coming weeks to collect all the pictures and finish the maps for future use in shoreline buffer evaluation, etc.
- **Lake Management Plan:** Began the process of collecting all necessary info to start LMP creation.
 - Collecting and reviewing all past management plans (Action Plan, water quality management plan, etc.) and studies to build a picture of all the info we have on Candlewood so far.
 - Started tracking down all WQ Monitoring Data from 1985-Present. Working with Larry to track down all the separate existing files. Will work on organizing all into one usable and organized format (Excel).



- Using this info to get an idea of any studies/data we want (extensive watershed modeling, internal loading modeling, etc.) from an outside consulting agency.
- **Drone Video:** Started process of planning first of drone video series.
 - Spoke with members of Public Awareness on strategy and timing.
 - Planning on a Springtime filming, and potentially getting a significant amount of footage to use in multiple videos.
- **Revival of Onboard:** Finished Grass Carp Onboard GIS Storymap Piece
 - Waiting for some finishing touches (Quotes, pictures, etc.) to publish.
 - Future onboard pieces planned include: Island Restoration/Erosion Prevention, Lake History, Noise/Light Pollution, Internal Loading, etc.
 - Continued to write and stockpile articles. Planning on three types of articles: shorter one-off pieces about a certain topic, seasonal newsletters covering a handful of relevant topics/info, and onboard pieces that will be longform deeper dives into long-term CLA projects, info, etc.
- **Clean-up:** Successful planning, organizing, and event!
 - Had a great time organizing the first “Fall cleanup.” And joining in the event.
 - Will be ready for an even larger group once the cleanup moves back to the spring!
- **Boat Wash Station:** Continuing research into boat wash station best practices, and how other organizations have successfully implemented voluntary boat wash station programs in the past.
 - Contacted both the Adirondack Watershed Institute (AWI) and Conesus Lake Association (CLA) about their programs, and what they’ve learned that we can translate to ours.
 - Planning a meeting with DEEP soon to discuss implementation at Squantz Cove boat launch. Firehouse across the street remains a promising option as well.
- September’s Water Quality Report summary is attached!





CANDLEWOOD LAKE AUTHORITY

- Preserving and Protecting Candlewood Lake Since 1972 -

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WATER QUALITY OBSERVATIONS

September 2018

Sampling was conducted on September 6th. This month, **secchi depth measurements were even better than those in August**, and represent the best clarity measured this entire summer. The greatest clarity was in New Fairfield at 4.45m (meters), followed closely by Sherman and New Milford at 4.22 and 4.20m respectively. The lowest Secchi depth was found in Danbury, which was 3.56m, which is still a significant improvement when compared to past years and earlier in the summer. The mean (average) secchi depth measurement for August ranged from 2.59m in Danbury to 3.07m in New Milford from 1985-2015. The significant improvement this September is likely due, in part, to the **deeper concentration of blue-green algae** found at 8-9m of depth. The causes of this concentration of blue-green algae at a specific depth are still being investigated but are not unusual for Candlewood or Squantz.

Nutrient loading (particularly the concentration of important compounds like Nitrogen and Phosphorus in the water) has important effects on lake health. High concentrations of these nutrients can lead to algal growth and blue-green algae blooms that can harm water quality, as well as lead to greater growth of nuisance plant species like milfoil. In September, **phosphorus levels increased modestly on the surface**, but none of the measures were above the CT threshold of 30 micrograms/liter that characterizes eutrophic conditions (eutrophic means a lake has decreased in quality due to excess algae and plant growth). **Phosphorus levels at the bottom of the lake increased noticeably** compared to August readings, illustrating that the lake is undergoing some internal loading processes. *Internal Loading is a term used often in lake science to describe processes that contribute nutrients to the water via sediments at the bottom of the lake.*

The most striking observation this month was the **localized nature of blue-green algae at 8-9m of depth**. Concentrations of the bacteria at this depth were anywhere from double to triple the concentrations found in the first 5m of water. In Sherman, the concentration at 8m was five times greater than the concentration found in the first 5 meters. This phenomenon is not unusual, and actually helps explain why Secchi depth is very high this month. If the bacteria were not localized to the deeper water, it would be more evenly distributed throughout the shallow depths; decreasing water clarity. The high secchi depth can also be partly explained by **slightly lower Chlorophyll-a concentrations** this month, indicating smaller algae populations on the surface.

Dissolved oxygen plays an important role in allowing organisms to thrive in the lake, particularly certain sport fish species. **Dissolved oxygen in the water decreased modestly** or remained roughly the same compared to August. There were **no Zebra Mussel veligers** (larva) found during sampling.

Summary: Transparency improved at every site on the lake, and September was the month with the clearest water this year. Phosphorus levels increased modestly compared to August levels, while Nitrogen levels decreased uniformly. Phosphorous levels are much higher at the bottom due to internal loading reactions that occur in oxygen-free environments. Blue green algae concentrations are localized at roughly 8-9m of depth and concentrations there are 2-3 times higher than the top 5 meters. This, as well as low chlorophyll-a concentrations, are likely contributing to the high secchi depth. There is no sign of any Zebra Mussels or larva in the lake.



Water Quality Monitoring: What You Need to Know

Temperature: Often measured in Celsius, different layers (surface vs. very deep water) of the lake often have very different temperatures! A larger difference between the temperature of shallow and deep water can mean that those two layers are less likely to mix, since colder water is denser and sits at the bottom. A diagram of the various lake layers is illustrated below!

Dissolved Oxygen: This is measured in milligrams per liter (mg/L) and is a measure of how much oxygen the water has, which many fish species and other organisms rely on.

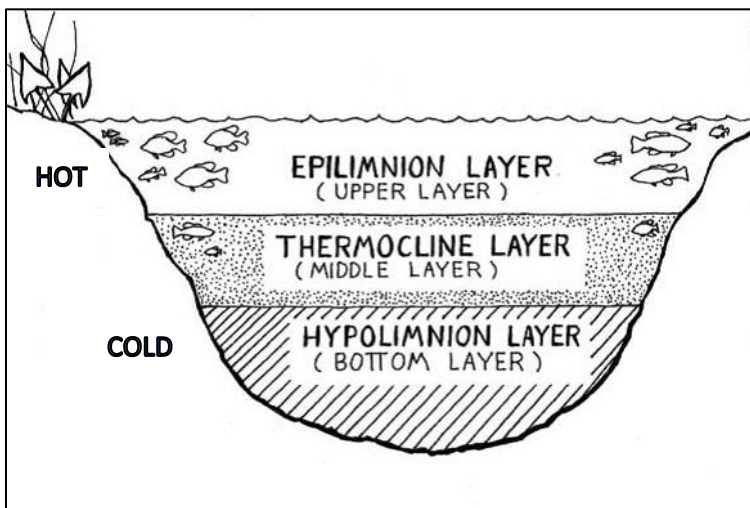
Total Phosphorus: This is measured in micrograms per liter ($\mu\text{g/L}$) which is the same as “parts per billion” (ppb). This measures the concentration of phosphorus in the water which can feed algae and aquatic plants.

Total Nitrogen: This is measured in the same way as total phosphorus, but instead measures nitrogen concentration, which can also feed algae and aquatic plants.

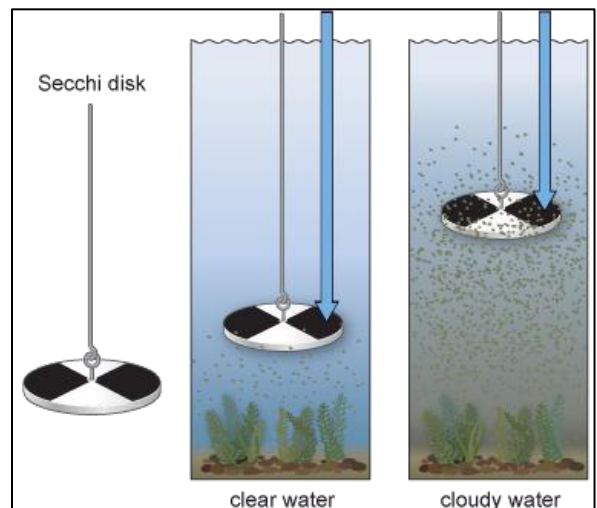
pH: This is a measure of how acidic or alkaline (basic) the water in the lake is by measuring hydrogen ions (H). This is measured on a scale from 0-14, where zero is the most acidic and 14 is the most basic. Neutral pH is 7, and this measure is of singular importance to organisms living in the water, many of which require a pH that is slightly basic (7-9). However, higher pH can also allow more phosphorus (and other compounds) to dissolve in the water; potentially increasing total phosphorus measurements.

Secchi Depth: This is a method used to measure how clear and transparent the lake water is. It is measured by dropping a circular black and white disk on a rope into the water, and the depth at which the disk can no longer be seen is recorded in meters (m). Higher measures mean the disk could be seen longer, and that the water is clearer. This is illustrated in the diagram below!

Chlorophyll-a: This is measured in micrograms per liter ($\mu\text{g/L}$) which is the same as “parts per billion” (ppb). Chlorophyll-a is the compound that makes plants green, and what they use for photosynthesis. This measure gives insight into how much green algae is in the water and can decrease transparency (and secchi depth).



Via: Kentucky Fish and Wildlife



Via: Open University