Beaver Lake Club Corp.

2022 Annual Report

MA DEP 317-476

Submitted to the

Ware Conservation Commission

BLCC Conservation Committee

Larry Donn	**- Aquatic Vegetation Management**
Kathy Cronin	**- Water Quality Testing**
Jim O'Mara	**- BLCC Vice President**
Walt Wilke	**- GPS Mapping**
Claudia Messier	**- Water Quality Testing**
Jim Nickerson	**- Reporting**

Aquatic Vegetation Management

Early Season Inspection

On May 25th, 2022, a survey was conducted by the Weed Control Committee of BLCC to assess the relative distribution and abundance of submersed vegetation within the waterbody. During this early season survey, a wide variety of non-target species were observed in various areas of the waterbody. The species observed included varying densities of low water-milfoil, ribbon-leaf pondweed, small pondweed, water starwort, bladderwort, waterlilies, and watershield. This survey helped identify the target species for treatment, with variable milfoil being the primary focus of the survey. During this survey, nine substantial areas of variable milfoil were identified and mapped via a GPS unit (see Figure 1).

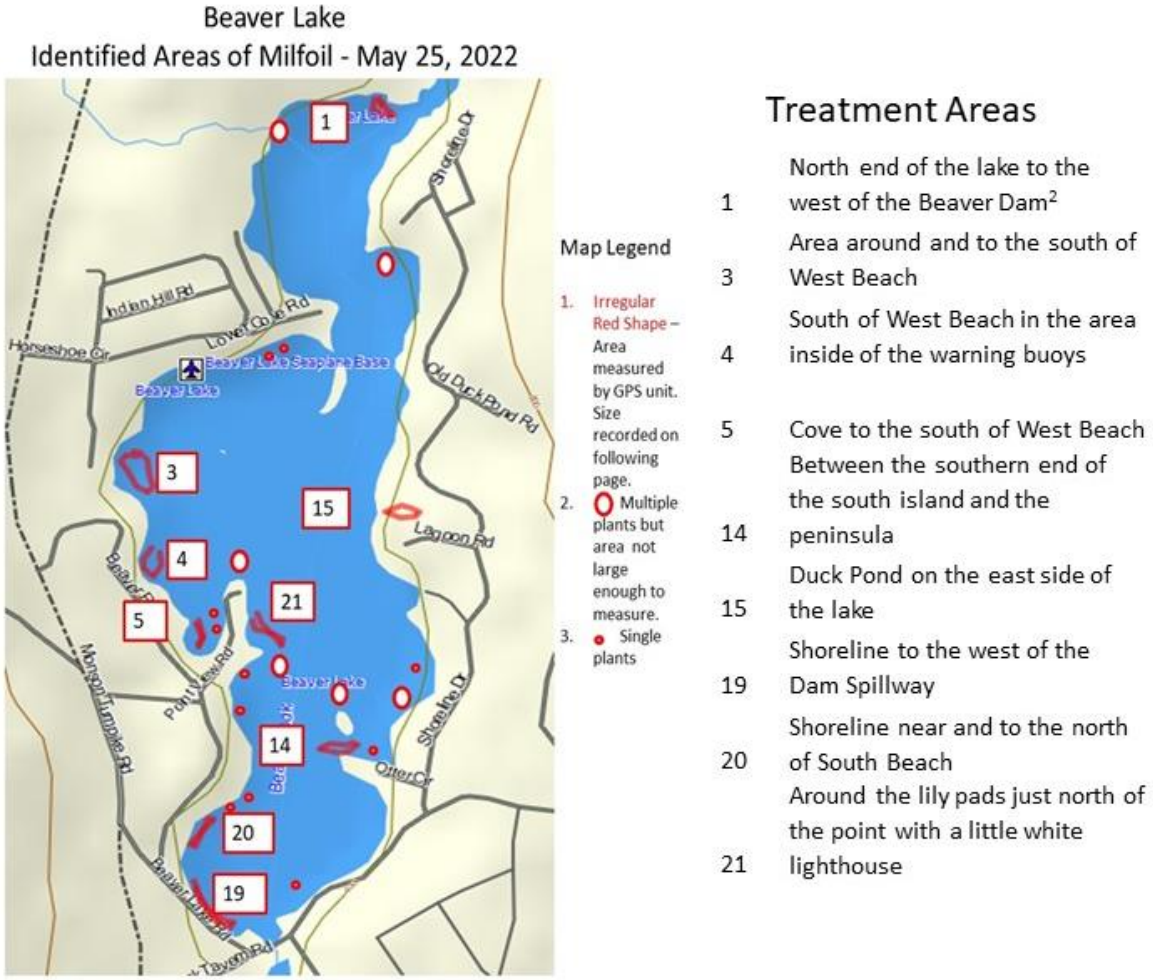


Figure 1

Based on this survey, The Pond and Lake Connection, BLCC's selected provider for 2022, developed a proposed treatment map (see Figure 2) to treat eight areas of variable milfoil that were identified in the early survey. With these specific areas, the specialists from The Pond and Lake Connection recommended that ProcellaCOR be used to treat these 11.25 acres.

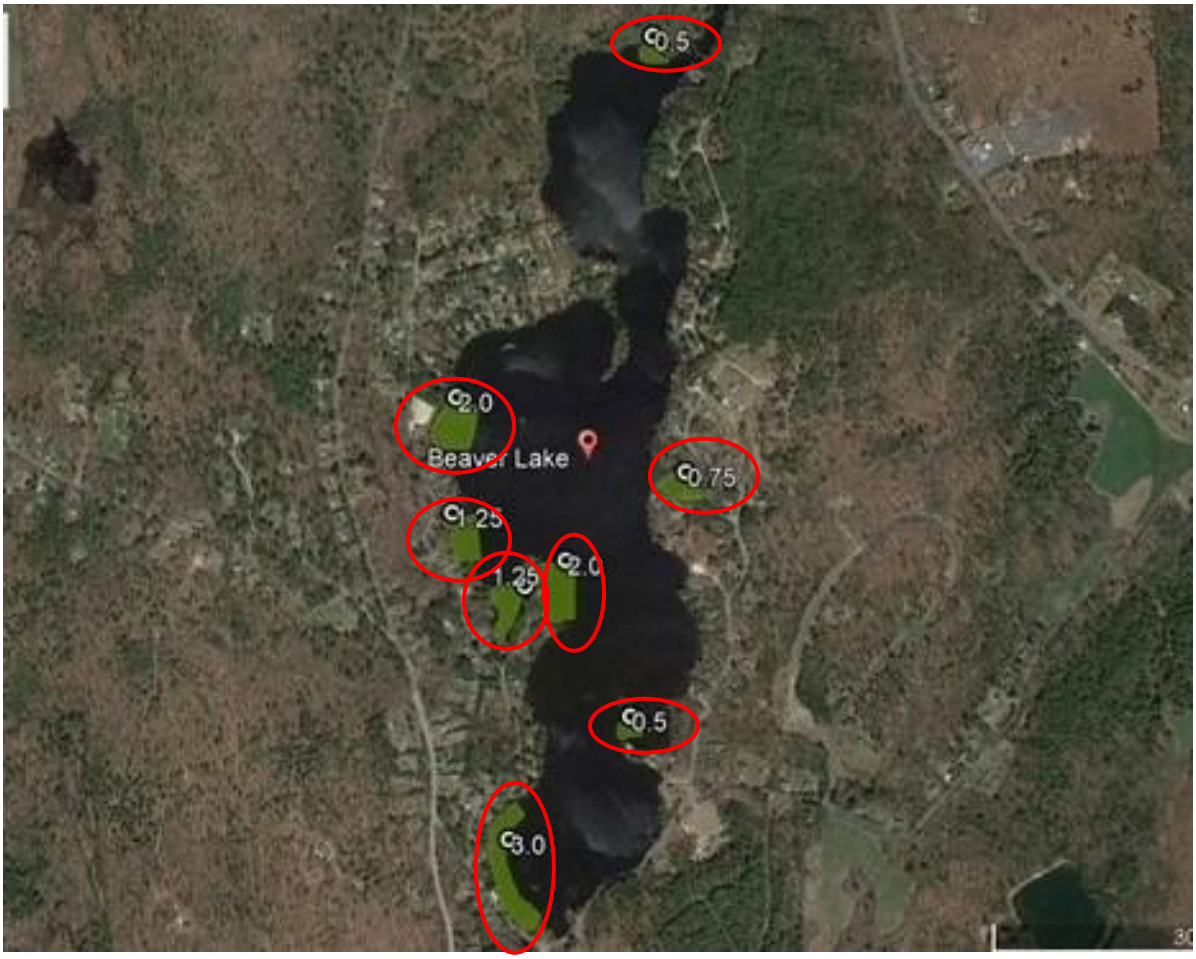


Figure 2

Milfoil Treatment

Based on the observations during the early-season survey and The Pond and Lake Connection proposal, an herbicide application was scheduled and conducted on June 21st , 2022. This treatment was done by The Pond and Lake Connection located a 1112 Federal Road, Brookfield, CT, a MA licensed aquatic weed treatment applicator (MA #CC-0048047) under the MA DEP Order of Conditions #317-476, issued by the Ware Conservation Commission on November 1, 2021. The MA DEP License to apply was also secured by The Pond and Lake Connection.

The Pond and Lake Connection and BLCC decided to treat the areas of variable milfoil with ProcellaCOR. ProcellaCOR (florpyrauxifen-benzyl) is a registered herbicide in Massachusetts and is an effective, selective, systemic herbicide on milfoil, hydrilla, and emergent species. The herbicide application was performed utilizing an Air Boat equipped with an onboard mixing tank and the product was sprayed over the area of milfoil. Small patches/treatment areas that have

less consistent results were not included in the treatment area because ProcellaCOR diffuses out from where it is placed and the untreated water quickly dilutes the treatment area. The original areas identified by BLCC were increased because a buffer is needed on all sides to ensure that the entire area is treated.

Prior to the treatment, water-use restriction notices consistent with ProcellaCOR label requirements were posted at access areas and electronic notification was sent to all members of the BLCC Community. The treatment was completed by The Pond and Lake Connection, state certified applicators, and was conducted in accordance with the product label and permits issued by MA DEP. At no time during the treatment program were fish mortalities or significant non-target impacts to other aquatic organisms or wildlife either observed or reported.

Floating Vegetation Treatment

On 7/26/2022, Beaver Lake Club treated floating vegetation, lily pads and watershield, adjacent to the shoreline at 22 properties around the lake to give the associated members clear access to their swimming and boating areas. This treatment was performed by The Pond and Lake Connection using Flumioxazin over 6.25 shoreline acres.

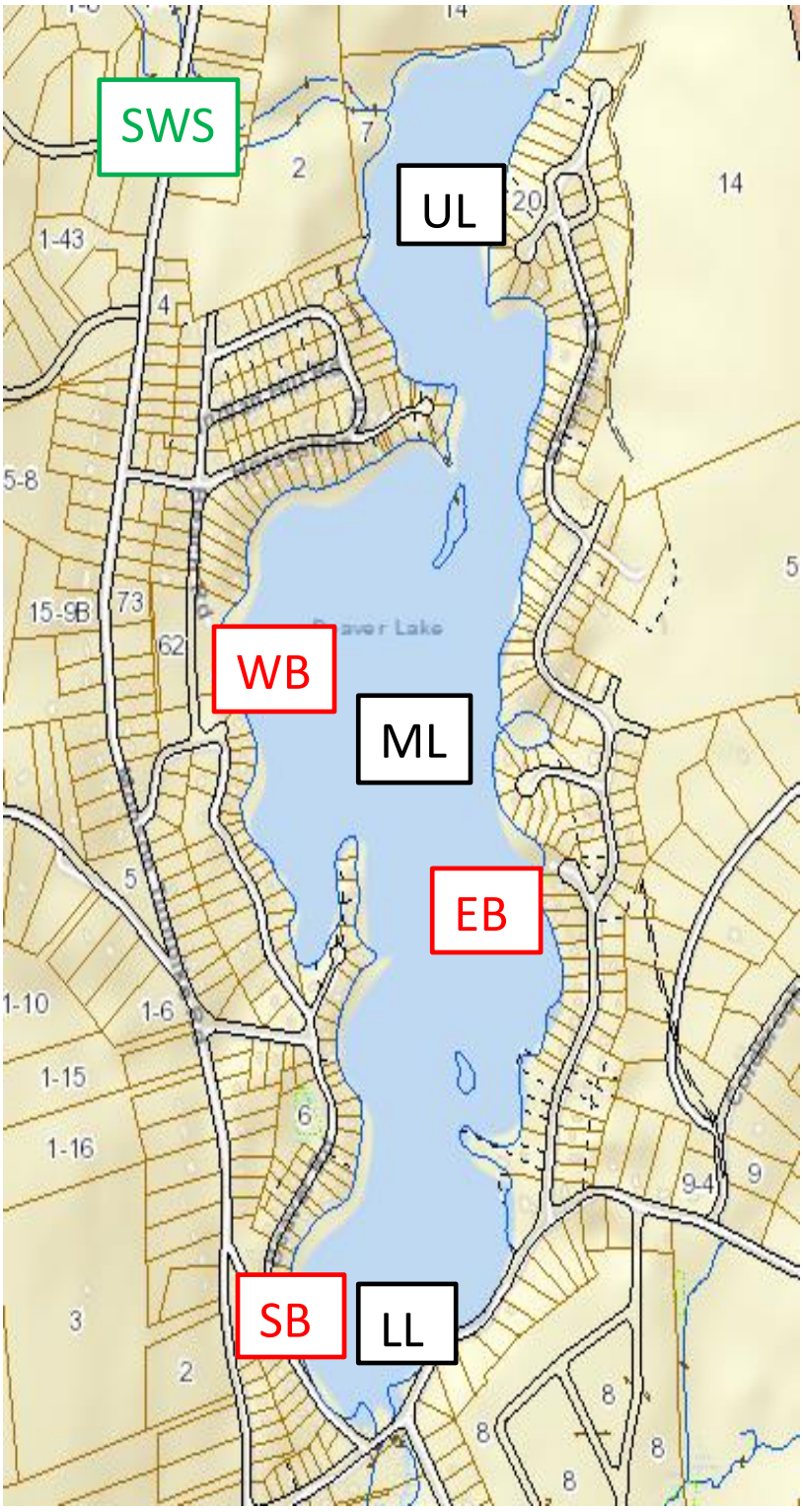
Late Season Inspection

During July and August , a survey was conducted in order to assess the efficacy of the herbicide application conducted earlier in the season. The late season survey also helps in assessing the overall distribution and density of submersed vegetation in the late season. During the late season survey, no variable milfoil was observed in the treatment areas. Comments from the BLCC Community, indicated that this was the most effective treatment that has been performed. Variable milfoil had been totally suppressed in the areas around the West and South Beaches. As of the first of September, no regrowth was observed in the treatment areas.

Going Forward

Since significant control was observed within the treatment areas with the use of ProcellaCOR, Beaver Lake Club Corp will perform a similar initial survey in May of 2023 to identify additional areas requiring treatment. Based on the results identified at other areas within Massachusetts, Beaver Lake Club hopes that the areas of treatment in 2023 will be significantly less than the 11.25 acres that were treated in 2022 and that large areas of treatment will not be required for three years.

Beaver Lake Water Quality
Testing Locations



Legend

Chemical, Physical and Dissolved Minerals Testing

UL – Upper Lake

ML – Middle Lake

LL – Lower Lake

SWS – Feeder Stream from Wetlands West of Monson Turnpike Rd.

Biological Testing

eColi

EB – East Beach

SB – South Beach

WB – West Beach

Testing Laboratory

In 2022, BLCC decided to change laboratories for water testing. Historically Spectrum Analytical / eurofins was used to complete the water quality tests and Quabbin Analytical was used for eColi testing. Changes in levels of testing and timing requirements at these laboratories, required that BLCC find a new laboratory that would be able to complete all of the tests required. Contest, a Pace Analytical Company, in Longmeadow, Ma was selected to perform all testing for BLCC. Contest is certified by the Massachusetts DEP under certification number M-MA100.

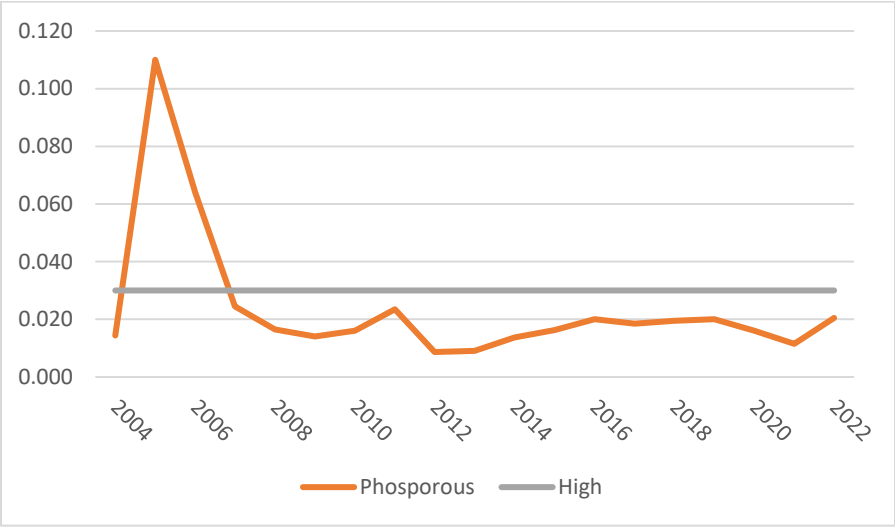
Beaver Lake Water Quality Metrics

Chemical, Physical and Dissolved Minerals

- The **red line** represents the average or median of all measurements made during the year. These measurements were taken during the months of May, June, July and August at any of the three locations, Lower Lake, Middle Lake, and Upper Lake based on the testing plan for that year.
- For each of the metrics a standard range was established after reviewing state and federal guidelines.
- A **solid blue line** represents an upper standard for the metric. Any reading below this line is acceptable and above the blue line is not.
- A **dashed blue line** represents a lower standard. Any metric above this dashed line is acceptable and a metric below this dashed line is not.
- Each metric has either an upper or lower standard with the exception of pH which has both an upper and lower standard.

Chemical Metrics

Phosphorus 2004 Through 2022

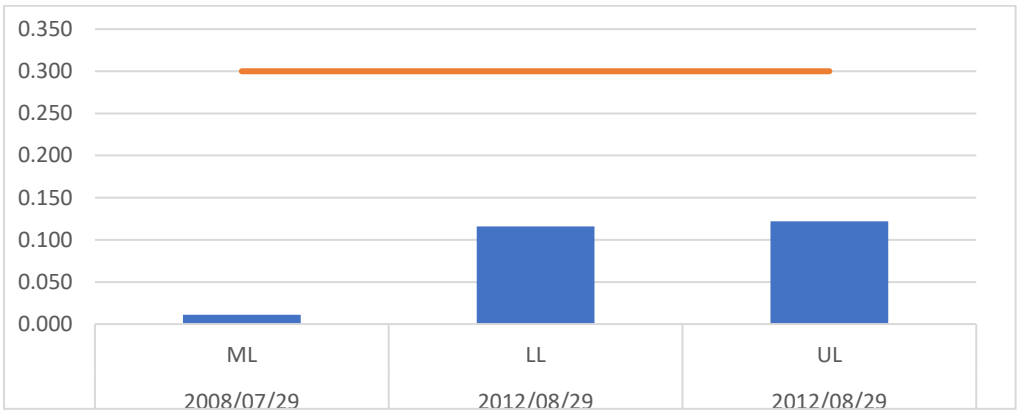


* The high levels in 2005 and 2006 may have been caused by logging on Route 9

Phosphorus and Nitrogen are the two nutrients of primary concern in lakes. Phosphorus is usually the nutrient that regulates algae growth and higher levels will stimulate algae. High phosphorus levels are an indicator of agricultural contamination, lawn runoff, or leaking septic systems.

Phosphorus - Stable – Since 2006 the median has remained below .03 but we have seen individual readings that exceed .03. None of the individual 2022 readings exceeded .024.

Nitrates 2004 Through 2022

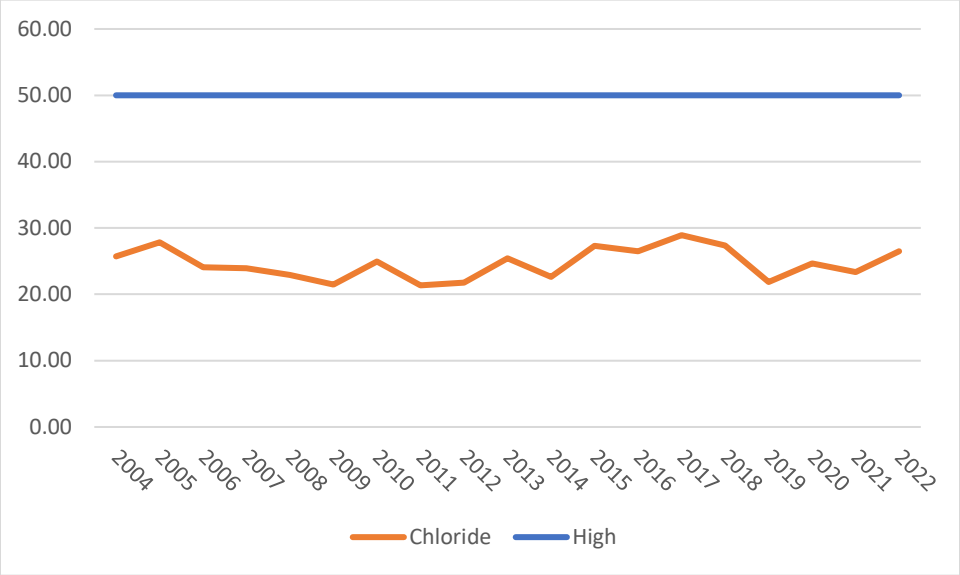


High levels of Nitrates in lake water are toxic to fish and other aquatic organisms. The primary source of Nitrates is from the runoff of agricultural and home fertilizers.

Nitrates - Stable – From 2004 through 2022 there were only 3 Nitrate measurements above the recordable level of .01. Starting in 2021 we had the lab lower the level to .05 and the level of Nitrates was still not recordable.

Chemical Metrics

Chloride 2004 Through 2022

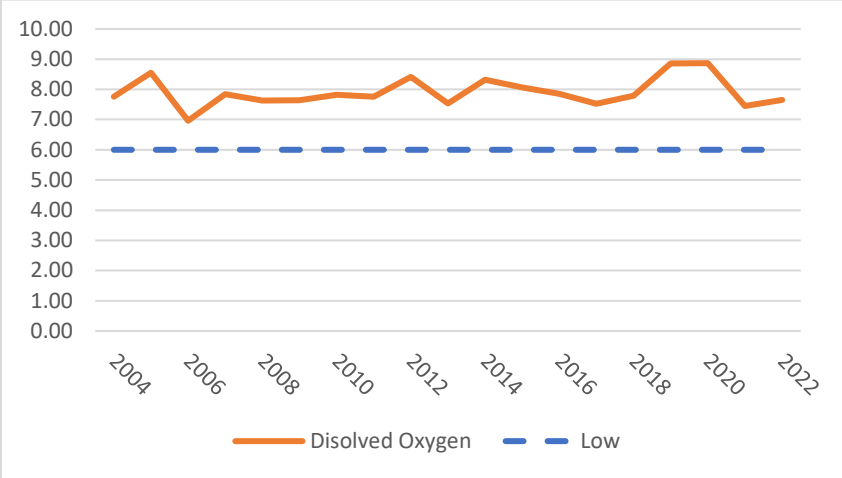


High levels of chloride could indicate contamination from septic systems, animal waste, potash fertilizer, and road salt run-off.

Chloride continues to be stable and well within tolerance.

Physical Metrics

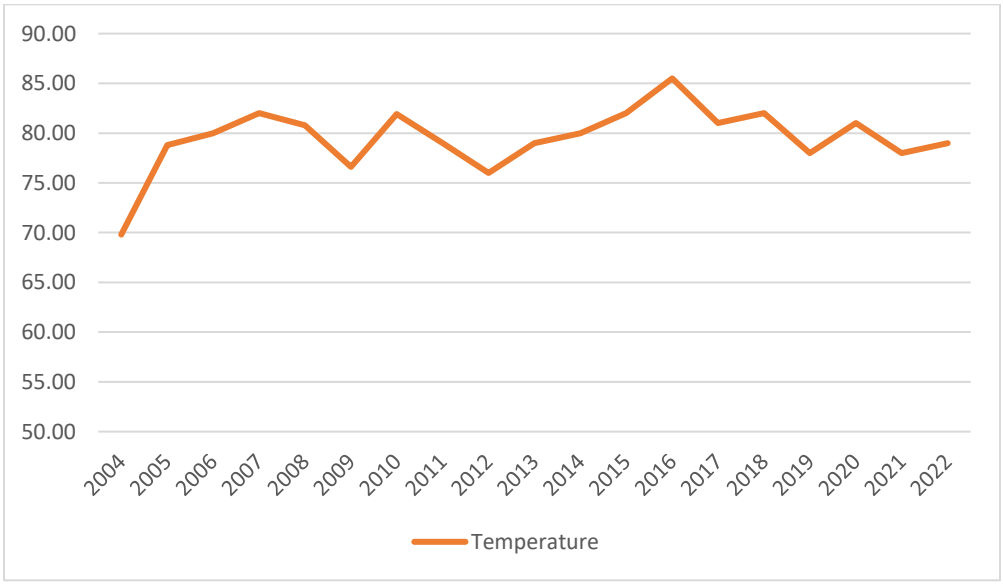
Dissolved Oxygen 2004 Through 2022



Dissolved oxygen measurements determine the amount of oxygen in the water available for fish and other aquatic life. A low level of dissolved oxygen is an indicator of organic material in the water.

Stable and within tolerance.

Temperature 2004 Through 2022

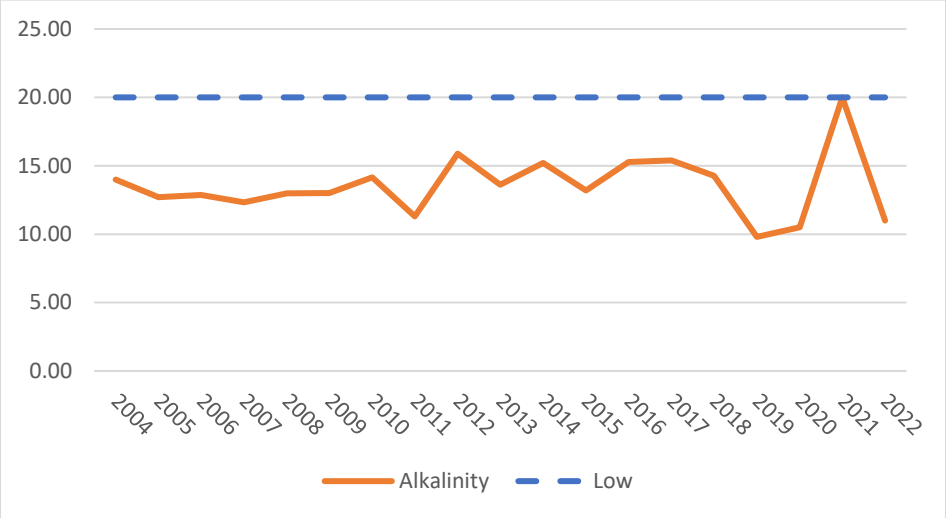


A lakes temperature variations are important in influencing what types and how many fish will live and reproduce in the lake.

Stable – Lake Temperature the last week of July each year was used for consistency

Dissolved Mineral Metrics

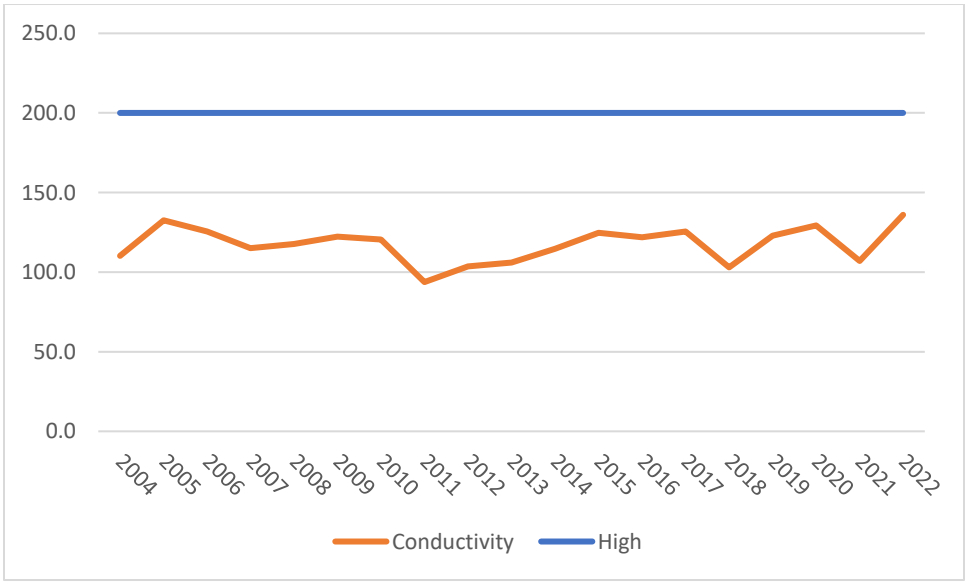
Alkalinity 2004 Through 2022



Alkalinity is a measure of the acid-neutralizing or “buffering” capacity of water. The higher the lake’s alkalinity, the greater its resistance to influences such as “acid rain”. Although the Alkalinity is low the PH has stayed within range.

Stable but not within tolerance. The new reporting laboratory can now report down to 1.0 which explains the 2021 reporting at the old Lab that could not measure below 20.0..

Conductivity 2004 Through 2022

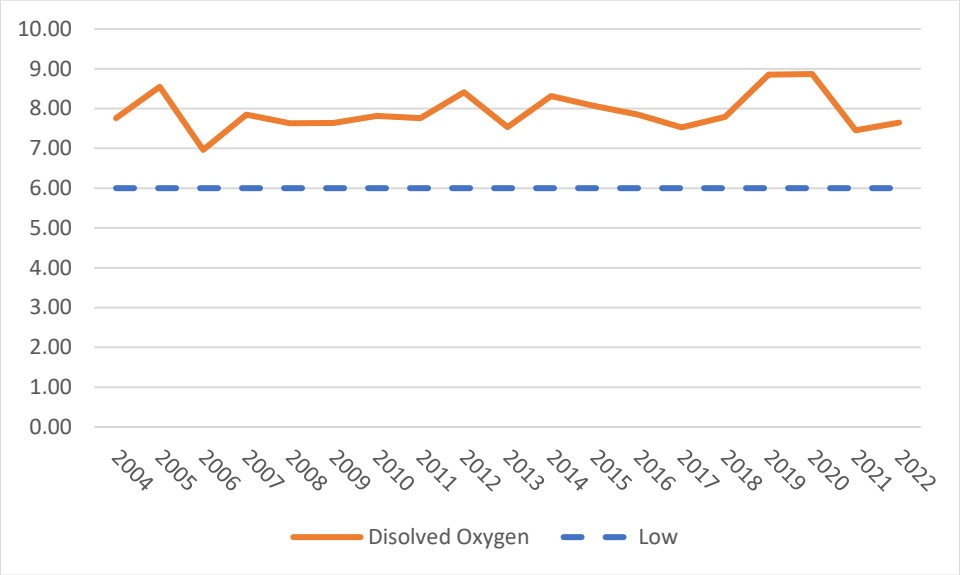


Conductivity is a measure of the water’s ability to conduct an electric current. It is useful for estimating the concentration of total dissolved solids in the water. Lakes with high Alkalinity often have high conductivity.

Stable and within tolerance

Dissolved Mineral Metrics

PH 2004 Through 2022

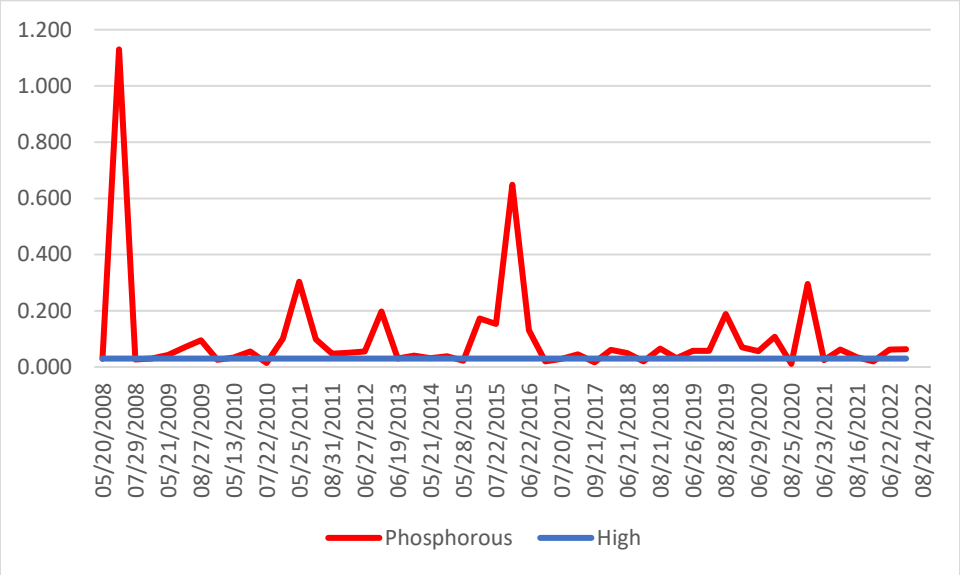


pH is a measure of the water's acidity. A pH of 7.0 represents a neutral level. Lower than 7.0 is acidic and higher than 7.0 is basic or alkaline.

Stable and within tolerance

Lake Intake Monitoring

Following the high level of phosphorous in the lake in 2006, in addition to monitoring the phosphorous in the Upper Lake, BLCC started to monitor the small stream entering the north end of the lake near the property that was going to be converted into a housing development and is now to be developed by ECOS Energy. This small stream is an indicator of the phosphorous that is being brought into the lake through runoff. Higher than normal readings during 2015 correlate with higher readings in the lake.

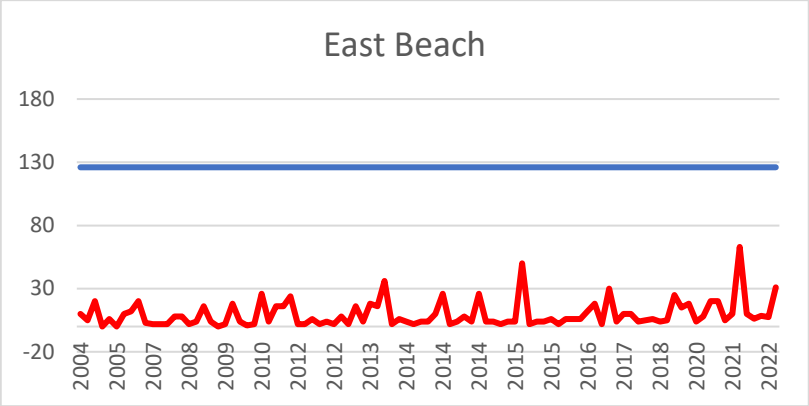


A spike in the phosphorous readings in the Spring of 2021, may be an indicator of the logging that was performed in the area during 2020. The phosphorous in this stream will become an indicator of the increased runoff that may be generated by the solar field being proposed by ECOS Energy.

Beach Monitoring

eColi Testing 2004 Through 2022

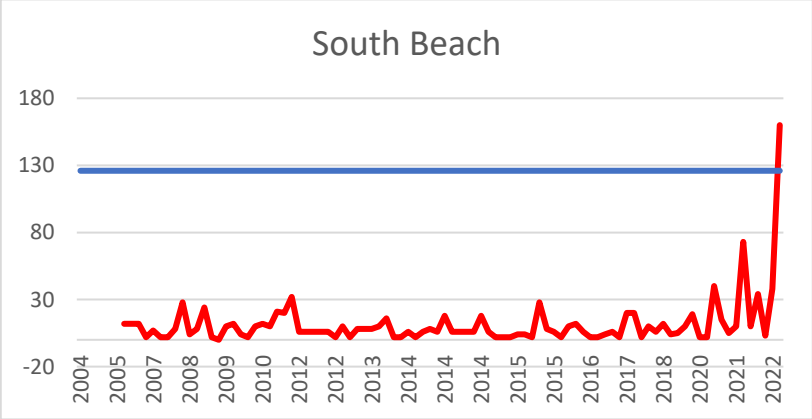
Per State and District guidelines (105 CMR 445.031) BLCC tests for Indicator Organisms (eColi) monthly at all three beaches and reports those results monthly to the Quabbin Health District. As noted in the charts below, no single eColi sample has exceeded 235 colonies per 100 ml. and the geometric mean of the eColi samples within the 2022 bathing season has not exceeded 126 colonies per 100 ml.



East Beach

2022 Maximum - 31

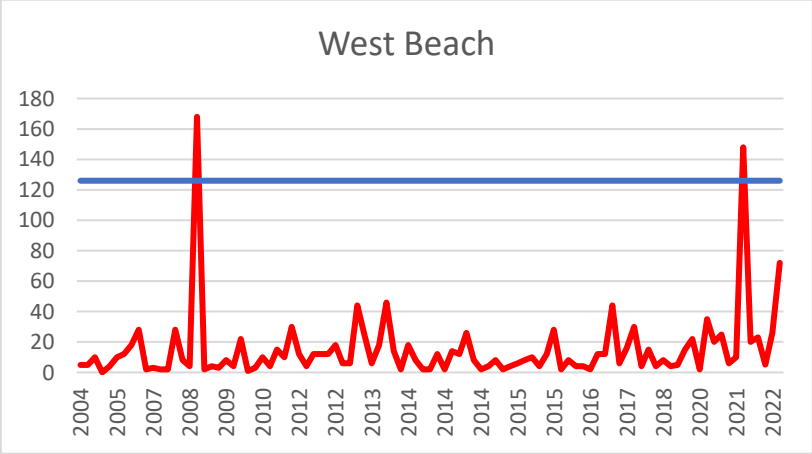
2022 Geometric Mean – 10.58



South Beach

2022 Maximum - 160

2022 Geometric Mean – 28.3



West Beach

2022 Maximum - 72

2022 Geometric Mean – 21.6

Note – The higher than normal August reading at South Beach may be the result of late season geese and early season duck activity in this area.