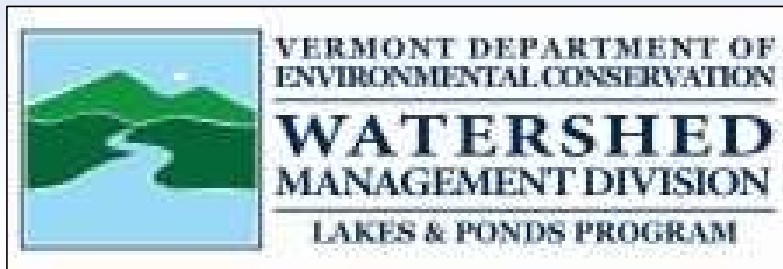


2022 Lake Morey Water Quality Monitoring Results



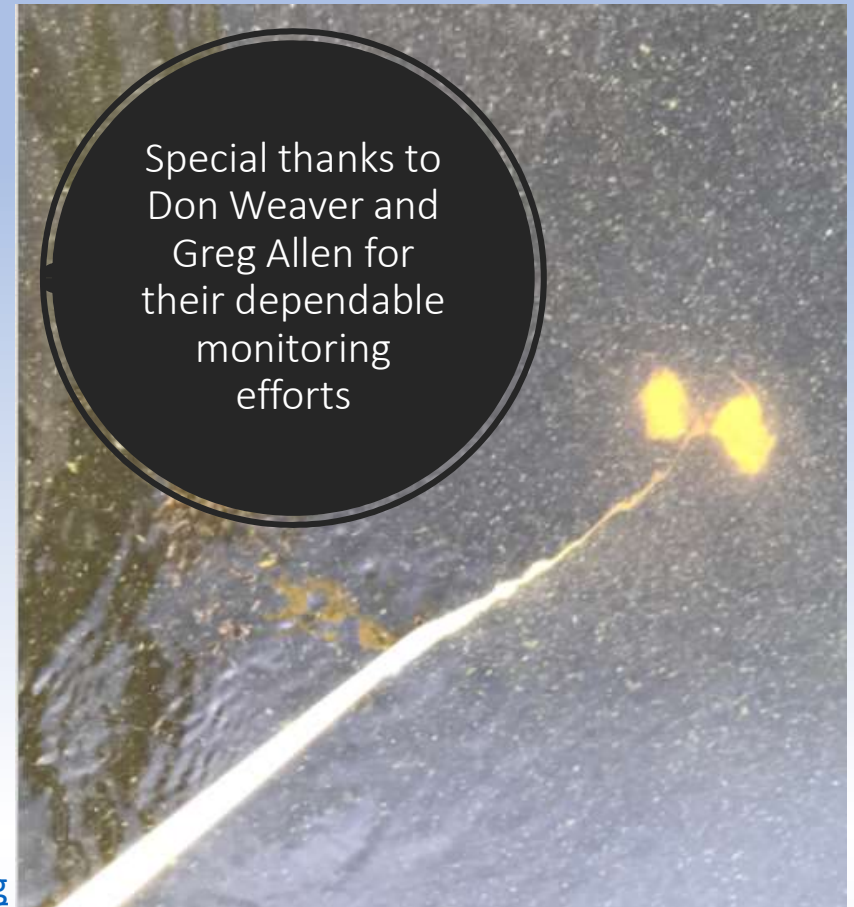
Mark Mitchell, Lake Monitoring and Community Outreach Coordinator
VT Department of Environmental Conservation, UVM Lake Champlain Sea Grant





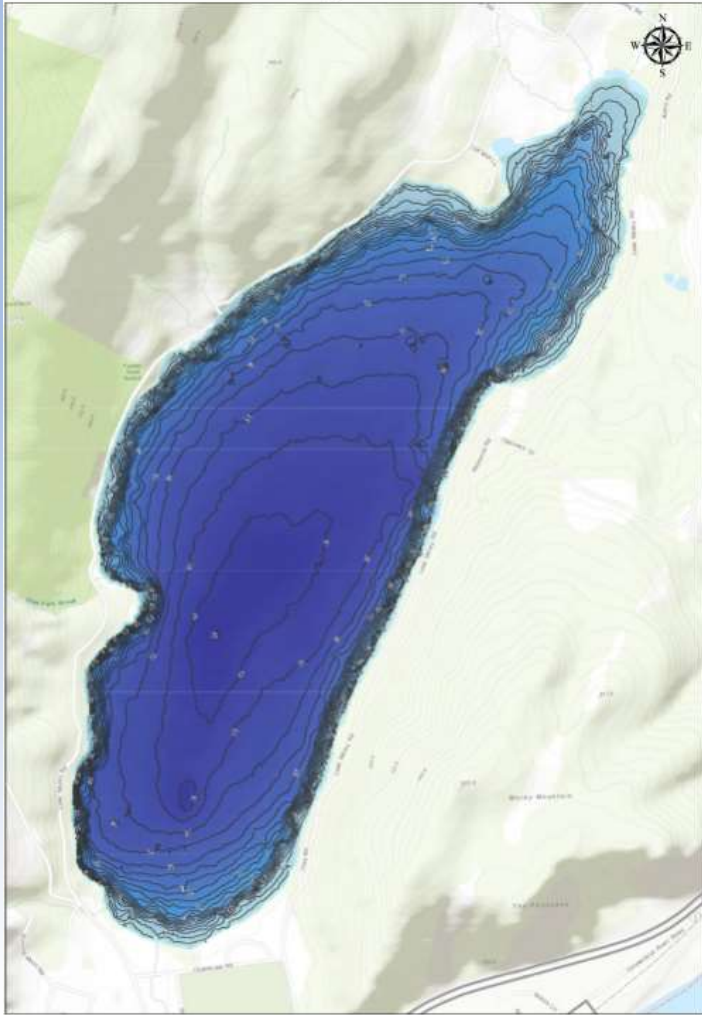
Lay Monitoring Program Lake Sampling Overview

- Weekly from Memorial Day to Labor Day (minimum of 8 samples for summer mean):
 - *Basic Sampling*: Measure Secchi disk transparency depth (clarity)
 - *Supplemental Sampling*: Collect water samples that are lab tested for total phosphorus (nutrient) concentration and chlorophyll-a (algae) concentration
 - Complete a lake sampling webform (and report cyanobacteria conditions)



Special thanks to
Don Weaver and
Greg Allen for
their dependable
monitoring
efforts

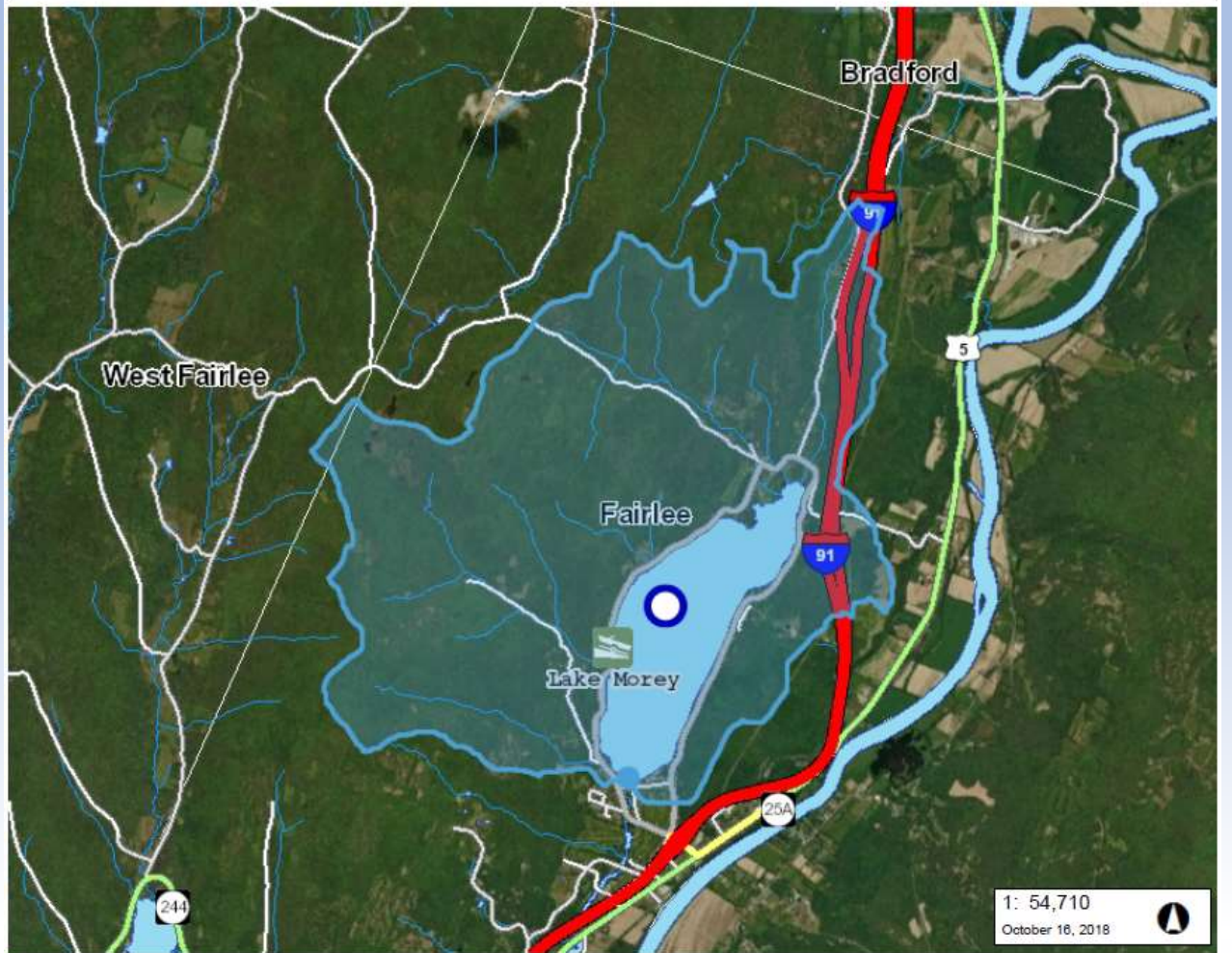
Lake Morey- Fairlee, VT



Lake Morey Monitoring Station 1

Vermont Agency of Natural Resources

vermont.gov



2,779.0 0 1,390.00 2,779.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 4559 Ft. 1cm = 547 Meters

© Vermont Agency of Natural Resources THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

Vermont Lake Score Card

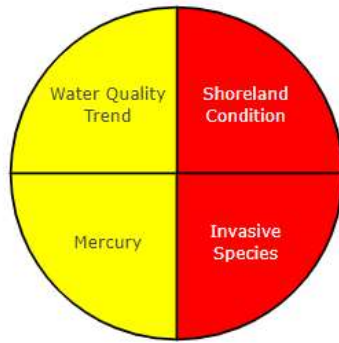
Lake Morey

<https://dec.vermont.gov/watershed/lakes-ponds/data-maps/scorecard>

Scores

Water Quality Data

Lake Information



Watershed: **Moderately Disturbed**

WQ Standards: **Stressed**

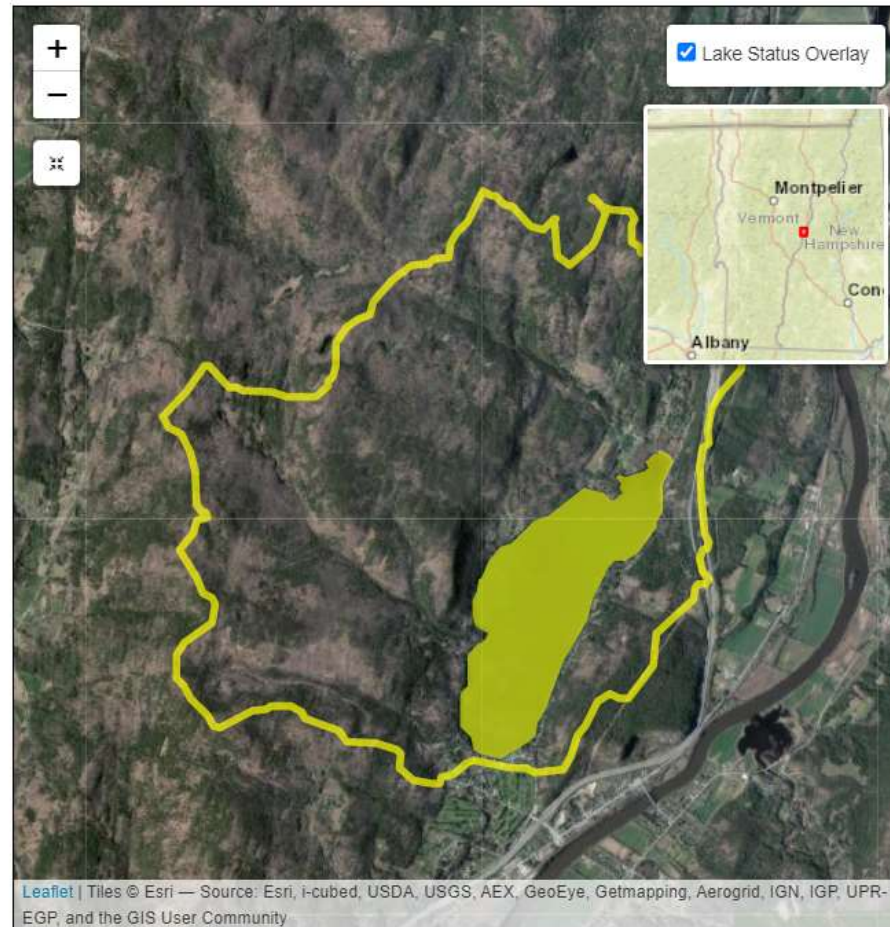
Details

Stressed - Phosphorus

Color Scoring System

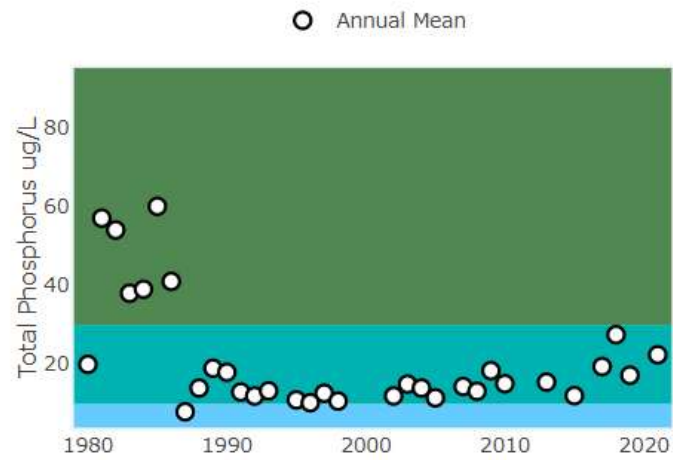
- Good Conditions
- Fair Conditions
- Poor Conditions
- Insufficient Data

[Learn How Lakes Are Scored](#)



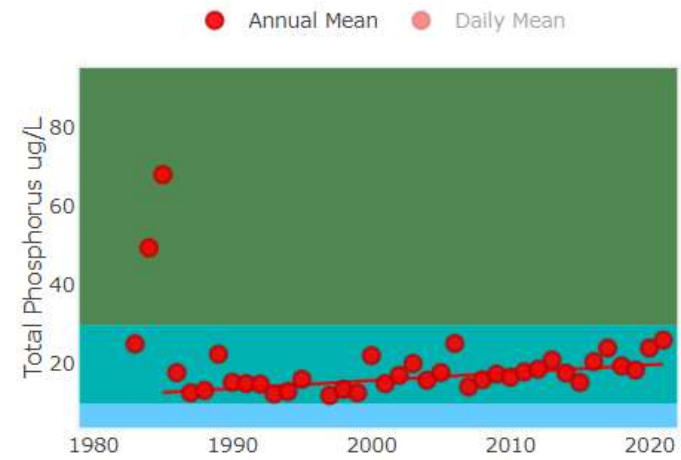
Spring Phosphorus

Trend: Stable (p-value=0.3637)



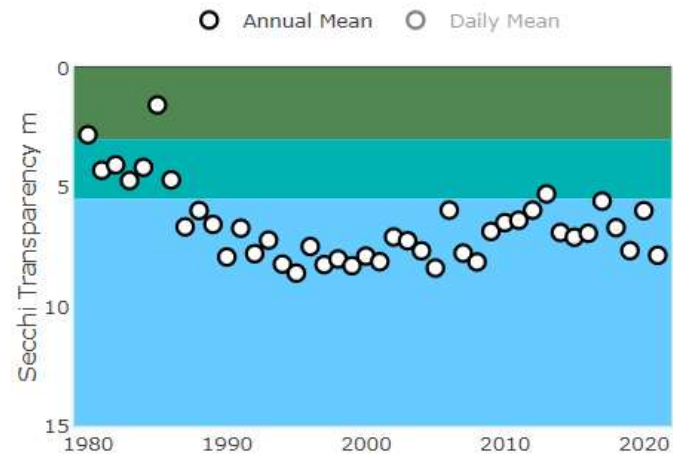
Summer Phosphorus

Trend: Highly Significantly Increasing (p-value=0.0016)



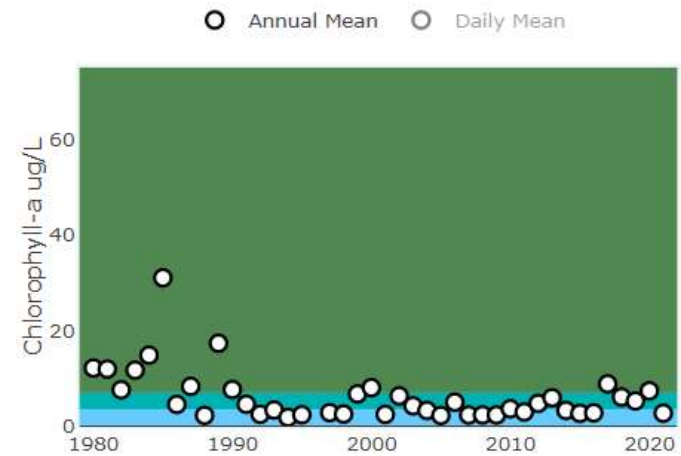
Summer Secchi

Trend: Stable (p-value=0.4177)



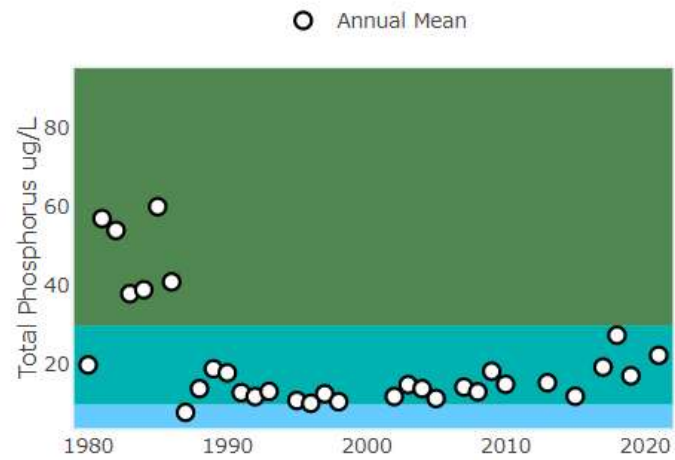
Summer Chlorophyll-a

Trend: Stable (p-value=0.1413)



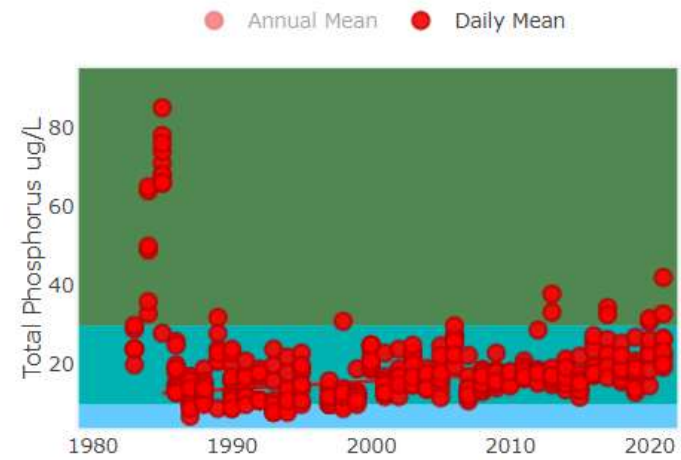
Spring Phosphorus

Trend: Stable (p-value=0.3637)



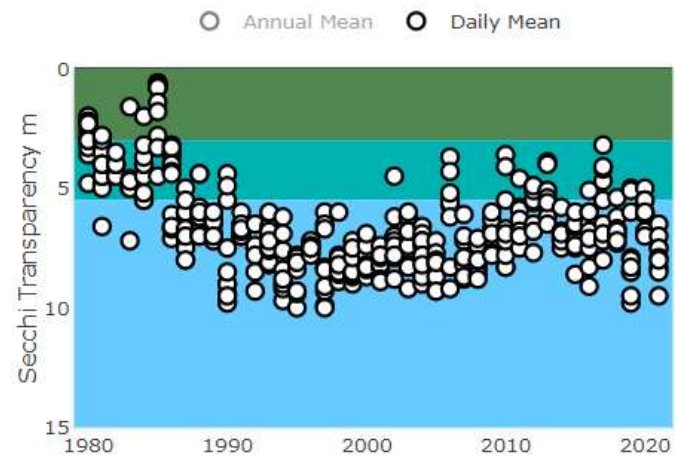
Summer Phosphorus

Trend: Highly Significantly Increasing (p-value=0.0016)



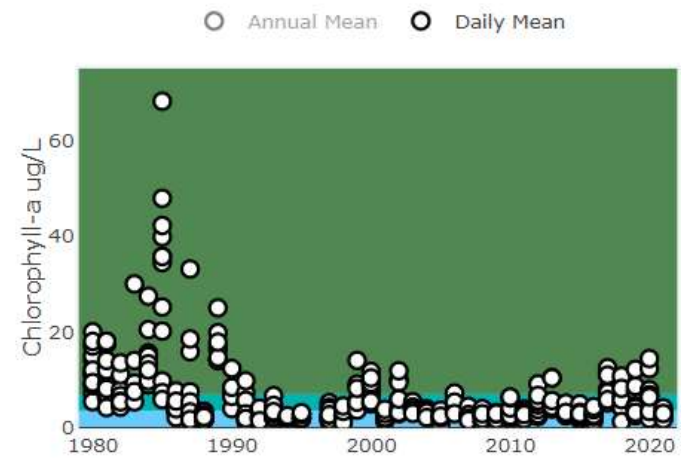
Summer Secchi

Trend: Stable (p-value=0.4177)



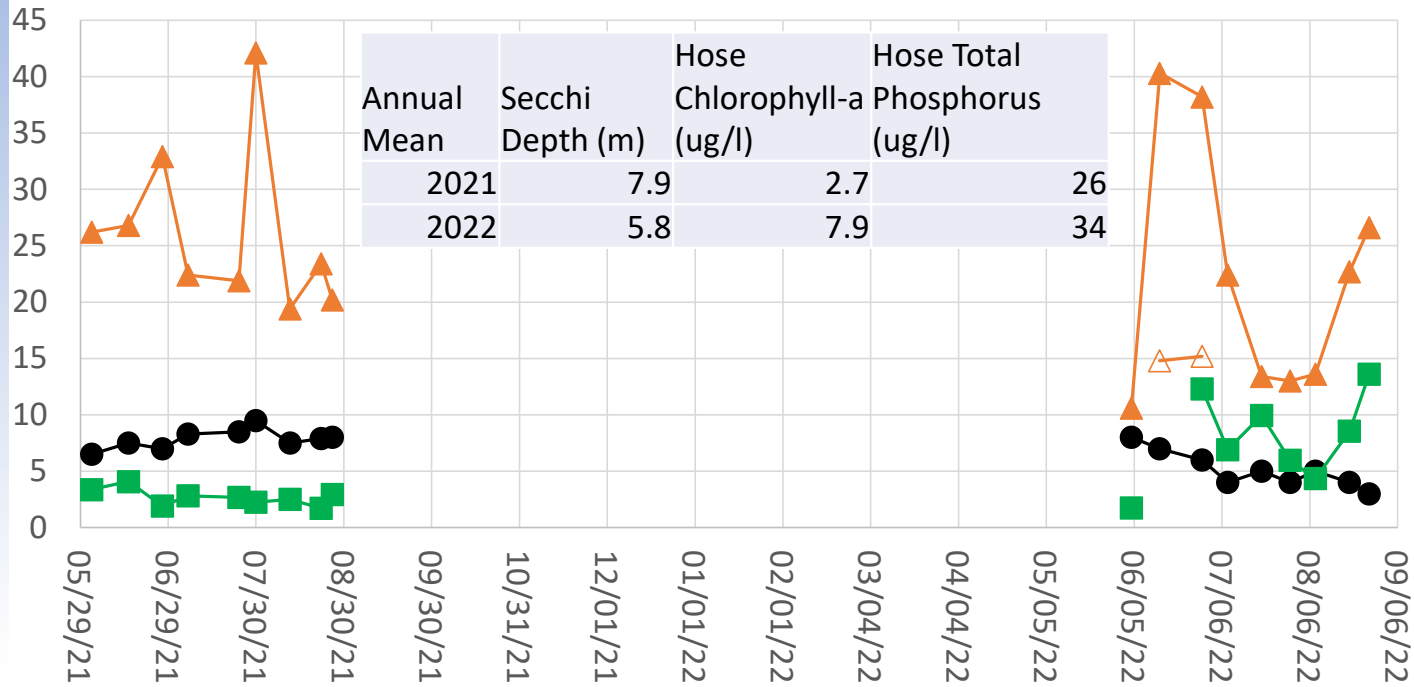
Summer Chlorophyll-a

Trend: Stable (p-value=0.1413)

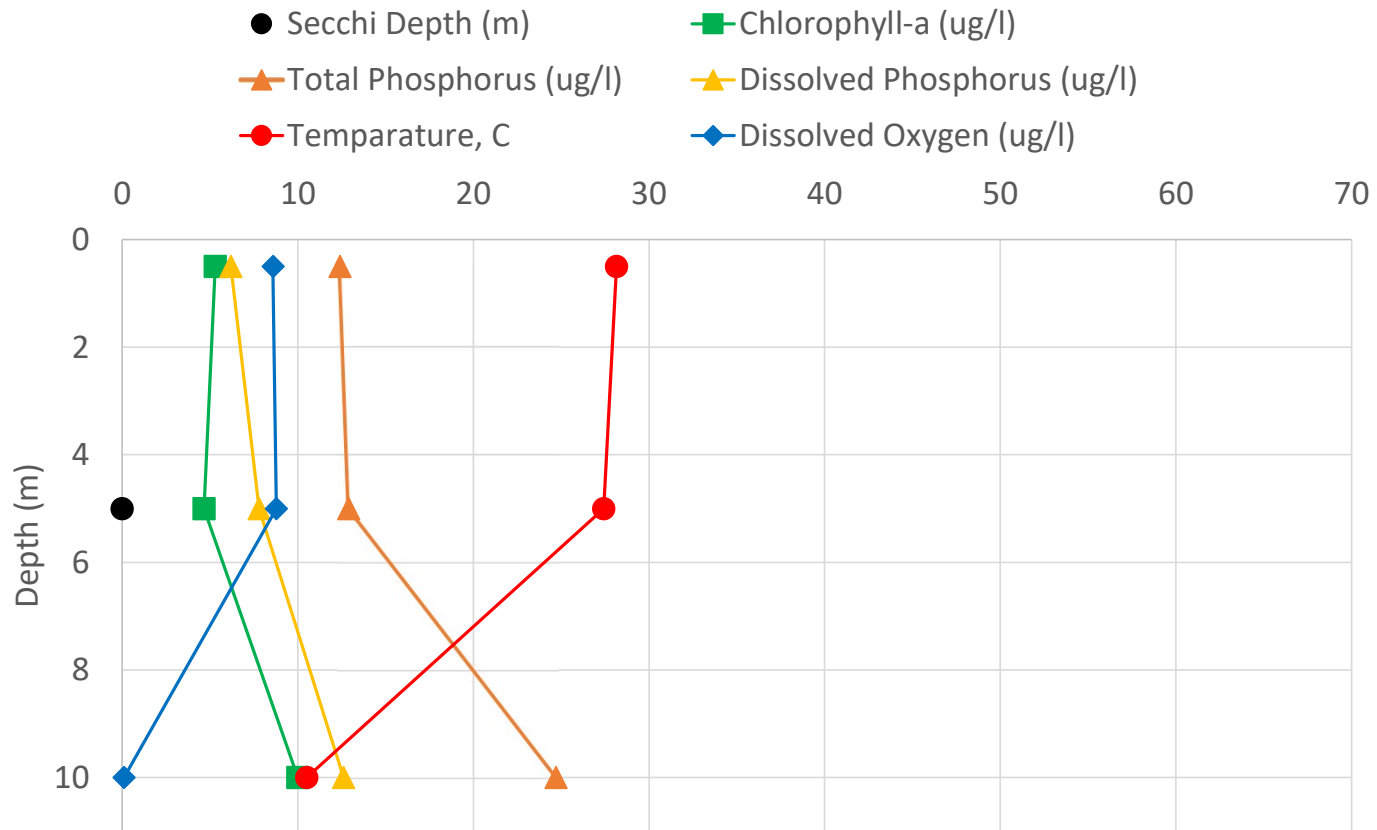


2021-2022 Lake Morey Lay Monitoring Results (Note: Hose Depth = 10 meters)

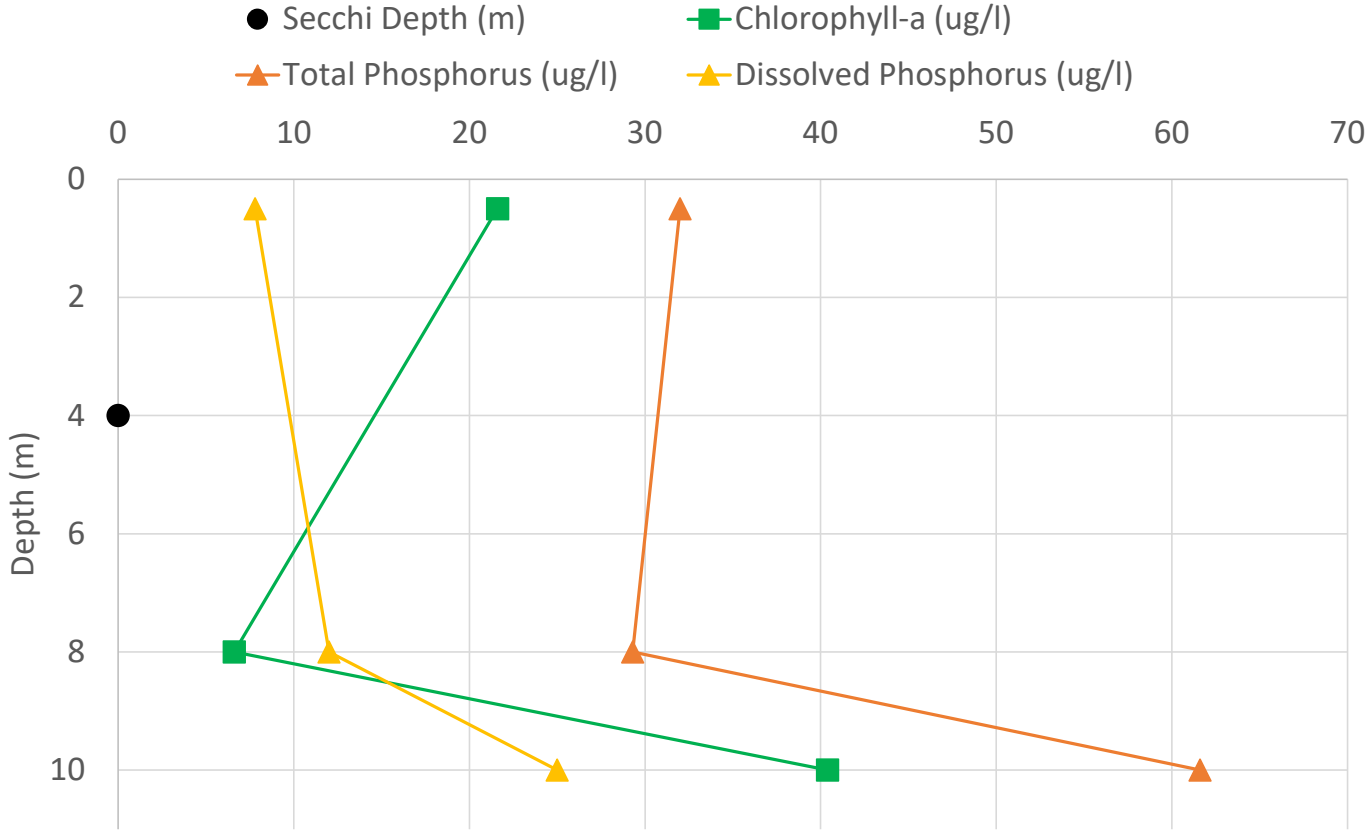
- Secchi Depth (m)
- Hose Chlorophyll-a (ug/l)
- ▲ Hose Total Phosphorus (ug/l)
- △ Surface Grab TP (ug/l)



Lake Morey Water Quality Vertical Profile 8/8/2022

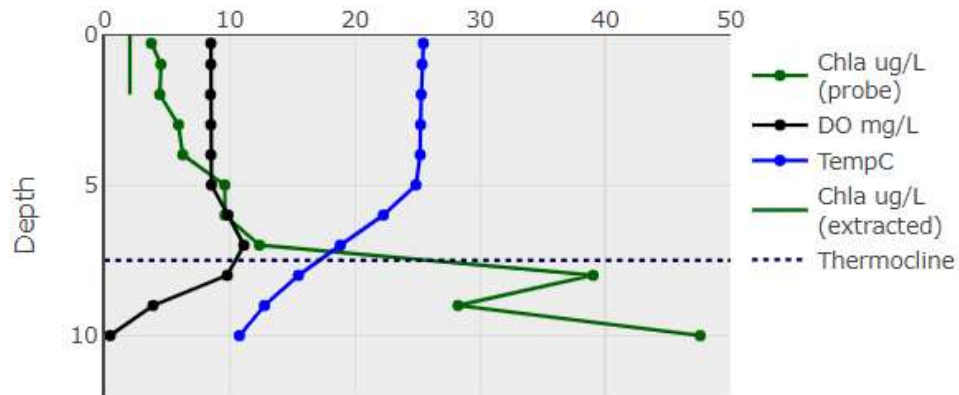


Lake Morey Water Quality Vertical Profile 9/12/2022

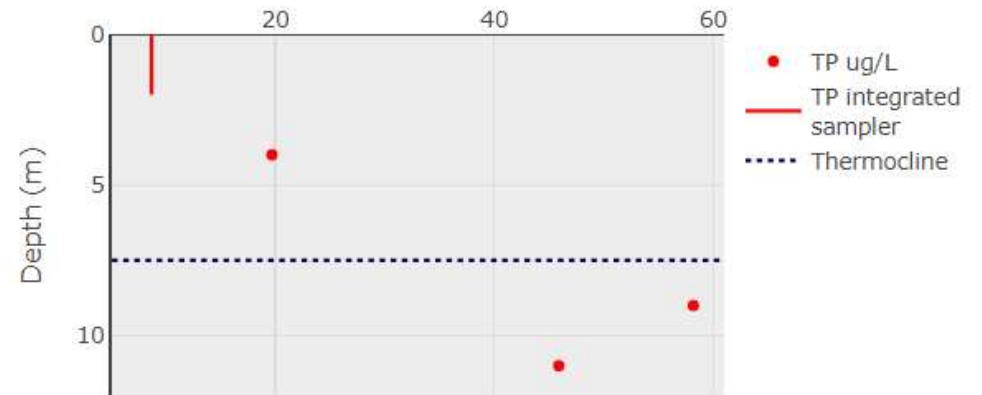


Lake Morey Next Generation Lake Assessment 8/24/2022

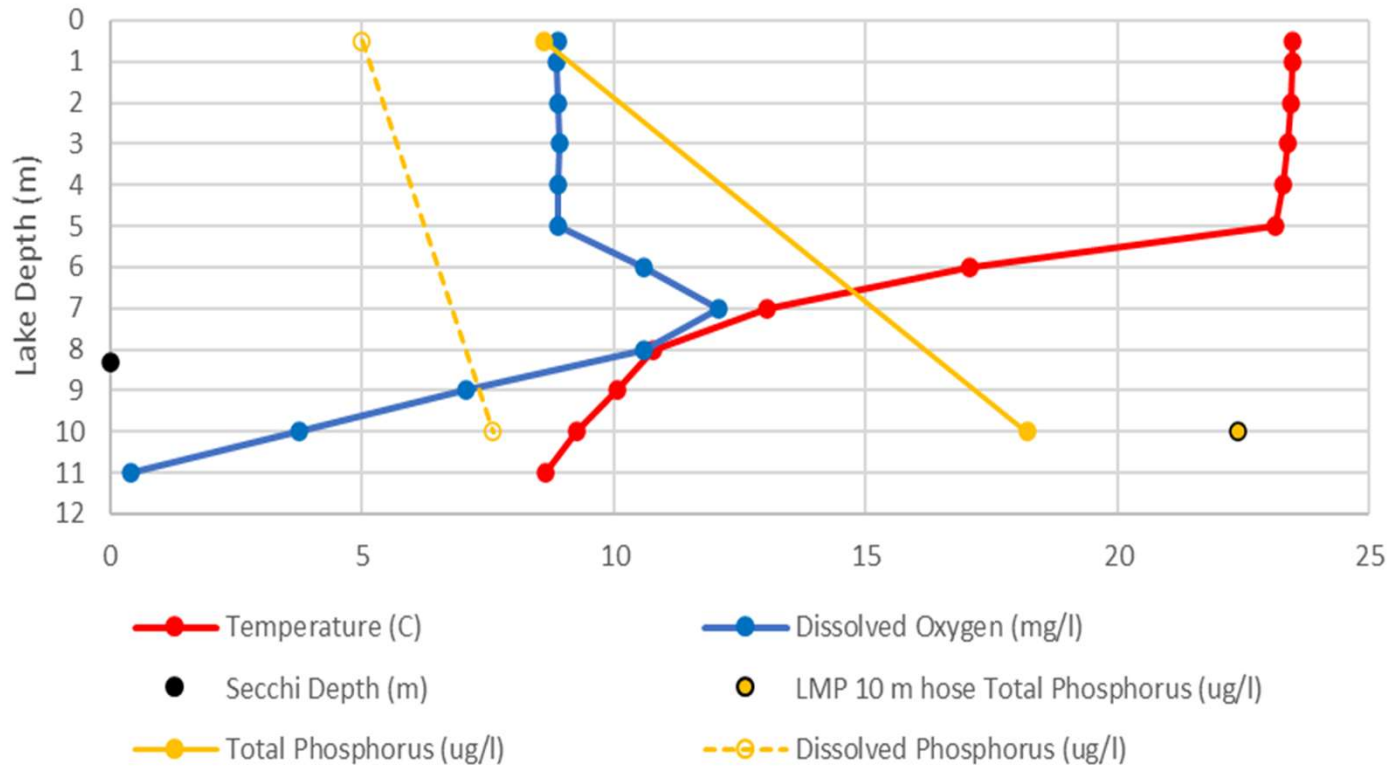
Temperature, Dissolved Oxygen, Chlorophyll-a



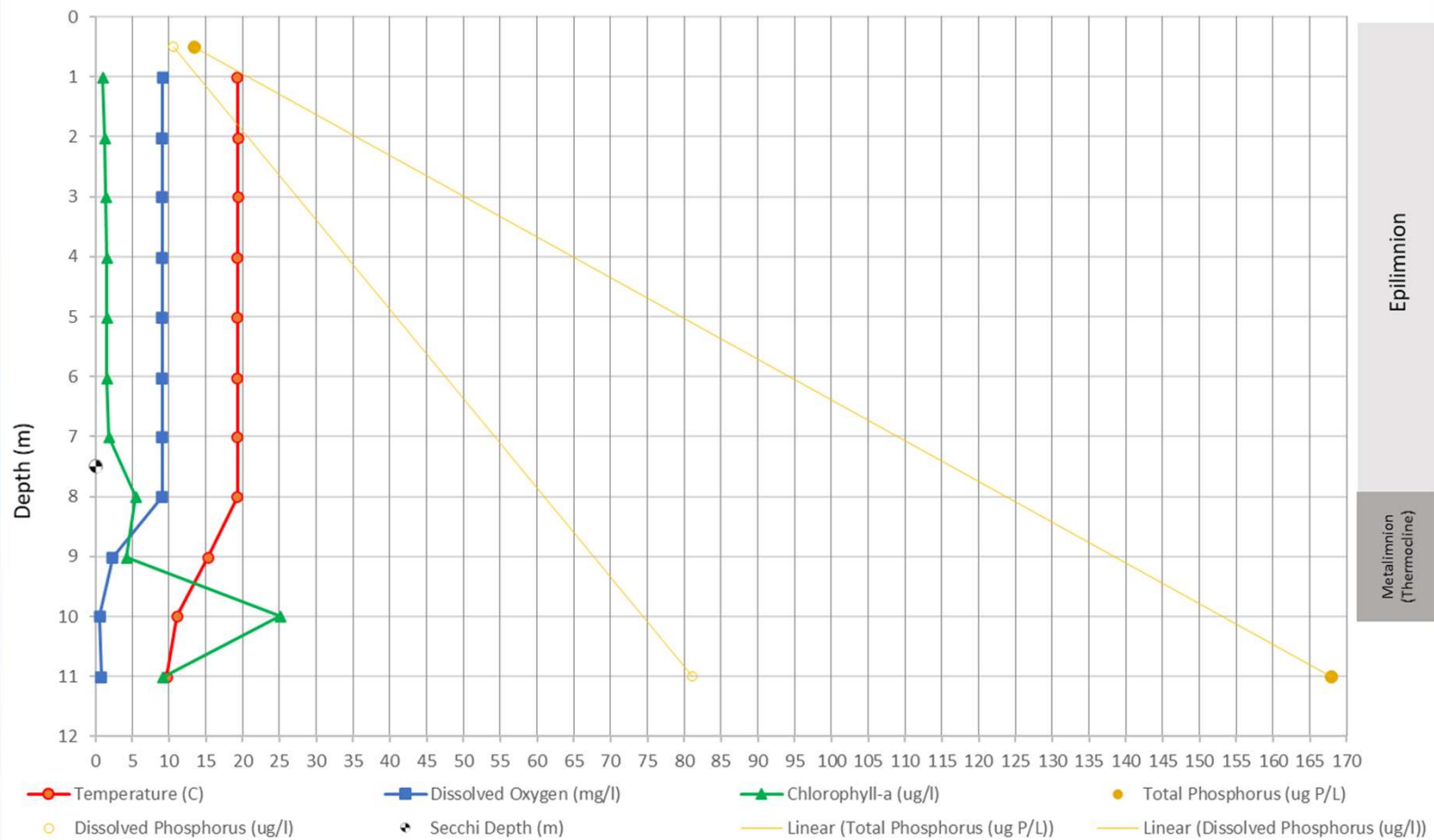
Total Phosphorus



Lake Morey Station 1 Vertical Water Quality Profile 7/6/2021

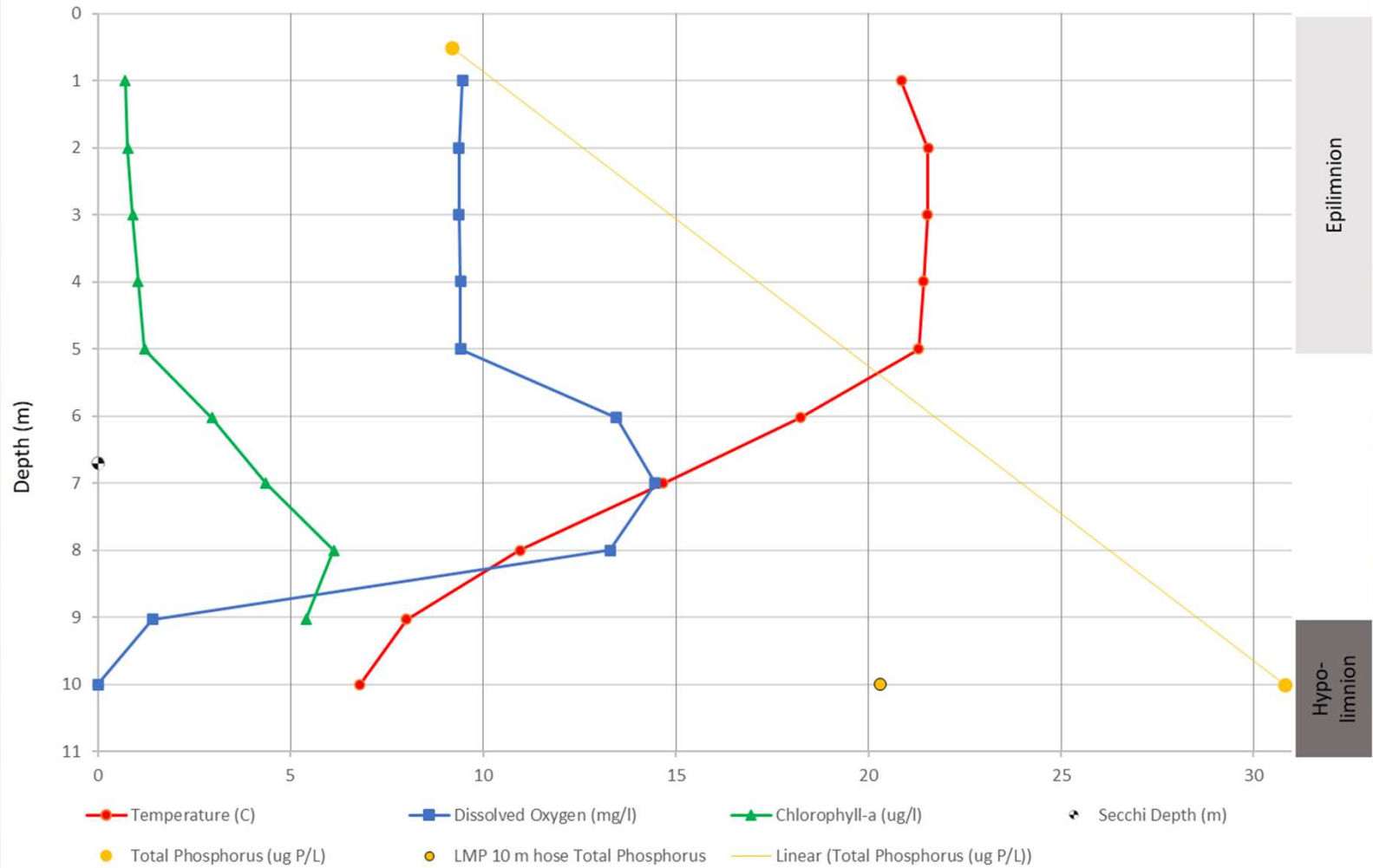


Lake Morey Station 1 Temperature, Dissolved Oxygen, Chlorophyll-a and Phosphorus Vertical Profiles on 9/28/2018

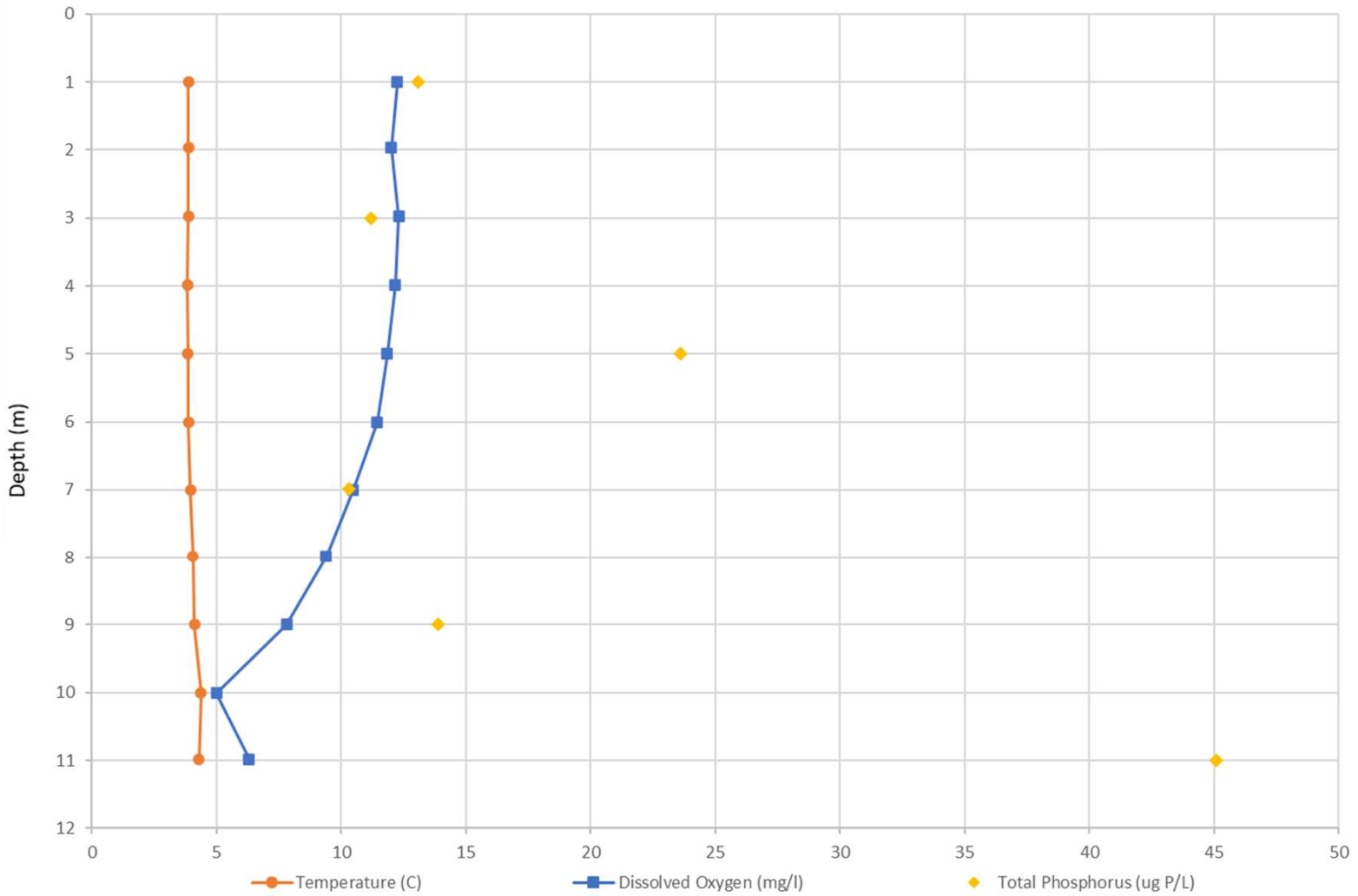


Anoxia in the hypolimnion and large increase in phosphorus concentration from surface (0.5 m) to bottom (1 m above sediment) water indicates internal loading from sediments. Note the chlorophyll-a (algae/cyanobacteria) maximum in the hypolimnion.

Lake Morey Station 1 Temperature, Dissolved Oxygen, Chlorophyll-a and Total Phosphorus
Vertical Profiles on 6/27/2018

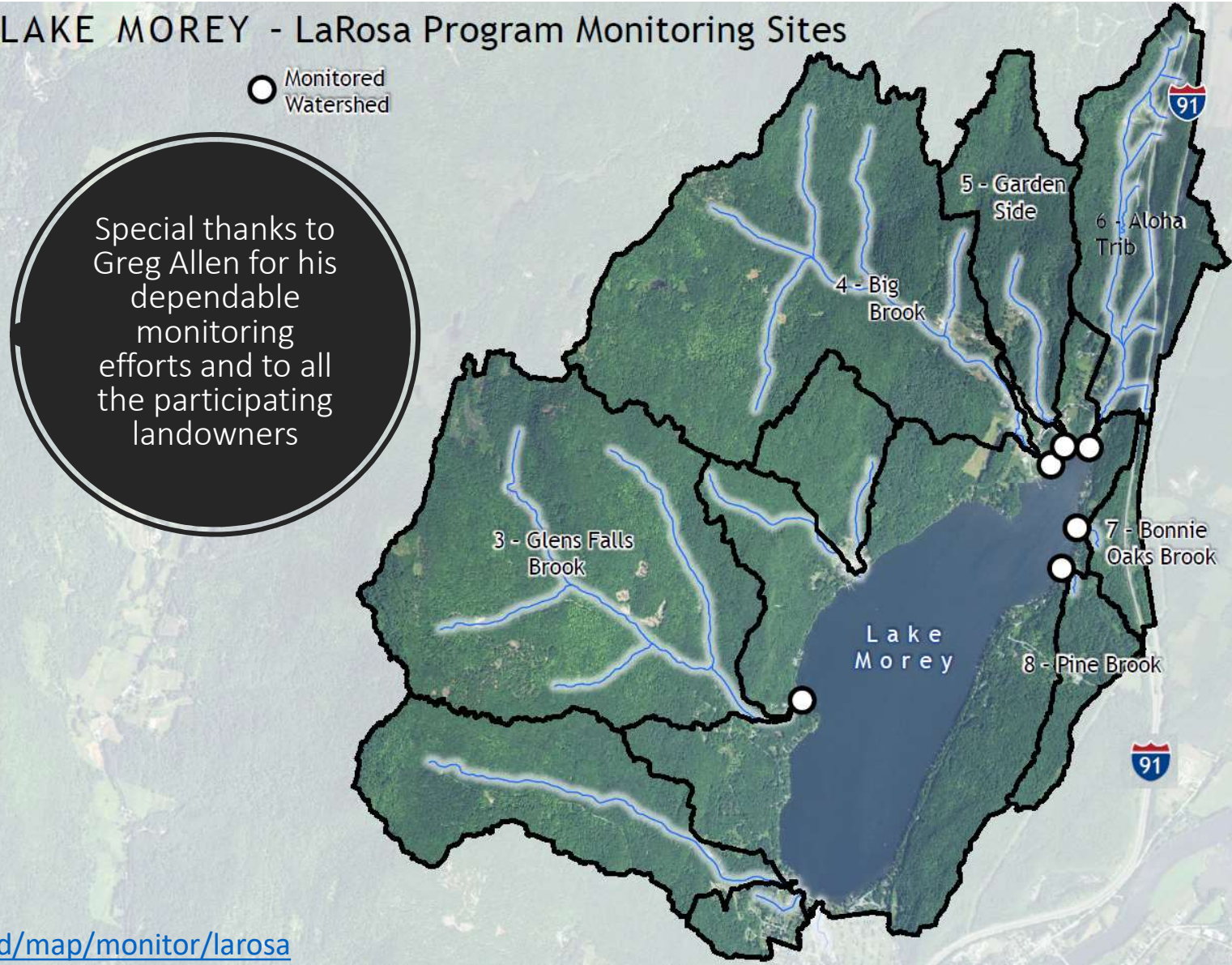


Lake Morey Station 1 Temperature, Dissolved Oxygen, Total Phosphorus and Total Nitrogen Profiles on 3/5/2018 (Under Ice Cover)



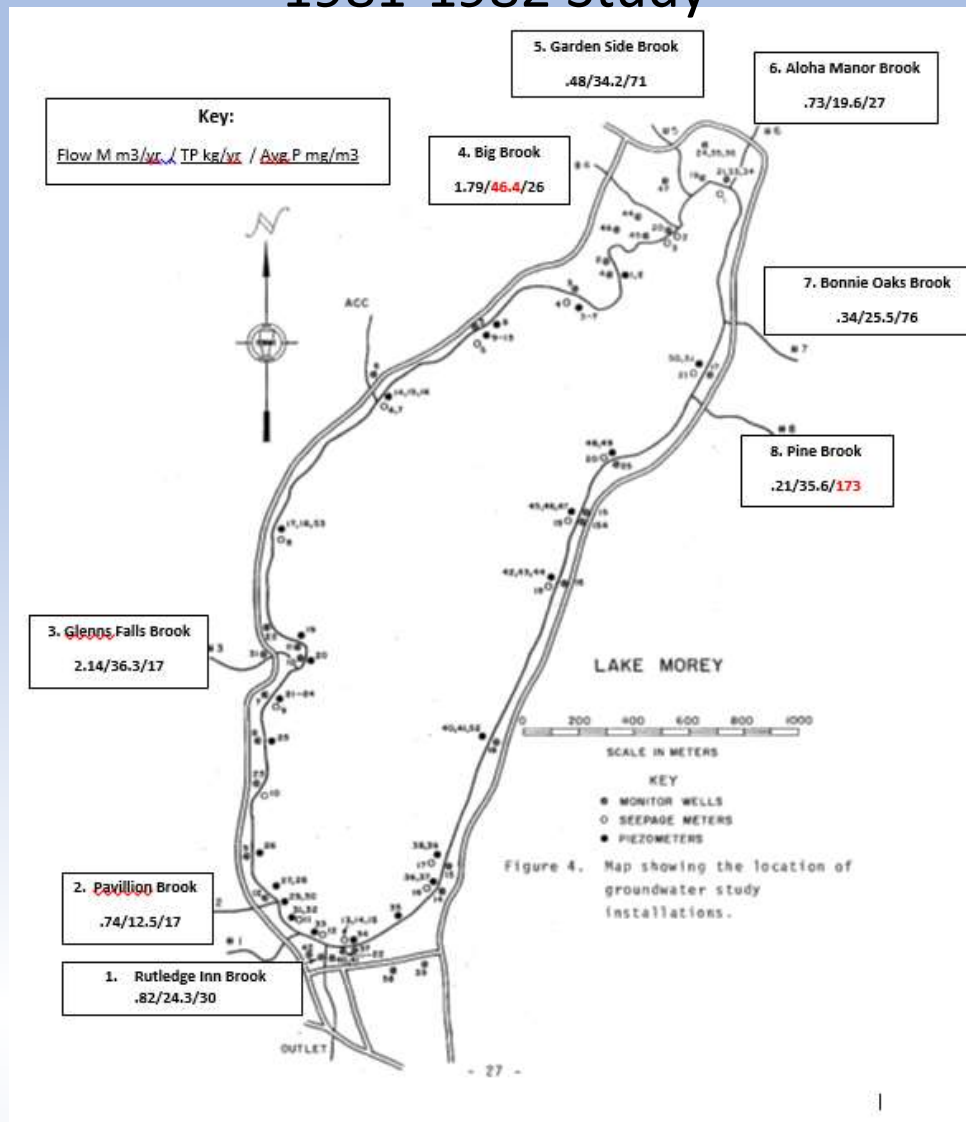
- Started monitoring regularly in 2019
- Collected samples from 7 tributary streams (4 in 2022)
- Only total phosphorus and chloride in 2022
- Monitored between April and September (April-July in 2022)
- 2019-2020: monthly
- 2021-2022: biweekly
- Watershed is mostly forested
- Developed area is the densest along the shoreline

LAKE MOREY - LaRosa Program Monitoring Sites

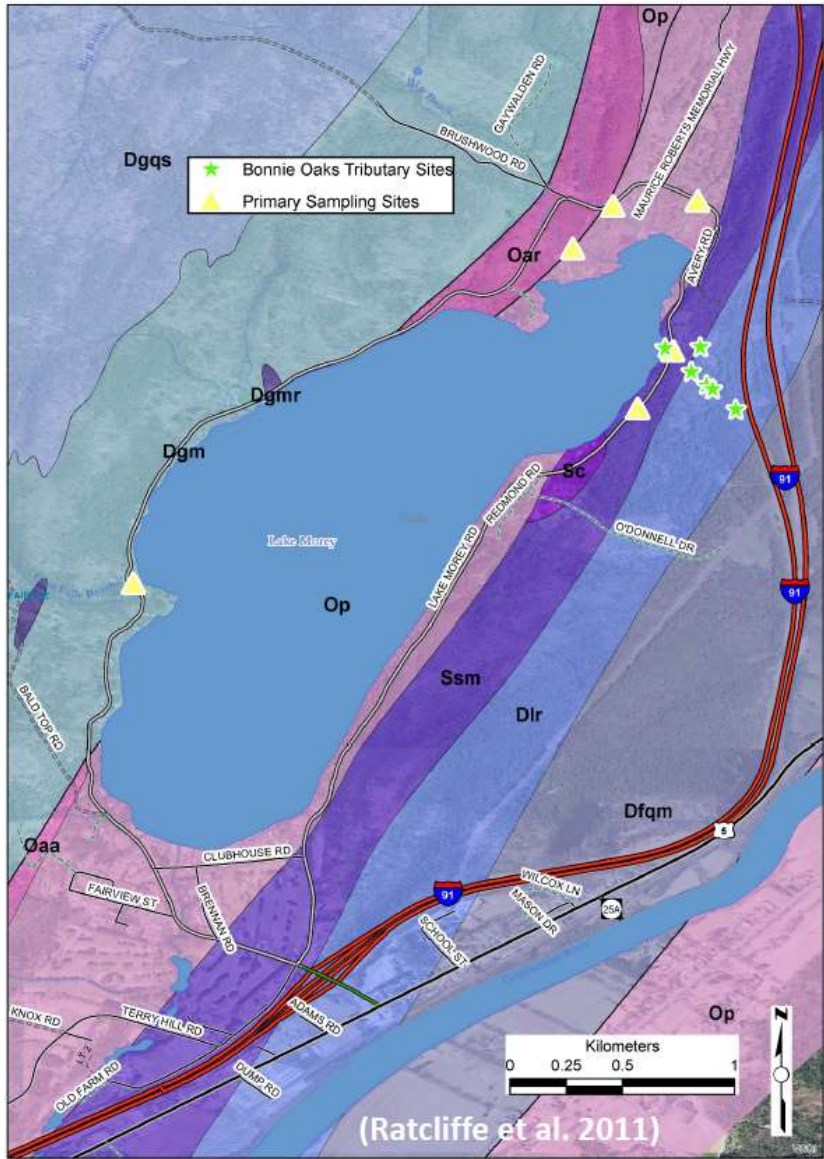


Special thanks to Greg Allen for his dependable monitoring efforts and to all the participating landowners

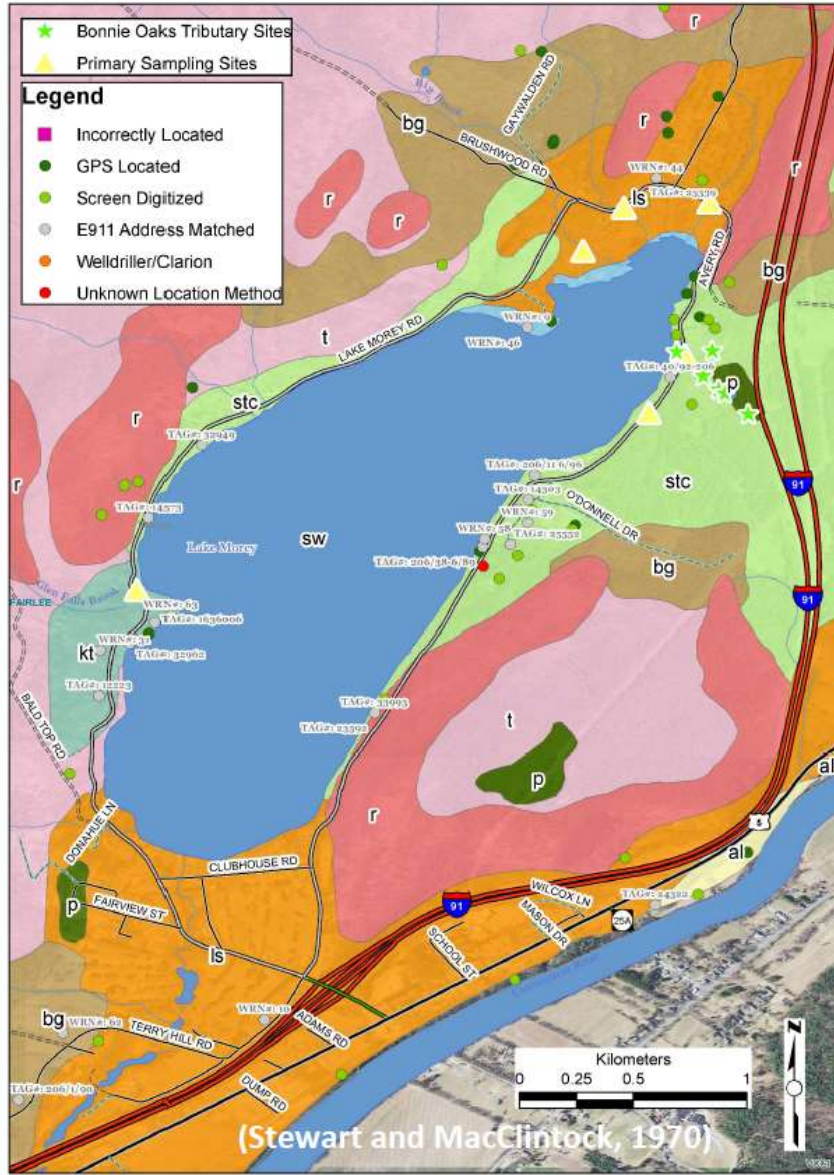
1981-1982 Study



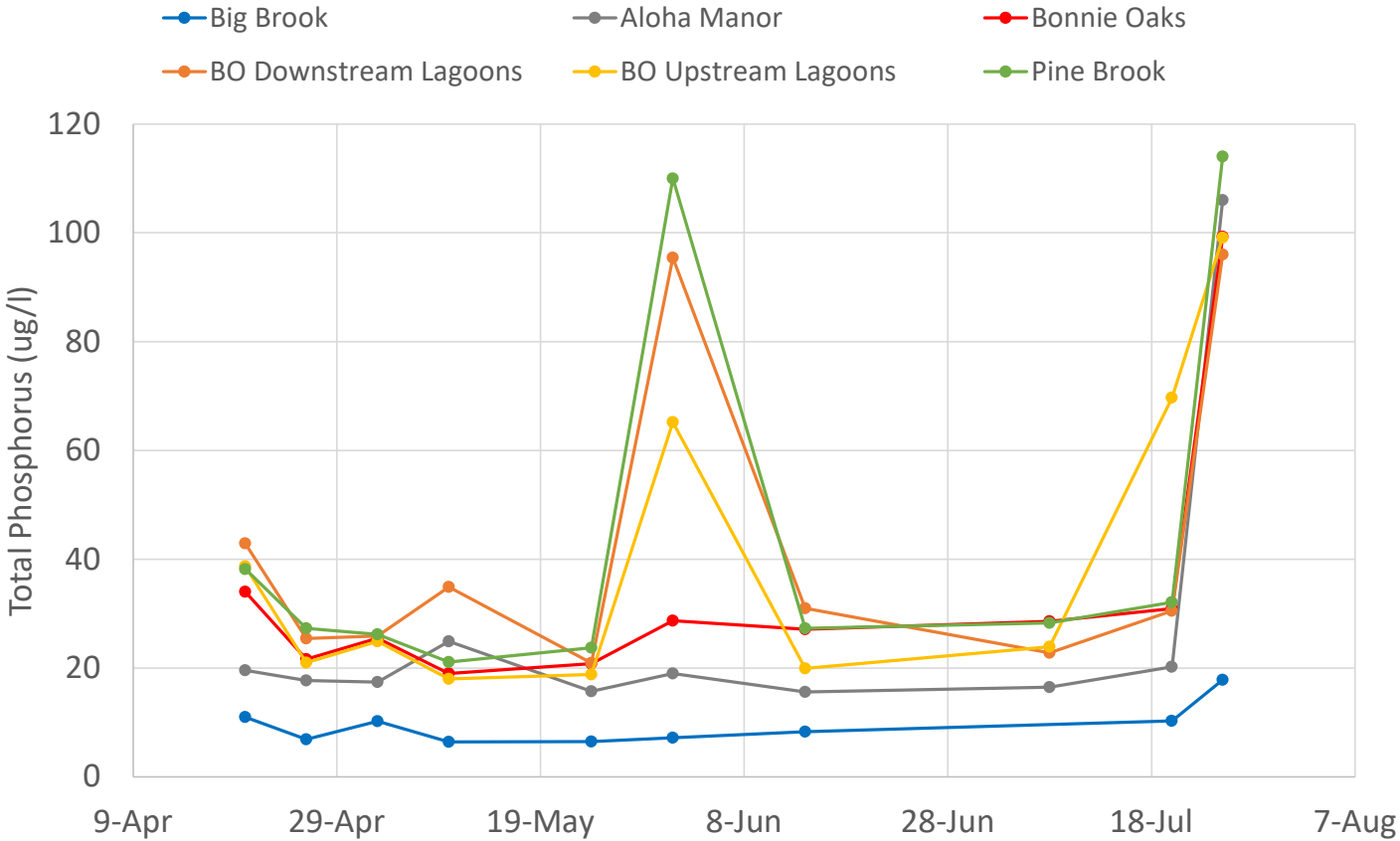
Bedrock Geology



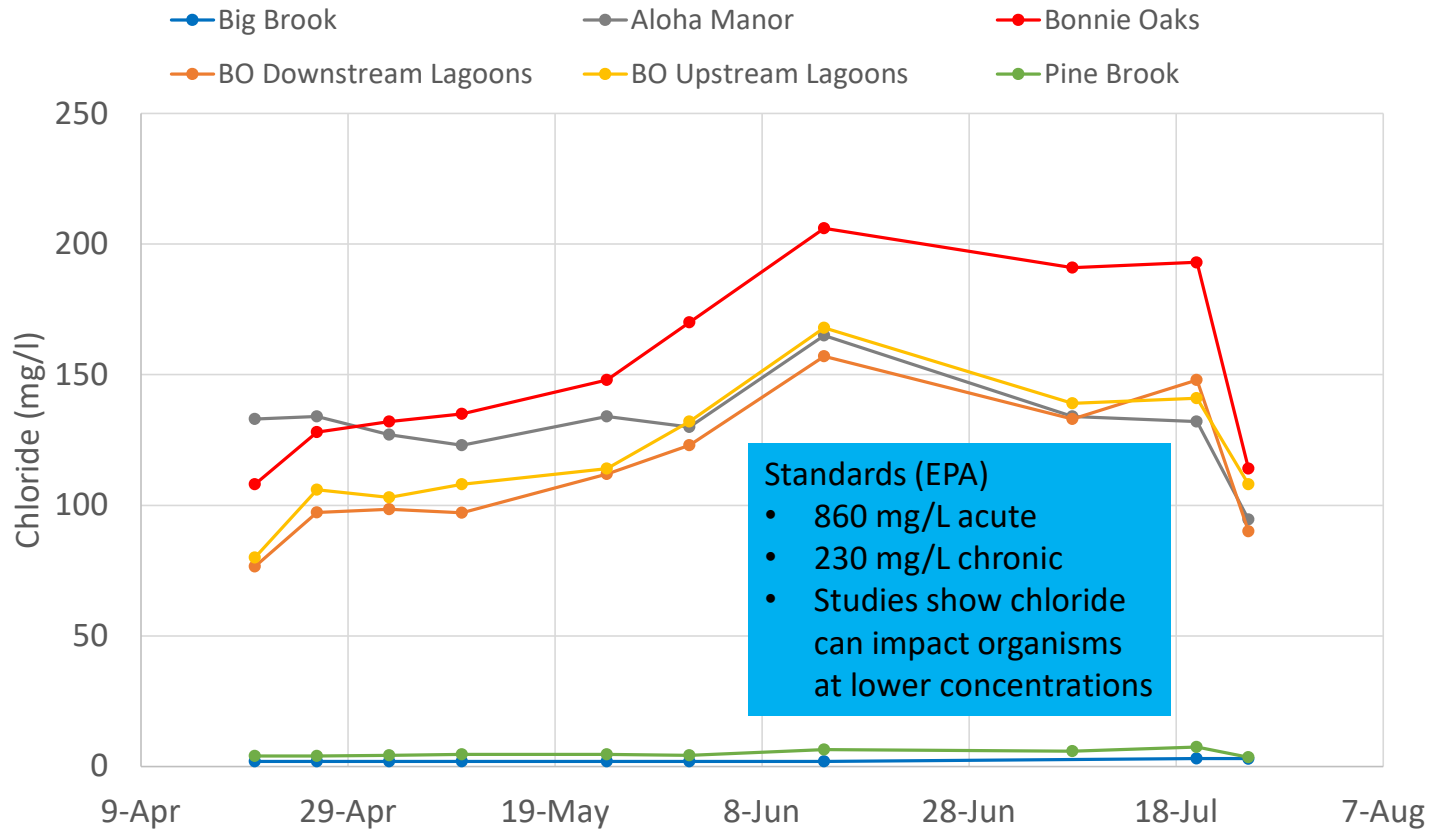
Surficial Geology + Wells



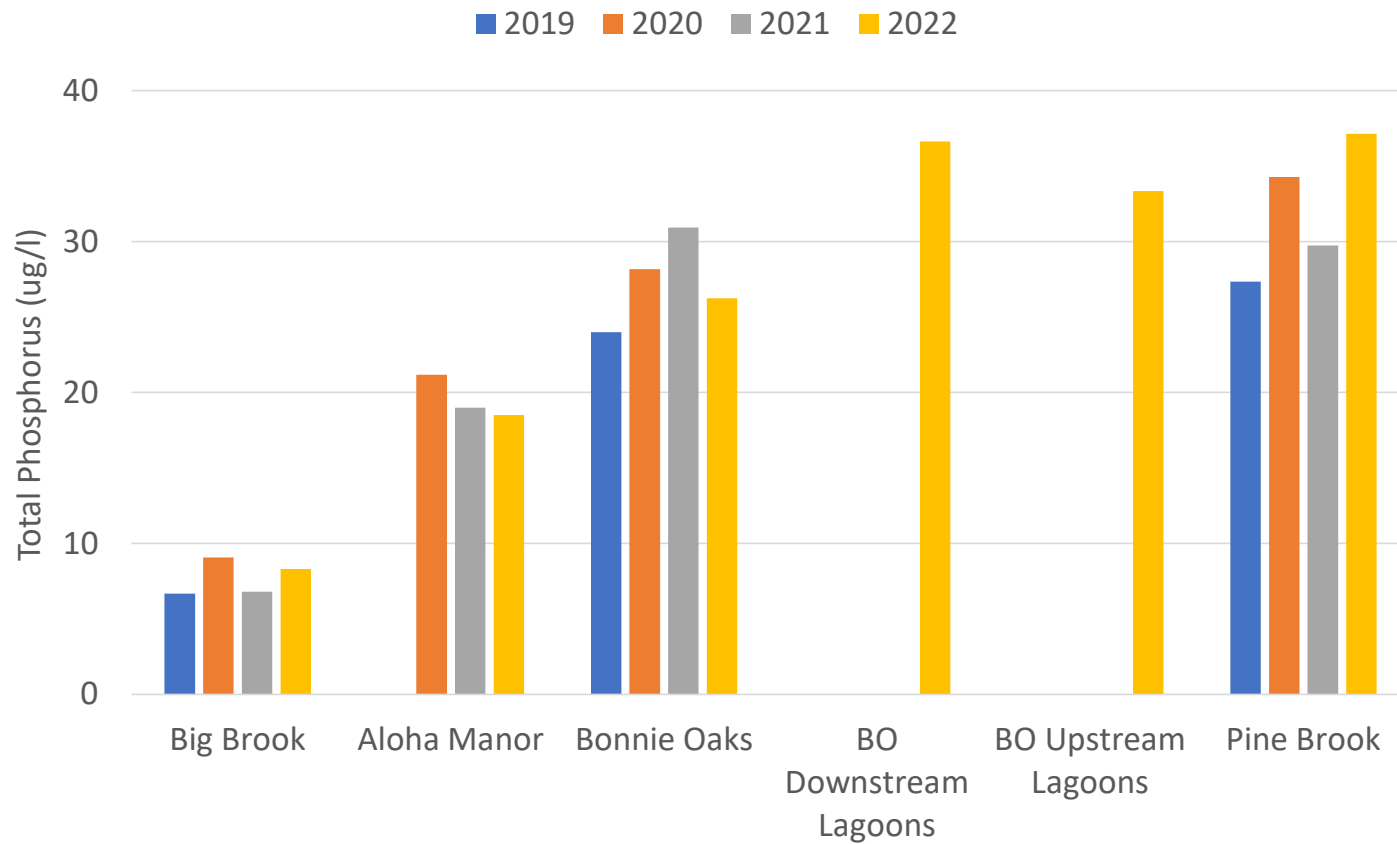
2022 Lake Morey Tributary Total Phosphorus Results



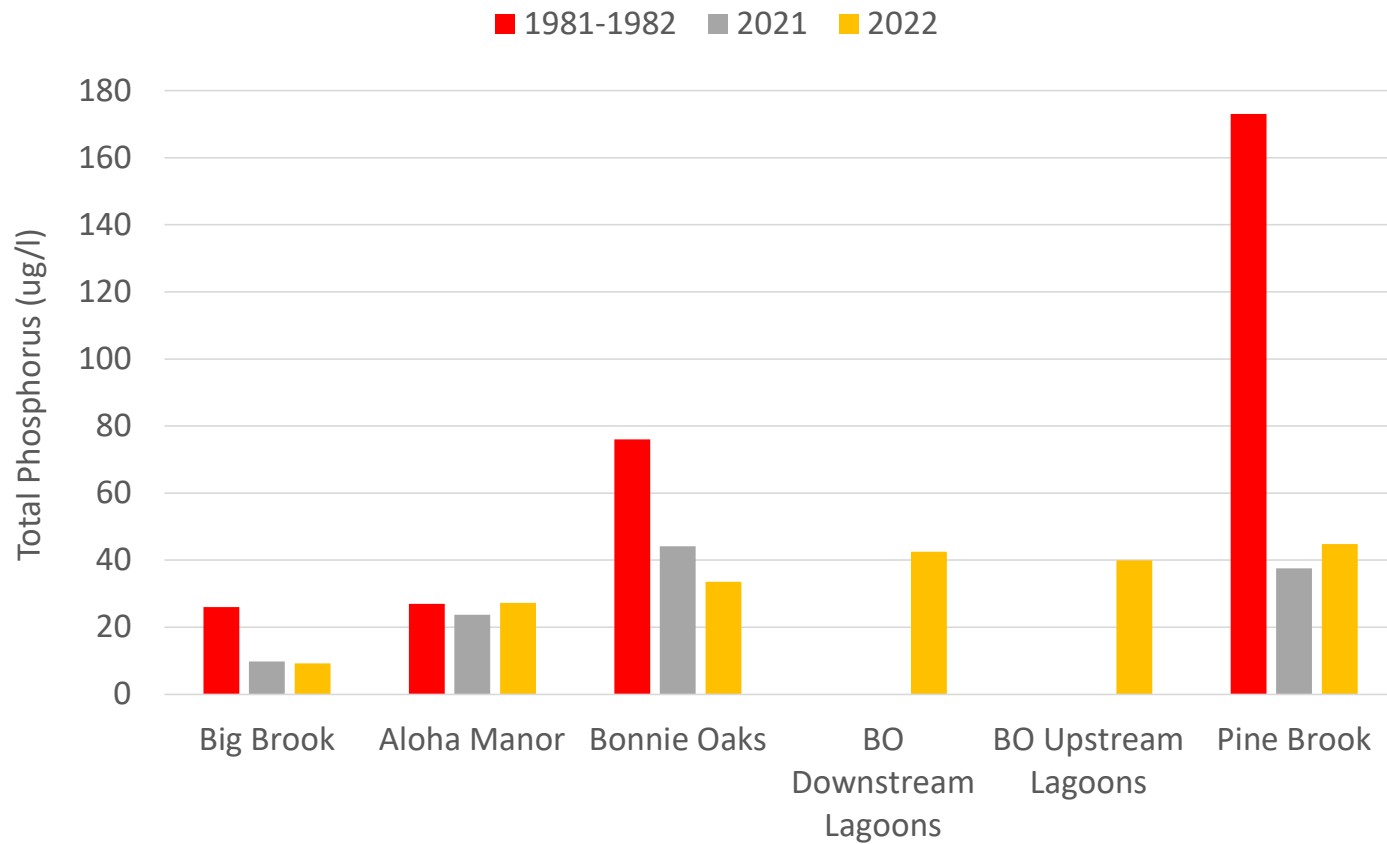
2022 Lake Morey Tributary Chloride Results



2019-2022 Lake Morey Tributary Base Flow Total Phosphorus Annual Means



1981-2022 Lake Morey Tributary Base + High Flow Total Phosphorus Annual Means



2022 Monitoring Summary & 2023 Next Steps

- Lay Monitoring Program (LMP)
 - 2022 Summary: Internal phosphorus loading from lake bottom sediment is main driver of cyanobacteria blooms and benthic mats forming in Lake Morey
 - 2023 Next Steps: LMP volunteers collect biweekly lake surface samples while LMP coordinator collects monthly water quality vertical profiles
- LaRosa Partnership Program (LPP)
 - 2022 Summary: Pine Brook, Bonnie Oaks and Aloha Manor have high TP during stormflow events; Bonnie Oaks and Aloha Manor have high Chloride
 - 2023 Next Steps: LPP volunteers continue collecting biweekly samples for same parameters (add DP?) at same sites but extend through August