The water quality of Joe’s Pond is monitored by both Vermont Department of Conservation (DEC) staff and Lay Monitoring Program (LMP) volunteers supported by a partnership through the DEC and UVM Lake Champlain Sea Grant (<https://dec.vermont.gov/watershed/lakes-ponds/monitor/lay-monitoring>). The DEC Lakes and Ponds Program has created a Lake Score Card (<https://dec.vermont.gov/watershed/lakes-ponds/data-maps/scorecard>) that is a user-friendly interface used to share available data on overall lake health with lake users (see screenshot below). The graphs in the report show water quality trends from spring monitoring by DEC staff and summer monitoring by LMP volunteers. Both DEC staff and LMP volunteers have been monitoring Joe’s Pond since 1979, a year after LMP commenced.

Total phosphorus (TP) concentration is sampled to determine a lake's level of nutrient enrichment. Phosphorus feeds algae, cyanobacteria (blue-green algae), and aquatic plants (including nuisance or invasive plant populations). Spring TP concentration is sampled at the deepest point by DEC staff sporadically during “lake turnover” soon after the ice melts, as a baseline for summer conditions. Spring TP concentration in Joe’s Pond is showing a statistically significant increasing trend since first sampled in 1979 (high of 17.0 ug/l in 1983), but recent levels (9.5 ug/l in 2019) are still well below Vermont Water Quality Standards Nutrient Criterion for summer TP of 18 ug/l for Class B(2) lakes larger than 20 acres.

Summer TP concentration as well as chlorophyll-a pigment (algae and cyanobacteria) concentration and water clarity (Secchi disk depth) are sampled at the deepest point by LMP volunteers on a weekly basis between Memorial Day and Labor Day, representing the swim season conditions. Average summer TP concentration in Joe’s Pond is showing a statistically significant decreasing trend since first sampled in 2004 (high of 33.1 ug/l in 2009), and recent levels are well below the Nutrient Criterion of 18 ug/l for Class B(2) lakes, including the lowest on record in 2021 (11.3 ug/l). Average summer chlorophyll-a concentration (4.1 ug/l in 2021) and Secchi depth (4.6 meters in 2021) in Joe’s Pond are showing a relatively stable trend with some interannual variability, well within the Nutrient Criteria for chlorophyll-a of (7.0 ug/l) and Secchi depth (2.6 meters) for Class B(2) lakes.

According to the [How Lakes are Scored](http://anrmaps.vermont.gov/websites/kml/wq_scorecard/lp_lsc_how_lakes_are_scored.pdf) document linked in the Lake Score Card for Joe’s Pond, the overall water quality trend score is fair, the water quality standards status is stressed due to flow alteration (from dam manipulation), the watershed score is moderately disturbed, and the lakeshore disturbance score is poor. Therefore, both watershed and shoreland Best Management Practices should be the focus of initiatives protecting water quality in Joe’s Pond.

The DEC Watershed Planning Program (<https://dec.vermont.gov/water-investment/watershed-planning>) develops and implements watershed management plans, called Tactical Basin Plans, that summarize existing water quality conditions and attainment of surface water uses, with identified priorities for surface water protection and restoration of degraded waters. Tactical Basin Plans identify and prioritize the projects or actions needed to protect or restore specific waters and identify appropriate funding sources to complete the work, based on monitoring and assessment data.

The DEC LaRosa Partnership Program (<https://dec.vermont.gov/watershed/map/monitor/larosa>) has helped watershed organizations and monitoring groups across Vermont implement new and/or ongoing monitoring projects for surface waters in need of water quality assessment. This testing allows community members to engage with their local streams and rivers firsthand, learn about water quality issues, and use water testing to identify where impacts are present.

The DEC Lake Wise Program (<https://dec.vermont.gov/watershed/lakes-ponds/lakeshores-lake-wise>) is an initiative that awards lake-friendly shoreland property, including that of state parks, town beaches, private homes and businesses. The goal of Lake Wise is to establish a new normal, a new culture of lakeshore landscaping that is proven to help protect the lake. A property that earns the Lake Wise Award will represent a "model" shoreland property. The Lake Wise Award certifies a property is well managed, using shoreland Best Management Practices, and is maintained to care for the lake.

DEC has recently initiated funding of Lake Watershed Action Plans that combine a lake’s condition of shoreland, tributaries, and hydrologically connected roads in an individual planning guide that prioritizes restoration and protection actions for that specific lake. Part of this current funding includes 10 Lake Wise Assessments to be completed on Joe’s Pond to identify voluntary projects that shoreland property owners can undertake to minimize threats to the lake.

**Joe’s Pond Score Card Trends and Status Report:**

