

2021 Secchi Day on Beaver Lake - Water Quality Results

For the 16th annual Secchi day, held Aug. 21, 2021, 25 teams covered 31 of 35 sample sites throughout Beaver Lake in Northwest Arkansas. Because of weather-related conditions, areas near Lost Bridge and Beaver Dam were not sampled. Sampling teams take Secchi disk readings to determine water clarity and collect water samples which are tested for Chlorophyll-*a*, Total Phosphorus, and Total Nitrogen, to determine algal density and nutrient concentration. Secchi depth in late August is inversely related to the concentration of Chlorophyll-*a*. Therefore, as Chlorophyll-*a* decreases, Secchi depth increases. When it comes to producing drinking water, higher Secchi depths and lower Chlorophyll-*a* concentrations are best. Below is a summary of results.

- **Secchi Depth:** The maximum depth at which a Secchi disk can be viewed from the surface of the water.
 - Average Secchi depth for Beaver Lake was 2.5 meters, or 8.2 feet.
 - Minimum depth was 0.5 meters (1.6 ft) near White River and Richland Creek confluence.
 - Maximum depth was 4.7 meters (15.4 ft) near Starkey Marina.
 - Average Secchi depth for 2021 was slightly lesser than the 16-year Long Term Average (LTA) of 2.7 meters (8.8 ft).
- **Chlorophyll-*a* (Chl-*a*):** A pigment in algae that is used to measure the density of the algal population of a lake.
 - Average Chl-*a* concentration for Beaver Lake was 8.25 µg/L.
 - Minimum Chl-*a* concentration was 1.57 µg/L near Starkey Marina.
 - Maximum Chl-*a* concentration was 36.74 µg/L near Camp War Eagle.
 - Near surface mean concentration for Chl-*a* was greater in 2021 than the 16-year LTA of 7.6 µg/L.
- **Total Phosphorus (TP):** A nutrient that promotes algal growth. Phosphates come from a variety of sources including agricultural and urban runoff, sewage treatment plant effluent, and faulty septic systems.
 - Average TP concentration for Beaver Lake was 30 µg/L.
 - Minimum TP concentration was 13 µg/L near Ventris Hollow.
 - Maximum TP concentration was 83 µg/L near the Blue Springs boat launch.
 - Near surface mean concentration of TP was greater in 2021 than the 16-year LTA of 16 µg/L.
- **Total Nitrogen (TN):** A nutrient that promotes algal growth. Nitrogen also comes from a variety of sources including fertilizer runoff, faulty septic systems, municipal wastewater and animal wastes, erosion of natural deposits, as well as atmospheric N-fixation in water.
 - Average TN concentration for Beaver Lake was 360 µg/L.
 - Minimum TN concentration was 26 µg/L near Prairie Creek.
 - Maximum TN concentration was 950 µg/L near the White River and Richland Creek confluence.
 - Near surface mean concentration of TN was greater than in 2020.