

# LAKE KANASATKA

## 2022 SAMPLING HIGHLIGHTS

### Station 1 Deep

Moultonborough, NH



Water quality data displayed in Tables 1, 2 and 3 are surface water measurements, with the exception of the dissolved oxygen data that are collected near the lake bottom. Summary statistics are provided for bi-weekly samples collected between May 20 and October 7, 2022.

Blue = Oligotrophic

Yellow = Mesotrophic

Red = Eutrophic

Gray = No Data

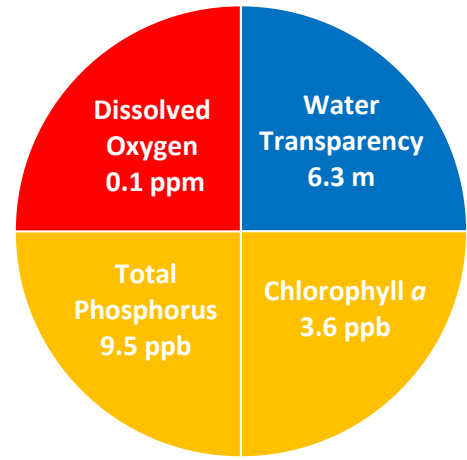


Figure 1. Lake Kanasatka Water Quality

Table 1. 2022 Lake Kanasatka Seasonal Averages and NH DES Aquatic Life Nutrient Criteria<sup>1</sup>

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Lake Kanasatka Average (range)	Lake Kanasatka Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	6.3 meters (4.1 – 7.4)	Oligotrophic
Chlorophyll a <sup>1</sup> (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	3.6 ppb (1.6 – 7.2)	Mesotrophic
Total Phosphorus <sup>1</sup> (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	9.5 ppb (7.1 – 14.3)	Mesotrophic
Dissolved Oxygen (ppm)	5.0 – 7.0	2.0 – 5.0	<2.0	0.1 ppm (0.0 – 0.8) *	Eutrophic

\* Dissolved oxygen concentrations were measured between 8.0 and 13.0 meters, in the middle and bottom water layers, on September 9, 2022.

Table 2. 2022 Lake Kanasatka Seasonal Average Accessory Water Quality Measurements

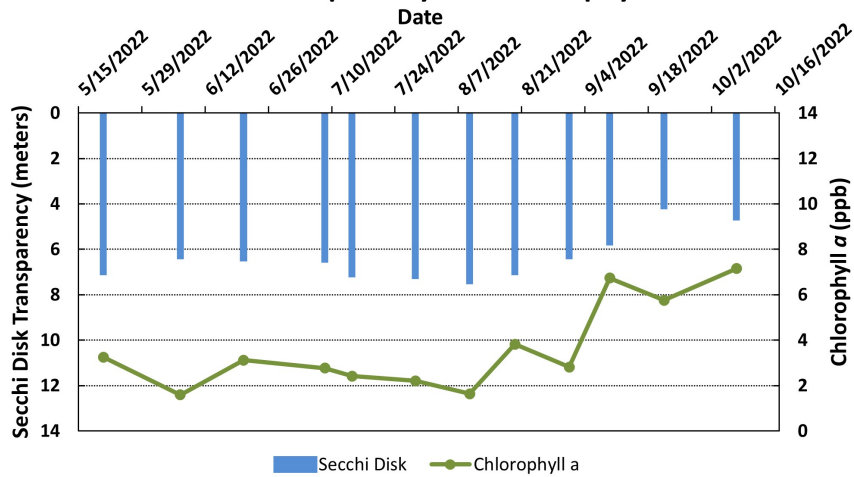
Parameter	Assessment Criteria					Lake Kanasatka Average (range)	Lake Kanasatka Classification
	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored		
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	10.4 color units (range: 7.7 – 13.8)	Slightly colored
Alkalinity (ppm)	< 0.0 acidified	0.1 – 2.0 extremely vulnerable	2.1 – 10 moderately vulnerable	10.1 – 25.0 low vulnerability	> 25.0 not vulnerable	14.1 ppm (range: 13.8 – 14.3)	Low vulnerability
pH (std units)	< 5.5 suboptimal for successful growth and reproduction		6.5 – 9.0 optimal range for fish growth and reproduction			7.1 standard units (range: 6.9 – 7.2)	Optimal range for fish growth and reproduction
Specific Conductivity (uS/cm)	< 50 uS/cm Characteristic of minimally impacted NH lakes		50-100 uS/cm Lakes with some human influence	> 100 uS/cm Characteristic of lakes experiencing human disturbances		109.7 uS/cm (range: 107.1 – 112.3)	Characteristic of lakes experiencing human disturbances

### Strategies to stabilize and improve water quality

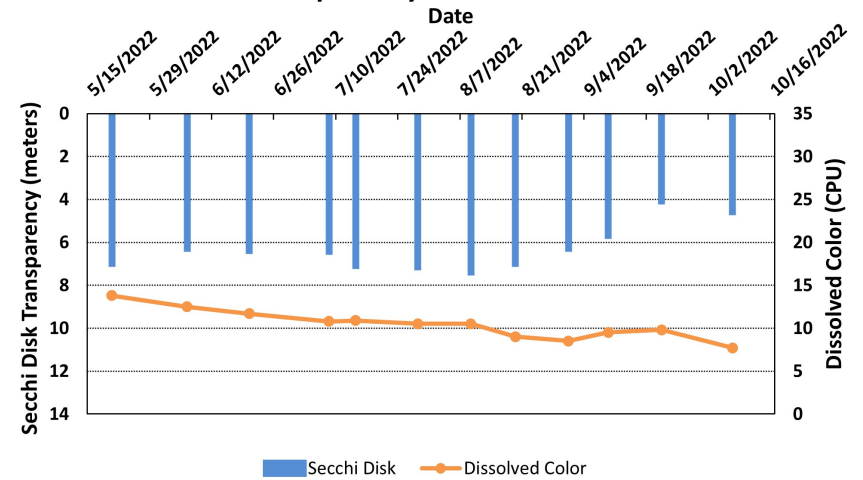
Implement Best Management Practices (BMPs) within the Lake Kanasatka watershed to minimize the adverse impacts of polluted runoff and erosion into Lake Kanasatka. Refer to [Landscaping at the Water's Edge: An Ecological Approach](#), [New Hampshire Homeowner's Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home](#) and the [Lake Kanasatka Watershed-Based Management Plan](#) for information on how to reduce nutrient loading caused by overland run-off. NH Lakes also provides a series of resources aimed at educating residents and protecting our lakes and ponds.

- [https://extension.unh.edu/resources/files/Resource004159\\_Rep5940.pdf](https://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf)
- <https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/homeowner-guide-stormwater.pdf>
- [https://kanasatka.org/wp-content/uploads/2023/02/LakeKanasatka\\_WMP\\_Final\\_20220816.pdf](https://kanasatka.org/wp-content/uploads/2023/02/LakeKanasatka_WMP_Final_20220816.pdf)
- <https://nhlakes.org/lakesmart-resource-library/>

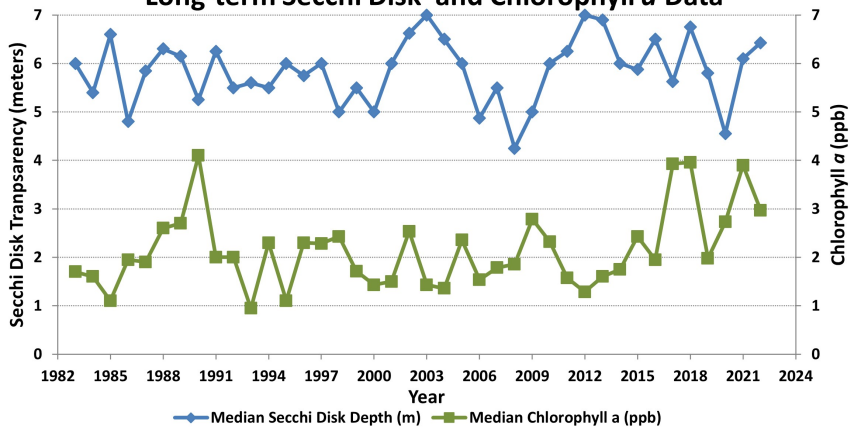
**Figure 2. Lake Kanasatka (2022 Seasonal Data)  
Secchi Disk Transparency and Chlorophyll *a* Data**



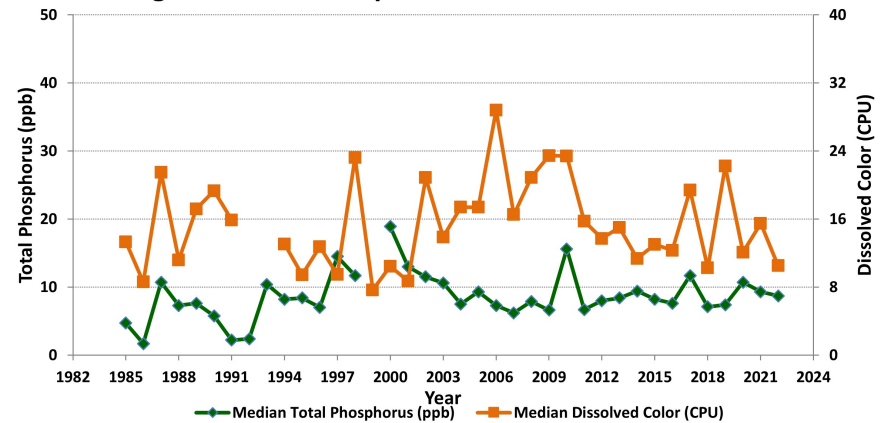
**Figure 3. Lake Kanasatka (2022 Seasonal Data)  
Secchi Disk Transparency and Dissolved Color Data**



**Figure 4. Lake Kanasatka - Site 1 Deep (1983-2022)  
Long-term Secchi Disk and Chlorophyll *a* Data**



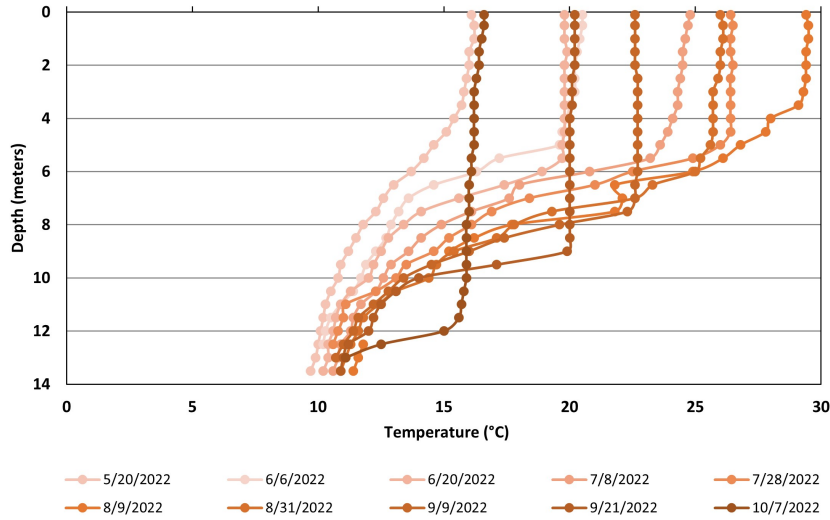
**Figure 5. Lake Kanasatka - Site 1 Deep (1985-2022)  
Long-term Total Phosphorus and Dissolved Color Data**



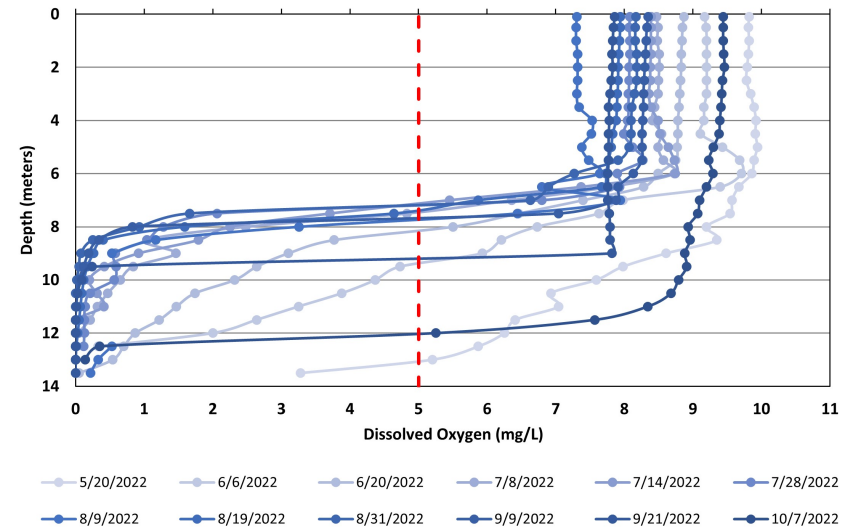
Figures 2 and 3. Seasonal comparison of Lake Kanasatka, Site 1 Deep, water transparency (Secchi Disk depth), chlorophyll *a* and dissolved color for 2022. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll *a* and/or color concentrations.

Figures 4 and 5. Annual median Lake Kanasatka water transparency, chlorophyll *a*, dissolved color and total phosphorus concentrations measured through the New Hampshire Lakes Lay Monitoring Program between 1983 and 2022. The long-term data provide insight into the water quality fluctuations, among years, that have been documented in Lake Kanasatka.

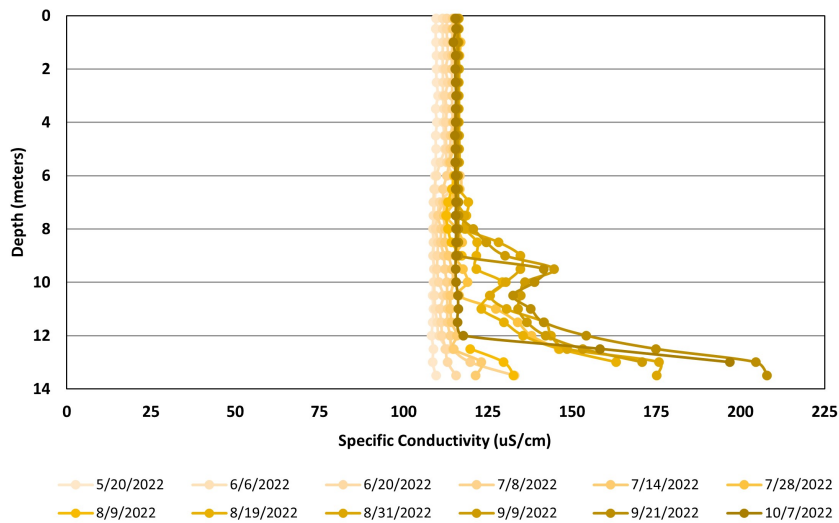
**Figure 6. Lake Kanastka - Site 1 Deep**  
Temperature Profiles (May 20 through October 7, 2022)



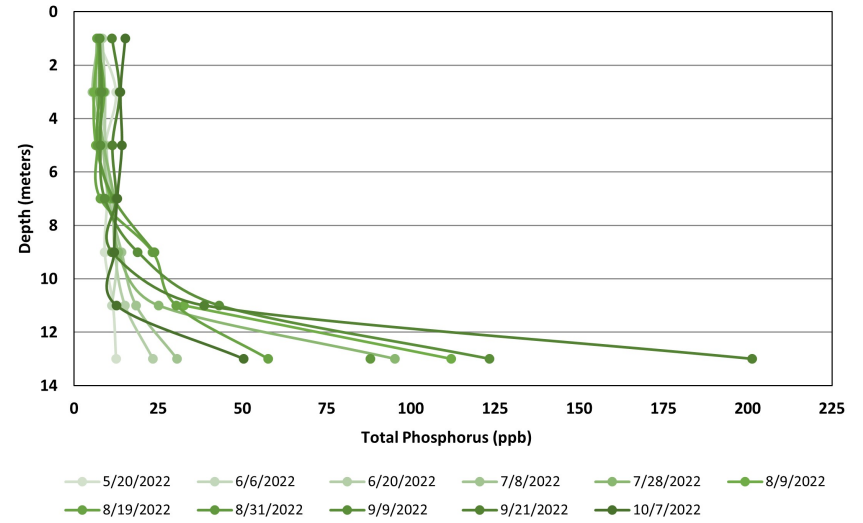
**Figure 7. Lake Kanastka - Site 1 Deep**  
Dissolved Oxygen Profiles (May 20 through October 7, 2022)



**Figure 8. Lake Kanastka - Site 1 Deep**  
Specific Conductivity (May 20 through October 7, 2022)



**Figure 9. Lake Kanastka - Site 1 Deep**  
Total Phosphorus (May 20 through October 7, 2022)



Figures 6, 7 and 8. Temperature, dissolved oxygen and specific conductivity profiles displaying the water quality differences, through the water column, in 0.5-meter increments. Notice the decreasing dissolved oxygen concentrations and the increasing specific conductivity levels, near the lake bottom. The dashed vertical red line in Figure 7 displays the dissolved oxygen threshold for the successful growth and reproduction of cold-water fish such as trout and salmon.

Figure 9. Total phosphorus profiles that display the water quality variations, through the season, from the surface to lake bottom at 2 meter increments. Notice the difference between the surface and bottom water total phosphorus concentrations.

**Table 3. Lake Kanasatka Seasonal Average Water Quality Inter-Site Comparison (2022)**

Sampling Station	Average (range) Secchi Disk Depth (meters)	Average (range) Total Phosphorus (ppb)	Average (range) Chlorophyll <i>a</i> (ppb)	Average (range) Dissolved Color (CPU)
1 Deep	6.3 m (4.1 – 7.4)	9.5 ppb (7.1 – 14.3)	3.6 ppb (1.6 – 7.2)	10.4 CPU (7.7 – 13.8)
2 Animal	7.1 m (5.1 – 6.2)	8.8 ppb (5.4 – 14.3)	4.7 ppb (2.0 – 7.5)	12.7 CPU (10.2 – 15.2)
3 West	5.7 m (2.5 – 7.7) *	12.4 ppb (7.1 – 15.1)	6.1 ppb (2.9 – 9.4)	11.9 CPU (10.7 – 13.0)

\* indicates the Secchi disk was occasionally visible on the lake bottom.

### Data Interpretation: Overview of factors to consider when reviewing the Lake Kanasatka data

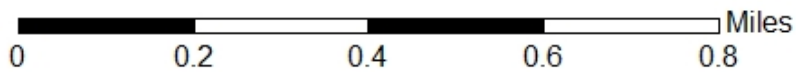
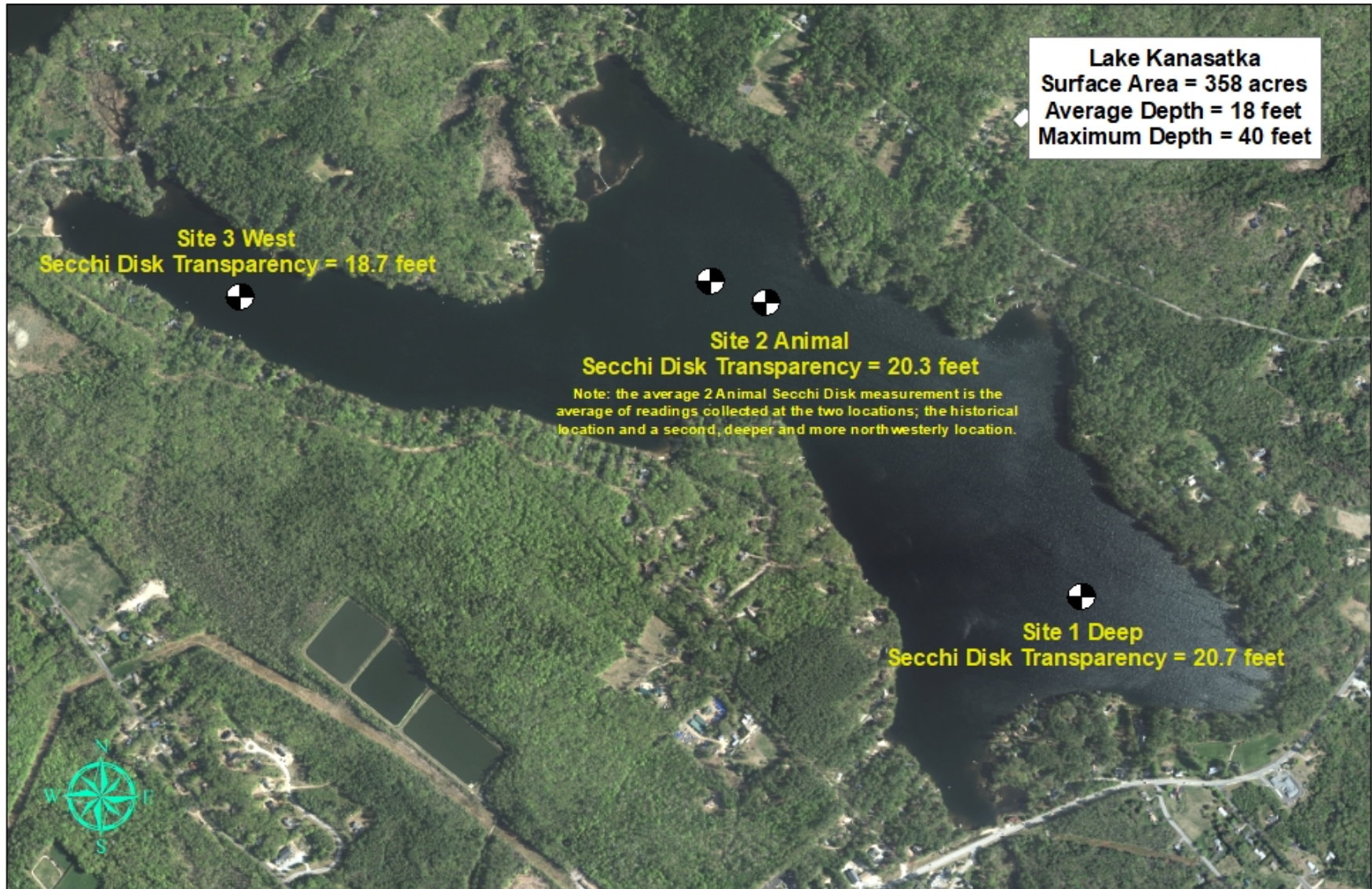
This highlight report provides a general overview of the current and historical conditions of Lake Kanasatka. The report is intended to provide a simple assessment of the water quality trends. Should you have additional questions about interpreting your water quality results, we would be happy to discuss the data with you and/or any concerns you may have. In general, some factors that influence the current and long-term water quality results/trends for our New Hampshire lakes and ponds include:

- **Land-use Patterns** within the watershed (drainage basin) – Research indicates land use patterns have an impact on how much phosphorus (nutrient) is washing into our lakes. In general, more urbanized watersheds have a greater degree of phosphorus runoff than highly forested/vegetated drainage areas.
- **Weather Patterns** – Rainfall and temperature can influence water quality. Wet periods, and overland runoff, tend to be a time when elevated nutrients and other pollutants are transported into our lakes. Temperature can also influence water quality conditions since many aquatic plants and algae tend to respond to changing seasonal conditions. Unusually warm periods are sometimes tied to short-term algal and cyanobacteria blooms.
- **Best Management Practices (BMPs)** – The presence/absence of best management practices can have an interplay on water quality. BMPs are measures that are used to manage nutrients and other pollutants that could otherwise make their way into our lakes. Properties that employ BMPs, designed specifically to remove pollutants of concern (e.g. sediments and phosphorus), are less likely to contribute nutrients and other pollutants into our lakes.
- **Temperature (Thermal) Stratification** – Many lakes become thermally stratified during the summer months and may form three distinct thermal layers: upper water layer (epilimnion), middle lake layer (metalimnion) and bottom cold-water layer (hypolimnion). These thermal zones form a barrier to lake mixing, during the summer months, and can coincide with differences in dissolved oxygen and specific conductivity through the water column.
- **Internal Nutrient Loading** (nutrients that are introduced from the sediments along the lake bottom) – Some of our lakes experience significant internal nutrient loading. Such lakes generally tend to be well stratified and exhibit increasing deep water phosphorus concentrations, relative to surface levels. Lakes that exhibit internal nutrient loading may also exhibit increasing deep water specific conductivity concentrations (a measure of dissolved materials) through the summer months.

# Figure 10. Lake Kanasatka

Moultonborough, NH

2022 Deep water sampling sites and seasonal average water transparency.



Aerial Orthophoto Source: NH GRANIT  
GPS Coordinates collected by the UNH Center for Freshwater Biology

