

LOWA volunteers have monitored Lake of the Ozarks water quality for the past two summers (2021 and 2022) at 5 locations: Bagnell Dam, Gravois, Grand Glaize, Niangua, and Background (**Figure 1**). Water quality samples for total nitrogen, total phosphorus, chlorophyll-a, total suspended solids, and clarity were collected weekly from May through September each summer. Lake of the Ozarks water quality monitoring was conducted to answer the following very important questions.

- 1) Is the Lake of the Ozarks meeting the State numeric lake nutrient standard?
- 2) Where and when are nutrients entering the Lake of the Ozarks?
- 3) How much does Lake of the Ozarks water quality vary from season to season and year to year?

Question 1: Is the Lake of the Ozarks meeting the State numeric lake nutrient standard?

Answer: YES (**Table 1**) and chlorophyll-a production is the lowest at Bagnell Dam and increases as you move up the lake toward Truman Reservoir (**Table 2**).

Table 1.

| Year | Chlorophyll-a Numeric Standard (micrograms per Liter) | Chlorophyll-a Geometric Mean at Bagnell Dam (micrograms per Liter) |
|------|---|--|
| 2021 | 15.0 | 10.9 |
| 2022 | | 8.2 |

Table 2.

| Year | Geometric Mean Chlorophyll-a (micrograms per Liter) | | | | |
|------|---|------------------|-----------------------|-----------------|---------------------|
| | Upstream | | Downstream | | |
| | Background 42 mm | Niangua 30 mm | Grand Glaize 19 mm | Gravois 6 mm | Bagnell Dam 0 mm |
| 2021 | 15.7 | 13.9 | 13.0 | 11.0 | 10.9 |
| 2022 | 12.9 | 11.0 | 6.9 | 8.3 | 8.2 |

Question 2: Where and when are nutrients entering the Lake of the Ozarks?

Answer: Much of the total phosphorus and total nitrogen are entering the lake from Truman Reservoir or Background location (**Table 3** and **Table 4**). In 2021 and 2022, data indicate a slight increase in total nitrogen from Gravois to Bagnell Dam locations (**Table 3**).

Much of the total nitrogen entering the lake occurs during the late spring and early summer (mid-May to mid-July) (**Figure 2**). Total phosphorus enters the lake relatively consistently throughout the summer but increases slightly in early fall (**Figure 3**).

Table 3.

| Year | Geometric Mean Total Nitrogen (micrograms per Liter) | | | | |
|------|--|------------------|-----------------------|-----------------|---------------------|
| | Upstream | | Downstream | | |
| | Background 42 mm | Niangua 30 mm | Grand Glaize 19 mm | Gravois 6 mm | Bagnell Dam 0 mm |
| 2021 | 883 | 807 | 855 | 630 | 653 |
| 2022 | 876 | 790 | 670 | 632 | 671 |

Table 4.

| Year | Geometric Mean Total Phosphorus (micrograms per Liter) | | | | |
|------|--|------------------|-----------------------|-----------------|---------------------|
| | Upstream | | Downstream | | |
| | Background 42 mm | Niangua 30 mm | Grand Glaize 19 mm | Gravois 6 mm | Bagnell Dam 0 mm |
| 2021 | 81 | 63 | 56 | 34 | 39 |
| 2022 | 70 | 47 | 36 | 29 | 29 |

Figure 2.

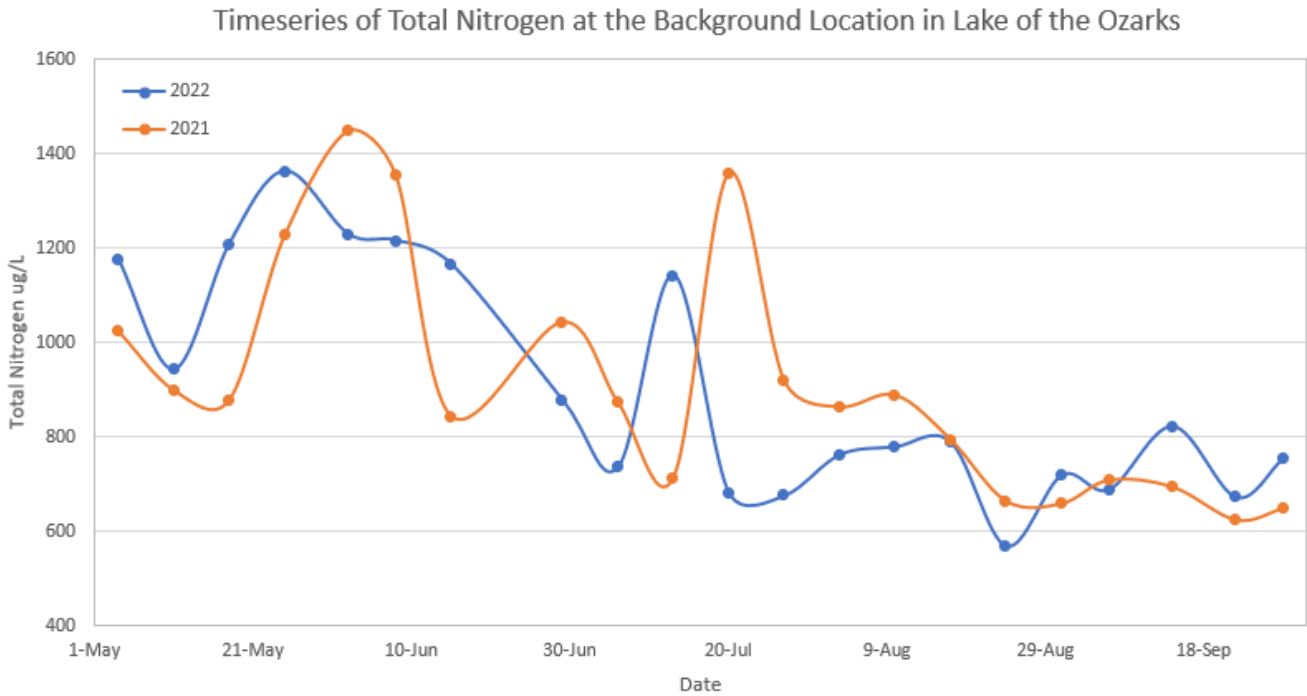
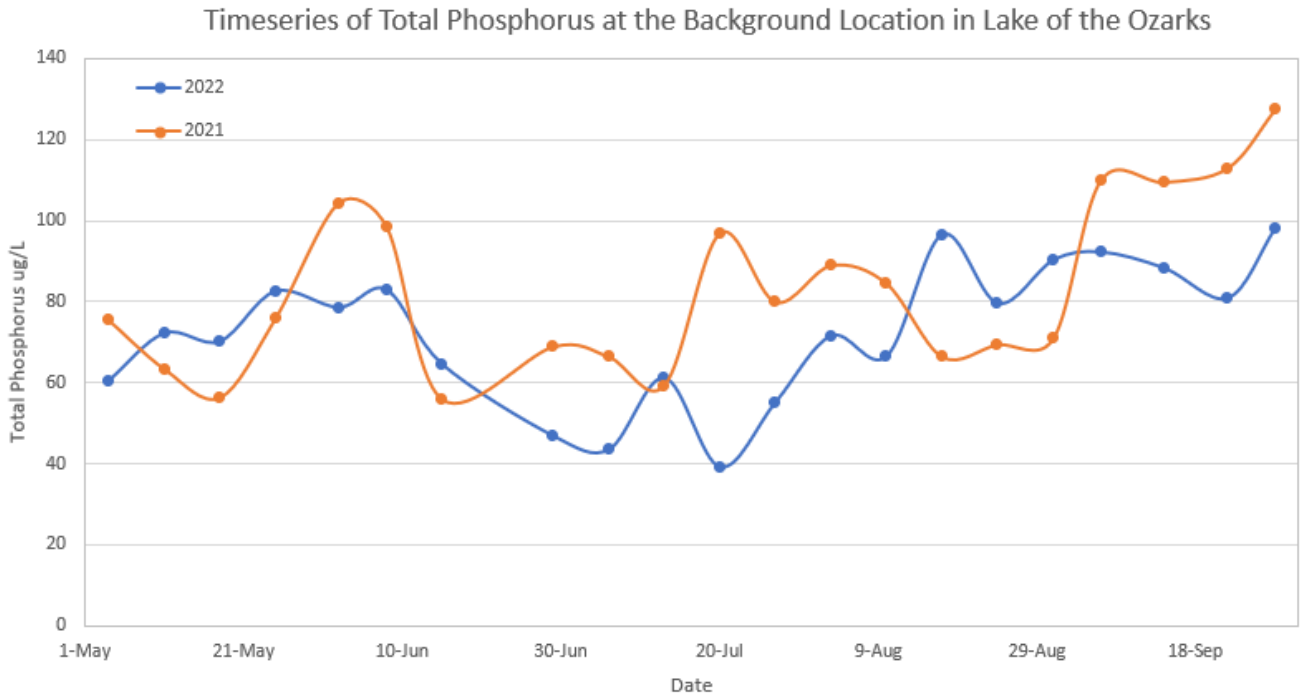


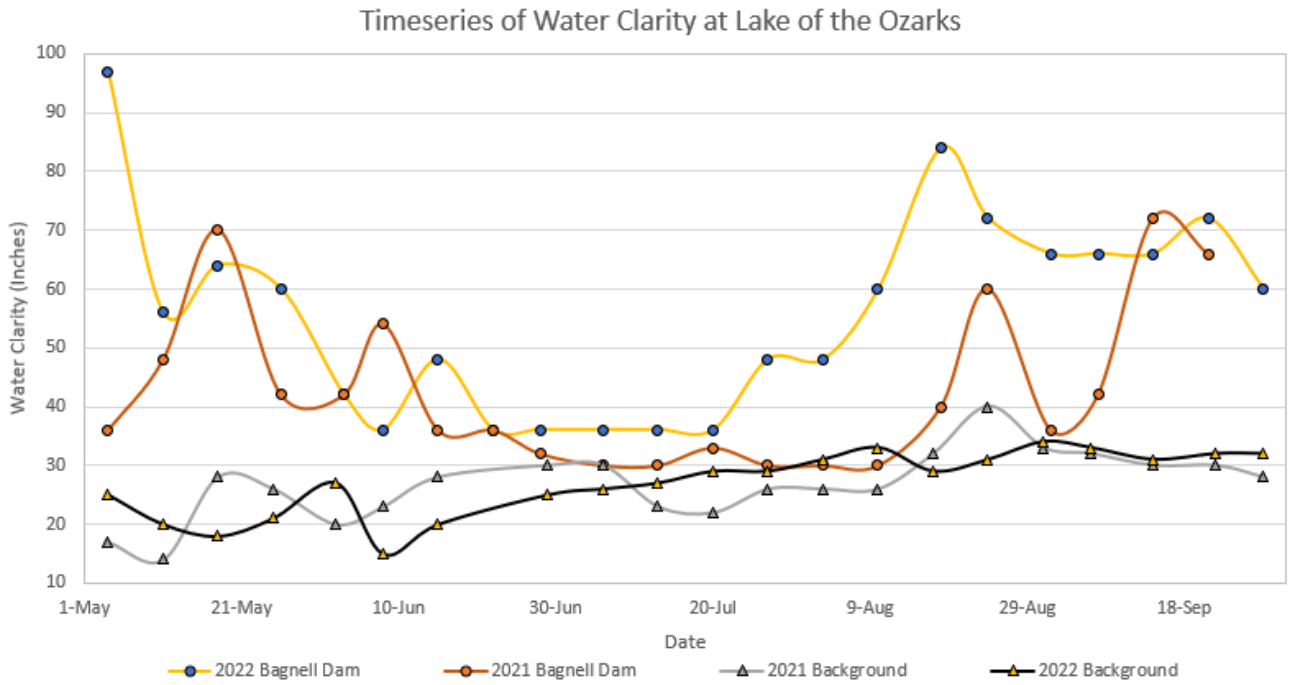
Figure 3.



Question 3: How much does Lake of the Ozarks water quality vary from season to season and year to year?

As presented in previous table and figures above, nutrients and chlorophyll-a vary throughout the seasons and locations in the lake. One of the most obvious indications of change in water quality is the clarity of the water. Lake of the Ozarks water clarity was measured using a secchi disk by LOWA volunteers. As presented in **Figure 4**, much less variation in water clarity occurs from season to season and year to year at the Background location (water clarity minimum 14 inches and maximum 40 inches) compared to the Bagnell Dam location (minimum 30 inches and maximum 97 inches).

Figure 4.



Closing

As the Lake of the Ozarks ages, climate changes, and we inhabit more of the lake’s watershed, monitoring lake water quality is a critical tool to protecting our lake investments and ensuring the next generation will get to enjoy the beautiful resources of the lake.