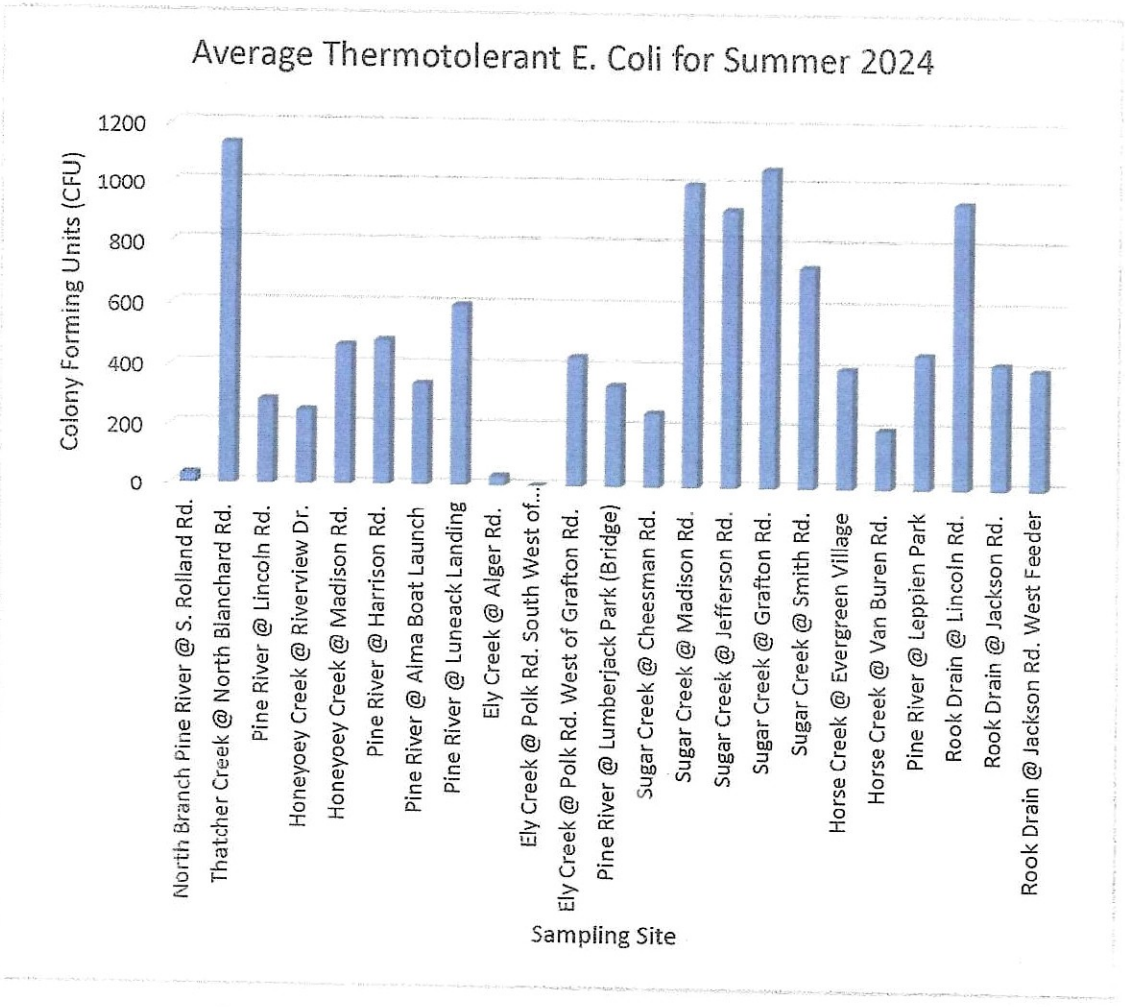
Great Lakes Watershed Institute 2024 Water Testing Overview

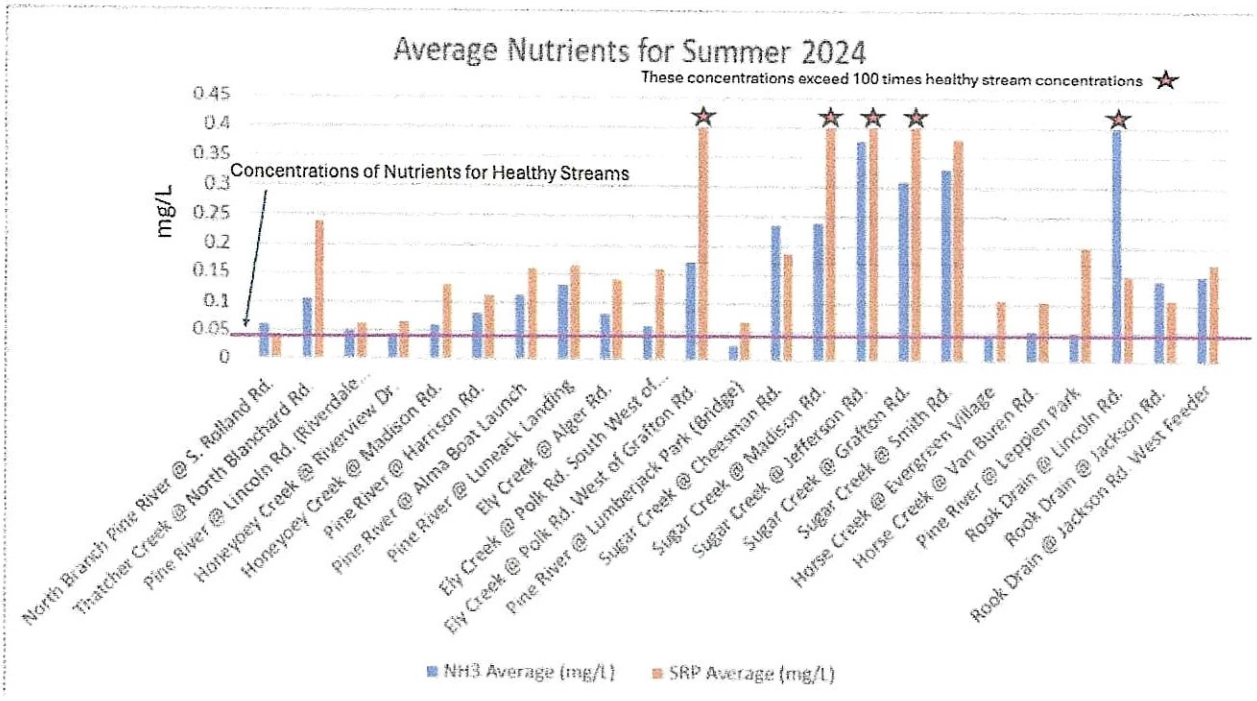
GLWI Goals for the 2024 Season:

- Continue to monitor the headwaters (above Lumberjack Park), mid-section sites (from Lumberjack Park to the Alma Dam), and downstream sites (downstream of the Alma Dam to the St. Louis Dam) in the Pine River watershed.
- Compile historical data which can be used for comparison over the last four years and eventually, over the 20 years that Alma College has been testing in the watershed.
- Identify potential sites that exhibit impacts after manure application.

Overview:

This year we were able to do testing at 23 different sites in the watershed. Initially looking at how the averages for all 23 of these sites compare, we find ...





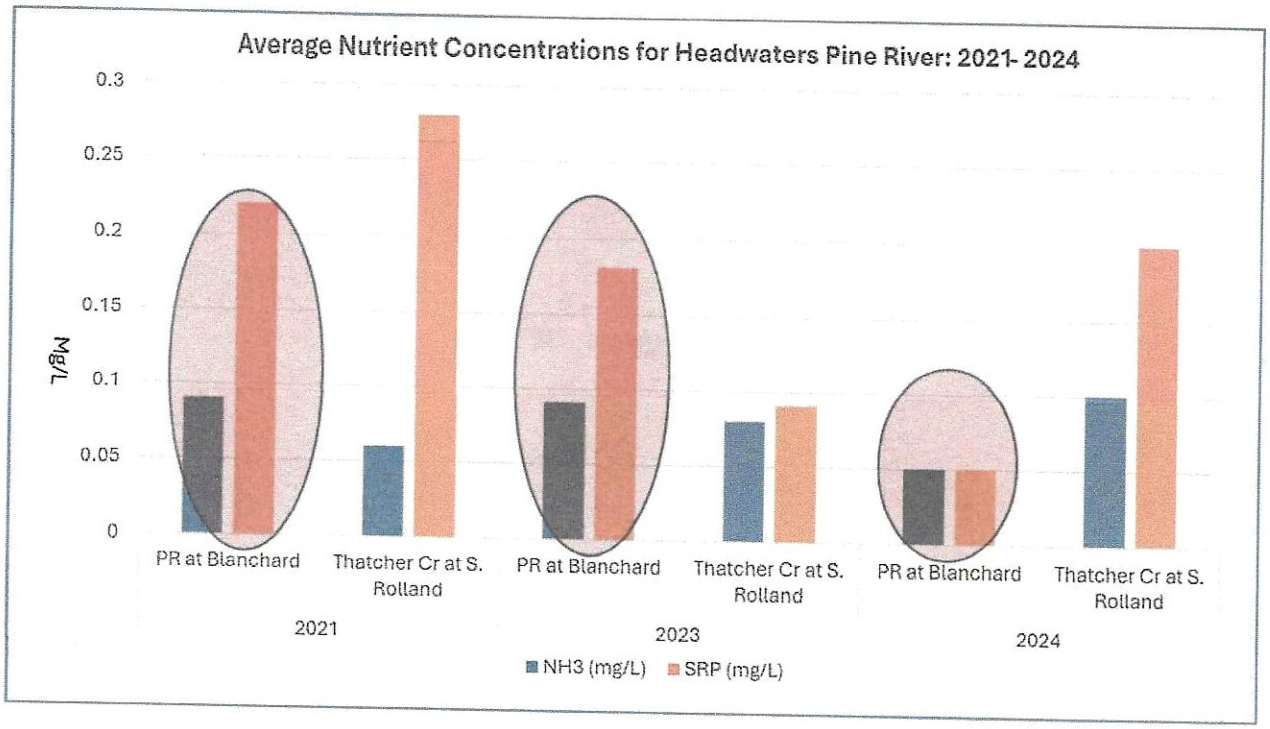
It is clear that agricultural inputs continue to significantly impact water quality in the entire Pine River Watershed, from the headwaters to the St. Louis Dam. Specifically, we see massive algal blooms from high concentrations of nutrients (N and P) and high concentrations of thermotolerant *E. coli*.

From here we started looking at the data a little closer. We began with our three sections of the watershed and how those have changed over the past four years...

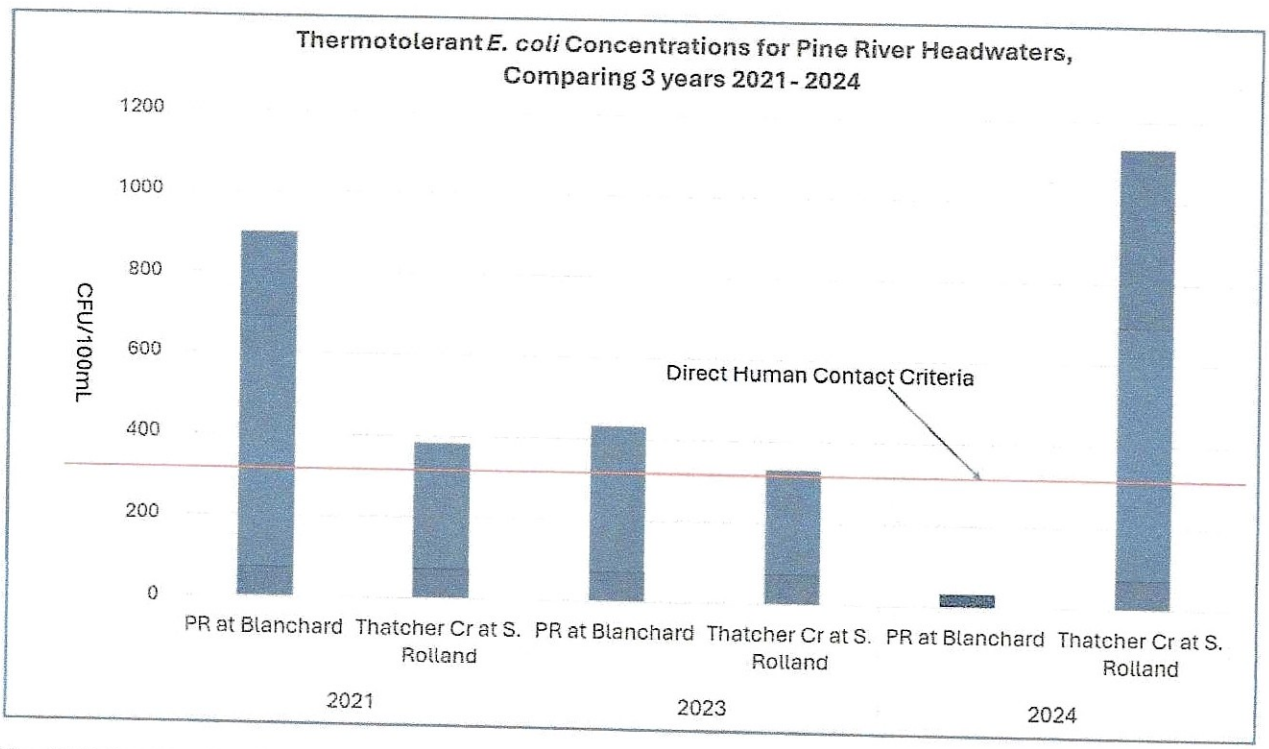
The Headwaters:

These stars represent the two sites that we tested in the headwaters. These sites are the Pine River @ Blanchard Rd. and Thatcher Creek @ South Rolland Rd. We chose these sites because we have historical data utilizing these sites that we can use for comparison.

Comparing our 2024 values to previous years, we see...

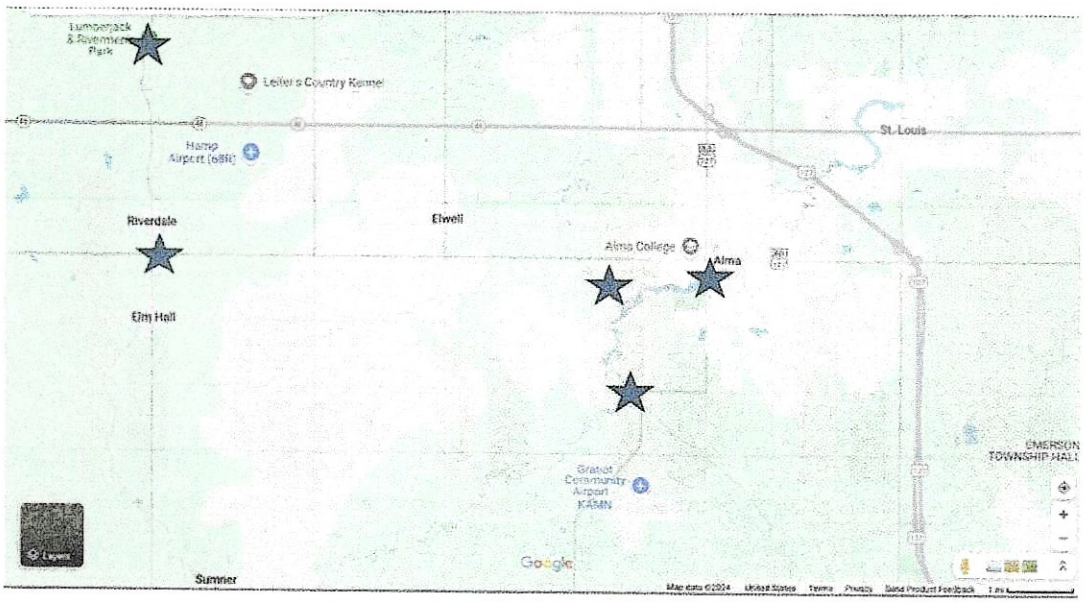


The headwaters are still negatively impacted; however, the Pine River Branch at Blanchard Road is showing improvement possibly due to the shutdown of the Peacock CAFO.



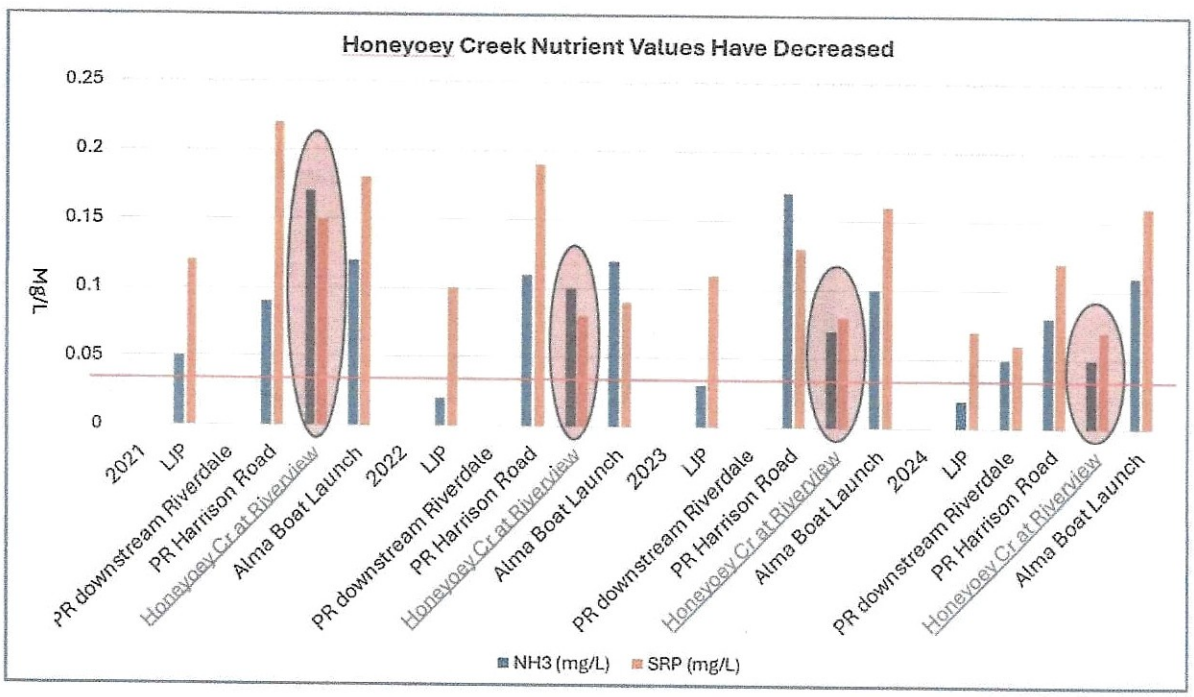
The Thatcher Creek site needs to be monitored more often as it may be increasing in thermotolerant *E. coli*.

Mid-Section:



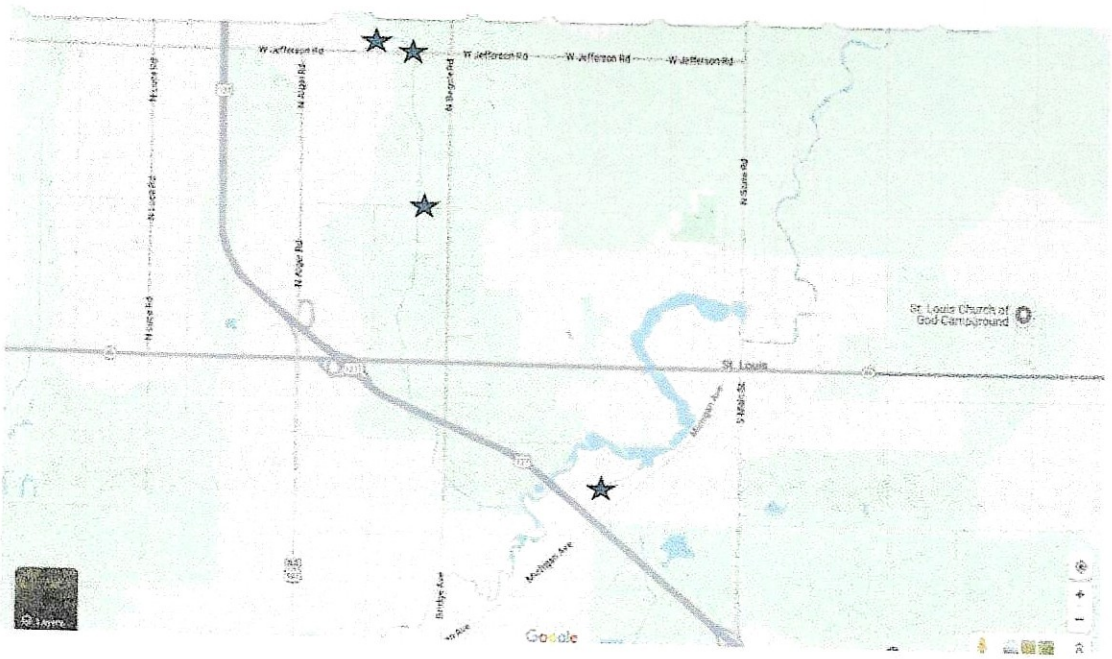
These five stars represent the mid-section sites that we primarily tested. These are Lumberjack Park, the Pine River downstream of Riverdale, the Pine River @ Harrison Rd., Honeyoey Creek @ Riverview, and the Pine River @ the Alma Boat Launch.

The Mid-Section of the watershed is still heavily impacted, though Honeyoey Creek appears to be improving – possibly because the source is moving to another outlet. We are unsure if this could be the result of underground drainage systems that have allowed the agricultural pollution to be pumped to other sections of the watershed or if this could be the result of systems being implemented like anaerobic digestion.

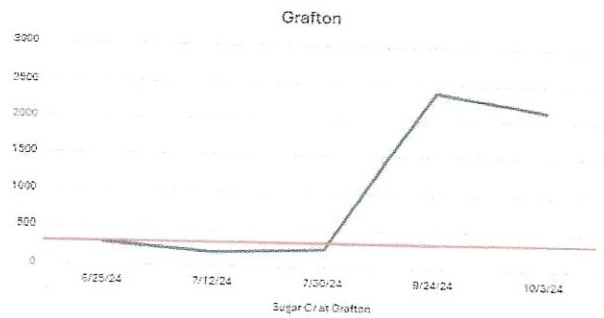


We also spent some time looking at the Pine River downstream of Riverdale and determined that compared with most other sites, Riverdale community does not appear to have a significant impact on Pine River water quality in the form of nutrient loading or high concentrations of thermotolerant *E. coli*.

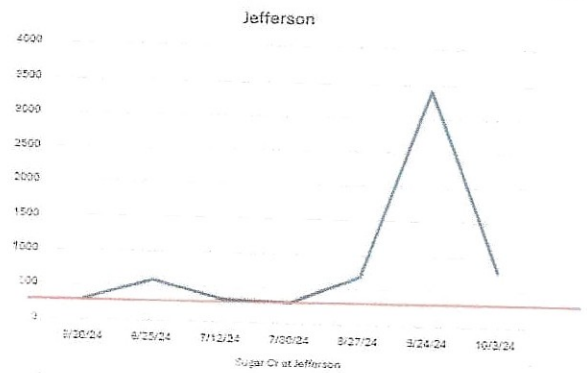
Downstream:

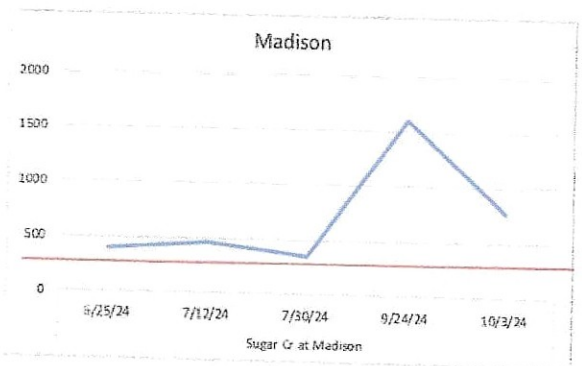


These four stars represent the downstream St. Louis sites that we primarily focused on. These sites are Sugar Creek @ Grafton Rd., Sugar Creek @ Jefferson Rd., Sugar Creek @ Madison Rd., and Horse Creek @ Evergreen Village.



E. coli Concentrations for Summer, 2024 – Sugar Creek Sites





The downstream section of the watershed from the Alma Dam to St. Louis is heavily impacted. Sugar Creek is specifically concerning because we are seeing high levels of nutrients and E. coli in the very start of the creek as well as every other part of the creek that we have tested. There seems to be a relatively

constant input into the creek regardless of maturity of crops or presence of manure application. Drain maps for the county (shown below) show the presence of an underground drain running under the highway to Sugar Creek.

Thank you, Healthy Pine River Group, for your funding and collaboration. With your support, the GLWI has been able to stock the lab with needed materials and provide salaries for the research assistants that make our work possible. We look forward to future collaboration and furthering the good work that we, as a team, have been able to achieve in the community.

Murray Borrello & Olivia Ayers

October 10, 2024