



# From Streets to Streams: Tracking Pollutants in Bristol's Urban Park Ponds

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## Project Motivation & Goals

In urban areas, when it rains, stormwater runoff carries pollutants from roads, parking lots, and surrounding infrastructure into storm drains and local ponds or streams (Fig. 1).

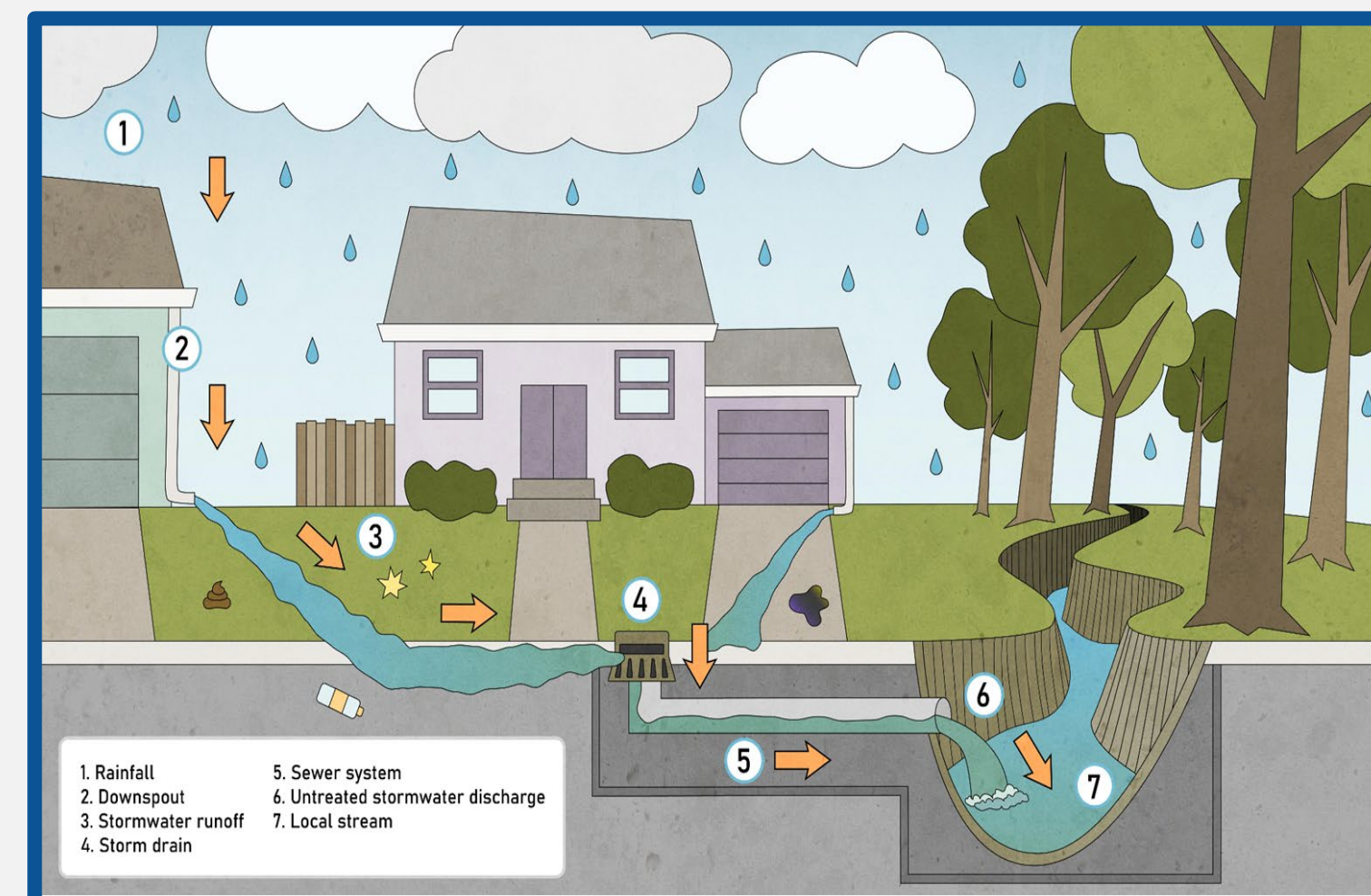
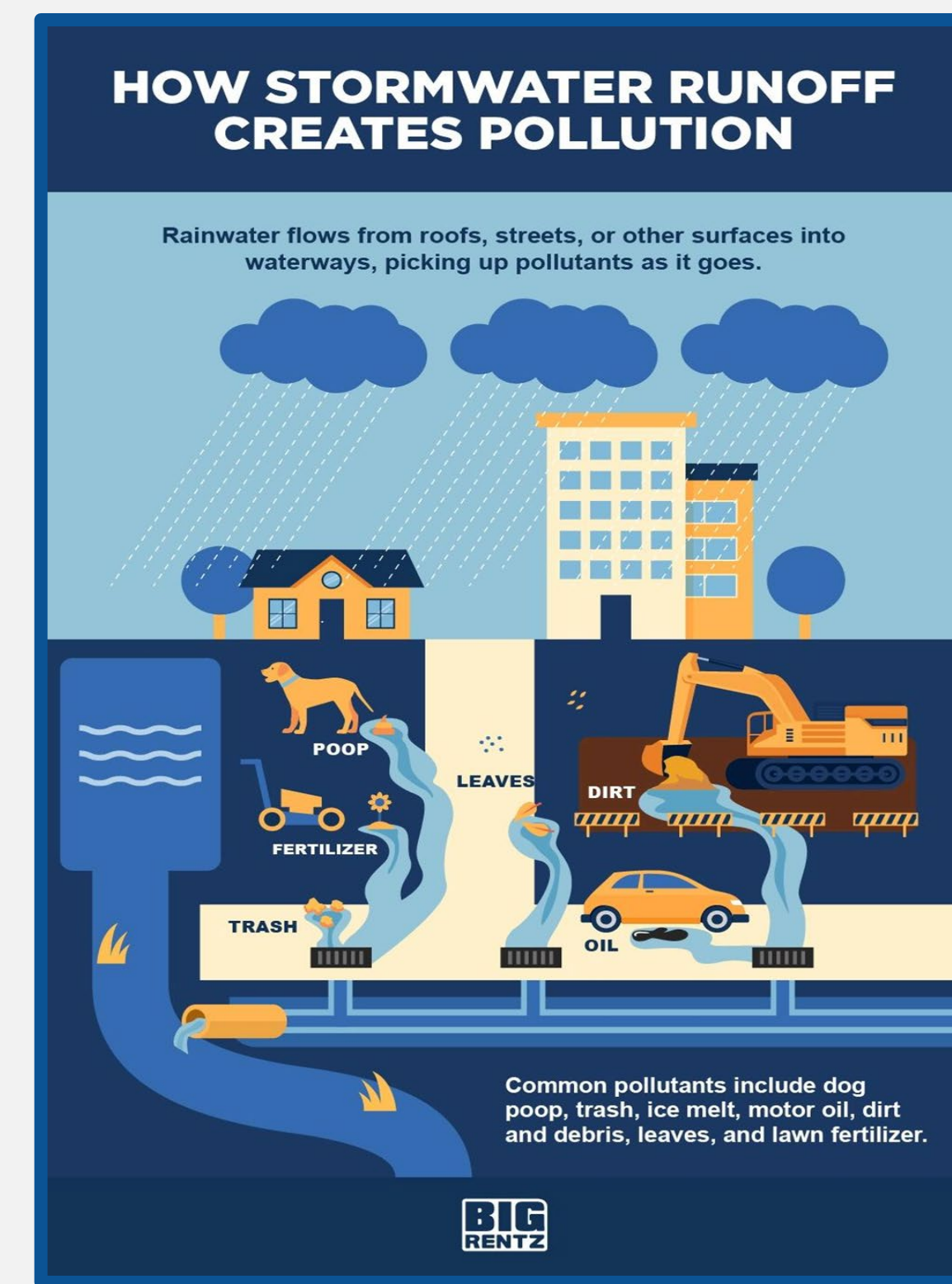
These pollutants include road salts (chlorides), debris, nutrients (nitrogen and phosphorus), other contaminants (metals, oils), potentially **affecting water quality, aquatic ecosystems, and public health negatively**.

Moreover, increasing rainfall due to climate change within urban areas exacerbate this issue. For example, in Bristol, CT, an urban community, precipitation from October 2025 to February 2026 exceeded 13.33 inches of accumulation, which is higher than typical seasonal averages of approximately 10 inches, **increasing the potential for pollutant runoff into local waterways**.

In Bristol, Page Park and Memorial Boulevard park are located in urban settings near roads and storm drains (Fig. 2), these ponds may be especially vulnerable to runoff-related pollution. Understanding how precipitation influences water quality can help identify environmental concerns and support local park management efforts.

To investigate these impacts, this project collected and analyzed pond water quality after precipitation events at both local parks. Specifically, the study focused on the following goals:

- Measure key water quality indicators (temperature, pH, phosphate, ammonia, and nitrate)
- Compare water quality of two urban parks: **Page Park (more forested)** and **Memorial Boulevard park (more developed)**
- Investigate whether recent **precipitation** may be linked to **changes in pollutant levels**
- Provide recommendations to local park officials based on findings



**Fig. 1** Two diagrams demonstrating how stormwater runoff carries different type of pollutants off different land uses.

## Methods

### Sites:

- Two urban parks in Bristol, CT (Fig. 2)
- More developed site: Memorial Boulevard Park (higher exposure to roads/runoff)
- More forested site: Page Park (lower direct urban impact)

### Data Collection:

- Collected data from each pond on:
  - 11/25/25 (pre-rain)
  - 11/26/25 (post-rain)
  - 01/24/26 (pre-snow)
  - 01/27/26 (post snow)
- During each field visit (Fig. 3):
  - Recorded **weather** and physical observations
  - Measured **phosphate, conductivity and total dissolved solids** onsite
  - Collected water samples to test for phosphate, ammonia, and nitrate

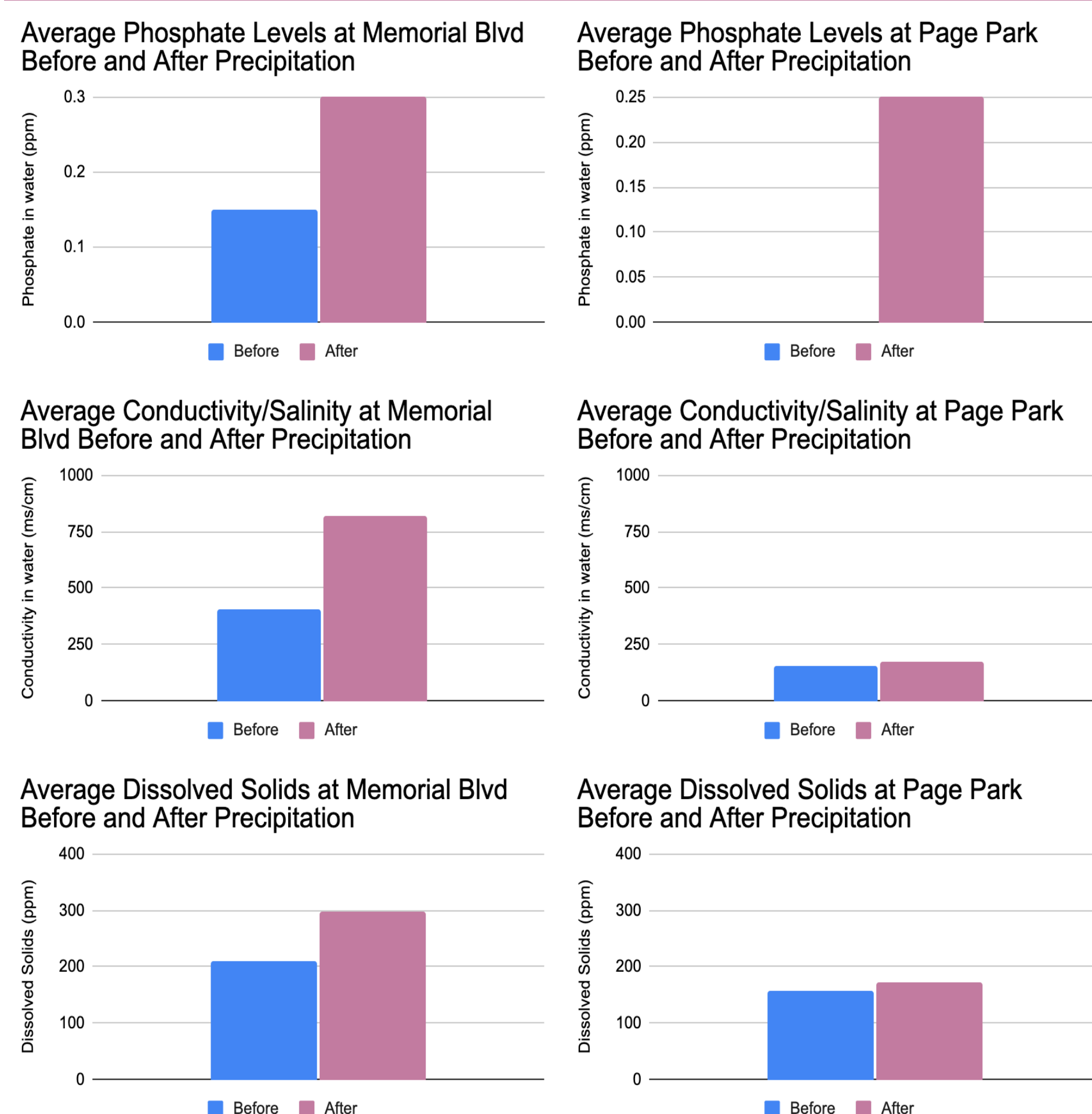


**Fig. 2** Aerial view of landscape around the 2 study sites paired with ground view of pond sites.



**Fig. 3** From left to right: this is me testing and collecting data

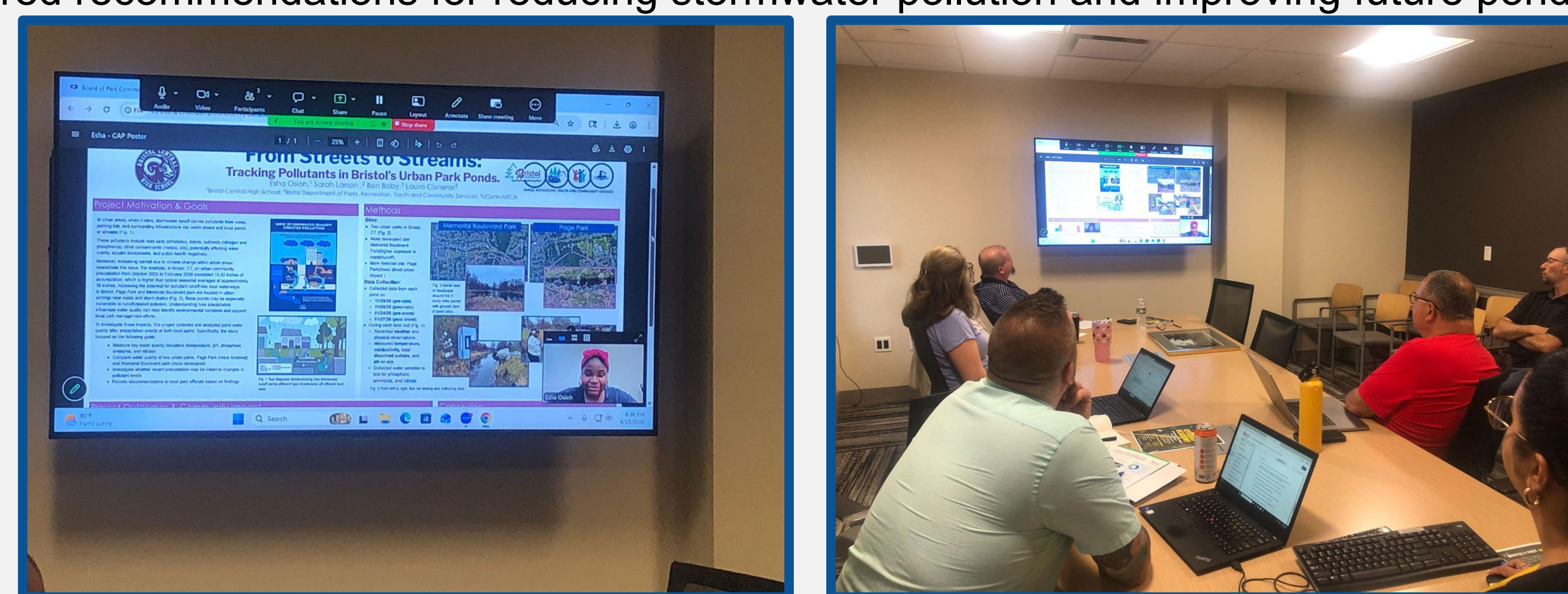
## Project Outcomes & Community Impact



### Parks & Rec Partnership & Recommendations

- Collaborated with the **Bristol Parks, Recreation, Youth and Community Services Department** along with the **Bristol Board of Park Commissioners** to address local water quality concerns.
- Worked with my community partner to select catch ponds.
- Presented the project plan, findings, and water quality data to the Board of Park Commissioners.
- Water quality at the two parks were relatively similar & mostly within **normal and non-harmful ranges**.
- **Memorial Boulevard** showed **more of the harmful variables**. Page Park showed much lower levels.
- Developed and shared recommendations for reducing stormwater pollution and improving future pond monitoring.

**Fig. 4** The figure shows the average levels of phosphate, salinity and dissolved solids at both Memorial Boulevard and Page Park before and after the precipitation



## Conclusion

This project showed how weather runoff can influence water quality in local parks like Bristol's Memorial Boulevard and Page Park. By testing the water and noting important indicators of pond health such as phosphate, conductivity and dissolved solids, I was able to see the differences at the two parks. Each pond differs with features such as street traffic and forest and other foliage that can either contribute or detract from the pollution levels in ponds. This was shown through the data as **Memorial Boulevard had much higher levels of all contaminants in comparison to Page Park, which is both located further from heavy street traffic and has much more foliage to help offset the effects of runoff**.

## Acknowledgements and References

I am going to start by thanking my mentor, Ben Baby, who helped me throughout this entire project by meeting up with me online and in person, during my fieldwork and other parts of my project. Then, I want to thank Sarah Larson, Deputy Superintendent of Bristol Parks, Recreation, Youth and Community Services for acknowledging me throughout this project by giving ideas and inspiration, pushing me through the end of this project. Your involvement and help did not go unnoticed. Finally, I would like to thank Laura Cisneros for being an amazing leader throughout the project, I couldn't do it without you.

- [https://www.weather.gov/media/box/PrecipReports/CT\\_Precip\\_Report\\_February\\_2026.pdf](https://www.weather.gov/media/box/PrecipReports/CT_Precip_Report_February_2026.pdf)
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