

# Tracking Nutrient Pollution Downstream from BMPs

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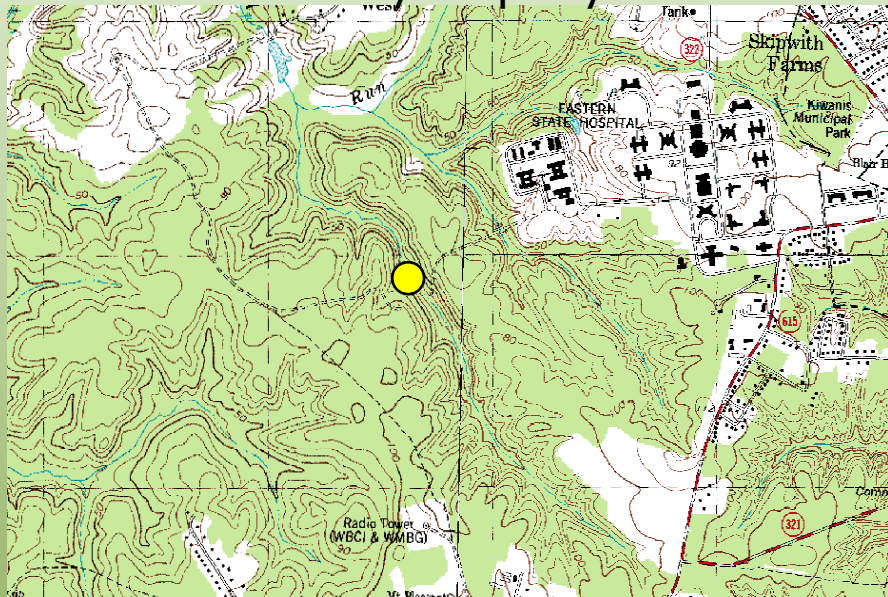
Dr. Randy Chambers, Faculty Mentor  
College of William and Mary  
National Science Foundation  
Research Experience for Undergraduates

# Sample Sites

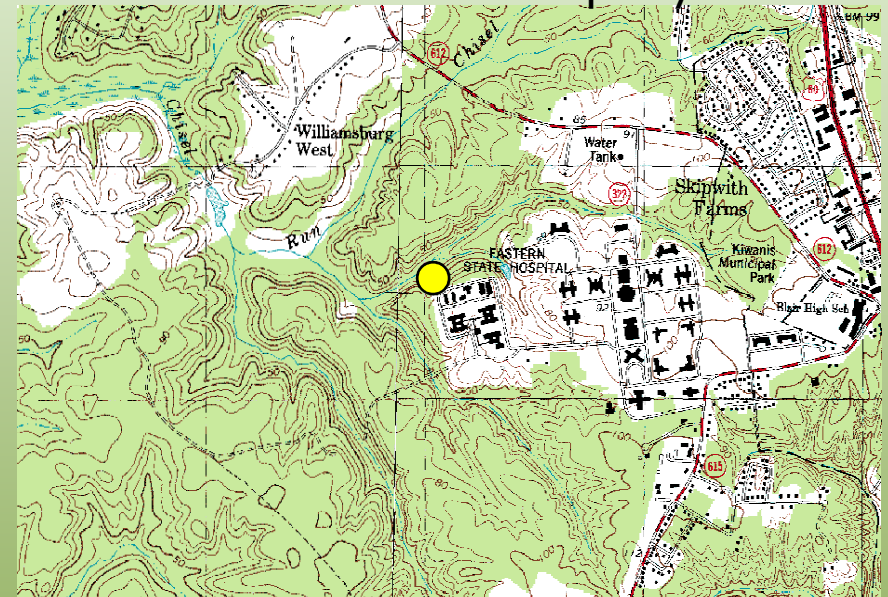
- 1. Casey Property Site:** A newly developed watershed with nonfunctional BMP.
- 2. Eastern State Site:** A watershed that has been developed for an extended period of time. Also, there are no significant BMPs within the Eastern State watershed.
- 3. Lowe's Site:** This watershed has been developed for a short amount of time with a functional BMP.
- 4. Paschal's Site:** An undeveloped watershed with a BMP at the headwaters.



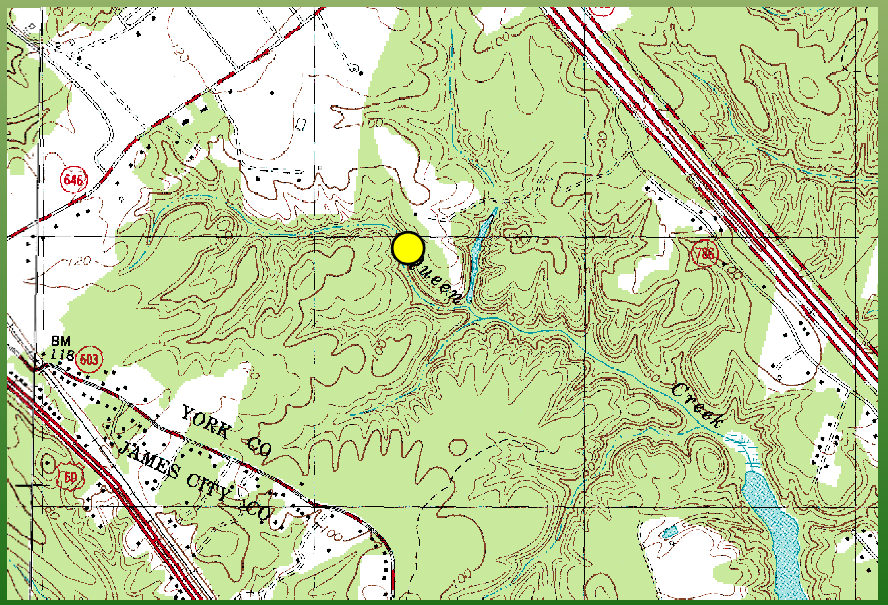
Casey Property



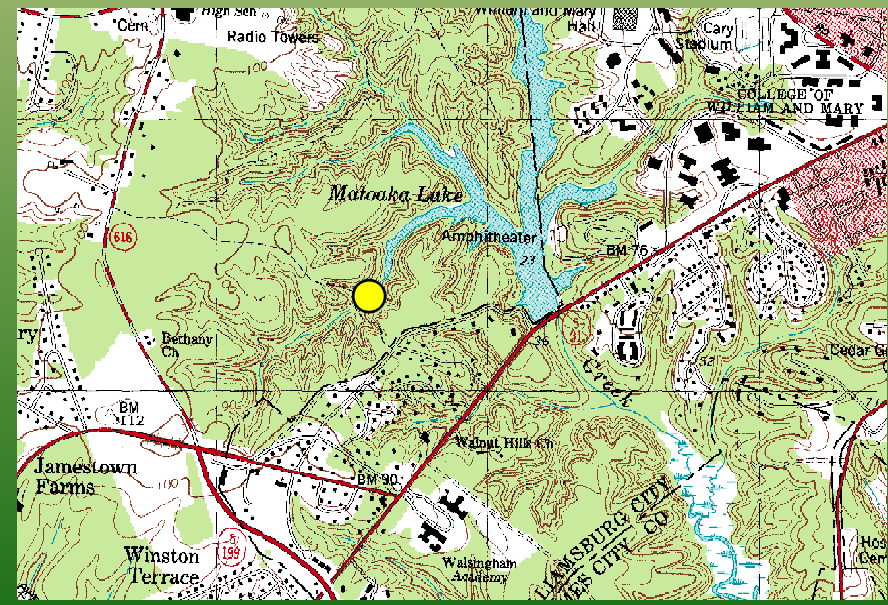
Eastern State Property



Lowé's Property



Paschal's Creek

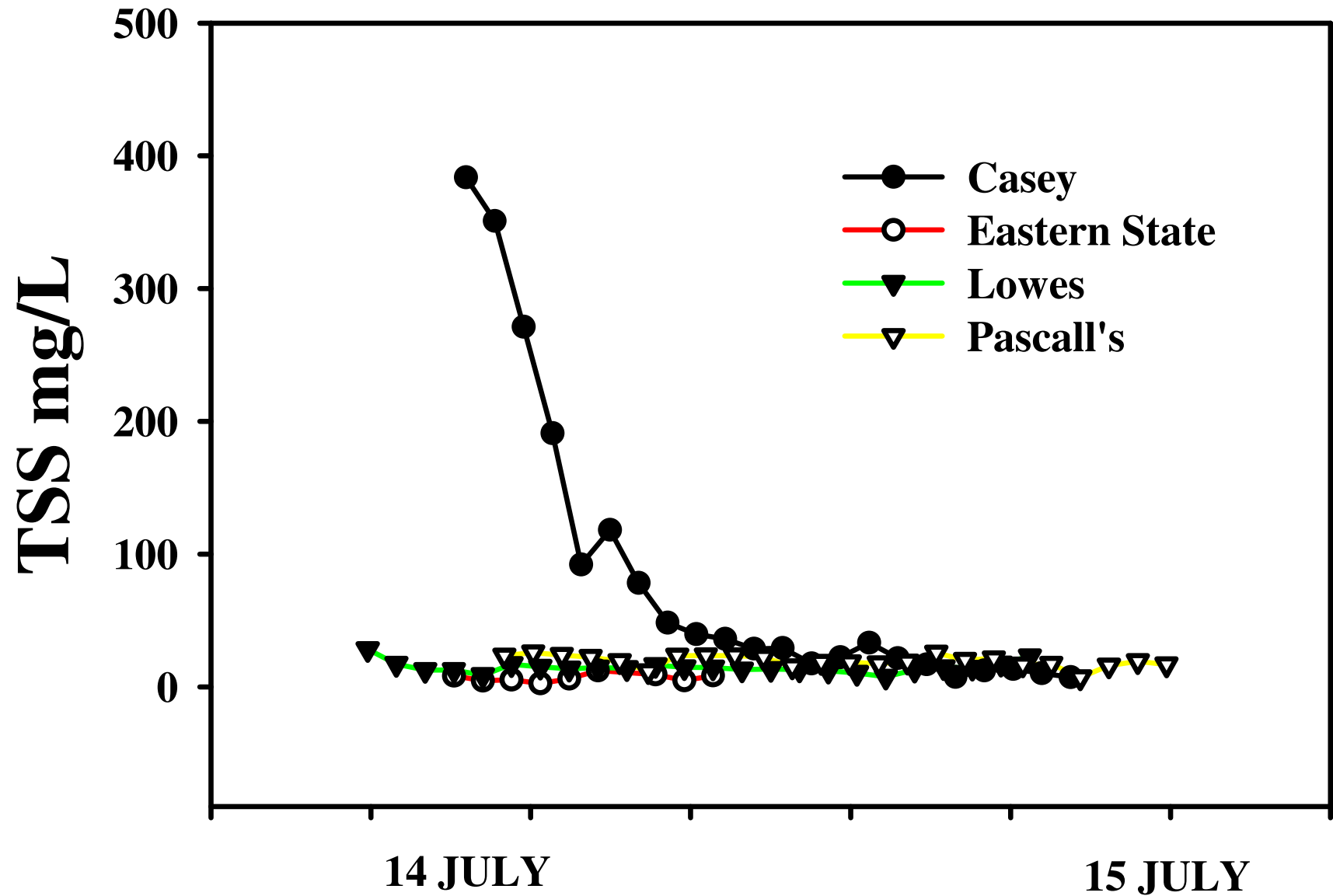


# Water Quality Variables

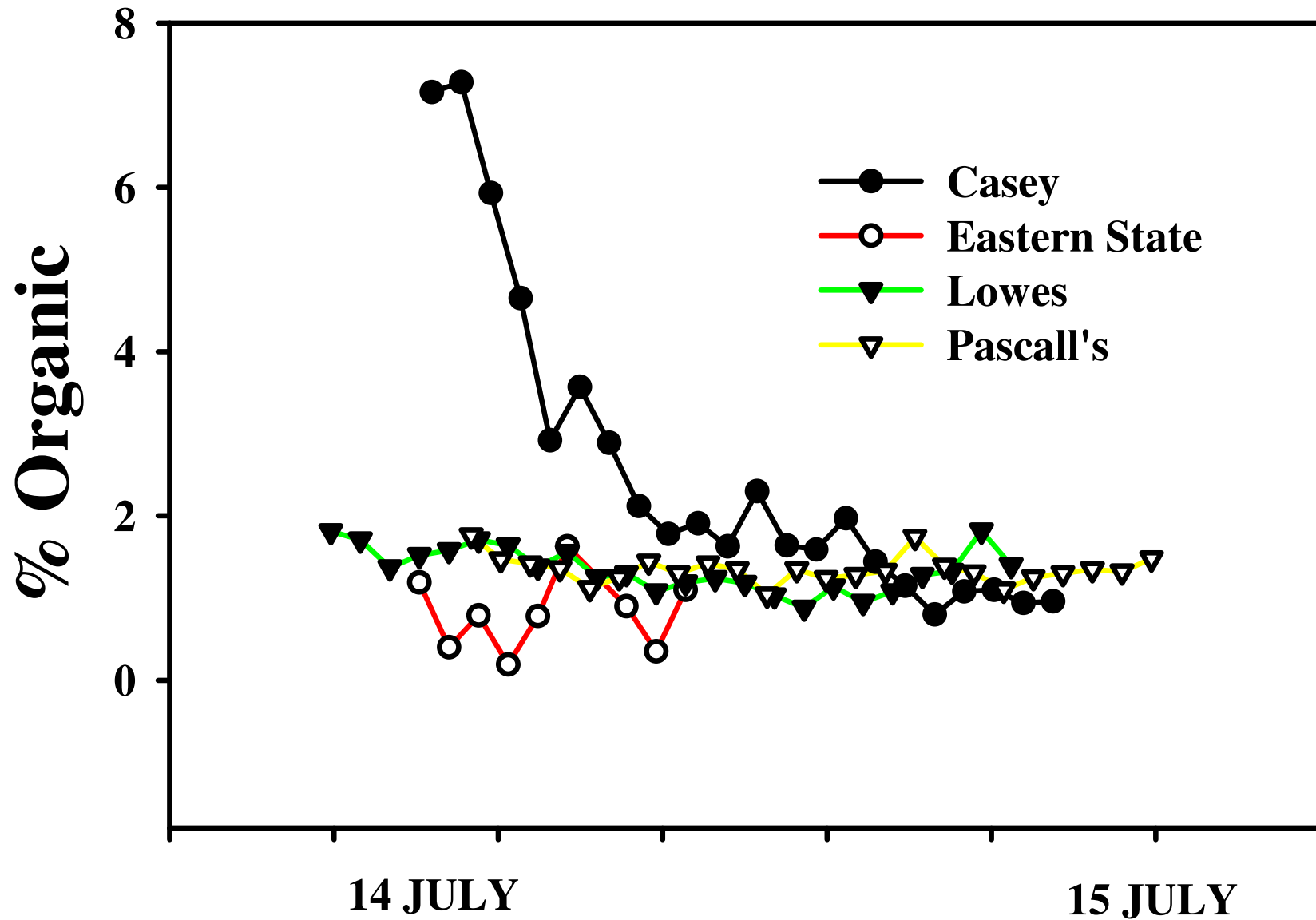
- Total Suspended Sediment
- Percentage Organic
- Particulate Phosphorus
- Dissolved Inorganic Phosphorus
- Dissolved Organic Phosphorus
- Nitrate
- Ammonium
- DIN:DIP Ratio



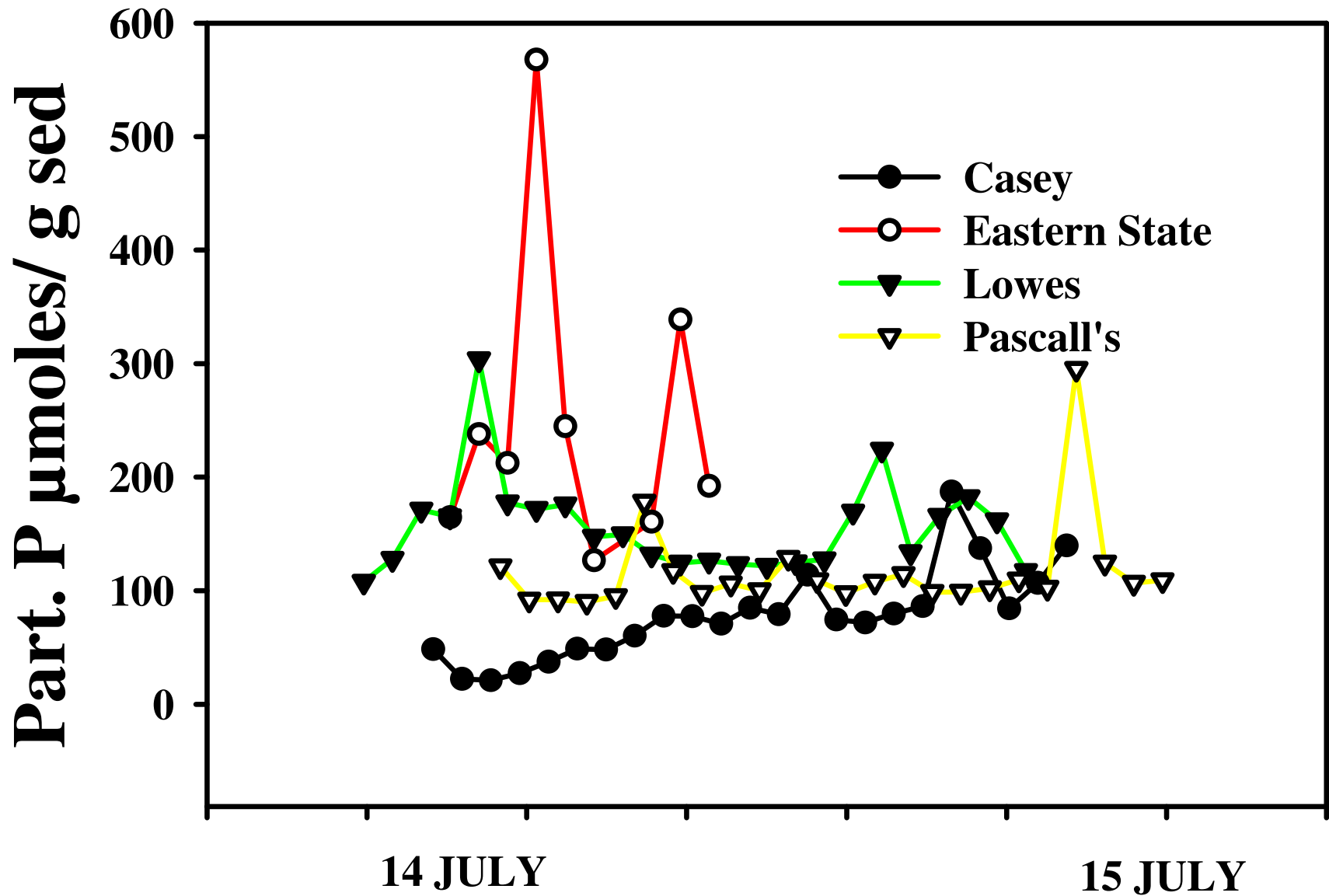
# Total Suspended Sediment



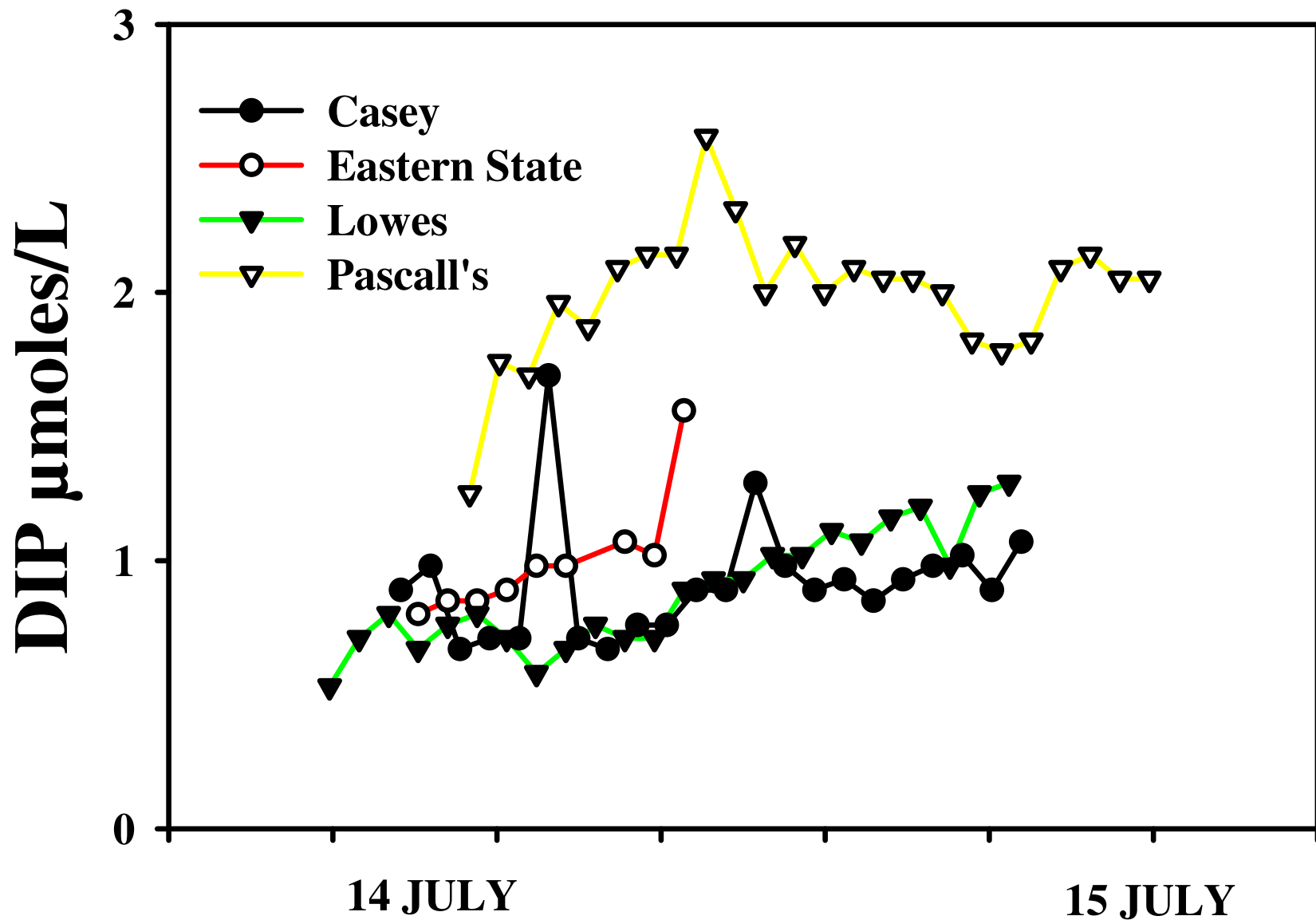
# Percent Organic



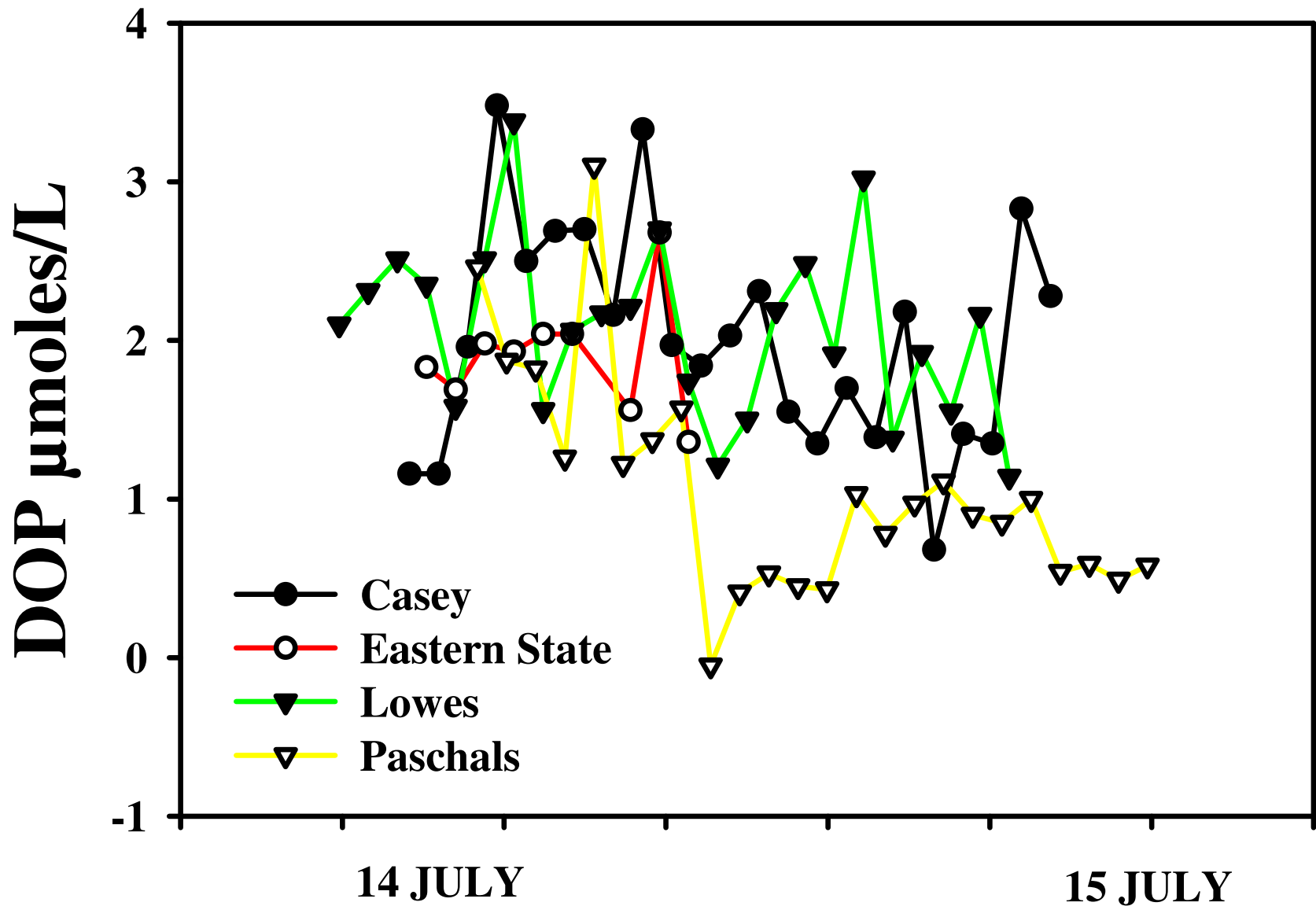
# Particulate Phosphorus



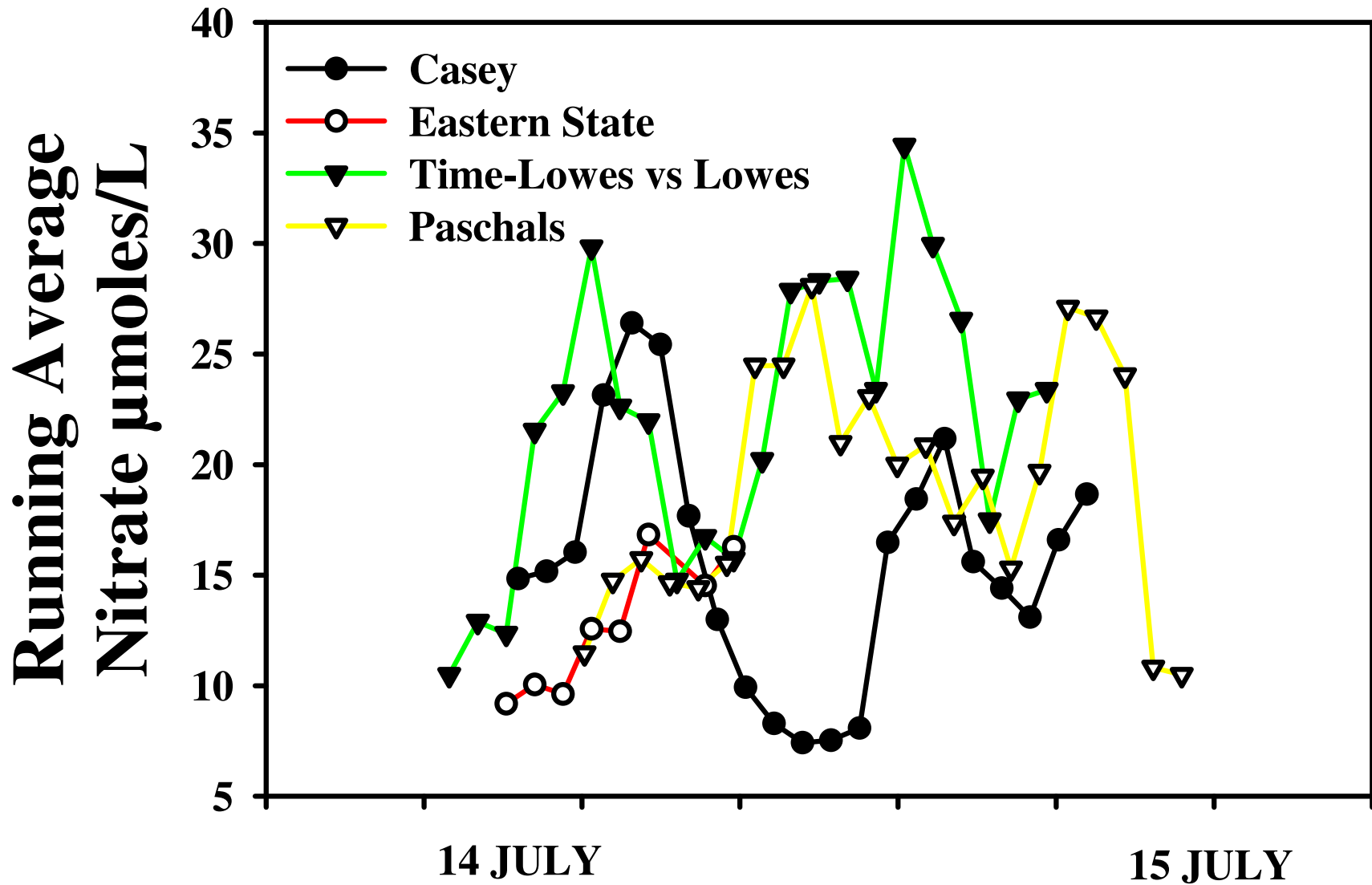
# Dissolved Inorganic Phosphorus



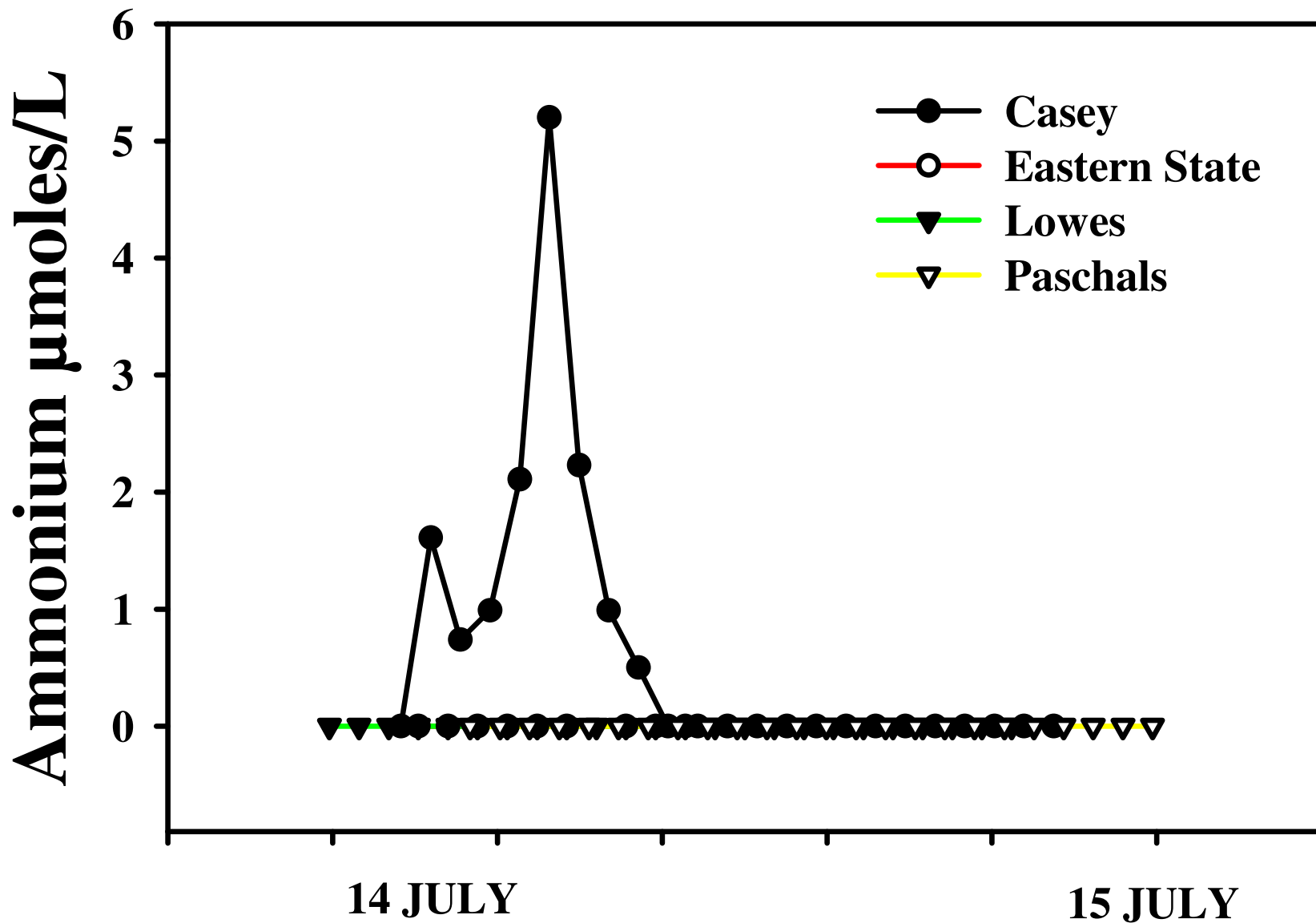
# Dissolved Organic Phosphorus



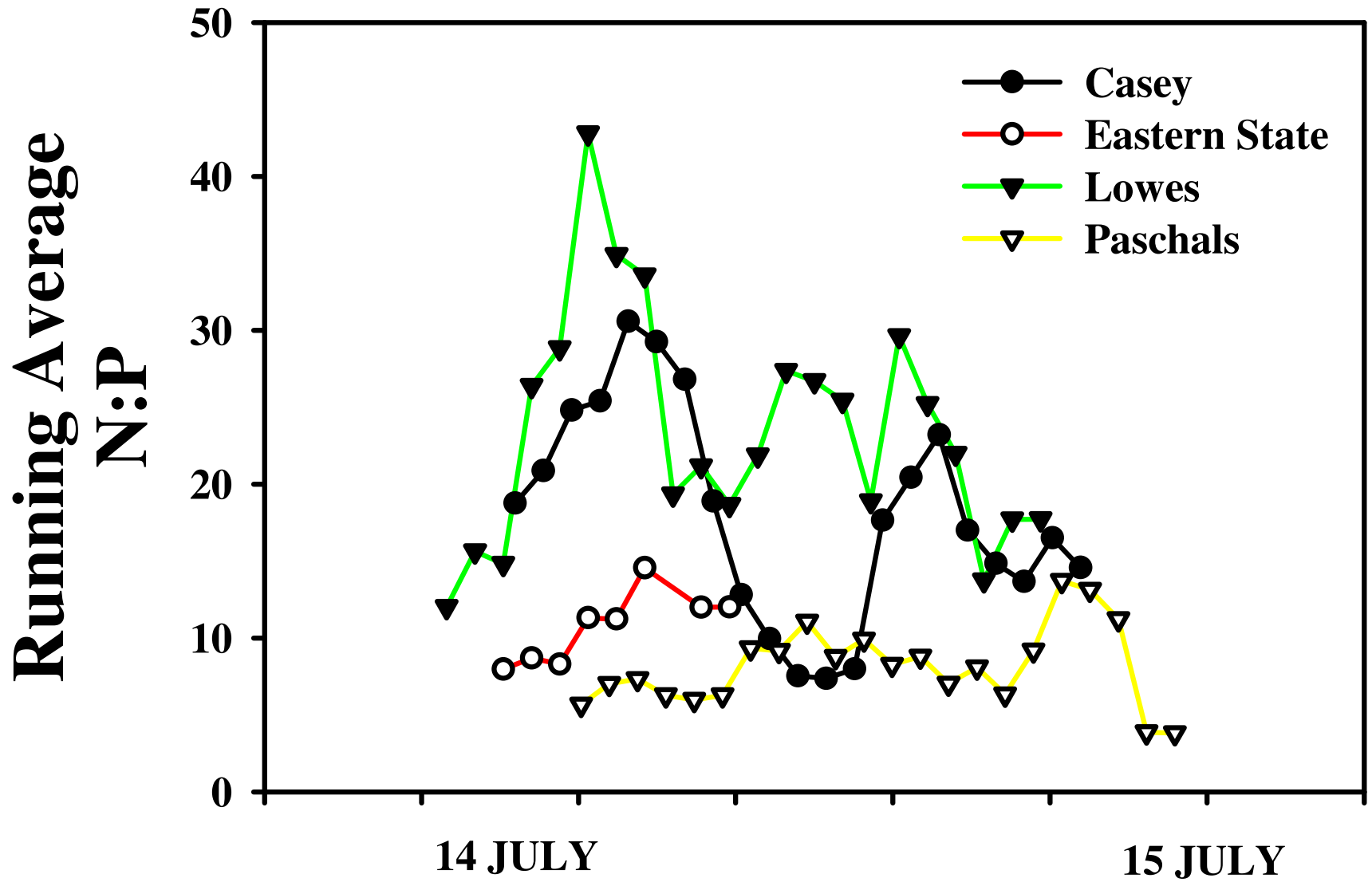
# Nitrate



# Ammonium



# Nitrogen to Phosphorus Ratio



# Conclusion

- The data suggests that improper installation of BMPs can lead to increased sediment runoff. Urban storm water runoff can drastically change the characteristics of a stream.
- Further research is needed to understand the effects of BMPs on water quality.
- “Many BMPs are used primarily for water quantity control. The pollutant removal performance of some BMP types is essentially undocumented.” (EPA, 1999)

# Acknowledgments

*I would like to thank Dr. Randy Chambers for all the help and information he provided for this project. Also, I would like to thank Dr. Greg Hancock and Tim Russell.*