

### Identifying Drivers and Analyzing Ecosystem Services in Stormwater Detention Ponds

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## **Motivation**

- Urbanization increases impervious surfaces, increasing flooding
- Stormwater infrastructure decreases risk of flooding



Gray Infrastructure





#### Stormwater Detention Ponds

Green Infrastructure



#### **Motivation**

Figure 2. Flow difference between inflow and outflow hydrographs.



Figure from The Wisconsin Storm Water Manual

- Stormwater detention ponds hold runoff and slowly release it
- Creates highly variable water levels (bounce) after storms



### **Motivation**



Water Balance of Stormwater Detention Ponds

- Watershed characteristics influence inflow into ponds and bounce
- Engineering design influences bounce and outflow from ponds

## **Research Question**

1. To what extent do watershed characteristics and engineering design play a role in the rapidly-changing water levels in stormwater detention ponds?





# **Methods: Water Level Measurements**

- Pressure transducers instrumented in each pond
  - T-post
- Estimate inflow from a single water level measurement
  - Uses relationships between water level, storage, and outflow



