Using Cisterns to Treat Rooftop Runoff

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Overview of Presentation
- Why Use Cisterns?
- Historical Cistern Use
- Types of Cisterns
- Applications
- Brief Review of NCSU cistern research

Fertilizing Rooftops?
- Atmospheric Deposition Accounts for 70-90% of TN in Urban Stormwater Runoff (Wu et al., 1998)
- 15-30% of TP attributable to Atmospheric Deposition (Bannerman et al, 1993)

Impacts of Excessive Nutrients
From Rivetslaw.org
Courtesy: Dove Imaging

Cisterns – Water Harvesting
**Hadrian’s Wall, England**

**Examples of Cisterns**

**Rain Barrels/ Small Cisterns**

**Water Harvesting: Balance of Water Supply & Demand**

![Graph showing balance of water supply and demand](graph.png)

**Supply**
Demand: Toilet Flushing
- Number of Toilets
- Volume of Each Flush
- Number of Users
  - Steady
  - Unsteady
- Setting
  - Restaurant
  - Event Space
  - Residence
- Operation Hours

Demand: Vehicle Wash
- Number of Vehicles
- Size of Vehicles
- Type of Washer Used
  - Power Wash?
- Wash time per sf of vehicle
- Frequency of Washing

Kinston – 33,000 gal/month

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Irrigation
Summary

- Cisterns are an old technology making a comeback
- Cisterns are used to capture roof top runoff and temporarily store it for later use
- Common cistern water uses are irrigation, toilet flushing, and vehicle washing
- Some monitoring of cistern use has occurred and the captured water is being somewhat used.

Questions?

Prairie Ridge Water Level: Toilet Flushing

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<th>Date</th>
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Monitoring @ Prairie Ridge: Wake County