

# Using Cisterns to Treat Rooftop Runoff

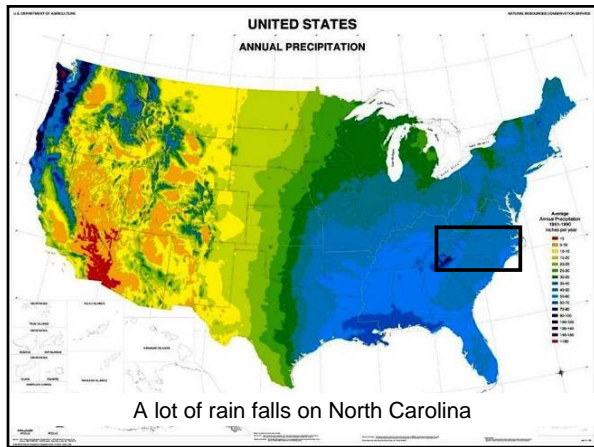
Stormwater Engineering  
NC STATE UNIVERSITY

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# Overview of Presentation

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

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# Fertilizing Rooftops?

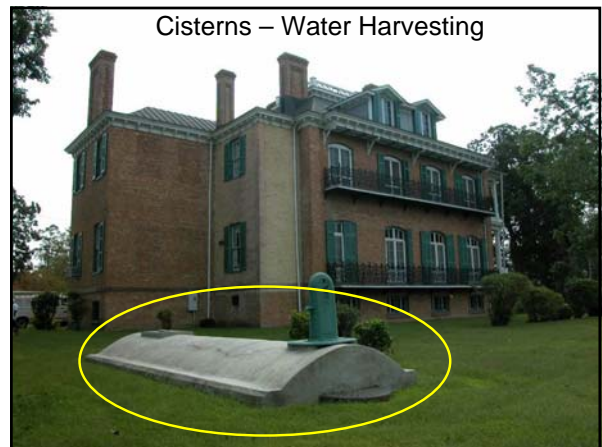
- Atmospheric Deposition Accounts for 70-90% of TN in Urban Stormwater Runoff (Wu et al., 1998)
- 15-30% of TP attributable to Atmospheric Deposition (Bannerman et al, 1993)

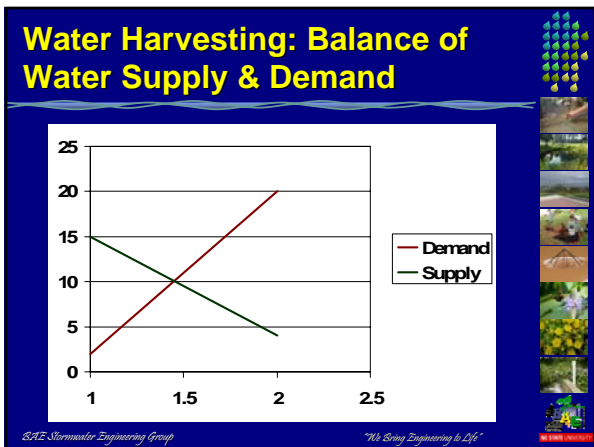
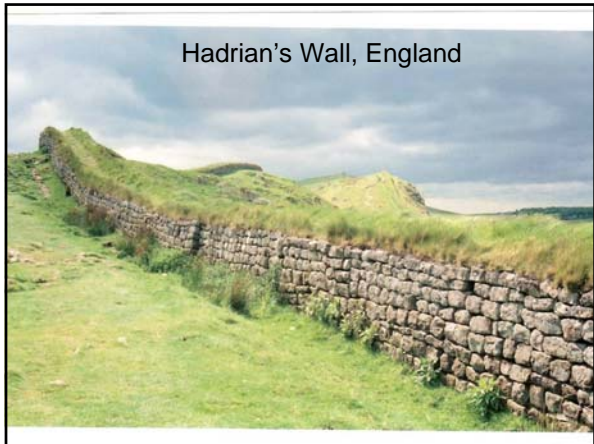
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# Impacts of Excessive Nutrients

Courtesy: Dove Imaging

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### Demand: Toilet Flushing

- Number of Toilets
- Volume of Each Flush
- Number of Users
  - Steady
  - Unsteady
- Setting
  - Restaurant
  - Event Space
  - Residence
- Operation Hours

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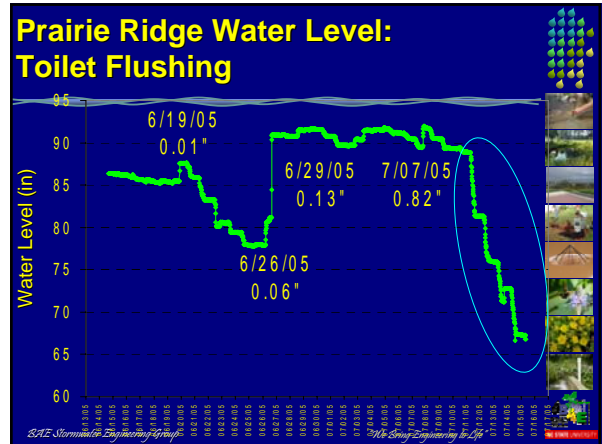
### Demand: Vehicle Wash

- 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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### 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.

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### Questions?

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