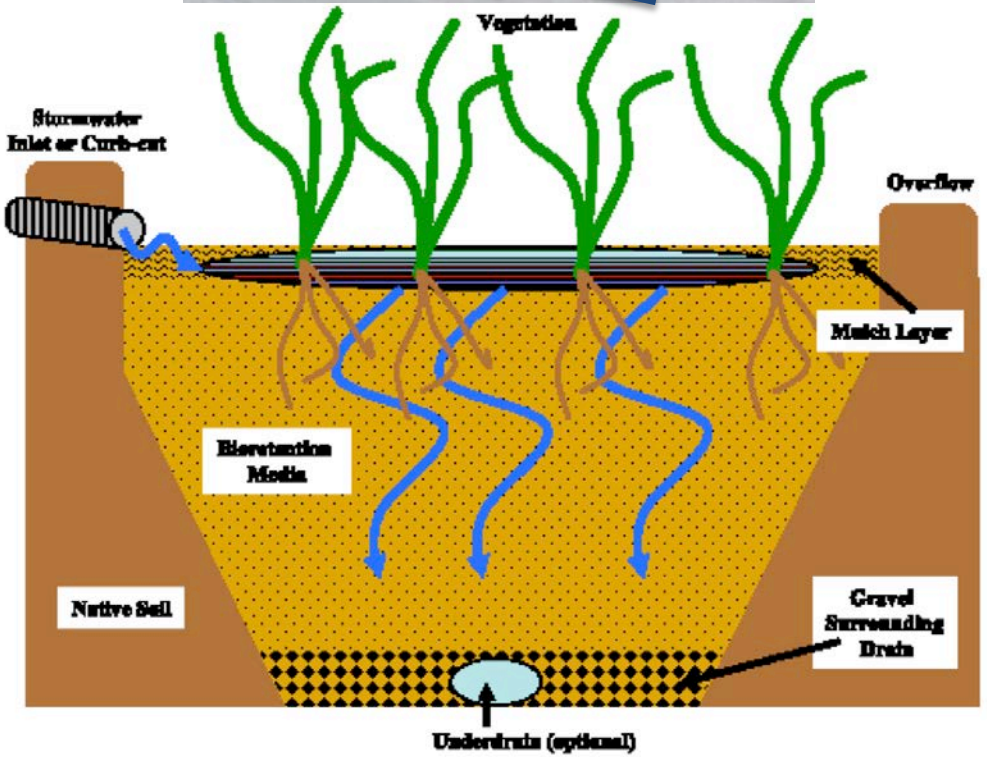
ReNUWIt: The Urban Water ERC

- NSF Engineering Research Center:
  - Re-inventing the Nation's Urban Water Infrastructure
- Collaboration among four universities engaged in long-term research
- Research that spans from the fundamental to the test-bed and systems-level
- Goal = accelerated translation from university to industrial/municipal application

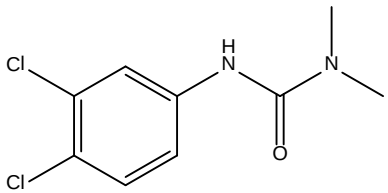
Treat and Re-use Stormwater

- Urban-sourced water supply
  - Infiltration for aquifer recharge
  - Maintain urban-impacted habitats
- Re-use limited by contamination risks
- Focus design on stormwater treatment

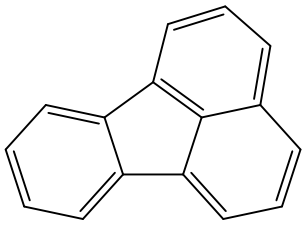


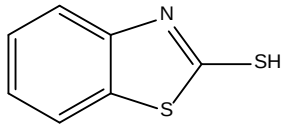
Urban Stormwater Contaminants

- Metals
- Nutrients
- ***Pathogens***
- ***Trace Organic Contaminants***
  - Urban-use biocides
    - e.g., diuron, triazines, chlorophenoxyacetic acids, pyrethroids, fipronil
  - Vehicle-related compounds
    - e.g., PAHs, benzothiazoles & alkylphenols (rubber additives), benzotriazoles (anti-freeze)

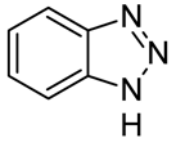


Diuron


Fluoranthene

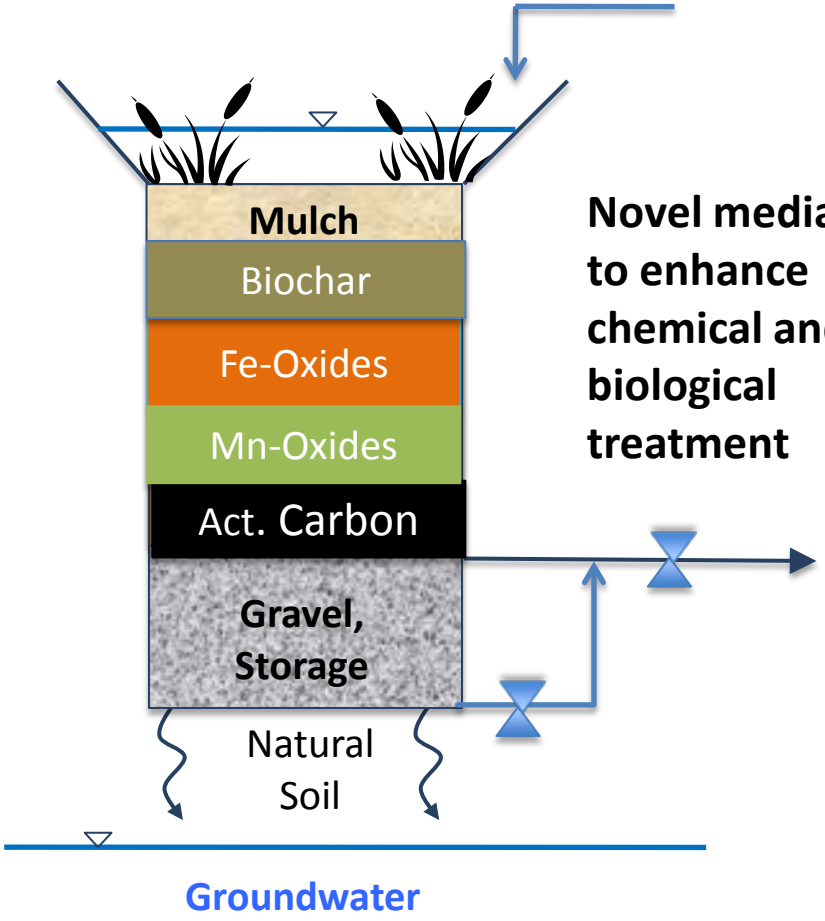


Mercaptobenzothiazole



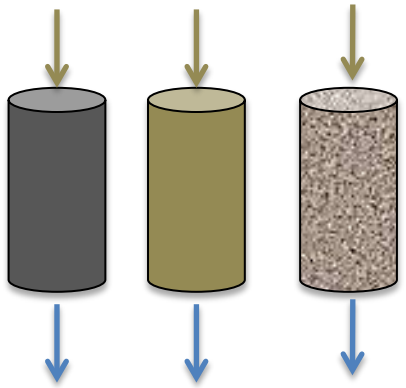
Benzotriazole

Bioretention research for pollutant removal



Novel media to enhance chemical and biological treatment

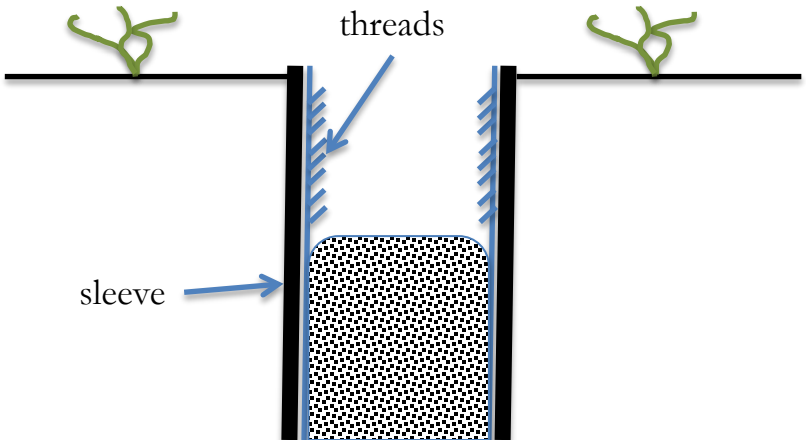
Fundamental Batch & Column Studies of Novel Media in Laboratory

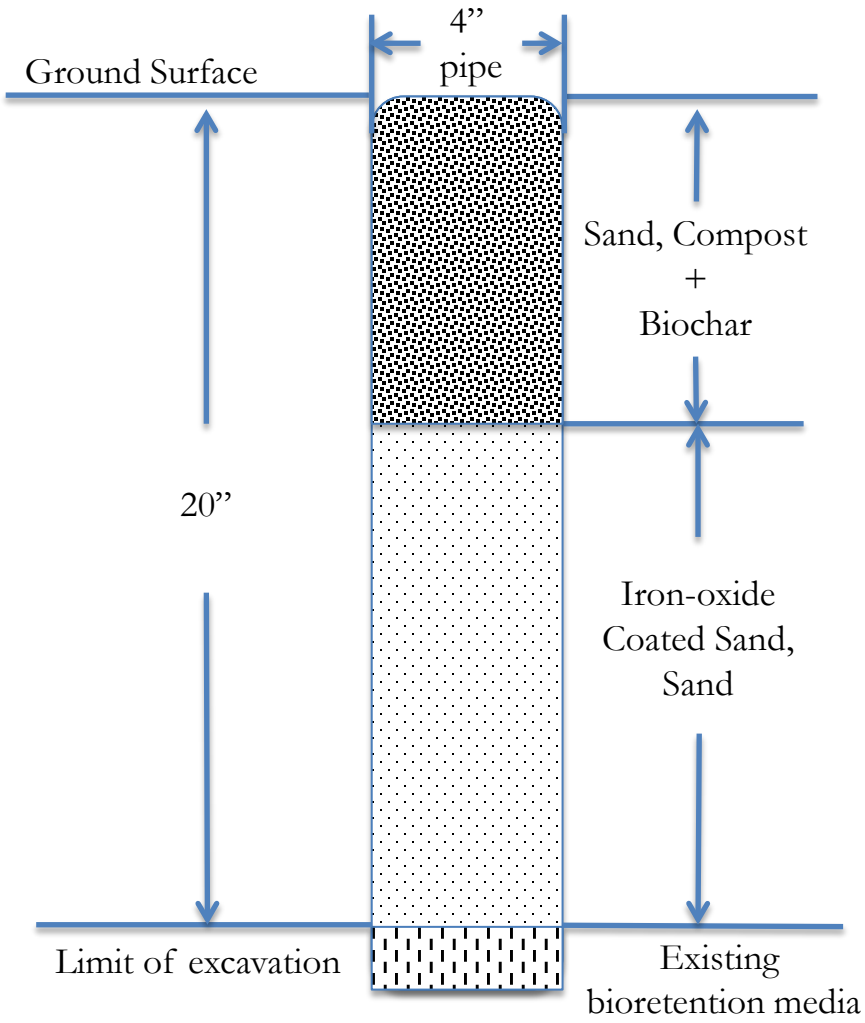


Field testing required to understand effects of media conditioning and long-term performance

In-situ column conditioning studies

- Sleeve placed in ground to allow research column to be inserted
- Allow for in-situ conditioning of bioretention geomedia
- Remove columns for laboratory testing
- Ability to test media in presence of 'real' stormwater
- Ensure that research activities do NOT endanger groundwater, etc.





Future Directions: Where from here

- Timeline for final designs, installations?
- Ensure that columns are integrated, safe
- Use of multiple geomedia types
- Concerns regarding landowner permission, etc.?