Making Room For Trees

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Presentation Goal

• **Practical approach for locating planting sites that:**
  – Enhance urban areas
  – Leverage funding opportunities

Agenda

• **Case study of Easton, MD**
  – Inventory tree planting specs
  – UTC runoff risk modeling
  – Planting plan
  – Options for retrofitting urban areas to provide space for trees
Tree in decline as a result of poor root health and water deficit

Stormwater pools, then runs off site carrying sediments and pollutants

Traditional sidewalk construction over compacted sub-base

Impervious pavement prevents infiltration

Roots lift and crack pavement in search of moisture and air

Soil under sidewalk contains little pore space for either stormwater storage or healthy root growth
Tree growth is limited by soil volume. To grow big trees, large amounts of uncompacted soil are needed. For a mature tree with a canopy spread of approximately 30 feet, 1,000 cubic feet of soil is needed. Illustration from *Casey Trees 2008*. 
James Urban (1992) synthesized data from Bassuk and Lindsey (1991) and others to determine a relationship between soil volume requirements and mature tree size. The larger the tree, the more soil volume it needs.
Planting Site Data

- Large vacant planting site?
- Small vacant planting site?
- How far on center?

- From known underground utilities?
- Over underground utilities?

- Smallest planting site size?

- 4ft x 8ft or larger.
- 3ft x 4ft.
- 35ft, however, judgment may decrease.
- No closer than 5ft.
- Will not be placed over underground utilities. However, if underground utilities are present on one side of the street, vacant planting sites may be collected more frequently and closer than 35ft on center on the other side of the street.

- Existing streetscape will be used to determine vacant planting sites and, in some cases, vacant planting site size may be less than 3ft x 4ft.
Planting Site Data

- Areas of full or partial cement will be recommended for tree planting.

- Recommended for tree planting if:
  - No underground utilities are present within 5ft.
  - No underground utilities are directly beneath the sidewalk.
  - Overhead utilities are not in conflict.

- Consistent with existing streetscape.
Finding potential planting sites where most would say no sites exist because there is no space for trees.

142 sites/39 large
Why do this?
Who’s on board?
National Tree Benefit Calculator

Beta

This 3 inch Tulip tree provides overall benefits of: $18 every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees' specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be considered initial approximations—a general accounting of the benefits produced by urban street-side plantings.

Benefits of trees do not account for the costs associated with trees' long-term care and maintenance.

If this tree is cared for and grows to 8 inches, it will provide $64 in annual benefits.
II. Funding for the project: This project is being funded by the National Fish and Wildlife Foundation (NFWF) through their Local Government Capacity Building Initiative.

III. Purpose: The purpose of this project is to assess the existing conditions of trees and tree cover within our community and to then develop a program that identifies problems, highlights objectives, and provides solutions in order to greatly improve: 1) the quality of trees within our community, 2) the quantity of trees within our community, and 3) water quality within our community.
• Stormwater
• Chesapeake Bay
GIS Assessment Stormwater Based Risk Analysis

- Determine places where there is the greatest risk of stormwater runoff.

- Risk Assessed by:
  - Hardscape Proximity
  - Tree Canopy Proximity
  - Hydrologic Soil Type (permeability)
  - Soil Erosion Factor (k factor)
  - Slope

- Focus on planting in areas with high priorities first.
Sites are ranked using the average risk value for each polygon. Data are broken into five (5) classes using natural breaks.
Runoff flows to underground storage system & tree roots

Pervious pavement increases infiltration

Structural/Engineered soil under pavement
H₂O capacity ~25% + increased root space!

Suspended pavement over uncompacted soil
H₂O capacity ~20% + increased root space!
Summary

• Trees need grow space above and below ground to thrive.

• However, don’t limit yourself to the obvious; communities need trees and it is our job to make sure they are well positioned in the landscape.

• Use all the technology you can to prove the need for trees and to make room for them in your city.
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