Cambridge, Maryland
An Urban Approach
Located on the Choptank River
Maryland Ave: Complete Green Gateway Street
What’s the Goal for the Green Gateway...2012

• Improve Circulation
  – Motor vehicle, bicycle, pedestrian
• Showcase Local Culture
• Beautification
• Working Economy
• **Improve Water Quality**
Location Location Location! Maryland Ave is

- On the “main gateway” into the heart of Cambridge.
- 2 blocks from Choptank River. And it crosses Cambridge Creek.
- At Intersection with Rt 50 at first light south of Malkus Bridge.
- A wide street. Approximately 44’-45’ curb to curb width. Great Bones!
- A mostly residential street. There is a back alley for access to the garages and houses, meaning very few driveways off Maryland Ave.
Maryland Ave, Cambridge, MD
Maryland Ave, Cambridge, MD
Preliminary Design Thoughts

• Bike Lanes
• Street Trees
• Reduction of Imperviousness
• Raingardens
• Improved Pedestrian Access
• All while being cost-effective, low on maintenance, and able to maintain the feel of Cambridge!
How is a green street created?

• Reducing imperviousness.
• Adding landscaping/green spaces.
• Introducing pervious areas.
• Placing a Sediment/Debris/Trash/Nutrient capturing device in the catch basins such as FloGards.
• Installing bike lanes.
What are the Pros & Cons of Maryland Ave

• Right-of-ways and how the road & sidewalk fit in them. Pro
• Lots of Infrastructure within the roadway; water, sewer, stormwater, gas mains, etc. Pro
• Roadway itself. At one point it was narrower, and the gutter pan was exposed. Had to work with existing conditions of the roadway, which had a <5% cross slope. However! This helped with the pervious brick installation. Pro
• 1200’ of sidewalk replacement. Poor existing conditions. Poor drainage. Poor maintenance. Pour porous concrete! Pro
• Lack of pedestrian friendly crossings. Install crosswalks. Pro
• Lack of bicycle facilities. Install dedicated bike lanes. Pro
• Altering of public behavior. Corner bumpouts, bike lanes, cross walks, mid-block curbing all new. Con
Wide pavement width
Parking both sides
Bike network & Large trees
Bricks, Bricks!!!!!
And more Bricks throughout Cambridge!!!!!
How to Finance the Entire Green Street

• DNR Chesapeake & Atlantic Coastal Bays 2010 Trust Fund, Capital Improvements Grant
• Leveraged $212,800 for the gap of $886,500 from DNR.
Along the 1,200 lf of Maryland Ave.

• 5’ porous sidewalk on each side = 12,000sf reduction
• 6.5’ pervious parking on each side = 12,000sf reduction
• Corner bumpouts and mid-block raingardens = further reduction of impervious area
• Street sweeping initiative = less debris on roadway
• Catchbasin inserts = capturing additional debris and filtering any stormwater entering catchbasins.
Runoff Reduction Efforts

• It is anticipated that applying these practices over the 6.2Ac direct drainage area and land using the MDE reduction guidelines, the following reductions, at a bare minimum, can be achieved:
  – TN by 10.6 lbs/yr
  – TP by 10.9 lbs/yr
  – TSS by 2.9 tons/yr
Final Design Layout
Design Layout/Road Diet
Reduce Amount of Imperviousness/Calm Traffic

• Corner Bumpouts
Reduce Amount of Imperviousness/Calm Traffic

• Mid-block bumpouts/raingardens
Provide Bike Access Throughout
Improve Pedestrian Movements
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Porous Concrete Sidewalks
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Porous Concrete Sidewalks
Pervious Bricks Pavers
Pervious Bricks Pavers
Pervious Bricks Pavers
Raingardens
Raingardens
Raingardens & Community Involvement
FloGard +Plus Catchbasin Inserts

**Economical Treatment**
Quick, easy and cost-effective to install, inspect, and maintain.

**Efficient Performance**
Removes pollutants at the inlet where they are easiest to catch.

**Versatile Applications**
Appropriate and easy to use on new construction or retrofit projects.

**Flexible Design**
Available in a wide variety of sizes and configurations, including custom options.

**Durable Construction**
Built to last and withstand the loads from captured pollutants.

**Environmentally Friendly**
No standing water minimizes vector, bacteria, and odor problems.

**Proven Performance**
Field and laboratory tested with up to 86% removal of TSS and 80% removal of oils and grease.
Be Prepared...

• Changing driving behavior is difficult. Drivers would pass on the right of left-turning vehicles previously. With bump-outs, the new street has caused some frustration.

• The raingardens are not going to be consistent the entire time.
  – 6 weeks of no rain affect the plants. And with plating material, things will grow in there.
  – 5 weeks of constant rain will mean TALL thriving plants

• If there is not a curb opening or catchbasin in a corner, provide one or the other.
Accolades for the hard work!
PURPOSE
• To provide a comprehensive evaluation of existing and planned water quality improvement projects vital to the City’s health and vitality.

MEMBERS
• Nanticoke Watershed Alliance
• Chesapeake Bay Foundation
• Dorchester Citizens for Planned Growth
• Eastern Shore Land Conservancy
• City of Cambridge
• University of Maryland Sea Grant Extension
• Jakubiak & Associates, Inc.
• MidShore River Keepers
Cambridge Clean Water Advisory Committee

GOALS
• Highlight recently completed water quality improvement projects and successes.
• Provide input and guidance on existing and planned projects.
• Identify nutrient pollution “hot spots”.
• Recommend future water quality improvement projects and initiatives.
• Estimate cost of proposed projects and suggest viable funding solutions.
• Analyze capacity to implement projects and recommend resource enhancements.
• Prepare a Water Quality Analysis and Recommendations Report to present to the Cambridge City Council by December 2015.
• Offer three Homeowner Workshops to Cambridge residents on:
  – Rain Barrels and Rain Gardens
  – Soils and Environmental Landscaping
  – Living Shorelines
1. Convert 20 Acres of impervious surface to green space.
2. Plant 500 cityscape canopy trees, utilizing native species.
3. Re-direct 1,000 downspouts from impervious surface areas.
4. Create and implement an urban nutrient management plan for leaf, grass clippings, and yard waste along with a reduction in the amount of lawn fertilizers used.
5. Coop with SHA to increase green space within street rights-of-way by up to one acre. (Addition of tree planting boxes, extending planting strips, partially converting medians to green space.)
6. Installation of new or rehabilitation of existing SWM facilities serving a drainage area totaling 40 acres.
Cannery Stream Existing Conditions
Cannery Stream Restoration-Reduction Efforts

- Stream bed reclamation and rebuild
- Shoreline stabilization
- Reclamation of previously tidal reach
- Upland improvements to vegetation-clearing of non-native trees and low-lying creepers
- SWM for the proposed park on the upland section
- Plunge pool sequence for runoff from off-site that drains to the top of the ditch leading to the tidal waters
- Better connectivity to the surroundings.
Cannery Stream Restoration-Reduction Efforts

• It is anticipated that the improvements to the approximately 900l.f. tidal sections as well as the other areas draining to the headwaters of Cambridge Creek on this project will achieve the following reductions:
  – TN by +/- 150 lbs/yr
  – TP by +/- 85 lbs/yr
  – TSS by +/- 130 tons/yr
Cannery Stream Concept Sketch - Biohabitats
Long Wharf Greening Project

- New porous concrete sidewalk behind new bulkhead and the top cap.
- Reduction of impervious area.
- Introduction of brick paver pervious parking spaces.
  - No net-loss of spaces but area remains pervious
- Grass swale areas for treatment and capture instead of direct overboard flow during rain events.
- New island at entrance to channelize traffic, reduce impervious area, and provide space for an entry sign in the future.
- Improved ADA access around the parking area.
Long Wharf Greening Plan
Long Wharf Greening Plan
Long Wharf Greening Plan
Thank you, from Cambridge