Creating Green Infrastructure Resiliency in Greater Baltimore and Annapolis Watersheds

Presentation to Chesapeake Bay Program

Climate Resiliency Work Group - March 2, 2016

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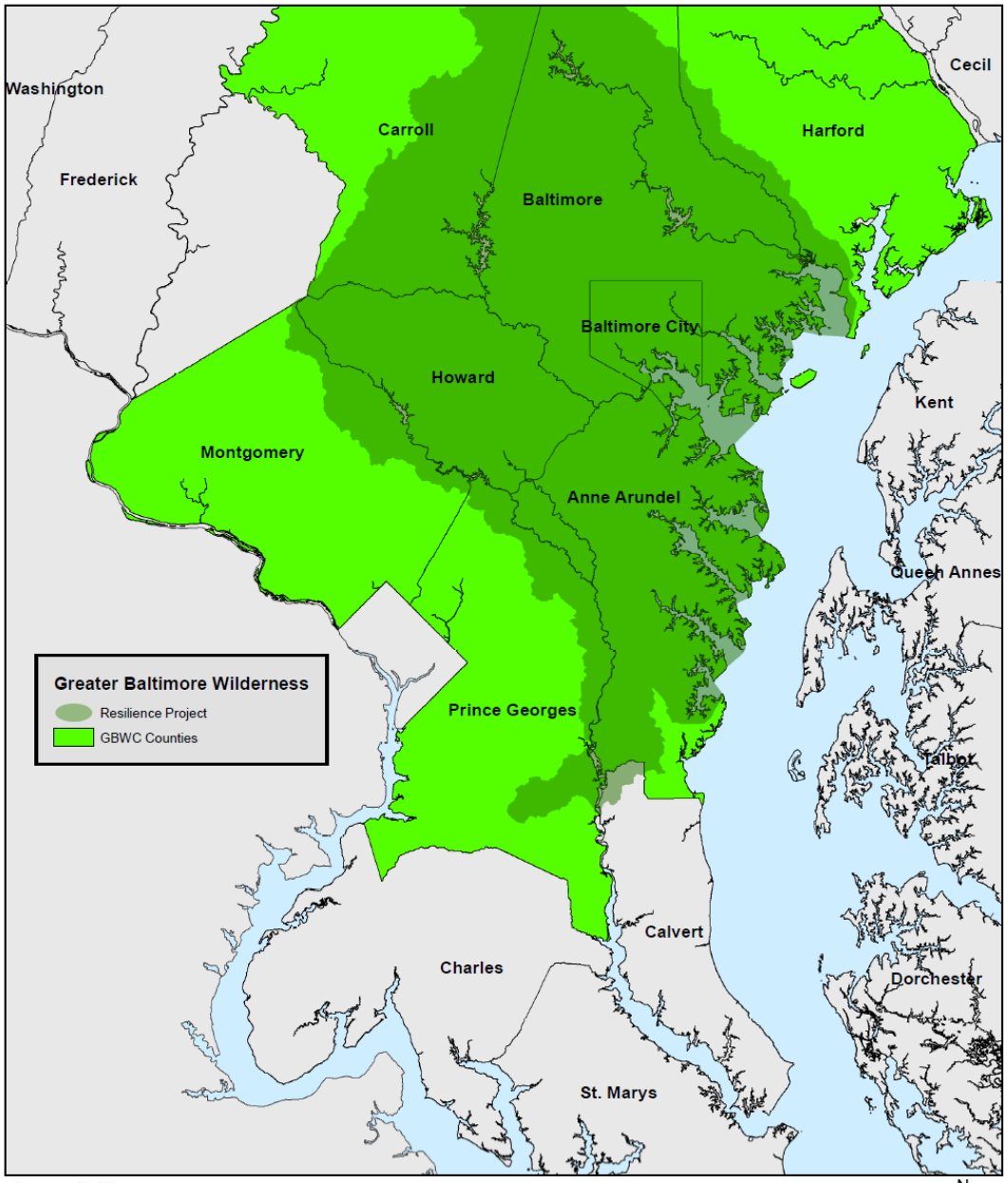
Greater Baltimore Wilderness Coalition & Coastal Resilience Project



Greater Baltimore Wilderness Coalition

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Project's Principal Objectives

- ***Map existing green infrastructure*** contributing to coastal storm resilience
- ***Map and prioritize green infrastructure enhancement opportunities***
- ***Evaluate best governance mechanisms*** for managing and protecting green infrastructure
- ***Build a better regional green infrastructure network***

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Project Management

Steering Committee

Greater Baltimore Wilderness Coalition

Project Team

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APA

USGS science for a changing world

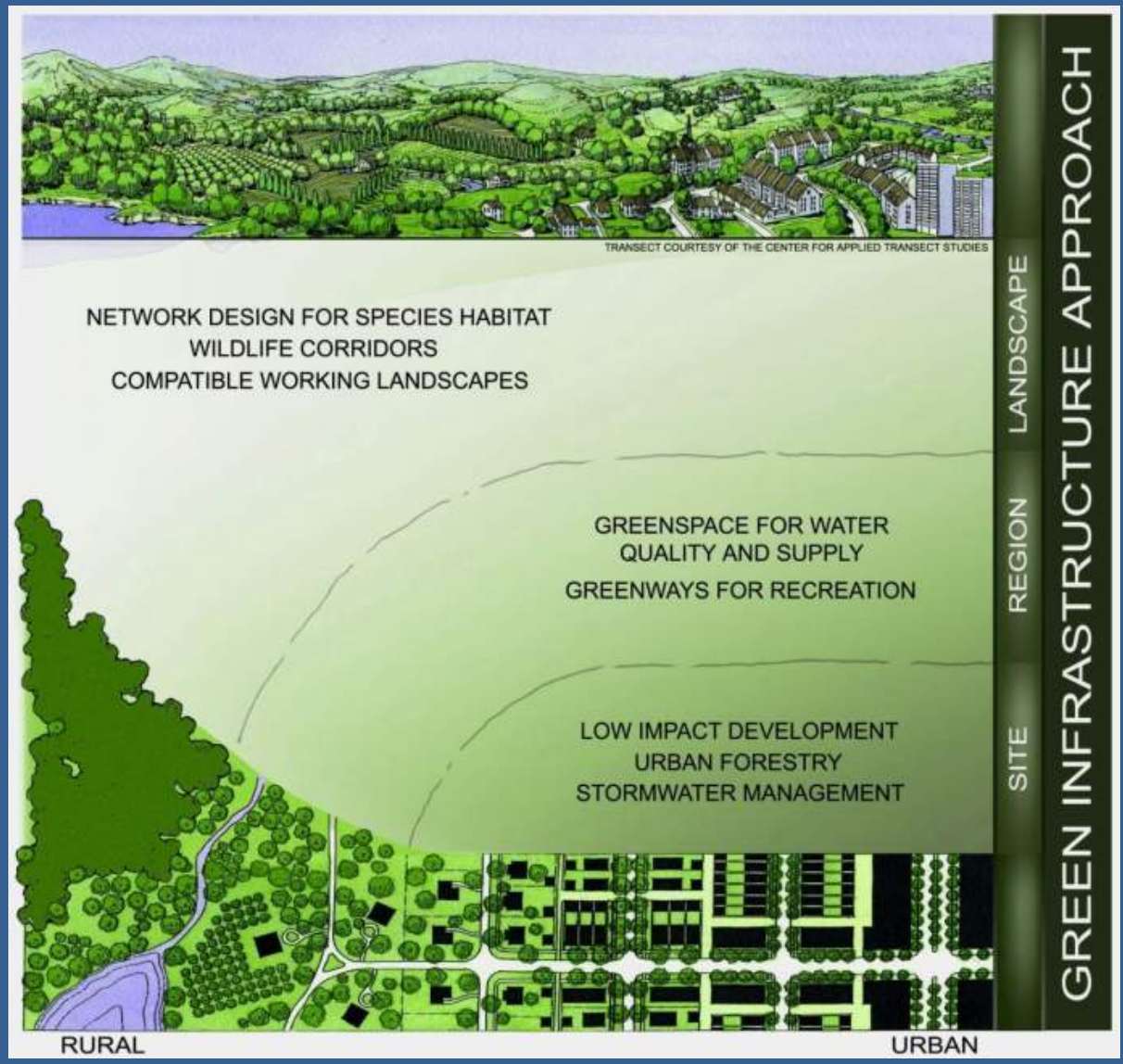
CENTER FOR CHESAPEAKE COMMUNITIES

Chesapeake Conservancy
EXPLORE. CONNECT. CONSERVE.

Defining green infrastructure

A strategically planned and managed network of natural lands, working landscapes, and other open spaces that conserves ecosystem values and functions and provides associated benefits to human populations

(Benedict & McMahon, 2006)



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Addressing Climate Resiliency in central Maryland: Coastal areas ….

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… and inland

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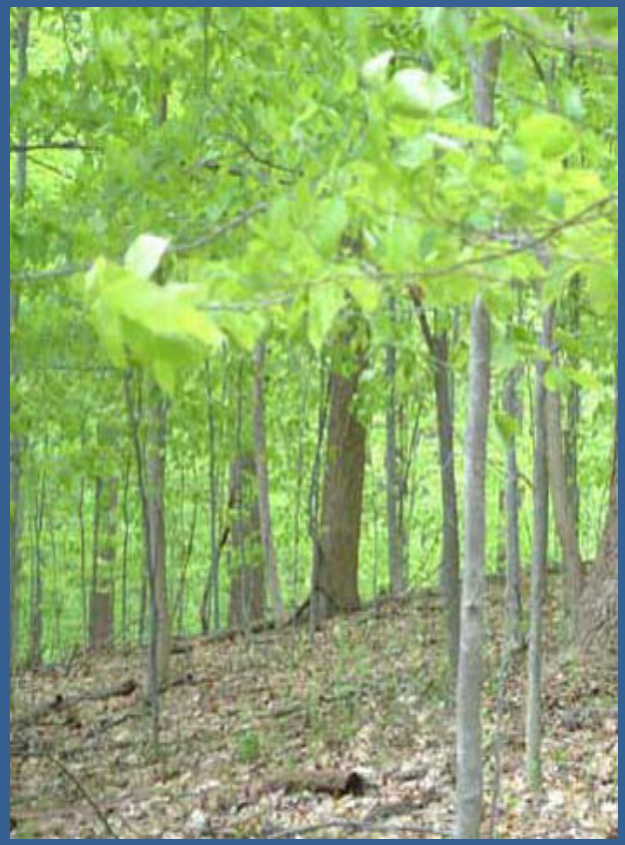
Seeking resiliency in Nature: Green infrastructure at landscape/ watershed scales



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And Nature-based Green Infrastructure at site scales

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Enlisting green infrastructure for climate resiliency services

- *Preparing for SLR*
- *Buffering against waves*
- *Reducing storm flows*
- *Filtering run off*
- *Reducing drought impact*
- *Turning down the heat*
- *Cleaning the air*

and more …

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Logic Scoring of Preference (LSP) Method

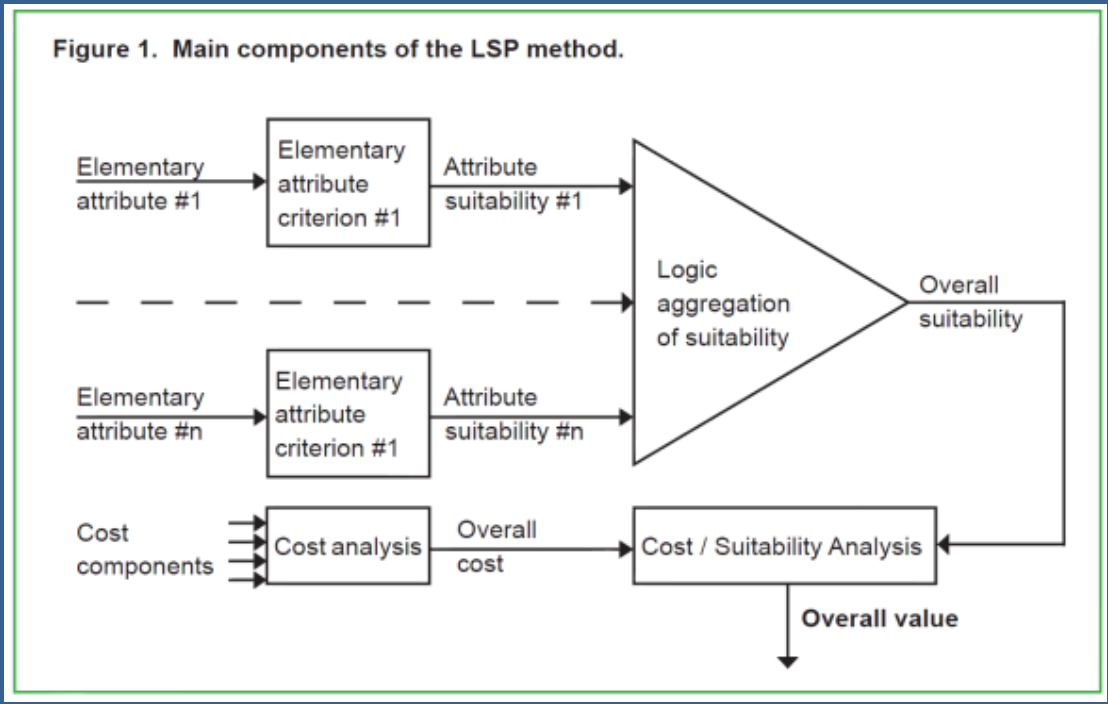
- A structured decision making technique for designing project selection criteria and weightings

- Uses "Attribute Trees" as organizing method for evaluating alternatives

- Attribute trees show how well an alternative satisfies the criteria, with 100% being the most suitable

- Technique is designed to ensure values reflect the desired intent of decision makers.

LSP Conceptual Framework



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Key LSP Terminology and Concepts

- The LSP method uses “Attribute Trees” as the organizing method for criteria
- Each branch of the tree is called an “Elementary Criterion”
- Attribute Trees show how well an alternative satisfies all of the elementary criteria and weights, with 100% being the most suitable
- LSP scoring according to the suitability value yields justifiable selection of the best alternative(s)
- LSP scoring can be used to rank projects and build GIS suitability models of the landscape based on specific goals and objectives

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seas

Strategies for Creating a Regional Green Infrastructure Network

Vision --

An interconnected network of natural areas and other open spaces that conserves natural ecosystem values and functions, sustains clean air and water, and provides a wide array of benefits to the people and wildlife of the Greater Baltimore Region. Benefits for local communities include resilience to the effects of extreme weather and climate change, increased economic activity, improved public health, more equitable access to nature, and many more.

Strategies --

1. Natural Resource Protection
2. Urban Forest Enhancement and Restoration
3. Multi-Benefit Green Stormwater Infrastructure
4. Critical Infrastructure Protection
5. Coastal Defense

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LSP Model Criteria Selection and Weights

For each Strategy…

1. Confirm/Refine criteria list
   - Add
   - Remove
2. Establish logic structure
   - Simultaneity
   - Substitutability
   - "Arithmetic mean"
3. Define elementary criteria details
   - Least suitable
   - Most suitable
   - Breakpoints in between
   - Ordinal, nominal, or ratio data
4. Assign weights
   - Needs to add up to 100
   - Discuss survey input options

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One LSP Strategy Ranking Example: Natural Resource Protection

Natural Resource Protection - Preserve /conserve lands with valuable and vulnerable resources providing hazard mitigation and other co-benefits, including floodplains, wetlands, forests, stream systems, steep slopes, hydric and highly erodible soils, and important habitat areas.

11 |%| Statewide Scale Green Infrastructure Network

12 |%| Local/County Scale Resource Features

13 |%| Community Considerations

11 |%| Statewide Scale Green Infrastructure Network

- 111 {%} Network Element
  - 1111 {w} Core Area
  - 1112 {w} Corridor
  - 1113 {w} Hub
- 112 {%} Network Designation
  - 1121 {w} State Network
  - 1122 {w} Local Network
  - 1123 {w} Targeted Ecological Areas
- 113 {%} Biological Significance
  - 1131 {w} BioNet Significance (Tiers 1-5)
  - 1132 {w} MD DNR Ecosystem Service Valuation for Wildlife Habitat
- 114 {%} Watershed Characteristics
  - 1141 {w} Functioning Forest Watersheds
  - 1142 {w} Impervious Surface by Watershed
  - 1143 {w} Blue Infrastructure Watersheds
  - 1144 {w} Drinking Water Supply Watersheds

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Natural Resource Protection

11 |%| Statewide Scale Green Infrastructure Network

12 |%| Local/County Scale Resource Features

13 |%| Community Considerations

121 {%} Designations
- 1211 {w} Regulatory
  - 12111 {w} 0.2% (500 year) floodplains
  - 12112 {w} Wetlands + 100-foot buffer
  - 12113 {w} MD DNR Ecosystem Service Valuation for Stormwater Abatement
  - 12114 {w} MD DNR Ecosystem Service Valuation for Air Quality
  - 12115 {w} MD DNR Ecosystem Service Valuation for Sediment and Nutrient Capture
- 1212 {w} Non-regulatory
  - 12121 {w} Surface waters + 100-foot buffer
  - 12122 {w} Slopes 15% or greater adjacent to other environmentally sensitive features
  - 12123 {w} Highly Erodible Soils
  - 12124 {w} Forest patches with at least 1 ac of interior
  - 12125 {w} MD DNR Ecosystem Service Valuation for Carbon Sequestration

122 {%} Critical Habitat Designations
- 1221 {w} State Designations
  - 12211 {w} State Natural Heritage Areas
  - 12212 {w} Wetlands of Special State Concern + 100 ft buffer
  - 12213 {w} Blue Infrastructure segments
- 1222 {w} County/Local Designations
  - 12221 {w} Baltimore City Habitat Protected Areas
  - 12222 {w} Anne Arundel bog wetlands + 100 ft buffer
  - 12223 {w} County green infrastructure networks
  - 12224 {w} Baltimore-Washington Partners for Forest Stewardship

Natural Resource Protection

11 |%| Statewide Scale Green Infrastructure Network

12 |%| Local/County Scale Resource Features

13 |%| Community Considerations

13 |%| Community Considerations

131 {%} Demographics

- 1311 {w} Household Income
- 1312 {w} Ethnicity/Minority
- 1313 {w} Age

132 {%} Open Space Provision

- 1321 {w} Population Density
- 1322 {w} Park/Open Space Deficit
- 1323 {w} Adopted Plan Priorities (e.g. Subarea, Functional)
- 1324 {w} Level of Protection

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LSP Model Criteria Selection and Weights

For each Strategy…

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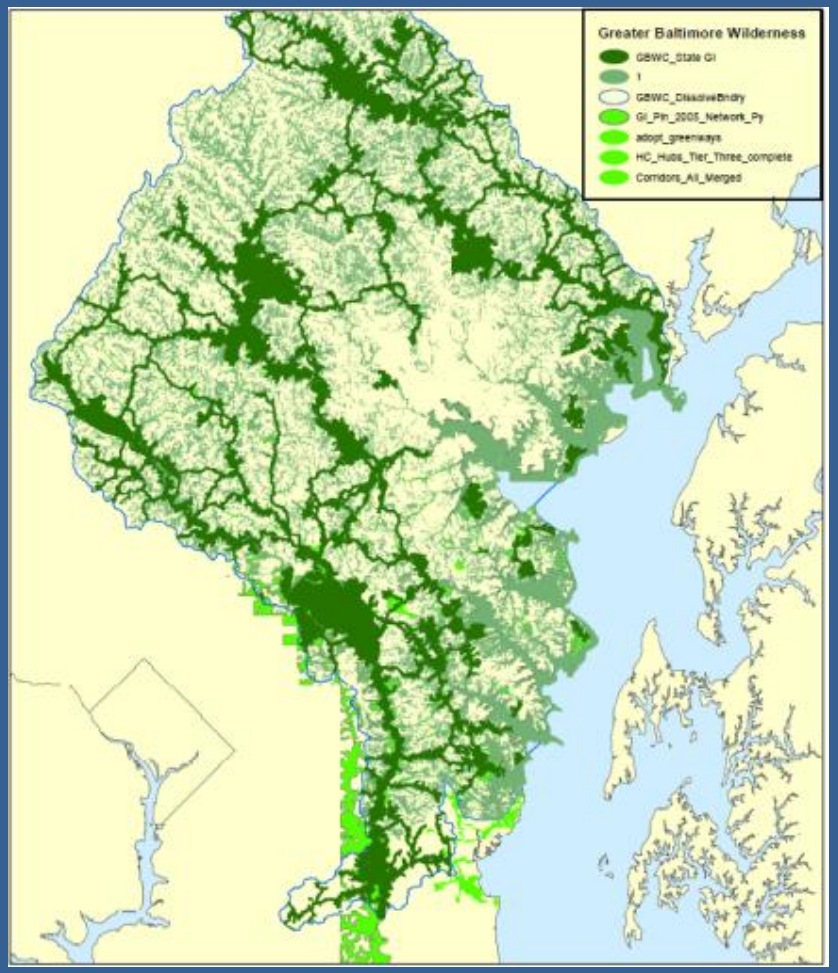
March 9, 2016 - LSP Project Team Meeting

March 9, 2016 Project Team LSP Session with Local Planners/GBWC:

1. LSP Method Overview
2. Review Draft Baltimore Wilderness LSP Resiliency Ranking Framework for Each Strategy
3. Discussion of Potential Survey
4. Wrap up / Next Steps



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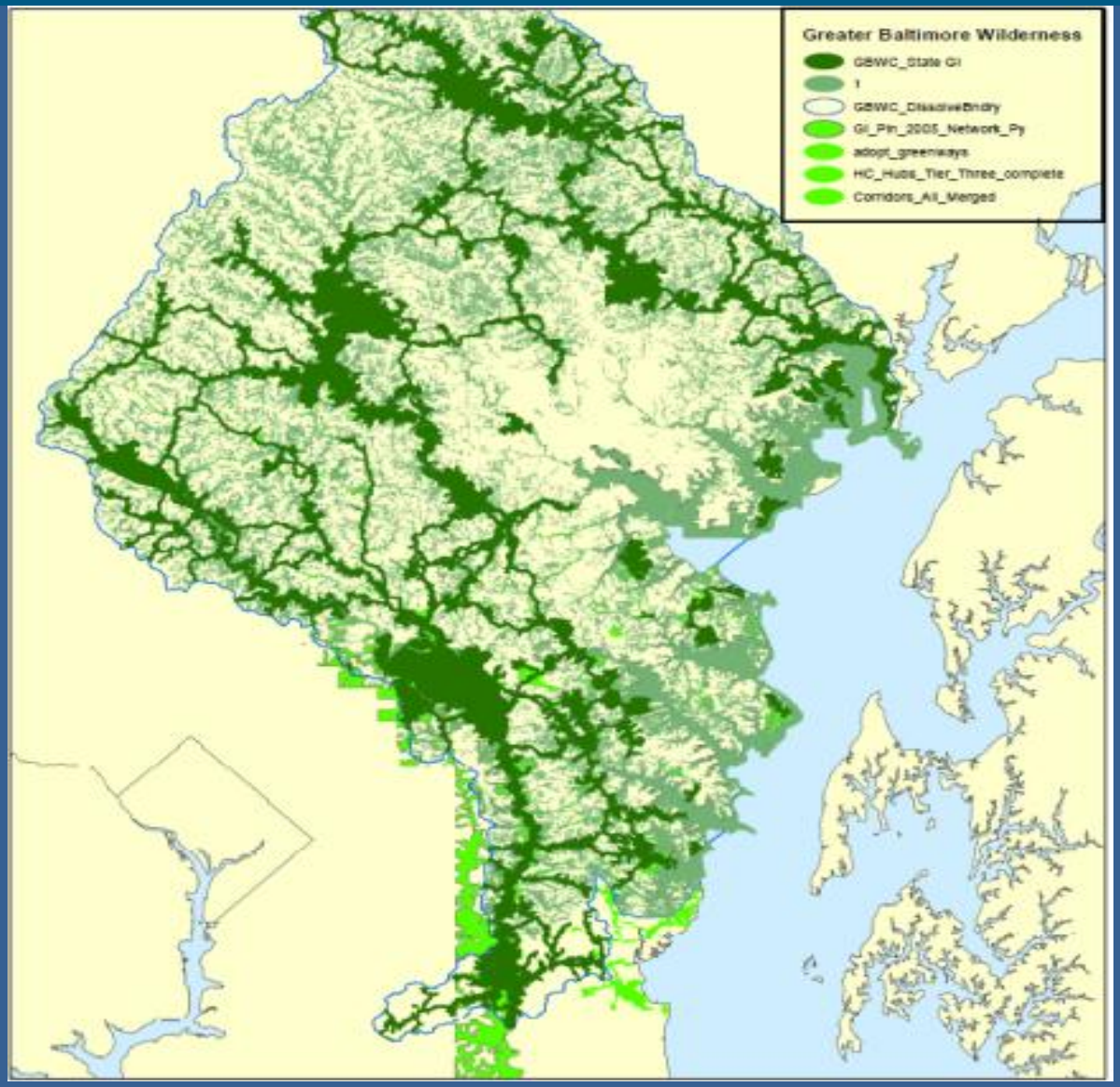
PROJECT PLANS: What's Next?



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