# Activity 1 Team

**MOUNT EVEREST SUMMIT**
29,035 ft (8,850 m)

Northeast Ridge

South Col

G

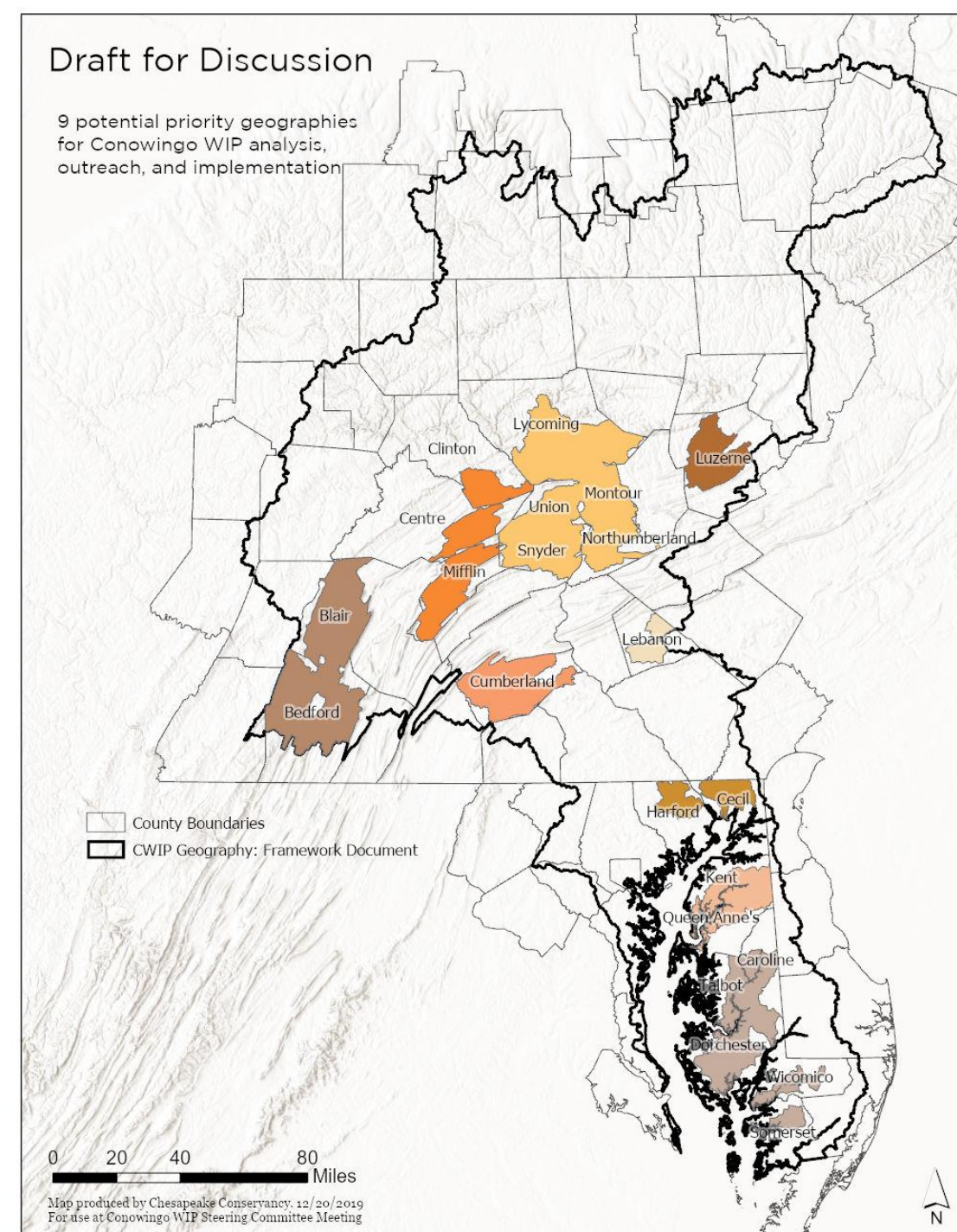East (Kangshung) Face

H

I

# Key Decision Points

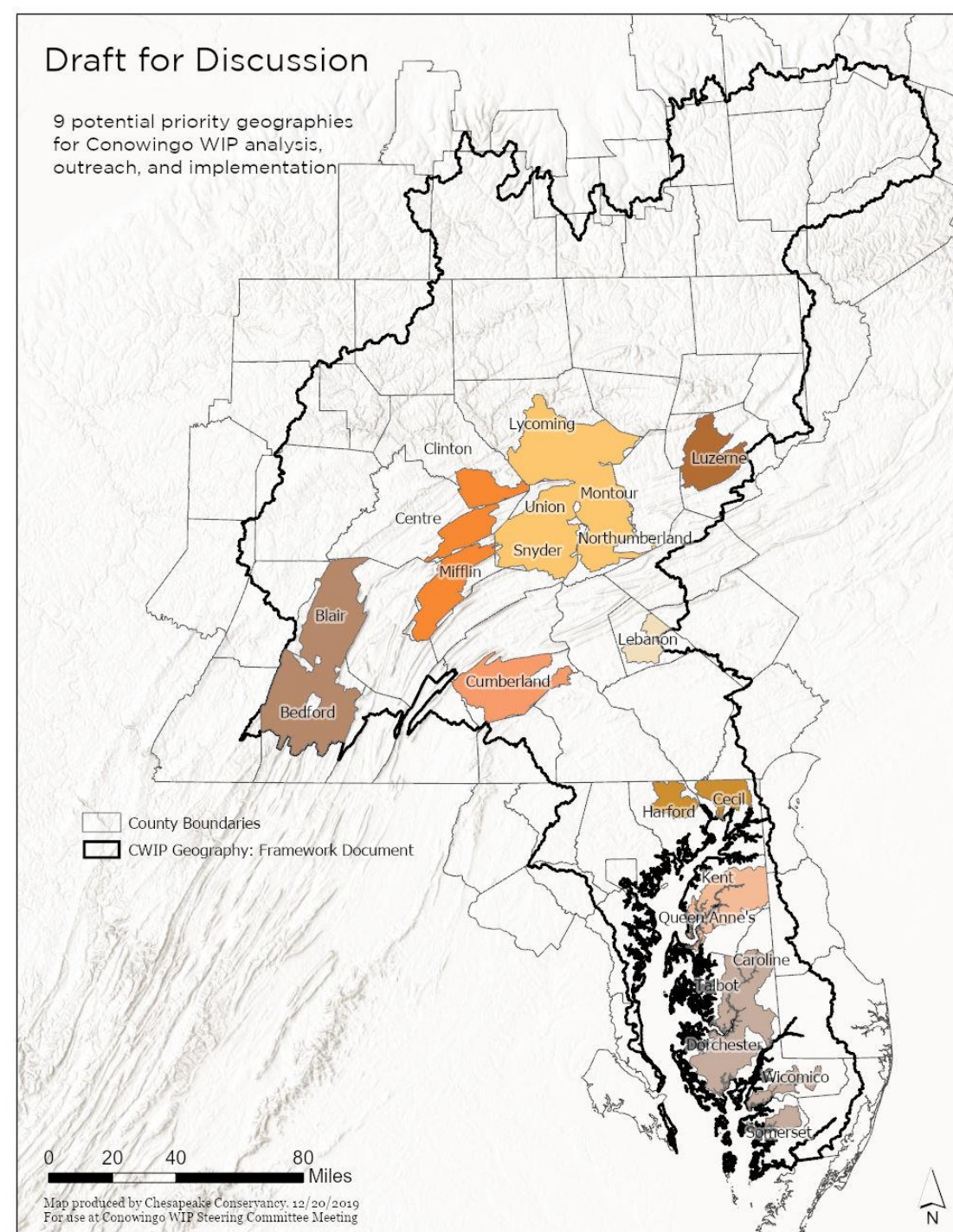| | | |
|---|---|---|
| Develop draft and final CWIP CAST scenarios | December 2019 (draft) – April 2020 (final) | Basin-scale BMP opportunity analysis; CAST scenario recommendations |
| **SC monthly meeting**: Review/approve CAST scenario draft results; update on the CWIP financing system assessment | January 2020 | CAST scenario draft results; written summary and update of CWIP financing system assessment |
| Grantee submits draft CWIP to CWIP SC for a two-week review period | January 24 – February 7, 2020 | Draft CWIP |
| Grantee revises draft CWIP based on CWIP SC feedback | February 7 - February 21, 2020 | Selection of priority implementation scenario(s) |
| **SC monthly meeting:** Review draft CWIP | February 2020 | Draft CWIP |
| CWIP SC sends advance copy of draft CWIP to PSC for a two-week review period | February 21, 2020 | Approval of draft CWIP by SC |
| **SC monthly meeting:** Update on the CWIP financing system assessment and update on CWIP financing strategy development | March 2020 | Written summary and update of CWIP financing system assessment |

# Review of BMP Opportunity and Priority Geographies

| Data evaluated | Brief Description |
|---|---|
| Total nitrogen relative effectiveness | Change in dissolved oxygen (DO) that occurs in the Bay per pound of nutrient changed locally in the watershed. |
| Possible BMP implementation opportunities | Riparian forest buffer restoration: Total area of land suitable for buffer restoration within 100 ft. of water network. |
| | Cover crop implementation: total area of agricultural land |
| | Wetland restoration: lands currently in agriculture that naturally accumulate water due to topography and have historically had poorly draining soils |
| | Urban BMPs: Urban land outside of MS4s |
| Nitrogen loads post-Phase 3 WIP implementation | CAST analysis: Opportunities for additional Nitrogen reductions post-Phase 3 WIP implementation (WIP 3 load - E3 load) |



Draft for Discussion

9 potential priority geographies for Conowingo WIP analysis, outreach, and implementation

County Boundaries
CWIP Geography: Framework Document

0  20  40  80 Miles

Map produced by Chesapeake Conservancy. 12/20/2019
For use at Conowingo WIP Steering Committee Meeting

# Review of BMP Opportunity and Priority Geographies

| State | Geography |
|---|---|
| Pennsylvania | Luzerne |
| | Confluence (Lycoming, Northumberland, Montour, Union, Snyder) |
| | Central (Clinton, Centre, Mifflin) |
| | Western (Blair, Bedford) |
| | Cumberland |
| | Lebanon |
| Maryland | Top of the Bay (portions of Harford, Cecil) |
| | Mid-Eastern Shore (Portions of Kent, Queen Anne's) |
| | Lower Eastern Shore (portions of Caroline, Talbot, Dorchester, Wicomico and Somerset) |



Draft for Discussion

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County Boundaries
CWIP Geography: Framework Document

0    20    40    80
Miles

Map produced by Chesapeake Conservancy. 12/20/2019
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# Total Nitrogen Relative Effectiveness

- Change in dissolved oxygen (DO) that occurs in the Bay per pound of nutrient changed locally in the watershed
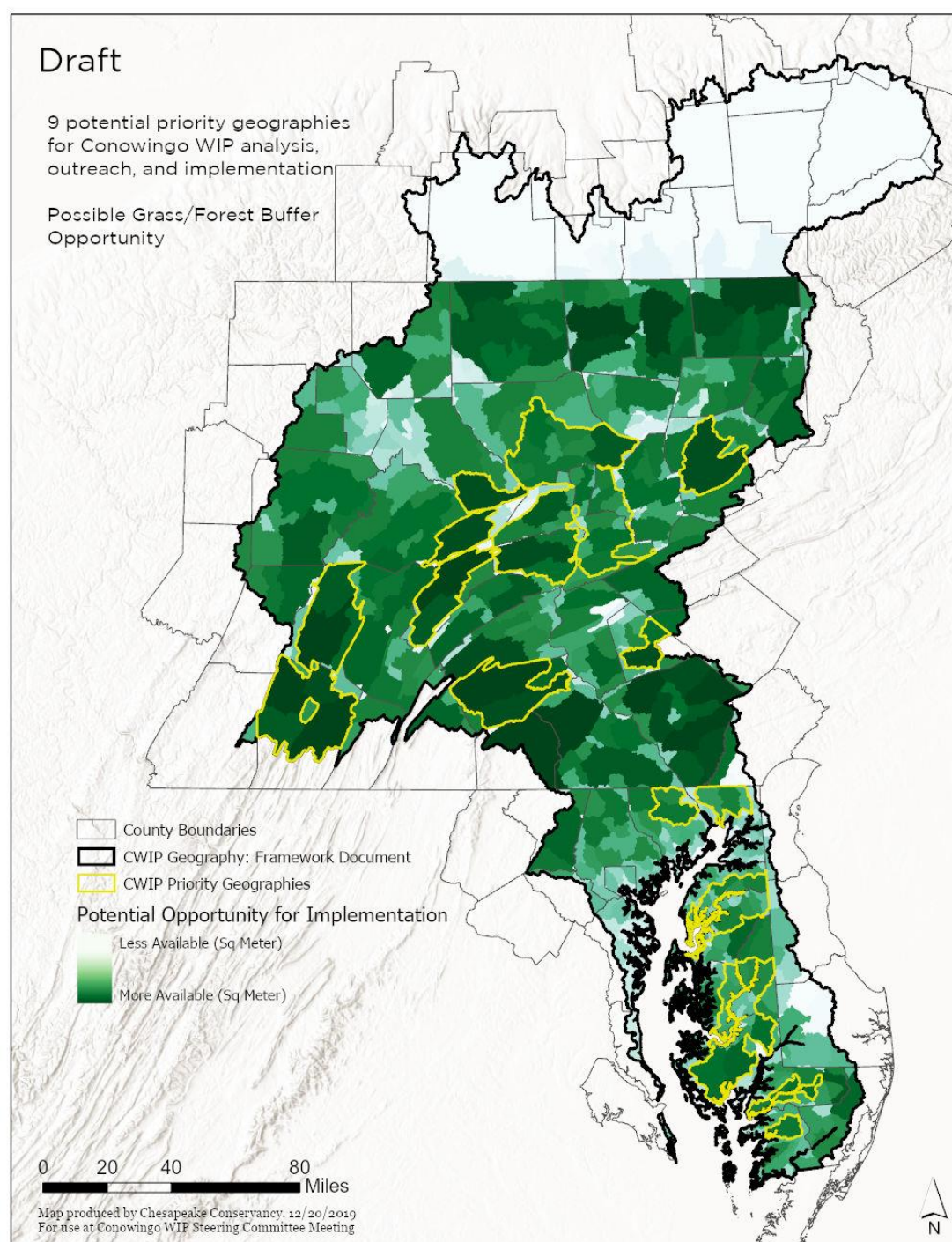
Datasets used:
- Relative Effectiveness; Chesapeake Bay Program. 2019.



Draft

9 potential priority geographies for Conowingo WIP analysis, outreach, and implementation

County Boundaries
CWIP Geography: Framework Document
CWIP Priority Geographies

Relative Effectiveness (Total Nitrogen)
Conowingo at Equilibrium
0 µg/L DO per million lbs of reduction (less impact on the Bay)
30 µg/L DO per million lbs of reduction (more impact on the Bay)

0   20   40   80
Miles

Map produced by Chesapeake Conservancy. 12/20/2019
For use at Conowingo WIP Steering Committee Meeting

N

# Possible Buffer Restoration Opportunities

- Total area of land suitable for buffer restoration within 100 ft. of water network.
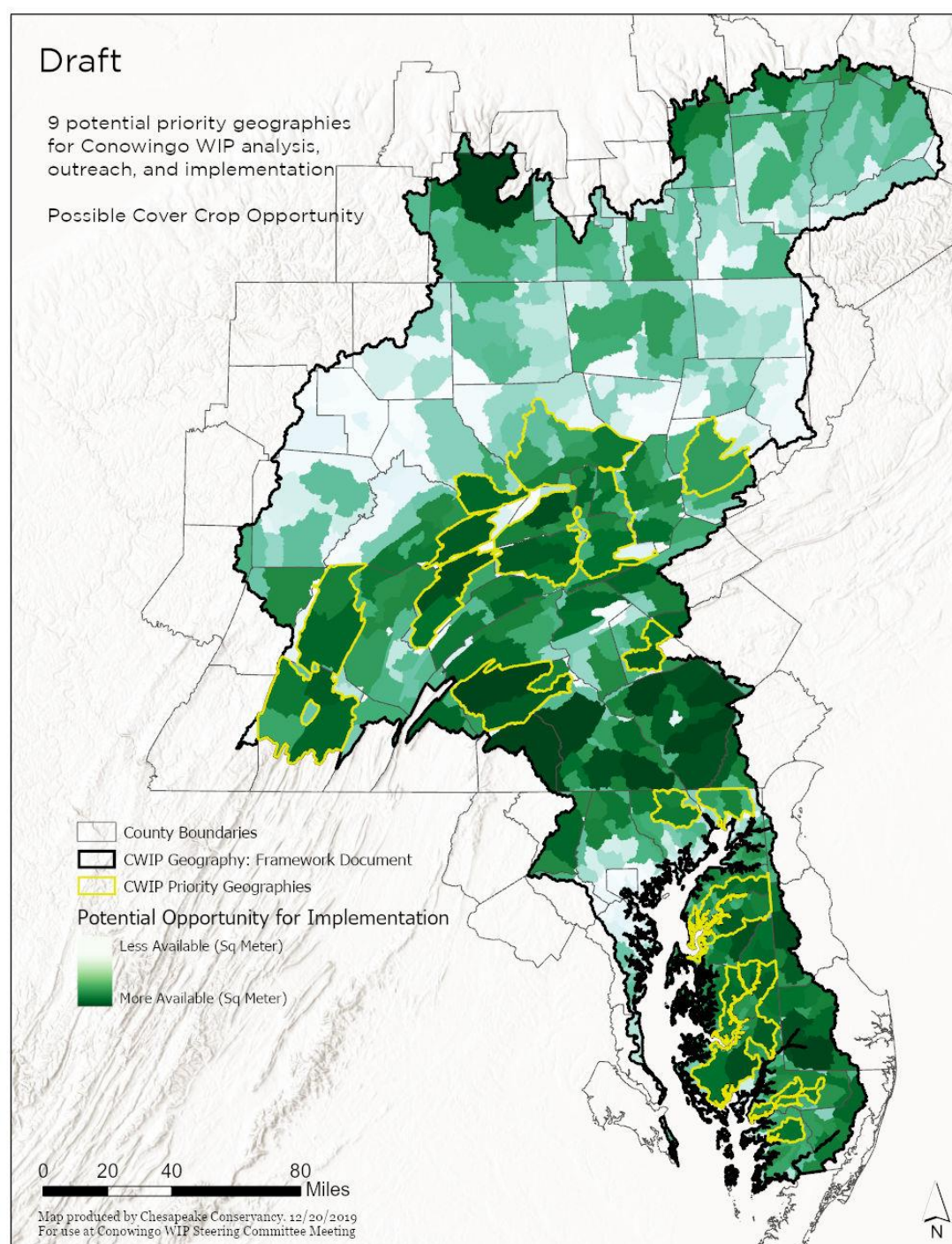


Datasets used:
- Land Cover: 1-meter land cover data classified using 2013 NAIP imagery; Chesapeake Conservancy & University of Vermont; 2016
- Water network (MD/PA): Lidar-derived water network combined with 2013 1-meter land cover data; Chesapeake Conservancy; 2018

# Possible Cover Crop Opportunities

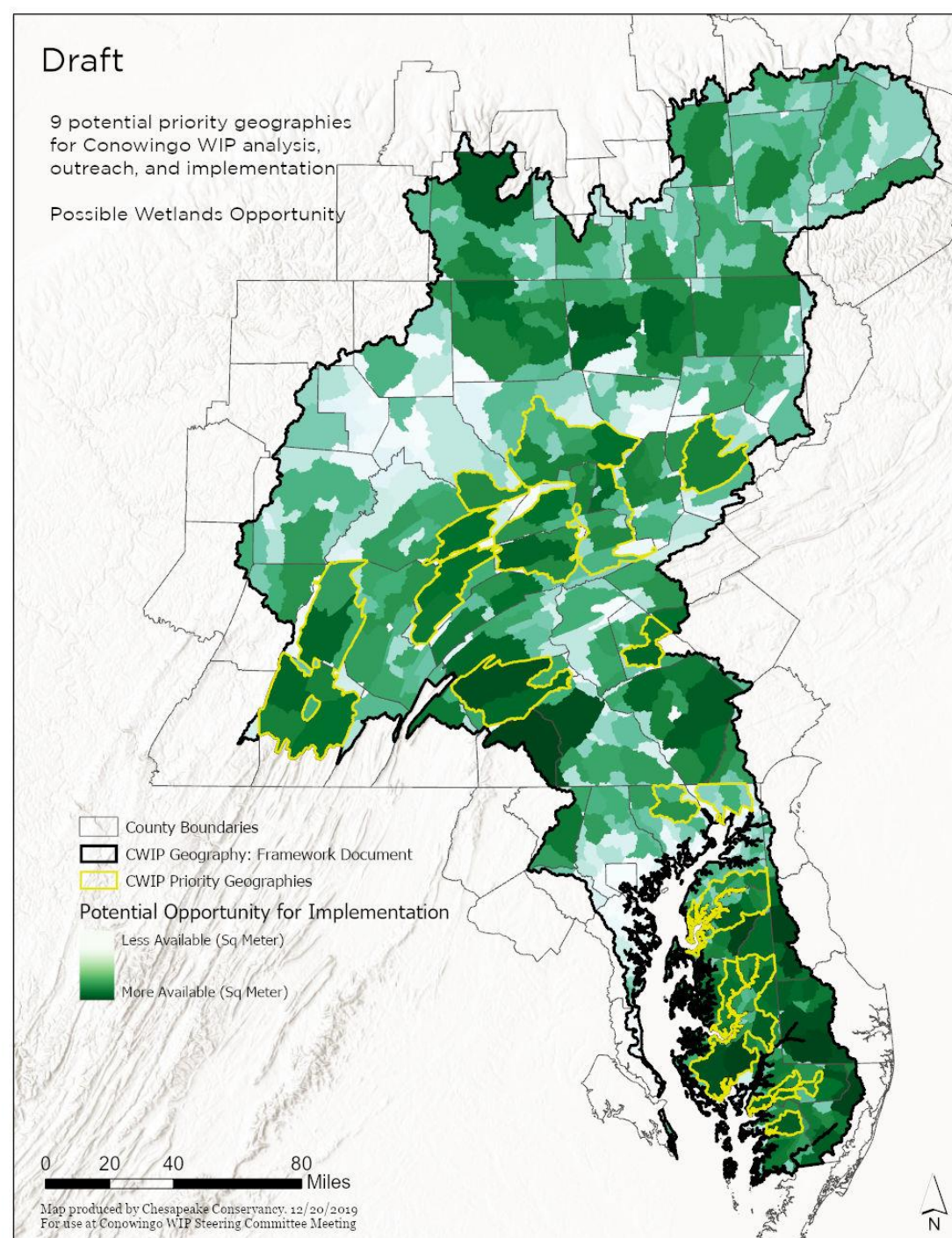- Total area of agricultural land.



Datasets used:
- Land Cover: 30-meter resolution National Land Cover Dataset (NLCD); U.S. Geological Survey, 2016

# Possible Wetland Restoration Opportunities

- Lands currently in agriculture that naturally accumulate water due to topography and have historically had poorly draining soils.
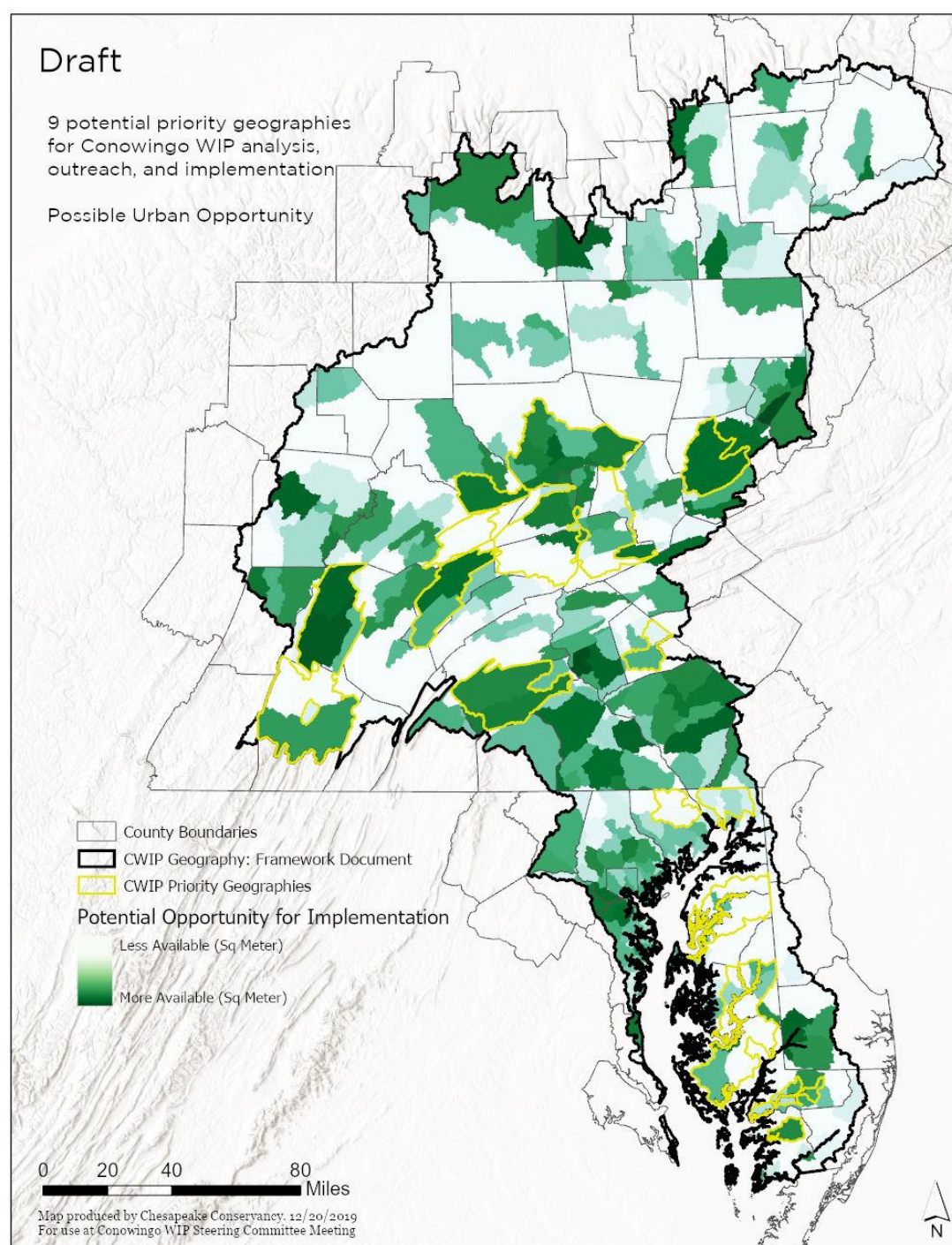


Datasets used:
- Potentially Restorable Wetlands; U.S. EPA; 2016

# Possible Urban BMP Opportunities
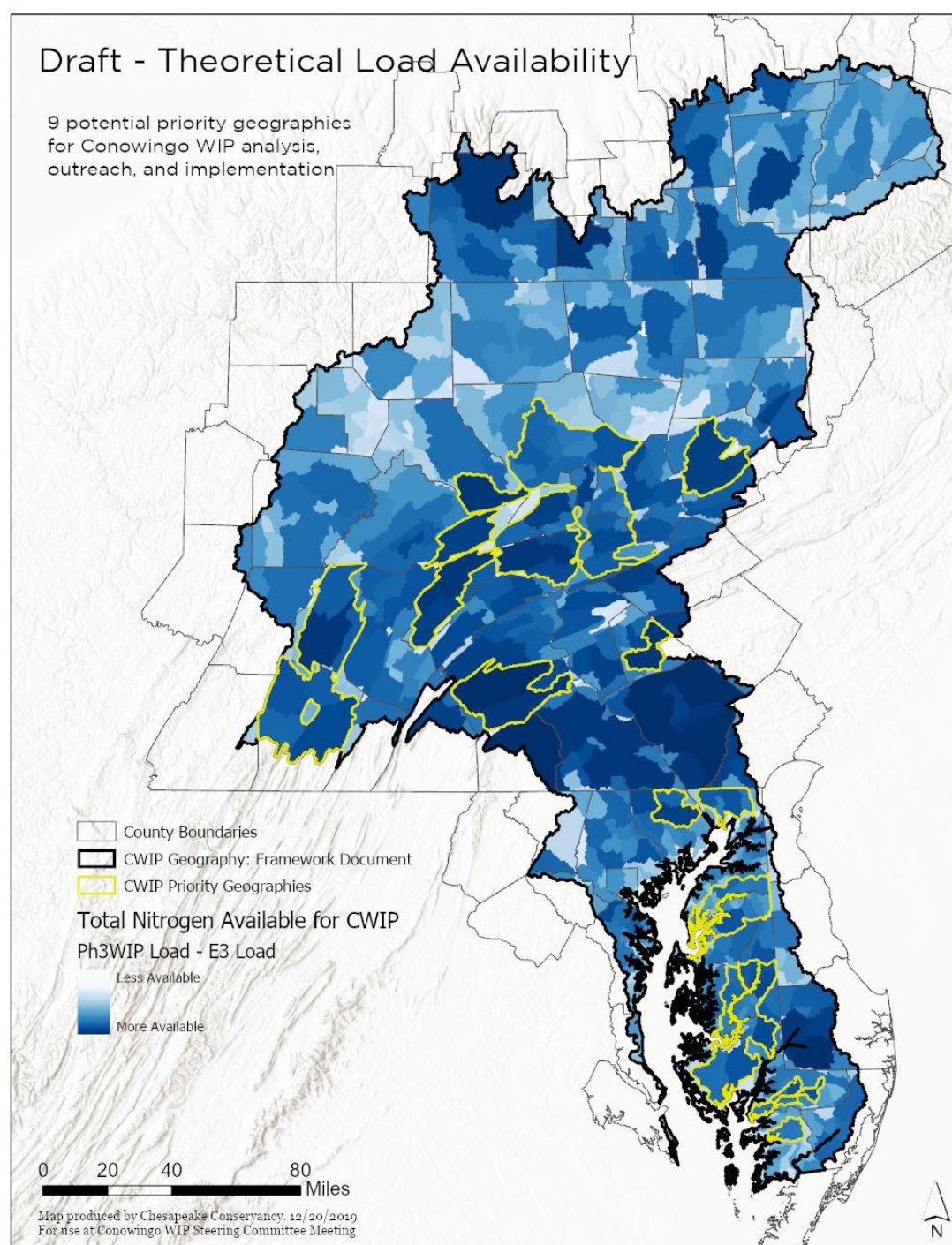
- Urban land outside of MS4s



Datasets used:
- Urban Areas/Urban Clusters. U.S. Census Bureau. 2010
- Municipal Separate Storm Sewer System (MS4) Boundaries. Chesapeake Bay Program.

# CAST Analysis of Nitrogen Loading

- Opportunities for additional Nitrogen reductions post-Phase III WIP implementation.



Draft - Theoretical Load Availability

9 potential priority geographies for Conowingo WIP analysis, outreach, and implementation

County Boundaries
CWIP Geography: Framework Document
CWIP Priority Geographies

Total Nitrogen Available for CWIP
Ph3WIP Load - E3 Load
Less Available
More Available

0   20   40   80 Miles

Map produced by Chesapeake Conservancy. 12/20/2019
For use at Conowingo WIP Steering Committee Meeting

Datasets used:
- WIP 3 load - E3 load = Opportunities for additional
- reduction through CWIP. Outputs for each layer are summed by LRS.

# Draft WIP BMP Scenario

- BMP opportunity – WIP III in CAST

- Remaining BMP opportunity after WIP III * 25%

- Time to review the approach

| | Acres of BMPs Total | Acres of BMPs Applied in Maryland Land-River Segments | Acres of BMPs Applied in Pennsylvania Land-River Segments |
|---|---|---|---|
| Cover Crops | 119,367 | 47,049 | 72,318 |
| Forest Buffers | 8,879 | 1,624 | 7,255 |
| Grass Buffers | 8,879 | 1,624 | 7,255 |
| Wetland Restoration | 53,253 | 26,760 | 26,493 |
| Planning level implementation efforts based on implementation on 25% of available BMP opportunity land after WIP III. | | | |

# WIP III + CWIP BMP Opportunity Compared to E3

- Cover Crops -> 75% + of E3

- Forest Buffers -> 100% of E3

- Wetlands -> Over E3

  - Working to figure out the discrepancy between the BMP Opportunity Analysis which used "Potentially Restorable Wetlands; U.S. EPA; 2016" data and the E3

# Gap

| | Nitrogen (pounds) |
|---|---|
| Goal | 6,000,000 |
| Amount Achieved | 2,132,870 |
| Percent Achieved | 36% |

# BMP Protocol Updates: Stream Restoration

- Riparian restoration areas identified may also include stream restoration opportunities

- Nitrogen credit maximized with Protocol 3 but difficult to estimate at planning stage
    - Protocol 2 procedures to provide conservative estimate of reduction using cast study examples from MD and PA to determine an average for the CWIP.

- New protocol 5

# Protocol 5: Outfall and Gully Stabilization Projects

5 Step Process:
- Define the Existing Channel Conditions
- Define the Equilibrium Channel Conditions
- Calculate Total Volume of Prevented Sediment Erosion
- Convert Total Sediment Volume to Annual Prevented Sediment Load
- Determine Annual Prevented Nutrient Loads
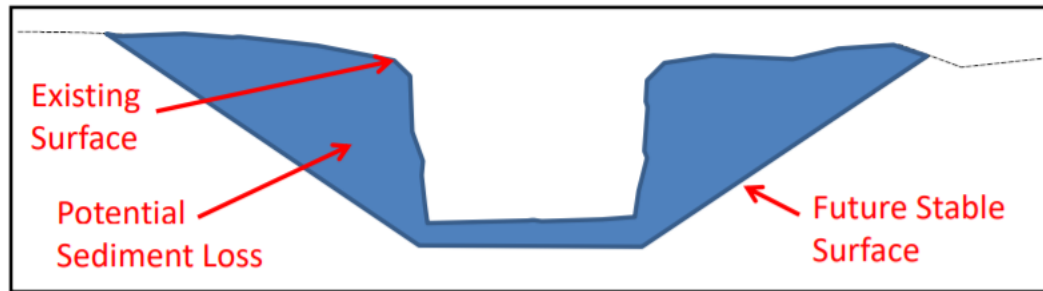




**Final Memo**
**Water Quality Goal Implementation Team Approved:**
**October 15, 2019**

**Recommendations for Crediting Outfall and Gully Stabilization Projects in the Chesapeake Bay Watershed**

Photo Courtesy: MDOT SHA

Stream Restoration Group 2:

Ray Bahr, Aaron Blair, Ted Brown, Karen Coffman, Ryan Cole, Tracey Harmon, Erik Michelsen, Nick Noss, Elizabeth Ottinger, Brock Reggi, Stephen Reiling, Allison Santoro, Chris Stone, Carrie Traver and Neil Weinstein

**Date:** October 15, 2019

https://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2019/10/FINAL-APPROVED-OUTFALL-RESTORATION-MEMO-101519.pdf

# Contingency Plan



- Additional Priority Watersheds within the most effective shell
  - Discuss alignment with the PA Tiers & MD MS4 Counties
- Add stream restoration and living shorelines
- Alternative strategies identified through pay for performance contracting
  - CWIP placeholder
- Dredging reductions (if any; pending pilot study result)

# Programmatic Approach

- Pay for Performance Contracting
  - Flexibility enables innovation and efficiency- Focus on end goals in target watersheds rather than specific projects and project designs
  - Empower and engage local partners- Allows local partners to develop effective solutions that achieve load reduction goals and compensate landowners for services provided by projects on their land.
  - Building trust through clear return on investment- Structing implementation and payment terms around Nitrogen reduction outcomes allows funders to demonstrate a return on investment
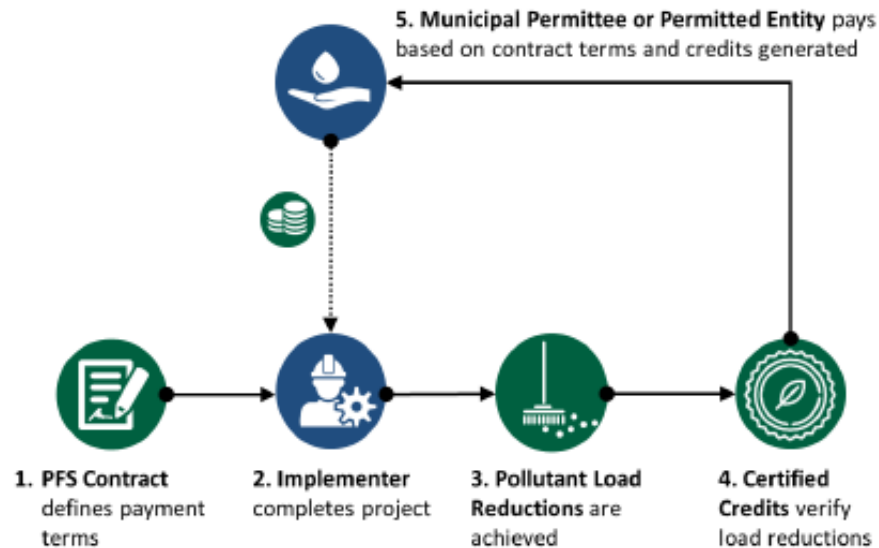
TECHNICAL BRIEF

PAY FOR PERFORMANCE CONTRACT MECHANISMS FOR STORMWATER MANAGEMENT

Environmental Incentives

cpraul@enviroincentives.com
530 541 2980

# CWIP Application



5. **Municipal Permittee or Permitted Entity** pays based on contract terms and credits generated

1. **PFS Contract** defines payment terms

2. **Implementer** completes project

3. **Pollutant Load Reductions** are achieved

4. **Certified Credits** verify load reductions

- Pay for Performance Contract project solicitation and a credit purchase contract that defines TN target and level of funding available to be paid upon verification of pollutant load reductions.

- Implementer implements project and achieves TN load reductions, which are verified as load reduction credits.

- CWIP Implementation Management Team pays the implementer based on the terms defined in the pay for performance contract.

- Technical resource provided by private sector

- Project/Credit offer evaluation, execution, and tracking by CWIP Implementation Management Team.

# BMP Implementation Informed through Outreach

- Living Shoreline to be informed by outreach to stakeholders in Maryland, some existing tools available for analysis.
  - 1000' of tidal shoreline is equivalent to 1000' stream at protocol 1 (conservative).  No delivery factor.
- Roadside Ditch Management/Bioswales

Image from  The Pew Charitable Trusts

# Outreach Strategy Update- Maryland



- Worked on revisions to the FAQ handout.
- Working on an invitation/contact list for Maryland Priority watersheds.
- Uploading contact info into Hughes Center database in preparation for sending out information and for workshop registration.
- Once we have draft WIP we will meet with county-level currently doing WIP-related work to get initial feedback.
- Looking at early April for Maryland stakeholder workshops in 3 locations, spread out over a 2 week period.

# Outreach Strategy- Pennsylvania

| Courtesy outreach: Engage stakeholders from priority geographies prior to public release of CWIP draft, March 13 | |
|---|---|
| 3rd – 4th Phase 3 WIP County Action Plan meetings<br>Tier 2 counties | • Lebanon<br>• Cumberland<br>• Centre<br>• Bedford<br>    Late February – early March, Meetings to be scheduled. |
| Regional partnership meetings | • Centre, Clinton, Lycoming; Precision Conservation Partnership meeting.<br>    January 22, 2020<br>• Snyder, Union, Northumberland, Montour; Conservation Union meeting.<br>    February 28, 2020 |
| Individual outreach | • Luzerne<br>• Blair<br>• Mifflin<br>    February – March, Calls to be scheduled. |

# Outreach Strategy- Pennsylvania

| Collect public comment: Engage stakeholders from priority geographies during public comment period, March - May | |
|---|---|
| In conjunction with Phase 3 WIP County Action Plan meetings | • Lebanon<br>• Cumberland<br>• Centre<br>• Bedford |
| In-person meetings, workshops | • Luzerne<br>• Confluence (Lycoming, Northumberland, Montour, Union, Snyder)<br>• Central (Clinton, Centre, Mifflin)<br>• Western (Blair, Bedford)<br>• Cumberland<br>• Lebanon |

# WIP Implementation Timeline/Milestones


© Can Stock Photo

- Need EPA and CWIP SC input, ultimately based on Financing Strategy
  - Near term funding- States and EPA implementation funding for Conowingo load reductions prior to implementation of the finance framework.
  - Long term funding- Implementation funding identified through the financing framework

  - When and how much will be available for CWIP

# Key Decisions and Gap Review

- More watersheds within the most effective shells will needed to be targeted to achieve load reductions
  - What level of BMP implementation as related to E3 should be modeled?
- Role out schedule for CWIP funding is needed to determine implementation timeline & milestones
  - What funding is available in the near term
  - When and how much will be available through financing framework
- Comments on Use of Pay for Performance Model and additional CWIP SC programmatic recommendations.