

# Healthy Watersheds:

## Principles for Phase III Watershed Implementation Plans

### Protecting Healthy Waters for Human Health, Economic Development, and Infrastructure

Maintaining healthy watersheds is of the utmost importance due to the critical ecosystem and economic services they provide which are essential to our social, environmental and economic well-being. These include, but are not limited to: nutrient cycling, carbon storage, sediment control, increased biodiversity, soil formation, wildlife movement corridors, source water protection, flood control, food, timber, recreation, and reduced vulnerability to natural disasters.

The wide array of critical ecosystem services provided by healthy watersheds is frequently undervalued when making land use decisions. Due to the complexity of natural systems and economic precedents, it is difficult to assign a dollar amount to a particular ecosystem service. However, there is a large body of research and evidence showing that intact healthy ecosystems prevent costly restoration and ecosystem service replacement and provide long-term societal benefits including economic opportunities and jobs. Property values are also generally higher near open space; therefore, integrating healthy watersheds into communities and the landscape provides an opportunity for an increased tax base.

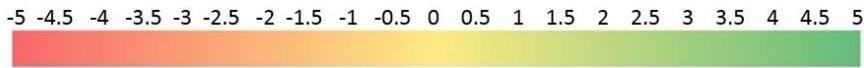
Protecting healthy watersheds can also defer stormwater treatment costs and flood related property damage when conservation principles are included in development policies and land use or zoning decisions. Healthy watersheds can contribute to the reduction of climate related impacts as these healthy ecosystems provide flexibility in a changing climatic environment and increase overall resiliency. In addition, access to these pristine areas can provide recreational and tourism opportunities like fishing, boating, swimming, hunting, hiking, and wildlife viewing.

### Best Management Practices with Healthy Watersheds in Mind

Incorporating the protection of healthy watersheds into project design does not necessarily require a wholesale change in implementation. There are many best management practices (BMPs) that address the Bay TMDL, healthy watersheds vulnerability, and other Chesapeake Bay Program outcomes. Evaluating projects for watershed health vulnerabilities and developing a range of strategies to offset those vulnerabilities will increase effectiveness, decrease maintenance costs, and still help to ensure you are meeting the Chesapeake Bay TMDL requirements into the future. See the table below for healthy watershed BMPs that have several co-benefits\*

Best Management Practice	Healthy Watersheds	Additional Co-Benefits							
		Protected Lands	Biodiversity Habitat	Brook Trout	Stream Health	Fish Habitat	Forage Fish	Flood Mitigation	Recreation
Ag Forest Buffer	4	3.5	4	4.5	4	4.5	4	3.5	4
Forest Conservation	5	5	5	4	4	4	3	3.5	3.5
Urban Forest Buffers	3.5	3.5	5	5	4	4	3	3.5	3
Urban Growth Reduction	4	5	4.5	4	3	3	3	3	3
Urban Stream Restoration	4	3	3.5	4	3.5	4	4.5	3.5	3

\*Values were taken from the [Quantification of BMP Impact on the Chesapeake Bay Program Management Strategies](#) study by Tetra Tech. [Appendix E](#) Final Impact Scores evaluates BMP effects on outcomes on a scale of +5 (very beneficial) to -5 (very harmful). **This table shows BMPs that scored a 3.5 or higher and -3.5 or lower for the Healthy Watersheds Outcome**



## Guiding Principles for Incorporating Healthy Watersheds

### WIP Development

1. Know where your healthy watersheds are (see interactive map link below)
2. Capitalize on co-benefits – select BMPs that also protect healthy watersheds and increase land conservation
3. Account for and consider existing stressors – offset future urban growth through forestland retention to help meet TMDL requirements
4. Align with existing climate resiliency plans (i.e. hazard mitigation, floodplain management, and drinking water source protection plans)
5. Engage Partners – work with government agencies, elected officials, and NGOs to incorporate updated data and conservation efforts into existing WIPs

### WIP Implementation

1. Reduce vulnerability – design BMPs to reduce land use change, increase land protection, and reduce water demand and withdrawals
2. Build in flexibility and adaptability – allow for adjustments in BMP implementation in order to consider a wider range of potential uncertainties and a richer set of response options
3. Adaptively manage – allow for changes over time as new data regarding healthy watershed vulnerability becomes available and as more watersheds are restored

## Tools and Resources

- Healthy Watershed Maps (Contact: Renee Thompson, USGS)
  - Map of [State Identified Healthy Waters and Watersheds](#) on Chesapeake Progress
  - Map of [State Identified Healthy Waters and Watersheds](#) and Protected Lands on LandScope Chesapeake
  - [Maryland's Tier II Waters Story Map](#)
- [Conservation Land-Use Policy Toolkit](#) and [Webinar](#)  
This toolkit provides local governments with information about land use policy tools to slow land conversion
- [Healthy Watersheds Forestry TMDL Forest Retention Study](#)  
This report includes a toolbox of recommendations and incentives for stimulating forestland retention
- [EPA Preliminary Healthy Watersheds Assessment](#)  
Comprehensive, national information about watershed health and vulnerability
- These tools and resources and more can be found at the Maintain Healthy Watersheds Team page [https://www.chesapeakebay.net/who/group/maintaining\\_healthy\\_watersheds\\_goal\\_implementation\\_team](https://www.chesapeakebay.net/who/group/maintaining_healthy_watersheds_goal_implementation_team)

## Contacts for More Information on Healthy Watersheds in your Jurisdiction

Jurisdiction	Website	Lead	Email
Delaware	<a href="#">DNREC Division of Watershed Stewardship</a>	Stephen Williams	<a href="mailto:stephen.williams@state.de.us">stephen.williams@state.de.us</a>
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