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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, erosion/sedimentation control, increased biodiversity, soil formation, wildlife movement corridors, source water protection, flood control, food, timber and recreation, as well as reduced vulnerability to invasive species, the effects of climate change and other 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 to support the fact that intact healthy ecosystems avoid costly restoration and ecosystem service replacement, and provide long-term societal benefits including economic opportunities and jobs.

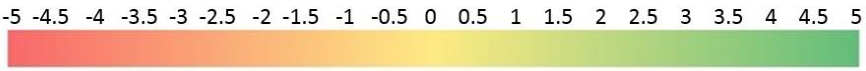
Protecting healthy watersheds can also defer stormwater treatment costs and flood related property damage when conservation principles are included in development principles and land use or zoning decisions. Healthy watersheds can contribute to the reduction of climate related impacts as these healthy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

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 BMPs that have several co-benefits*

Best Management Practice	Healthy Watersheds	Habitat Biodiversity	Brook Trout	Stream Health	Fish Habitat	Forage Fish	Flood Mitigation
Agricultural Forest Buffer	4	4	4.5	4	4.5	4	3.5
Forest Conservation	5	5	4	4	4	3	3.5
Urban Forest Buffers	3.5	5	5	4	4	3	3.5
Urban Growth Reduction	4	4.5	4	3	3	3	3
Urban Stream Restoration	4	3.5	4	3.5	4	4.5	3.5

*Values were taken from a Tetra Tech study evaluating 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 for the Healthy Watersheds Outcome.



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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: integrate future population growth and land-use changes
4. Align with existing climate resiliency plans (i.e. hazard mitigation plans, floodplain management programs)
5. Engage Partners – work with government agencies, elected officials, and NGOs to incorporate updated

WIP Implementation

1. Reduce vulnerability - design BMPs to reduce land use change, increase land protection, reduce wildfires, 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

- Interactive Maps:
  - 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

Contacts for More Information on Healthy Waters and Watersheds in your Jurisdiction

Jurisdiction	Website	Lead	Email
Delaware	DNREC Division of Watershed Stewardship		
D.C.	DOEE Watershed Protection Division	Matt Robinson	matthew.robinson@dc.gov
Maryland	MDE Tier II High Quality Waters	Angel Valdez	Angel.Valdez@maryland.gov
New York	NYDEC Keeping Waters Clean	Lauren Townley	lauren.townley@dec.ny.gov
Pennsylvania	DEP Bureau of Clean Water	Gary Walters	gawalters@pa.gov
Virginia	DCR Healthy Waters Program	Todd Janeski	todd.janeski@dcr.virginia.gov
West Virginia	DEP Water Quality Standards	Tim Craddock	Timothy.D.Craddock@wv.gov
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