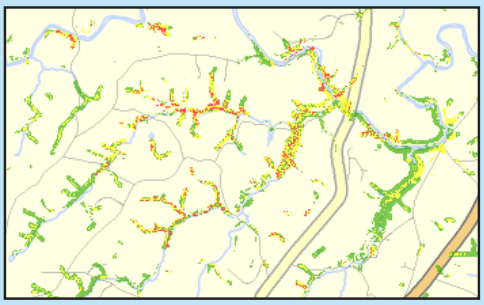
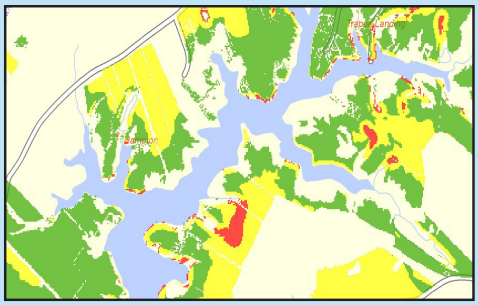
Improving Maryland's Water Quality with Natural Filters

Maryland's Chesapeake & Coastal Service

Riparian forests, grasses, wetlands, and living shorelines are known as ***natural filters*** because they contain natural habitat elements that slow and intercept surface, subsurface and ground water. These restoration practices reduce nutrient loading into the Chesapeake Bay through plant uptake, soil processing, and sediment trapping. By identifying and prioritizing natural filter opportunities, Maryland can proactively plan for restoration in areas where enhanced water quality benefits are feasible. The source and transport pathways of nutrients should be considered when selecting restoration sites. Landscape, soil and hydrology characteristics can also predict areas where natural filters may provide the greatest water quality benefits.

Coastal Atlas Shorelines Screenshot. Priority riparian buffer opportunities for nitrogen removal in the Deer Creek sub-watershed of Harford County (left) and priority wetland restoration opportunities for water quality improvement in the Lower Choptank subwatershed of Talbot County (right). High (red), Medium (yellow), and Low (green) priority areas can help direct site selection or project funding. To view natural filter targeting data, visit ***http://dnr.maryland.gov/ccs/coastalatlas/shorelines.asp***

Riparian Buffers

Opportunities for riparian forest and grass buffers exist on most land covers except forest, open water, and non-Palustrine wetlands. These Best Management Practices are implemented within 300 feet of streams and 35 feet of ditches. The following factors are considered when prioritizing sites for nitrogen, phosphorus, and/or sediment removal.

- Land Use Land Cover
- Headwater/Water Source Proximity
- Floodplain Presence
- Hydrogeomorphic Region
- Upslope Nutrient Sources (Agriculture)
- Soils: Drainage Class, Erodibility
- Slope

Low slope areas (<15 %) with poorly drained soils are highlighted for nitrogen removal since these conditions support denitrification and increase retention time. High slope/transport areas (> 20%) with erodible soils are highlighted for phosphorus and sediment removal. Buffers at these locations will intercept fast-moving sediments to promote sediment trapping and phosphorus transformation. Sites that intercept runoff from agriculture and high transport areas are weighted because they directly address nutrient loading.

Wetland Restoration

Opportunities for wetland restoration exist on most land covers except forest, wetland, and open water. BMPs are implemented on potential wetland soils, which have hydric or poorly drained characteristics. The following factors are considered when prioritizing sites for nutrient removal.

- Land Use Land Cover
- Water Source Proximity
- Floodplain Presence
- Hydrogeomorphic Region
- Soils: Drainage Class, Hydric
- Wetland Size to Drainage Area Ratio
- Headwater Connection

Integrating water quality and coastal resources into Maryland's marine spatial planning.

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