

References for “Solutions” Page

Wastewater Solutions

Upgrade Septic System Technology

Nitrogen Removal

- 50-75% nitrogen removal¹

Cost Efficiency

- \$580-\$770 per pound of nitrogen removed⁷

Project Costs

- \$10,000-\$30,000^{1,5}
- Operations and Maintenance: \$2,000-\$3,200/year⁷
- Monitoring: \$200-\$300/year¹

Learn More about Septic System Upgrades (link to library)

Increase Sewer Connections within Sewer Service Areas

(Advanced Wastewater Treatment Plants)

Nitrogen Removal

- 81% nitrogen removal¹

Cost Efficiency

- \$30-160 per pound of nitrogen removed², averaged from septic connections info

Project Costs

- Approximate one-time cost to connect to existing sewer line: \$1,000-\$6,000³
- Annual sewer fee: \$500 per year³

Install Permeable Reactive Barriers

Nitrogen Removal

- 70-75% nitrogen removal¹

Cost Efficiency

- \$140 per pound of nitrogen removed¹

Project Costs

- \$2,500 to \$3,000 overall cost⁴
- Operations and Maintenance: \$220 per year¹

Learn More about Permeable Reactive Barriers (link to library)

Fertilizer Management

Nitrogen Removal

- 25-75% nitrogen removal¹

Cost Efficiency

- \$67-\$250 per pound of nitrogen removed²

Project Costs

- \$50,000 to \$100,000 estimated cost for watershed-wide campaign^{5,6}

- The Chesapeake Bay Region reported that an outreach initiative cost \$15 per household ⁶

Learn More about Fertilizer Management (link to library)

Capture Stormwater

Nitrogen Removal

- 25-40% nitrogen removal ¹

Cost Efficiency

- Bioswale: \$139 per pound of nitrogen removed ²

Project Costs

- Material and Installation Cost: \$11,000 ⁶
- Operations and Maintenance: \$200-\$300 per year¹

Learn More about Capturing Stormwater (link to library)

References

1. [Cape Cod Commission Technology Matrix](#), and preliminary spreadsheet available for download: [HERE](#).
2. Maryland Department of the Environment: [BMP Unit Cost Estimates Spreadsheet](#)
3. Westport, Connecticut Public Works Department-Personal Communication
4. Personal Communication with David Potts, Geomatrix Systems, LLC
5. Personal Experience with Fertilizer Campaigns in Connecticut, and Advanced Septic System Costs on Long Island, NY
6. [King and Hagan, Costs of Stormwater Management Practices in Maryland County, Maryland Department of the Environmental and University of Maryland Center for Environmental Science](#)
7. [Barnstable County Report: Guidance to Cape Cod Towns Undertaking Comprehensive Wastewater Management Planning](#)