



Composting Toilets



STRATEGY SCALE

THREATS ADDRESSED

- Excess Nutrients
- Pollutant Inputs
- Algal Blooms
- Erosion
- Invasive/Nuisance Species

STRATEGY GOALS

- Protect
- Manage
- Rehabilitate

STRATEGY CO-BENEFITS

- Habitat (Neutral)
- Aesthetics (Neutral)
- Recreation (Neutral)



- Permittable in Massachusetts**
MassDEP Approved for General Use under Title 5. Local Board of Health review. List of potential permits available [here](#).
- Implemented on Cape Cod**
See examples of pond projects implemented on Cape Cod [here](#).
- Listed in 208 Plan Technologies Matrix**
Learn more about the nutrient management strategies in the Tech Matrix [here](#).
- Can be Performed at Homeowner Scale**
Local review and permitting may be required.
- Nature-based Solution**

DURATION OF BENEFITS

- Less than one month
- One season or year
- Multiple seasons or years

MAINTENANCE REQUIREMENTS

- Monthly
- Annually
- Infrequent

DESCRIPTION

Composting toilets are an alternative toilet technology to traditional toilets that may prevent nutrients (mainly nitrogen and phosphorus) from entering freshwater ponds from septic effluent via groundwater. A composting toilet is a self-contained waterless toilet designed to decompose nonwater-carried human wastes through microbial action on a carbon source and store the resulting matter for further treatment and reuse or disposal. Residuals refer to the solid compost and liquid leachate generated by a composting toilet. By regulation, the finished solid compost residual may be buried beneath six inches of cover by the toilet owner and the leachate must be transported by a licensed septage hauler or diverted to a septic system. When nutrient management in a watershed is desired, onsite disposal strategies may still release varying amounts of nutrients into the watershed, which needs to be evaluated relative to any nutrient limits established to protect natural resources.

ADVANTAGES

- Targets nutrients at the source
- Reduces water usage
- Improves energy savings, nutrient recovery, and nutrient recycling

CONSTRAINTS

- Requires a significant number of citizens to participate to be effective at scale
- Homeowners may be resistant due to real and perceived operation and maintenance differences relative to conventional toilets
- If composting toilets are widely used, a regional facility for processing residuals would be necessary
- If residuals are used as fertilizer, application at the right time, right amount, and right place is essential to minimize losses to the environment
- May cause odors and attract insects, may not deactivate pathogens in solid waste, and requires ongoing maintenance to function correctly
- A conventional septic system is still required for graywater treatment



IMPLEMENTATION

POTENTIAL ACTORS



Towns: Towns may propose to install composting toilets at town-managed ponds and other town facilities, and provide a supportive role through permitting and education



Pond Groups: May propose composting toilets around public or private ponds and provide a supportive role through education



Private Landowners: May install composting toilets



Land Trusts: Land trusts may provide a supportive role through education

SITING REQUIREMENTS

- All ponds with upgradient development (particularly within 300 feet) using Title 5 or other non-nutrient treating septic systems
- Need disposal options for residuals and licensed septage hauler

INFORMATION NEEDS

- Survey of existing septic systems
- Wastewater flows and groundwater flow direction
- Nutrient sources, travel times, and distances



IMPLEMENTATION EXAMPLES

As part of an overall wastewater management strategy, the Town of Falmouth has investigated the efficacy of diversion toilets or “eco-toilets” for the management of nutrient inputs to groundwater with specific reference to nitrogen and phosphorus. Two types of eco-toilets were investigated: composting toilets and urine-diverting toilets. Project information can be found on the MASSTC website [here](#).

RESOURCES

- MassDEP maintains a [list of approved Title 5 I/A technologies](#).
- MASSTC has information on phosphorus removal in onsite septic systems [here](#).
- The Massachusetts’ Department of Conservation and Recreation’s [Lakes and Ponds Program](#) provides related resources.

COST ESTIMATE

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Varies depending on technology



ADDITIONAL FINANCIAL CONSIDERATIONS

Assessment: Planning, design and permitting

Implementation: Equipment, supplies and installation

Maintenance: Ongoing maintenance required



POTENTIAL FUNDING SOURCES

- Community Preservation Act
- Capital Budget
- Grants
- Private Funding

Additional information regarding potential funding sources is available [here](#).