

Alternatives to Conventional Wastewater Treatment

An Overview of Greywater, Composting,
Communal Systems, and Other Options.



*Maine Center for Disease
Control and Prevention*

*An Office of the
Department of Health and Human Services*

Paul R. LePage, Governor

Mary C. Mayhew, Commissioner

Alternatives to Conventional Wastewater Treatment



This discussion will include:

- *Greywater Systems*
- *Composting Systems*
- *Community Systems*
- *Other Systems*

Alternatives to Conventional Wastewater Treatment

Greywater Systems

Greywater is comprised of all domestic wastewater except sanitary waste, i.e, no urine or feces. Sources include:

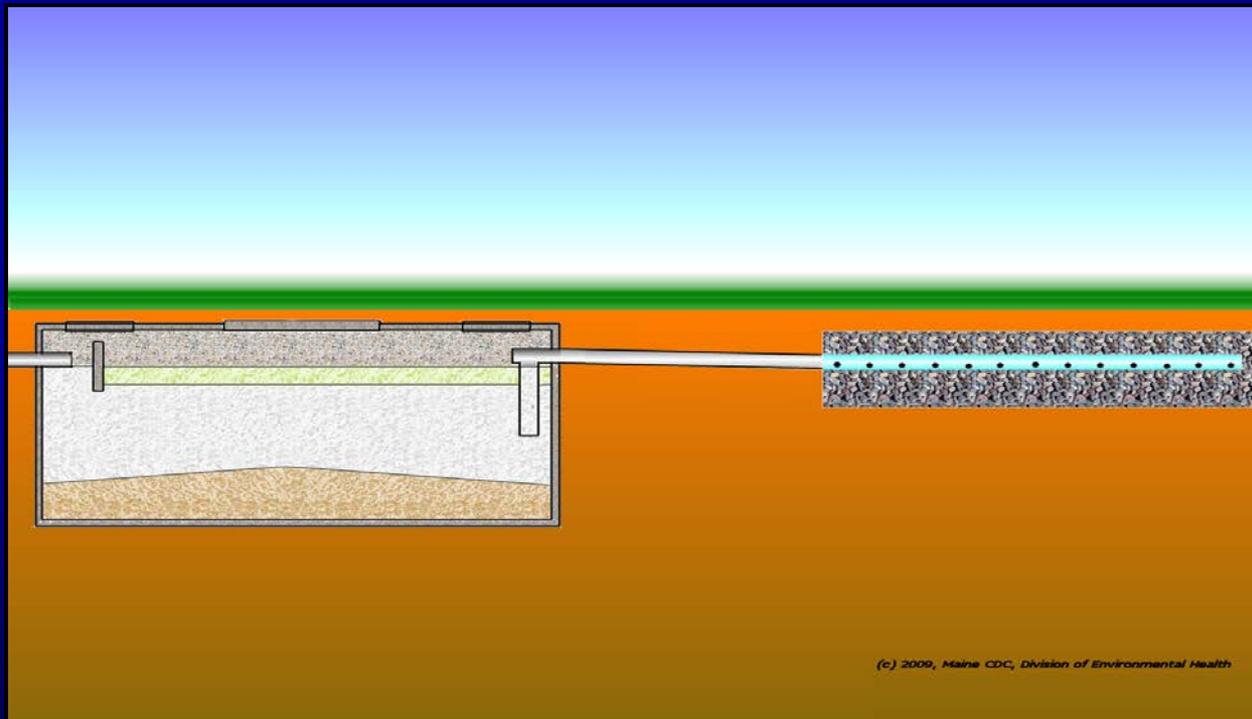
Water from sinks and basins

Water from tubs and showers

Laundry waste

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Conventional System with Pressurized Water and Without a Toilet



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One of the most common sources of greywater contamination is illegal surface discharge from clothes washers.

It is a misperception that running laundry waste on the ground is allowed. In fact, all surface discharges of untreated wastewater have been prohibited since 1926.

Why is laundry waste a concern?



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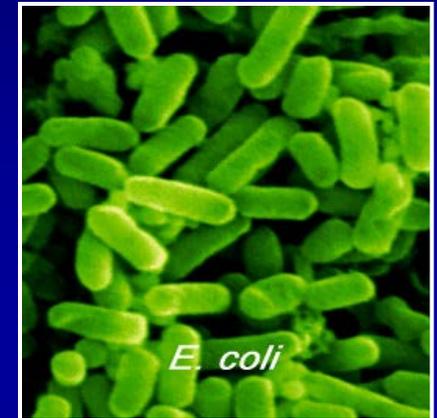
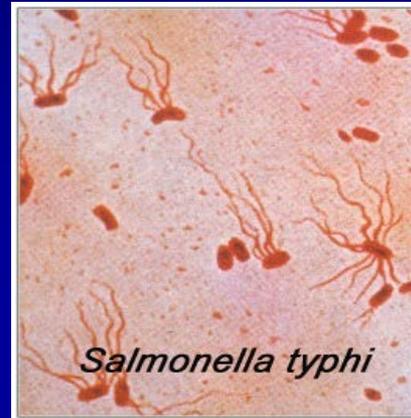
Greywater, particularly laundry waste, is a concern because of pathogen transmission, and is subject to the same basic standards as combined wastewater, such as soil suitability and setbacks.

Pathogens such as *E. coli*, *Salmonella typhi*, *Cryptosporidium parvum*, *Shigella dysenteriae*, and Hepatitis A virus are potential threats, as are parasites like blood flukes and tapeworms.

These are all found in the feces of infected individuals. Therefore, they can be found in laundry waste and bathing waste.

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While infections from *E. coli* and tapeworms are more likely in Maine than tropical diseases like typhoid fever, modern international travel means that such infections are possible, even if not probable.



Proper disposal of greywater minimizes the potential for the spread of fecal borne diseases and organisms.



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Composting Toilets

Allowed as alternate toilets in the Rules.

A separate greywater disposal system is required if part of a system.

An internal plumbing permit is required, and if only a composting toilet is being installed (e.g., replacement fixture) no soil test is needed.



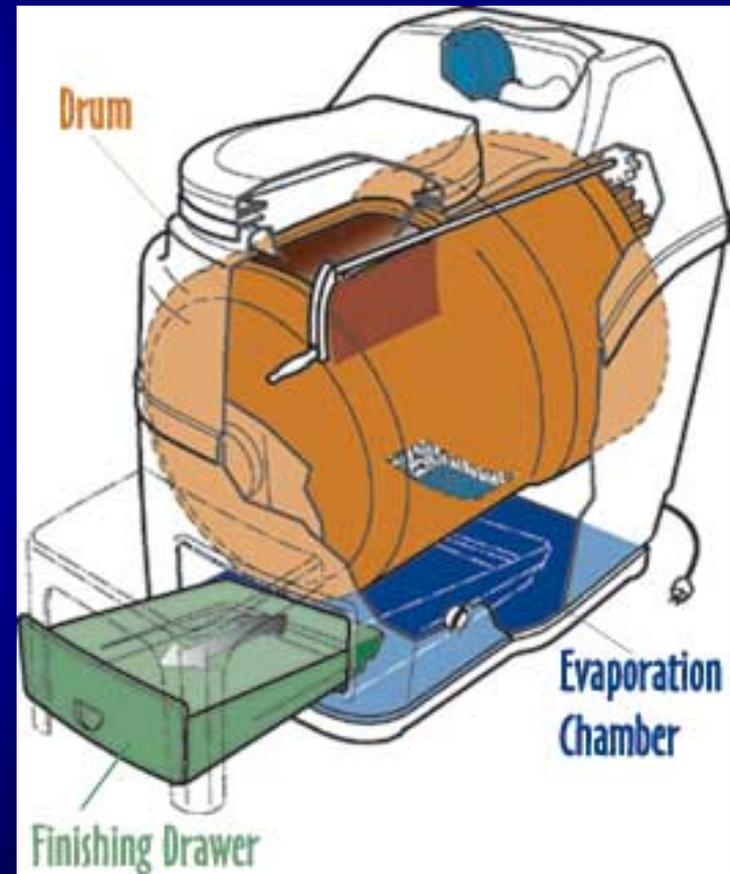
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Use an aerobic processing system that treats waste by composting.

May be used as an alternative to flush toilets where there is limited water supply, or as a lifestyle choice.

Composted excrement is normally mixed with sawdust, coconut fiber, peat moss, etc. to support aerobic processing, absorb liquids, provide a carbon source, and to reduce the odor.

Require periodic maintenance.



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From a permitting perspective, incinerating toilets are similar to composting toilets.

There is no liquid discharge, but there is an ongoing energy requirement whether propane or electric incineration is used.

Not to be confused with an incinerated toilet.

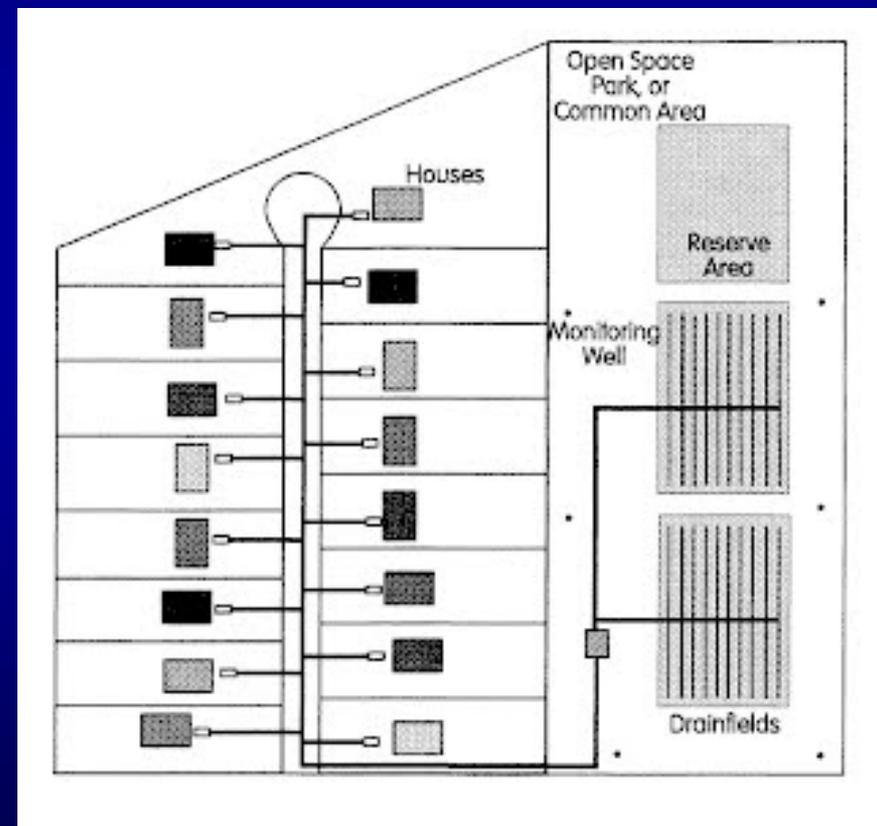


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Communal Systems

Referred to in the Rules as **Multi-User Systems**.

These are systems designed to serve three or more parcels with structures under individual and separate ownerships, and when the disposal system is not owned entirely by one of the parties.



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Ownership of all parts of the multi-user system beyond the building sewer must be vested in a single and independent, legally established entity under Maine law, similar to condominiums.

The entity shall be liable for the operation, maintenance, repair, or replacement of all parts of the system beyond the individual building sewers.



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Multi-user systems are suited for areas with dense existing development, small lot sizes, and limited soils such as communities along coastal peninsulas.

Generally, a suitable site for the common disposal area would be identified. Each structure would have its own septic tank and lift station (if needed). Everything from the building sewer (2 feet beyond the structure) to and including the disposal area would be the responsibility of the entity.



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The entity shall have the right by easement to enter upon properties that are tied to the system for the purpose of servicing, maintaining, repairing, or replacing all parts of the common system.

The entity may charge a maintenance or other fee to assure sufficient capitalization to meet its responsibility to maintain the multi-user system.



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Advantages

Centralized system

Repair & maintenance is assured

Lessens distributed impact of clustered development

Disadvantages

Maintenance fee

Legal setup costs

Requires relatively large area for disposal area installation



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Miscellaneous Systems

Aerated Systems

Tertiary Systems

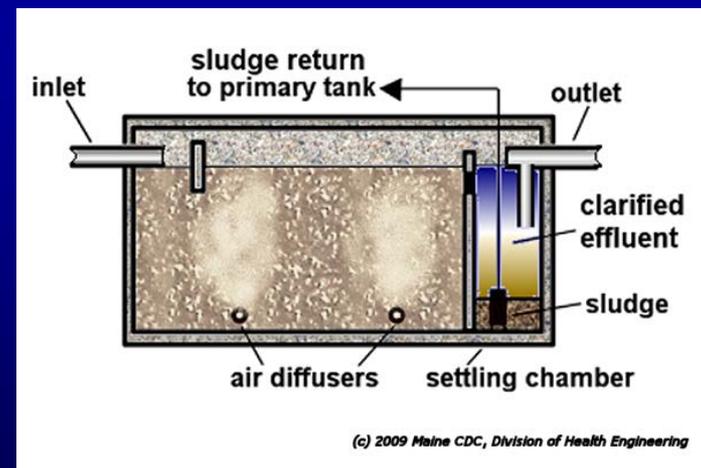
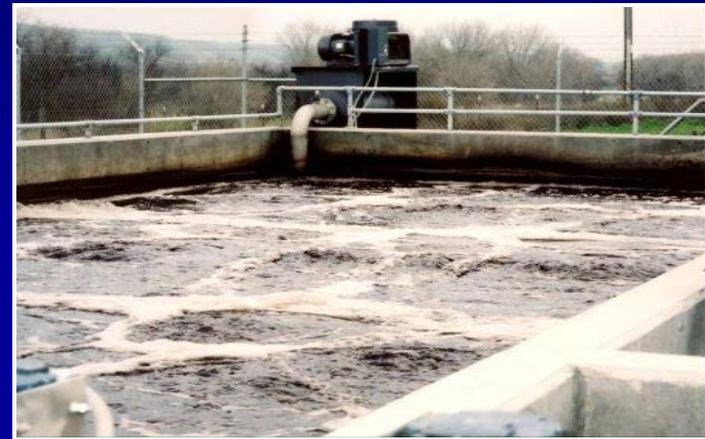
Constructed Wetlands

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Aerated Systems

Aerobic treatment units utilize an aerobic (oxygen rich) process, and remove substantial amounts of BOD₅ and TSS not removed by primary treatment. This is called secondary treatment

Aerobic treatment units (bottom) can be thought of as small scale versions of municipal treatment plants (top). They use the same underlying process of oxygenation of the wastewater to promote microbial treatment.



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The primary advantage of aerobic treatment is that the low nutrient, high D.O. effluent requires a much smaller disposal area. In many cases, the disposal area size can be reduced by as much as 50%.

This often allows a system to be installed on a lot with a limited area for system use.



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Tertiary Systems

Tertiary treatment is defined as anything more advanced than primary and secondary treatment.

If it is sufficiently clean, tertiary effluent from municipal treatment plants can be used for groundwater recharge or agricultural purposes in some states, usually in the Southwest.



Orange County (CA) Sanitation District groundwater reclamation facility-micro filtration, reverse osmosis, & UV disinfection.

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The sole form of tertiary treatment available for on site use in Maine is the Busse MF System. It consists of two cabinets, one of which aerates wastewater and provides storage while the other contains reverse osmosis membrane filters. The filters eliminate suspended material, even microbes, ensuring that only clear, odorless water (permeate) leaves the system. The manufacturer claims rain water quality for the permeate.



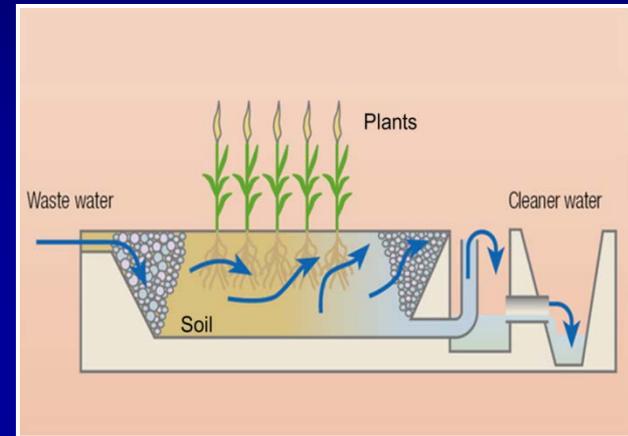
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Constructed Wetlands

A constructed wetland system is an artificial wetland, marsh or swamp created to treat stormwater runoff or wastewater.

The wetland system acts as a biofilter, removing pollutants from the wastewater.

Constructed wetlands also provide habitat for native and migratory wildlife.

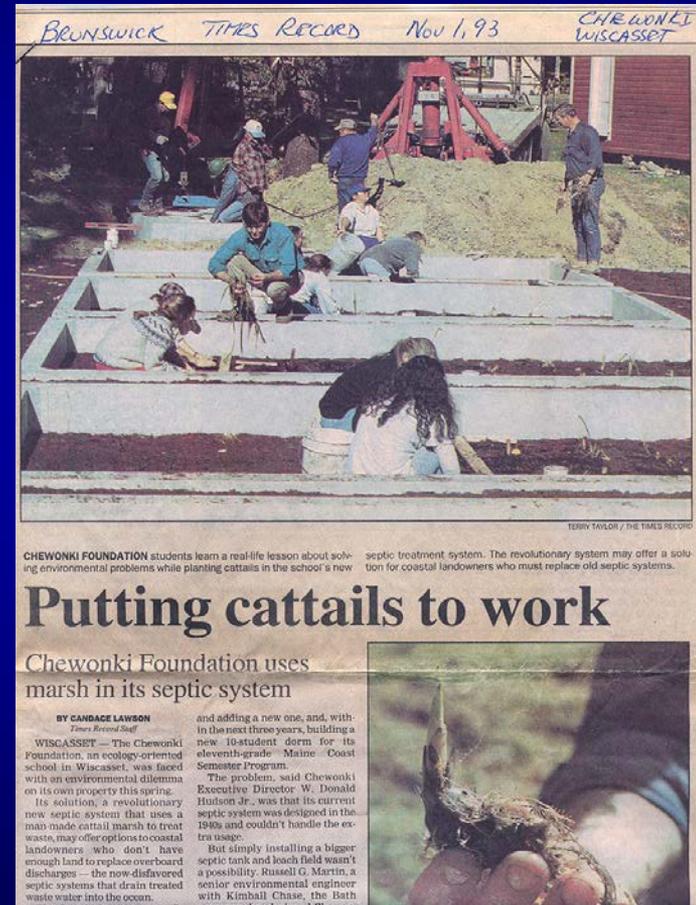


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In 1993 the Chewonki Foundation received approval for a constructed wetland system. The system used the lower portion of a concrete septic tank, and cattails as the vegetation.

The Division reviewed and approved this due to the disposal of filtered effluent in a downsized plastic chamber disposal area.

This appears to be the only such system approved by the Division.



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Other Methods

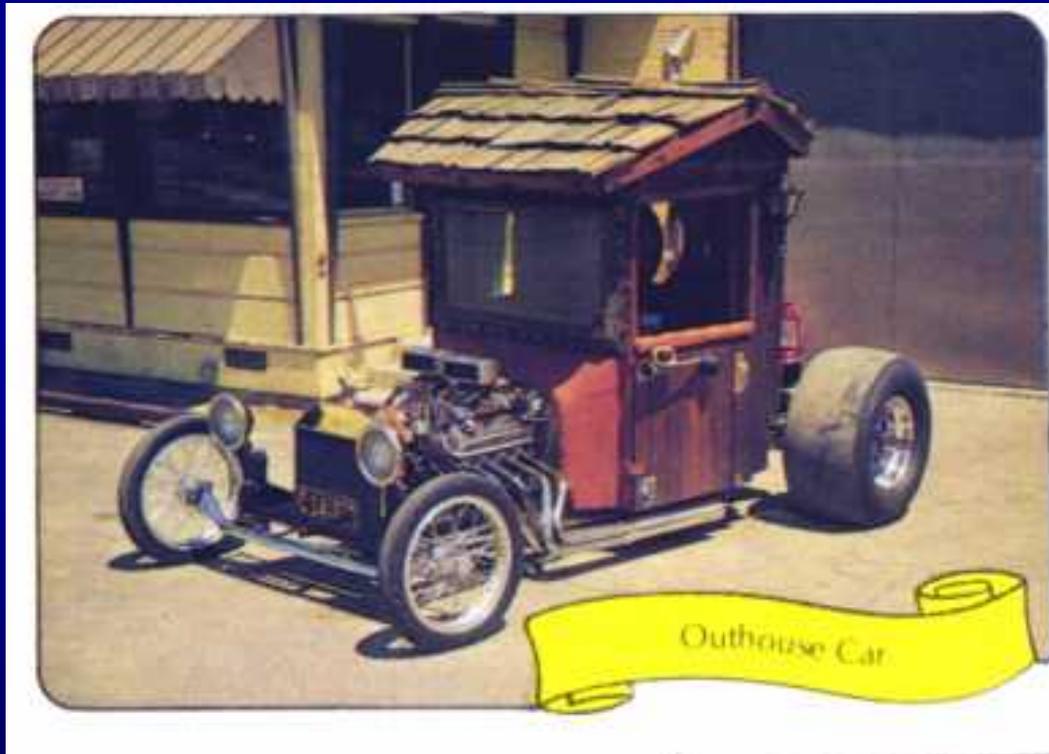
Overboard Discharge Systems. Regulated by MDEP regardless of treatment method.

Spray and surface irrigation. Regulated by MDEP regardless of treatment method.

Re-use of greywater as nonpotable supply for flushing, etc. Regulated by the Plumbers Examining Board via the Internal Plumbing Rules. Needs completely separate plumbing system.

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THE END



Mobile Wastewater Disposal Unit
JETCC

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www.mainepublichealth.gov/septic-systems

The screenshot shows a web browser window displaying the Maine CDC website. The page title is "Subsurface Wastewater Unit, Division of Environmental Health, Maine CDC - Mozilla Firefox". The URL in the address bar is "www.maine.gov/dhhs/mecdc/environmental-health/plumbj/index.htm". The page content includes the Maine.gov logo, navigation links, and a search bar. The main heading is "Maine Subsurface Wastewater Unit". The text describes the state's reliance on decentralized sewage disposal facilities and the role of the Maine Center for Disease Control and Prevention (MeCDC) in regulating septic systems. A sidebar on the left lists various resources like "About Us", "Forms", and "Links". A sidebar on the right lists "Featured Links" such as "Online Rules" and "Public Swimming Pools". The bottom of the page shows a Windows taskbar with the Start button and several open applications.

Subsurface Wastewater Unit, Division of Environmental Health, Maine CDC - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Subsurface Wastewater Unit, Division of En...

www.maine.gov/dhhs/mecdc/environmental-health/plumbj/index.htm

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Division of Environmental Health Contact Us | News | Online services | Publications | Subject index

Maine Center for Disease Control & Prevention
A Division of the Maine Department of Health and Human Services

Maine CDC Home Health Topics A-Z Data/Reports For Health Care Providers For Businesses For Homeowners/Renters Divisions/Programs

DHHS → MeCDC → Environmental Health → Maine Subsurface Wastewater Unit → Home

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Maine Subsurface Wastewater Unit

Maine is a predominantly rural state, and relies heavily on decentralized sewage disposal facilities for disposal of human waste, i.e., septic systems. The State of Maine has regulated septic systems since 1926, to varying degrees. Over the years, the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules) in their various versions have been administered by the Maine Center for Disease Control and Prevention (MeCDC) and its predecessors.

The MeCDC has been and continues to be responsible for the Rules because they have historically been viewed as a public health code, rather than an environmental regulation.

The Subsurface Wastewater Unit, within the MeCDC's Division of Environmental Health, promulgates and administers the Rules. Our mission is to minimize health and safety hazards associated with improperly installed subsurface waste water disposal systems.

What's New at the Subsurface Wastewater Unit

On this page:

- Family Burying Grounds
- Health Inspection Program Holding Tank Policy
- Fillable Online HHE-200 Page One Available
- Recently Approved Products
- Elimination of Permit Labels

Maine Subsurface Wastewater Unit

- About Us
- Forms
- Links
- Lists
- Newsletters
- Policies
- Publications
- Training

Featured Links

- Online Rules
- Variations
- Site Evaluator Licensing
- Frequently Asked Questions
- Ten Tips for Systems
- Cemeteries and Crematoria
- Certifications
- Public Swimming Pools
- 2001 DHS & DEP Programs Review

Online Services

- Publications Order Form
- Record Search Form
- Water Records

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