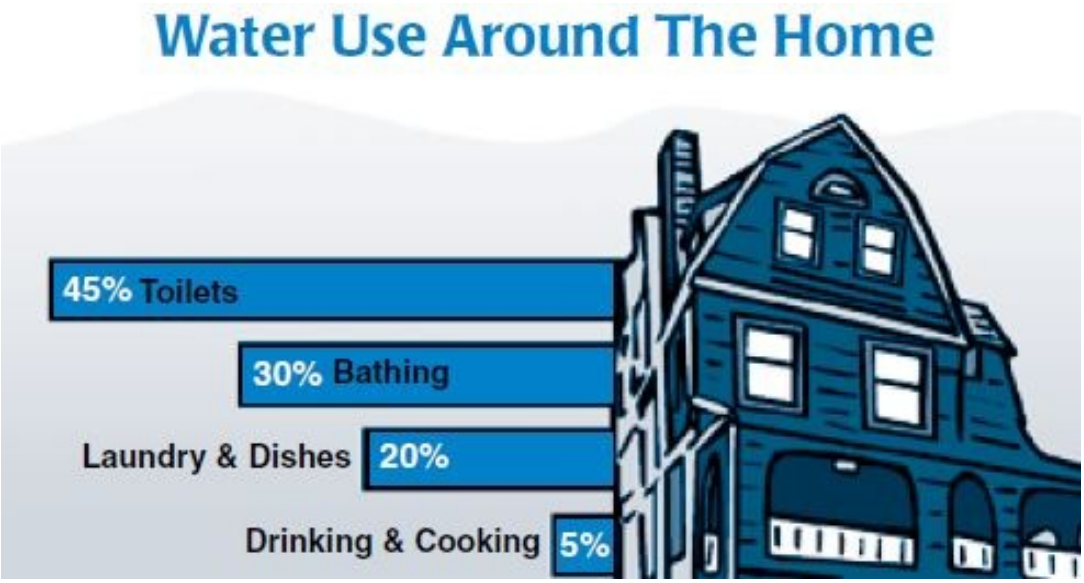
SEPTIC SYSTEMS
A GUIDE FOR LEELANAU COUNTY HOMEOWNERS

Buried beneath your back yard, it is out there constantly working. When you're at work, it is working. When you're eating dinner, it continues working. When you're sleeping, it's still out there in the dark working. What is it? Your septic system. It may be the most overlooked and under-valued utility in your home, but with proper care and maintenance, your septic system can continue to work for you for at least 25 to 30 years.

If you are like most homeowners, you probably never give much thought to what happens when waste goes down your drain. But if you rely on a septic system to treat and dispose of your household waste water, what you don't know can hurt you.

Proper operation and maintenance of your septic system can have a significant impact on how well it works and how long it lasts, and in Leelanau County, as in most communities, **septic system maintenance is the responsibility of the homeowner.**



Preventing ground water pollution from failing septic systems should be a **priority** of every community and every homeowner. Contamination of the ground water source can lead to pollution of local wells, lakes, streams and ponds – exposing family, friends and neighbors to waterborne diseases and other health risks.

When a septic system fails, inadequately treated domestic waste can reach the ground water. Bacteria and viruses from human waste can cause dysentery, hepatitis, and typhoid fever. Many serious outbreaks of these diseases have been caused by contaminated drinking water.

Nitrates and phosphates, also found in domestic wastewater, can cause excessive algae growth in lakes and streams called algal blooms. These blooms cause aesthetic problems and impair other aquatic life. Nitrate is also the cause of methemoglobinemia, or blue baby syndrome, a condition that prevents the normal uptake of oxygen in the blood of young babies.

A failing system can also lead to unpleasant warning signs, such as pungent odors and soggy lawns.

Why Maintain Your System?

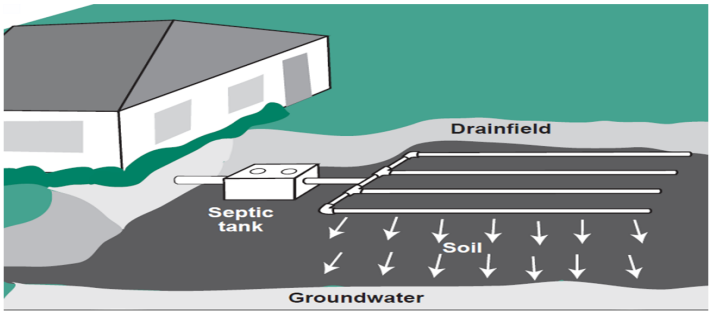
The first and most important reason to properly maintain your system is the health of your family, your community, and the environment. When septic systems fail, inadequately treated household wastewater is released into the environment. Any contact with untreated human waste can pose a significant risk to public health. Untreated wastewater from failing septic systems can contaminate nearby wells, groundwater, and drinking water resources. Chemicals improperly disposed of through a septic system also can pollute local water resources and contribute to early system failures. For this reason it is important for homeowners to educate themselves about what can and what cannot be disposed of through a septic system.

The second reason is money. Failing septic systems are expensive to repair or replace, and improper maintenance by the homeowners is common cause of early system failure. The minimal amount of preventive maintenance that septic systems require costs very little in comparison to the cost of a new system. For example, it typically costs from $3,000 to $10,000 to replace a failing septic system, compared to $100 to $300 every three to five years to have a septic system routinely pumped and inspected.

A third reason to maintain your septic system is to maintain the economic health of your community. Failing septic systems can cause property values to decline. Sometimes building permits cannot be issued for these properties. Also, failing septic systems may contribute to pollution of local lakes, rivers, and shoreline that our communities use for recreational and commercial use such as water sports, vacation rentals, and tourism. The economic viability of our area would be compromised by this pollution, as the major part depends upon our natural beauty and clean water.

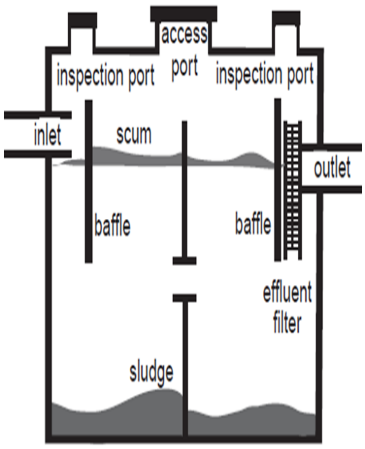
Septic System Components

The septic system components consist of two basic parts: a **septic tank** designed to intercept, hold and partially treat solids contained in wastewater coming from the home, and a **drain field** to facilitate treatment and dispersal of clarified water after it leaves the septic tank.



How a Septic Tank Functions

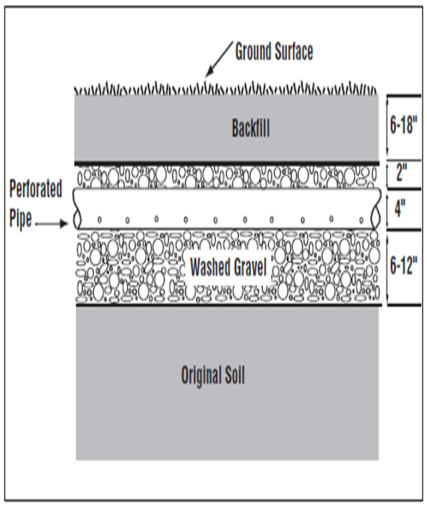
The typical septic tank is a large, buried, rectangular or cylindrical container made of concrete, fiberglass or polyethylene usually located 10 or more feet from the point where the sanitary drain leaves the house. Wastewater from your bathroom, kitchen, and laundry flows into the septic tank. There, heavy solids settle to the bottom where bacterial action partially decomposes the solids into sludge and gases. The lighter solids, such as fats and greases, rise to the top and form a scum layer. The partially treated effluent then leaves the septic tank and flows to the drain field. Septic tanks have one or two compartments specifically designed to capture the solids and prevent them from entering the drain field.



Two compartment tanks do a better job of capturing the solids. Tees and baffles are essential parts of the septic tank. Some tanks are equipped with an inlet tee or baffle to slow down the incoming waste and direct it downward. The outlet tee or baffle prevents floating solids or scum from leaving the tank and then clogging the drain field. Some tanks are also equipped with an effluent filter to further prevent the movements of solids to the drain field. All septic tanks should have accessible covers for checking the condition of the baffles and for pumping out the accumulated sludge and scum material. **If accumulated solids are not regularly removed from the septic tank, they will overflow into the drain field and cause premature failure of the drain field resulting in costly repairs or replacement.**

How a Drain Field Functions

The drain field receives partially treated effluent from the septic tank. It consists of a network of perforated pipes laid in gravel-filled trenches about 2 to 3 feet wide and 6 to 18 inches (or more) deep. The size and type of drain field are determined by the estimated waste-water flow and local soil conditions. Wastewater trickles out of the perforated pipes, through the gravel layer and into the soil.



Physical and biological purification processes take place as the effluent percolates down toward groundwater. These processes work best where the soil is somewhat dry and permeable and contains plenty of oxygen for several feet below the drain field. Some systems include a dosing chamber or distribution box in the pipe leading to the drain field for regulating the release of wastewater into the drain field. This promotes optimal treatment and dispersal of the water and prolongs the life of the drain field. The lifespan of a well-maintained system can be 20 to 30 years or more.

Septic Tank and Drain Field Maintenance

Regular servicing of the septic tank is **the single most important maintenance requirement** of a septic system. Required frequency of service depends on the tank size, the number of persons in the household and whether occupants are minimizing the release of unnecessary solids into the wastewater. **Most septic tanks should be pumped every three to five years.**

Contact a licensed septic cleaning service to pump the tank when the sludge level exceeds 1/3 of the tank's volume. Heavy or year-around use will necessitate more frequent pumping than the light or seasonal use.

How do I determine when to pump? Most homeowners prefer to give this responsibility to a reputable septic pumping firm. Its representative will periodically check your system to determine the rate of solids accumulation and design a pumping schedule tailored to your situation.

Estimated septic tank pumping frequencies in years. These figures assume there is no garbage disposal unit in use. If one is in use, pumping frequency may need to be increased.
(Source: Pennsylvania State University Cooperative Extension Service.)

Tank Size (gals.)	Household Size (number of people)					
	1	2	3	4	5	6
500	5.8	2.6	1.5	1.0	0.7	0.4
750	9.1	4.2	2.6	1.8	1.3	1.0
900	11.0	5.2	3.3	2.3	1.7	1.3
1000	12.4	5.9	3.7	2.6	2.0	1.5
1250	15.6	7.5	4.8	3.4	2.6	2.0
1500	18.9	9.1	5.9	4.2	3.3	2.6
1750	22.1	10.7	6.9	5.0	3.9	3.1
2000	25.4	12.4	8.0	5.9	4.5	3.7
2250	28.6	14.0	9.1	6.7	5.2	4.2
2500	31.9	15.6	10.2	7.5	5.9	4.8

Should I use special products to enhance the operation of my septic tank? No. Though many products claim to improve septic tank performance or reduce the need for routine pumping, they have not been found to make a significant difference. Some of these products can actually cause solids to be carried into the drain field and lead to premature clogging.

How do I locate the system? Even a professional may have trouble locating the system. One way to start looking is to go in the basement and determine the direction of the sewer pipe as it goes out the wall. Back outside, the inspector will use an insulated rod to locate the buried piping. Once the system components are found be sure to sketch a map and keep it on hand to save time on future service visits.

Signs of system failure

- Odors, surface sewage, wet spots or lush vegetation on or near the drain field.
- Plumbing or septic tank backups.
- Slow draining fixtures.
- Gurgling sounds in the plumbing system.
- If you notice any of these signs or if you suspect any other problems with your septic system contact a sanitarian or your septic system contractor for assistance.

Recommendations

- **Minimize the amount of water entering your system.** Practice water conservation by installing water saving fixtures in your home in order to use the least amount of water to get the job done. Repair leaky faucets and toilets and when possible keep water softener backwash out of your septic system.
- **Don't do load after load of laundry.** This does not allow your septic tank to adequately treat wastes and you could be flooding your drain field without allowing sufficient recovery time. Try to spread out laundry throughout the week.
- **Avoid using a garbage disposal unit.** Make compost out of vegetable wastes, coffee grounds, eggshells, and other compostable wastes.
- **Eliminate release of non-degradable materials.** Fats, paper towels, hair, Q tips, tampons, sanitary napkins and disposable diapers should not be put in your system. **The only things that should be flushed down a toilet are waste water and toilet paper.**
- **Don't drive or park vehicles on any part of your septic system.** Doing so can compact the soil in your drain field or damage the pipes, tank, or other septic system components. **Plant only grass** over and near your septic system. Roots from nearby trees or shrubs might clog and damage the drain field.
- **Never release toxic chemicals** such as solvents, disinfectants, oils, paints, paint thinner and pesticides into your system. Use boiling water and a drain snake to open clogged drains instead of caustic drain cleaners. Use commercial bathroom cleaners in moderation. Use mild detergent or baking soda when possible.
- **Do Not Flush Leftover Pharmaceutical Drugs into your septic system.** High concentrations of antibiotics will destroy the beneficial bacteria. There is also the potential for medications to contaminate ground water, as a septic system may not adequately remove them from the waste water.

Contact your Health Department in regards to proper disposal of Toxic Chemicals and Pharmaceutical Drugs.

Tips for Buying or Selling a Home with an Onsite Wastewater System

Ask the right questions. Give the right answers.

In addition to an inspection, you need to ask lots of questions before committing to buying a house with a septic system. Get as much information about the system up front as you can.

- Has there been a history of trouble?
- How often has the system been pumped?
- When was the last time it was pumped?
- How old is the system and when was it permitted?

As the seller, the homeowner should make available all pertinent information about the existing system.

- The age of the system
- The pumping record
- Inspection history
- A sketch of the tank and drain field location on the property.

Inspections reveal the truth. Whether you are buying or selling, an inspection of the home's septic system is highly recommended.

Additional Resources

Leelanau County Health Department: 231-256-0200 or **www.bldhd.org/ehealth.html**
Leelanau County Housing Programs: 231-256-9812 (Help for low & medium income families with failing septic systems.) or **www.leelanau.cc/planhousing.asp**
National Small Flows Clearinghouse: 1-800-624-8301 or **www.nesc.wvu.edu/wastewater.cfm**
Tip of the Mitt Watershed Council: 231-347-1181 or **www.watershedcouncil.org**

Licensed Septic Waste Haulers In Our County

Williams & Bay Pumping Service: 231-228-7499 or 231-947-3535 or **www.williamspumping.com/SepticEducation.html**
Houdeks Pumping: 231-256-9241 or **www.houdekspumping.com**
Decker's Pumping Service: 231-326-6800

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