

**Vermont
Farm*A*Syst**



**Worksheet #6
Assessing the Risk of Groundwater Contamination from**

Household Waste Water

Why should I be concerned?

Virtually all Vermont farms treat household wastewater using in-ground septic systems. The care you take maintaining your system and using it properly can affect ground water quality. Your septic system takes in wastewater from your home and discharges it back into the ground water system.

A typical septic system consists of the following elements:

1. A sewer line that connects the home's plumbing to the septic tank;
2. A septic tank that allows for the settling of solids and provides the initial treatment of the septage. A properly functioning septic tank will reduce pollutant levels and produce an effluent of fairly uniform quality. This is accomplished by providing inlet and outlet baffles to reduce the velocity of liquid moving through the tank *and to prevent solids from leaving the tank.* *Tanks installed since January 1991* now consist of two compartments in order to do *a more effective* job of *attaining* the above objective;
3. A distribution system that directs the flow of effluent from the septic tank to the leaching system in such a manner to insure full utilization of the system. Most systems are "gravity" systems, meaning the flow runs through piping and distribution boxes without the assistance of any mechanical device, such as a pump or siphon;
4. A leaching system, which disperses the sewage effluent into the surrounding natural soils. There are many types of leaching systems. The specific type utilized on a particular property is usually dependent on the soil conditions which exist on the site. Most residential installations utilize stone-filled leaching trenches, but galleries, pits and beds have historically been used.

The effluent contains all of the liquid from your wastewater, which often includes bacteria, viruses, chemicals, and nutrients such as nitrogen and phosphorus. The septic tank removes some wastes, but the septic tank effluent may still contain bacteria, viruses, chemicals and nutrients. The soil drainfield provides further absorption and treatment. If effluent is not treated adequately, its contaminants may threaten ground and surface water quality.

In many areas where people use septic systems they also rely on drinking water from drilled wells, dug wells or springs. A septic system that is improperly sited, maintained or overloaded can discharge bacteria, viruses, nitrates, and hazardous chemicals to ground water - the same water that you and your farm animals may use for drinking water.

Even if your well or your neighbor's well isn't affected, the contaminants in ground water may travel to nearby surface waters such as lakes, rivers or streams. These contaminants can harm lakes, rivers and streams by increasing algae growth and threatening fish.

Your drinking water is least likely to be contaminated by your household wastewater if you correctly site and maintain your septic system.

The goal of Farm-A-Syst is to help you protect the groundwater that supplies your drinking water.

How will this worksheet help me protect my drinking water?

- It will take you step by step through your household waste management practices.
- It will rank your activities according to how they might affect the groundwater that provides your drinking water supplies.
- It will provide you with easy-to-understand rankings that will help you analyze the risk level of your household waste management practices.
- It will help you determine if your current septic system is reasonably safe and effective, and if it might require modification to better protect your drinking water.

Glossary

Household Wastewater Management

These terms may help clarify some of the terms used in this Worksheet.

Septic tank: A tank which separates, stores and begins to treat household waste.

Distribution system: The system which distributes the effluent over a large area of soil.

Leach field: The area in which water is returned to the soil for final filtration by soil organisms and plants.

Sludge: Partially decomposed solids, that settle out, resulting from biological, chemical or physical wastewater treatment.

Effluent: Liquid discharged from a septic tank or other treatment tank.

Septic System Worksheet

Home Activities

Rank 4

Rank 3

Rank 2

Rank 1

Field Number

Septic System Inputs					
Cleaners, solvents and other chemicals	Rare use of household chemicals, no disposal of solvents and toxic cleaners, no water softener.	Careful use of household chemicals, no disposal of solvents and toxic cleaners, no water softener.	Moderate use of household chemicals, no disposal of solvents and toxic cleaners including chemical septic tank cleaners.	Extensive use of household chemicals, moderate/extensive use of toxic solvents and cleaning agents.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Water Conservation	Water conservation fixtures and practices are used. Drips and leaks are fixed immediately.	Some water conservation steps are taken (such as using low-flow shower heads or fully loading washing machines and dishwashers.	Standard high volume plumbing fixtures are used. Water conservation is practiced.	Standard high volume plumbing fixtures are used. Water conservation is not practiced.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Water usage	Laundry and other major water usages are spread out over the week.			Several water-using appliances and fixtures are in use in a short period of time.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Solid Wastes	There is no garbage grinder in the kitchen. No grease or coffee grounds are put down the drain. Only tissue flushed.			There is heavy use of a garbage grinder, and many solids are disposed of down the drain.. Many paper products or plastics flushed.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
SEPTIC SYSTEM DESIGN AND LOCATION					
Capacity of the system	Tank is designed to handle more wastewater than required, based on the size of the home.	Capacity just meets load requirements, but I watch out for factors indicating overload.	Capacity just meets load requirements. No water conservation measures taken.	Bedrooms, bathrooms, or water using appliances are added without looking at capacity of system.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Separation Distance	Drain field is at least 150 feet from any well or surface water.	Drain field is at least 100 [feet] from a well or surface water.	Drain field is between 50 and 100 feet from a well or surface water.	Drain field is less than 50 feet from a well or surface water.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Age of system or holding	System is five years old	System is between six	System is more than	System age unknown.	

Septic System Worksheet

Home Activities

Rank 4

Rank 3

Rank 2

Rank 1

Field Number

tank	or less.	and twenty years old.	twenty years old.		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
SYSTEM MAINTENANCE					
Maps and records	I have a map and good records of repair and maintenance.	The location of my tanks and date of last pumping are known but not recorded.	I'm not sure of the location of my system but know when maintenance has been done in the past.	Location of septic system is unknown. No records are kept of pumping and repairs.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Tank pumping	The septic tank is pumped on a regular basis as determined by an annual inspection, or about every 3 to 5 years.	The septic tank is pumped but not regularly.	The holding tank overflows or leaks between pumpings.	The septic tank is not pumped.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Leach field protection	Vehicles and other heavy objects or activities are kept away from the Leach field area.	The leach field is rarely compacted by heavy objects or activity.	Sometimes the leach field is compacted by heavy objects or activity.	Vehicles, equipment, livestock or other disturbances are allowed in the leach field area.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Plantings over the leach field	Grass or other shallow rooted plantings are over the leach field.			Trees or shrubs are growing over the leach field.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Signs of trouble	Household drains flow freely. There are no sewage odors inside or outside. Soil over the leach field is firm and dry. Well water tests negative for coliform bacteria.	Household drains run slowly. Soil over the leach field is sometimes wet.		Household drains back up. Sewage odors can be noticed in the house or in the yard. Soil is wet or spongy in the leach field area. Well or spring water tests positive for coliform bacteria.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

What do I do with these rankings?

Step 1: Begin by determining your overall well management risk ranking. Total the rankings for the

_____ divided by _____ equals *	
Rankings total from previous page	number of risk ranking categories ranked (11 if ranked all)

categories you completed and divide by the number of categories you ranked:

*Carry your answer out to one decimal place.

Example:
 $26 \div 11 = 2.36$

Use 2.4.

Risk Ranking Description	
3.6 - 4.0 = low risk	1.6 - 2.5 = moderate to high risk
2.6 - 3.5 = low to moderate risk	1.0 - 1.5 = high risk

This ranking gives you an idea of how your well condition, **as a whole**, might be affecting your drinking water. This ranking should serve only as a **very general guide, not a precise diagnosis**. Because it represents an **averaging** of many individual rankings, it can overlook any **individual** rankings (such as 1's or 2's) that should be of concern. (Step 2 will focus on individually ranked activities of concern.)

Enter your boxed well condition ranking in the appropriate place in the table on the front of Worksheet #12. Later you will compare this risk ranking with other farmstead management rankings. Worksheet #11 will help you determine your farmstead's site conditions (soil type, soil depth, and bedrock characteristics), and worksheet #12 will show you how these site conditions affect your risk rankings.

Step 2: Look over your rankings for individual activities.

- **4's - Best:** low-risk practices
- **3's - Provide reasonable groundwater protection:** low- to moderate-risk practices
- **2's - Possibly inadequate protection:** moderate- to high-risk practices
- **1's - Inadequate protection with relatively high groundwater contamination risk:** high-risk practices

Regardless of your overall risk ranking, any individual rankings of "1" require immediate attention. You can take care of some of the concerns right away; others could be major or costly projects, requiring planning and prioritizing before you take action.
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Step 3: Read Fact Sheet #6, "*Improving Household Wastewater Management*," and give some thought to how you might modify your farmstead practices to better protect your drinking water.

For further information contact the Wastewater Management Division
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