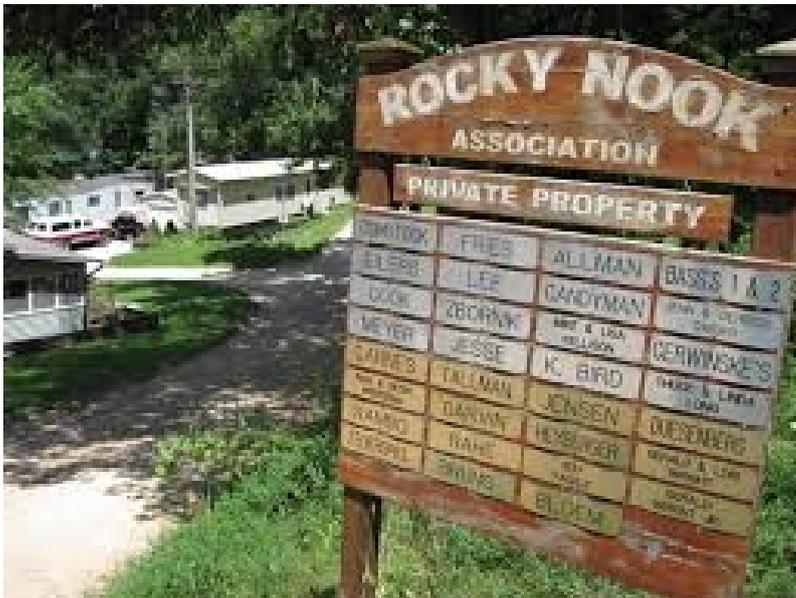


Rocky Nook



Homeowner's Guide Disclaimer

This Homeowner's Septic Guide is intended for information purposes only and is provided as a public service. While the University of Minnesota has made reasonable efforts to ensure the accuracy of the information provided in this homeowner's guide, it is not responsible for any damages resulting from reliance on the information. Please consult a septic professional or permitting agency if you have specific questions about your system and its management needs. The University of Minnesota reserves the right to make additions, changes, or corrections to this guide at any time and without notice.

This operation and maintenance (O&M) guide was developed using a tool funded by the National Institute of Food and Agriculture and created by the University of Minnesota. For more information on the University of Minnesota please see H2OandM.com and www.septic.umn.edu.

The developer of the guide is Dan Olson. Please contact the developer at daniel.olson@dnr.iowa.gov, (515) 725-8404 for more information or to have this O&M guide updated.



This community system owner's guide is for Rocky Nook.

This guide was created on September 28, 2015.

The septic system is located at Lake Delhi, Manchester IA USA 52057.

Your system has an easement for access to the system for monitoring and maintenance. permission to service textile pods.

Primary Contact for your system: Dan Olson.

Phone: (515) 725-8404

Email: daniel.olson@dnr.iowa.gov

Mailing Address: 502 E 9th St, Des Moines IA USA 50319

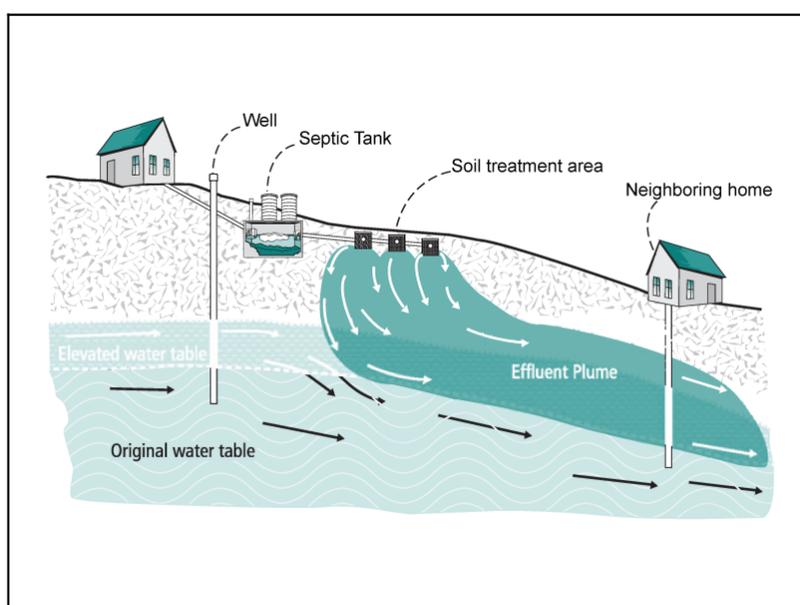


Introduction

This community septic system owner's guide will help you:

1. understand the basic principles of how your septic system works,
2. learn how to operate your system efficiently and effectively,
3. know how to maintain the system to prevent costly repairs and water contamination,
4. resolve problems with the system, and
5. know where to go if you need more information or assistance.

Health and safety - Why we need good wastewater treatment

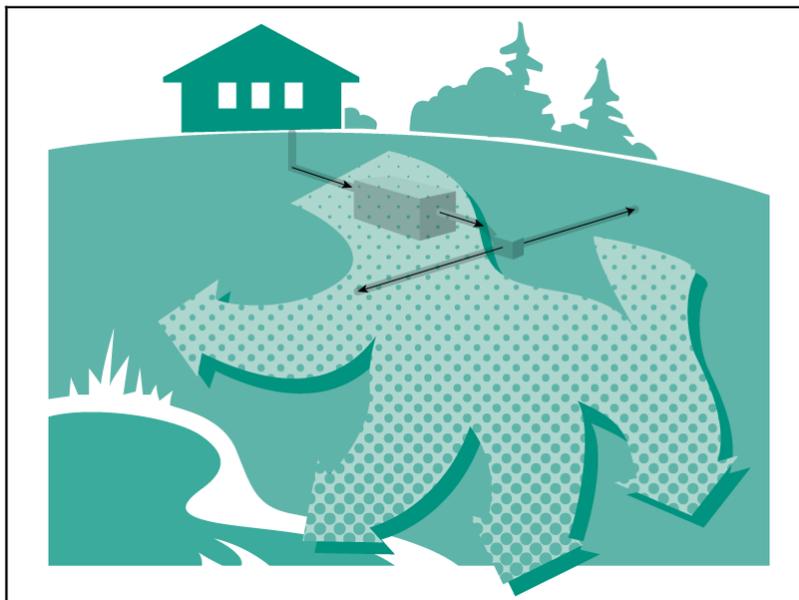


A wastewater system is professionally designed to treat wastewater for a specific home, business or group of properties. Proper treatment of wastewater recycles water back into the natural environment with reduced health risks to humans and animals and also prevents surface and groundwater contamination as shown in the figure.

Wastewater management involves:

- collection and transport of wastewater to a treatment process,
- removal of the waste products that are suspended and/or dissolved in the water,
- returning the water back to the environment, and
- management of processes to ensure that a wastewater system is fully functional.





The primary goal of all wastewater management systems is to remove waste products from water and to safely return the water back into the environment. Every day, society generates a significant volume of wastewater because we depend on water to transport wastes away from our bodies, our clothes, and our homes. Once water comes in contact with waste products, the water becomes wastewater. It contains pathogens (viruses and bacteria), solids, nutrients and other waste products we add into the system as demonstrated in the diagram. This wastewater can impact the quality of ground and surface water resources. Used water does not simply go away. We must clean it before we can safely recycle it back into the natural environment. Proper handling and treatment of wastewater will protect our waters and ourselves from contamination.

Risks to human and animal health

It is unhealthy for humans, pets, and wildlife to drink or come in contact with surface or groundwater contaminated with wastewater. Inadequate treatment of wastewater allows bacteria, viruses, and other disease-causing pathogens to enter surface and groundwater. Hepatitis, dysentery, and other diseases may result from pathogens in drinking water. Disease-causing organisms may make lakes or streams unsafe for recreation. Flies and mosquitoes that are attracted to and breed in wet areas where wastewater reaches the surface may also spread disease.

Inadequate treatment of wastewater can raise the nitrate levels in groundwater. High concentrations of nitrate in drinking water are a special risk to infants. Nitrate affects the ability of an infant's blood to carry oxygen, a condition called methemoglobinemia (blue-baby syndrome).



Risks to the environment

A septic system that fails to fully treat wastewater also allows excess nutrients (phosphorus and nitrogen) to reach nearby lakes and streams, promoting algae and plant growth. Algal blooms and abundant weeds may make the lake unpleasant for swimming and boating, and can affect water quality for fish and wildlife habitat. Many synthetic cleaning products, pharmaceuticals, and other chemicals used in the house can be toxic to humans, pets, and wildlife. If allowed to enter a septic system, these products may reach groundwater or nearby surface water.

Treatment options

There are two primary methods to treat and disperse wastewater back into the environment - centralized and decentralized. It is easy to describe a centralized approach to wastewater management - all the community's wastewater drains to a common collection network and is transferred to a centralized treatment and disposal facility. With a decentralized approach, the wastewater treatment infrastructure is distributed across a community. This may be accomplished by building individual onsite septic systems, having small residential clusters of homes on shared systems, and/or by some combination of both to serve multiple wastewater management zones. This guide will focus on YOUR decentralized septic system.

A properly designed, installed, operated and maintained septic system will provide economical and effective wastewater treatment. Pathogens and solids are removed and destroyed by filtration and naturally occurring microscopic organisms. Nutrients are removed, absorbed by soil particles or taken up by plants.



Organization of the System

Basic System Information

Number of Properties or Structures

There are 32 home(s) or commercial properties/buildings hooked up to the septic system.

Daily Design Flow for the System

Your system was designed for a maximum flow of 3200 gpd. Your average flows should be 70% of this value or less for system longevity. Check with your septic system professional to determine your average flows.

Population

There are 64 people connected to this septic system. If the number or type of users changes, you should inform your septic system professional to determine if changes in your system or management are needed.

Initial Construction Date

Your system was constructed in 6/30/15.

Repairs

No repairs have been made.

Sources of Drinking Water

Water Main or Branch Water Line Location

Your property is served by a water main or branch water line located 10 feet or more from collection lines.

Public or Private Water Supply Well Location

Your property has a public or private water supply well located - at least 50 feet from private wells and 175 feet from the public well.

Regulatory Body

County Permit

Your system has a county permit: 0001-14.

Local Permit

Your system has a local permit: Delaware County.



Additional Assistance and Contacts

Key People & Contact Information				
Type	Name	Website	Phone Number	Email
Service Provider	Roger Groth		563-927-5823	grothservices@hotmail.com
Local regulator	Dennis Lyons		563-927-5925	dlyons@co.delaware.ia.us



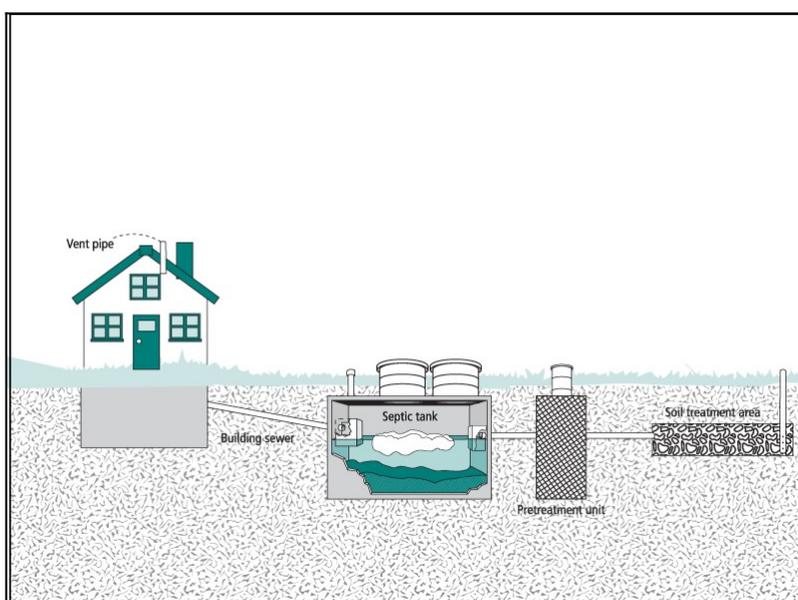
Wastewater Treatment System

Location

This section provides site-specific information about your system's location.

Diagram of the System

The system's location in relation to your property is critical information. The arrangement of system components may affect the operation and maintenance of the system and the use of the property for other purposes.



Shared systems between homes and river

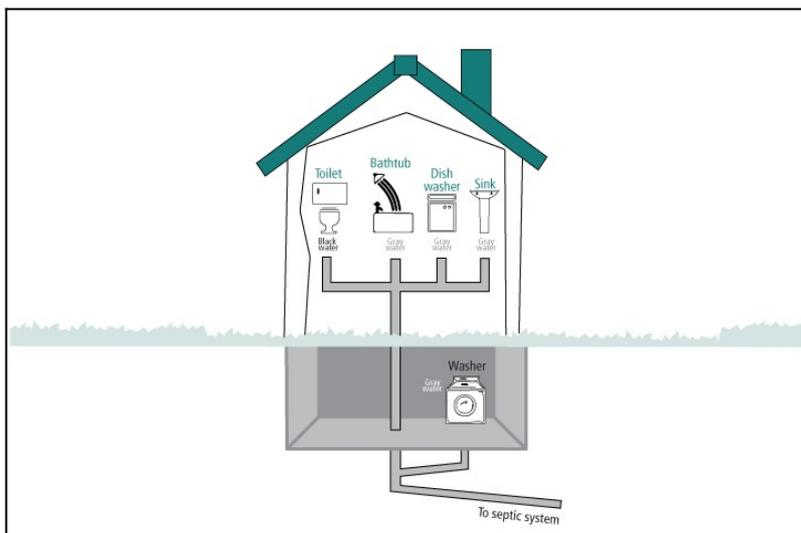
Sources

All wastewater treatment systems, both individual onsite and municipal, are designed for a specific capacity, flow and type of wastewater. There are many variations in how health jurisdictions regulate these discharges and you should contact them to determine your options (see Additional Assistance - Regulatory). All wastewater in a home must be treated including both black and gray water as shown in the figure.

Residential

You have residential system which collects, transports and treats normal domestic wastewater.





System Setbacks

Your system has been located so that it does not adversely affect neighboring property or the local environment. Such 'setbacks' are part of your local regulations. Here are the relevant setbacks and easements for your system:

Setbacks from the System	
Component	Setback from system
Rivers/streams	25 ft.
Water main	10 ft.
Public well	175 ft.
Service water main	10 ft.
Structures with no foundations below ground	10 ft.
Dam	100 ft.
Private wells	50 ft.



Expenses

Various System Expenses

All waste water treatment systems, both individual onsite and municipal have capital costs, replacement costs, administrative costs plus operation and maintenance costs. All wastewater treatment systems require regular maintenance.

Capital expenses are the costs of a new system including the cost of design, permitting, purchase of collection and treatment components, land and installation. For example the capital expense of a new septic system may be \$3,500 - \$20,000+ for a single family home.

Replacement expenses include both the costs to keep the system running plus possibly repeating the capital costs in the future. This also includes the costs of replacing and repairing parts in the system i.e. pumps, wiring, switches etc.

Administrative costs are all the fees and reporting costs associated with your system such as permitting, reporting, and billing.

Final costs include the actual care, operation and maintenance of the system. These include regular service visits and all the activities to keep your system technology working. The specifics will be identified later.

Capital Expense

The capital expense of your septic system is \$75,000.

Annual Scheduled

The anticipated replacement expense of your septic system is \$3750.

Annual Unscheduled

Unscheduled replacement expenses of your septic system is \$500.

Scheduled

This system has an operation and maintenance contractual agreement to provide regularly scheduled service at an estimated cost of \$1000 per year.

Electrical for the System

This system includes electrical components. The cost to operate your electrical components is estimated at \$250 per year.



Estimated Unscheduled

Emergency electrical service may be billed at a higher rate. In the event of a weather emergency, the addition of a backup generator may be necessary and will incur a fee. The unscheduled expenses for this system are estimated at \$500 per year.

Administrative Expense

If this location is part of a managed community system, a portion of your bill goes to cover administrative services. The administrative fee per year for your system is \$500.

Rates/fees

This system is part of a managed community system and properties pay a usage fees of \$25.

Terms of Payment (Frequency)

Your payments are due monthly.

Submittal of Fees

Your fee should be sent to Rocky Nook Association.



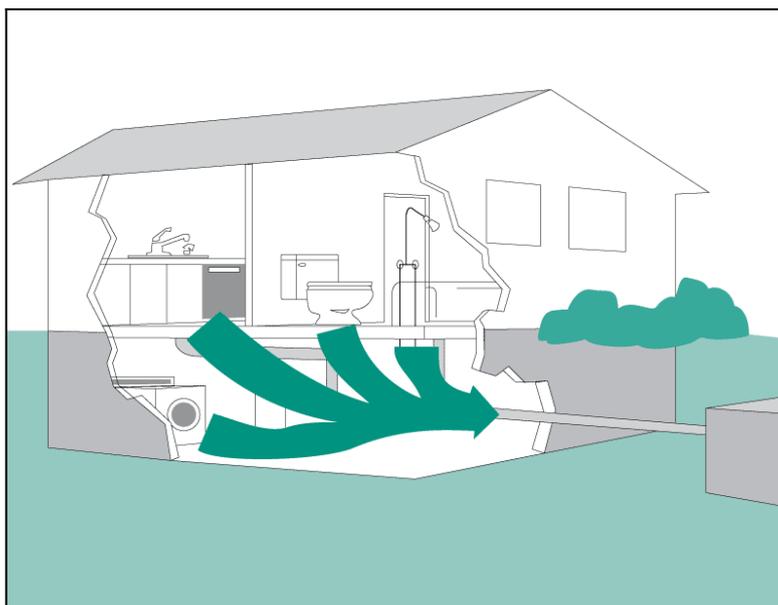
Interior Plumbing

Wastewater Treatment Plumbing

Plumbing is the system of pipes, drains fittings, valves, valve assemblies, and devices installed in a building for the distribution of water for drinking, heating and washing, and the removal of wastes. The wastewater is taken away by a system of gravity, pumps and connections, also called 'traps'. Traps retain a small amount of water which acts as a barrier preventing gasses from coming back into your home. In most cases, both incoming and outgoing piping has shut off valves and stop cocks.

Gravity

Gravity is by far the most common means of taking wastewater out of your home: flushed toilets, showers and sinks travel down in pipes from the upper floors and sloped pipes from the main floor kitchen, laundry leave the building to collection and treatment



Non Sewage Discharges

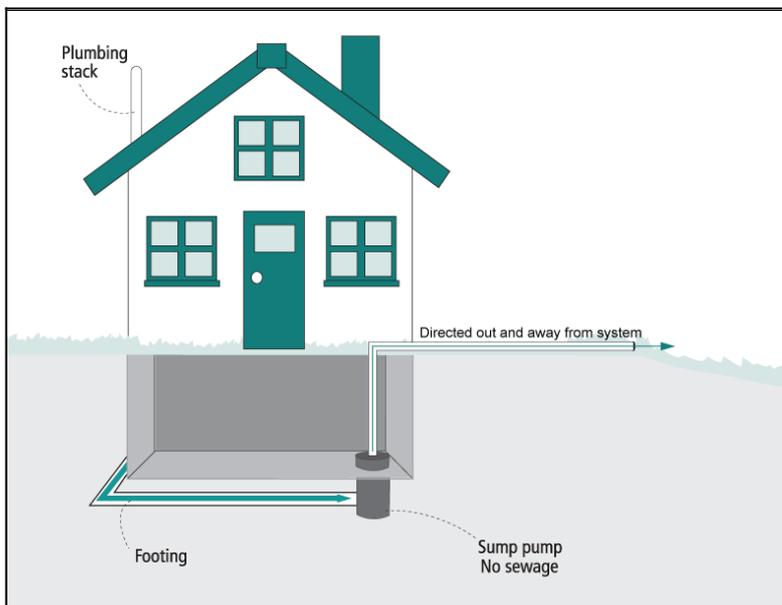
The following are considered unacceptable discharges from your home that will increase excess flow to the system. Each should be routed out of your collection system if present. There are many variations in how jurisdictions regulate these discharges and you should contact your regulator or designer to determine your options.

Sump Pumps (Clearwater)

Your system has a sump pump. Sump pumps can discharge 100s or



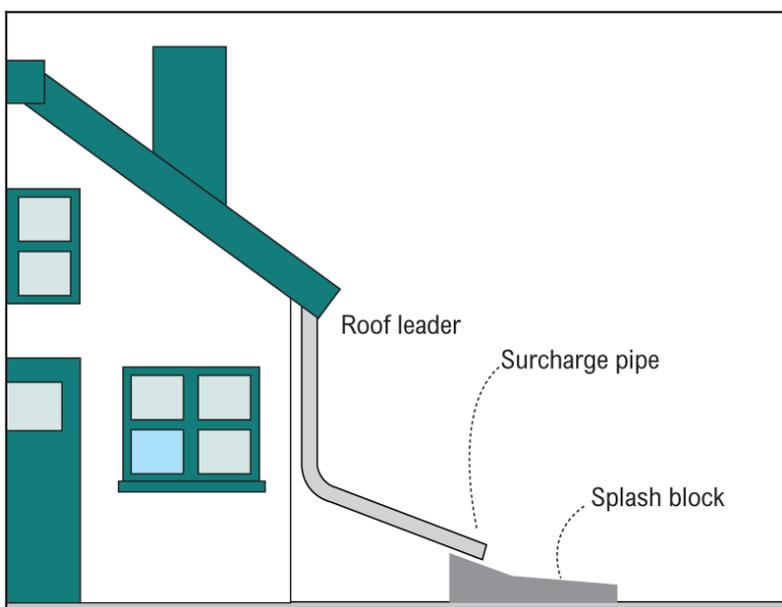
1,000s of gallons of water in a very short period of time. This water should not enter your treatment system and if there is a surface discharge it should be directed away from the system components.



Discharge sump pump separately and away from septic system

Rain Gutters

Your home(s) or structure(s) have roof rain gutters. To prevent an unacceptable discharge to your system they should be directly away from your system.



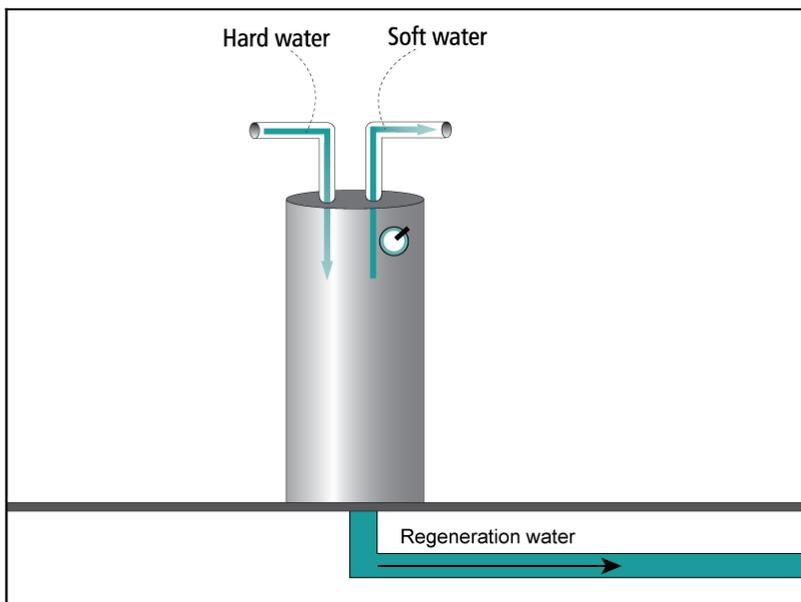
Diverted down spouts away from system



Water Treatment Devices

Water Softener

Your system has a water softener. Please refer to your owner manuals for proper use and operation. The regeneration water can be negative for septic system from both a quantity and quality standpoint. It is recommended that this regeneration water not be routed to your septic system. Check with your local regulations to determine an alternative location.



Divert softener discharge away from system

Access to the Plumbing

Type of Access

Your plumbing system is accessible with a cleanout. Access to household plumbing upon request.

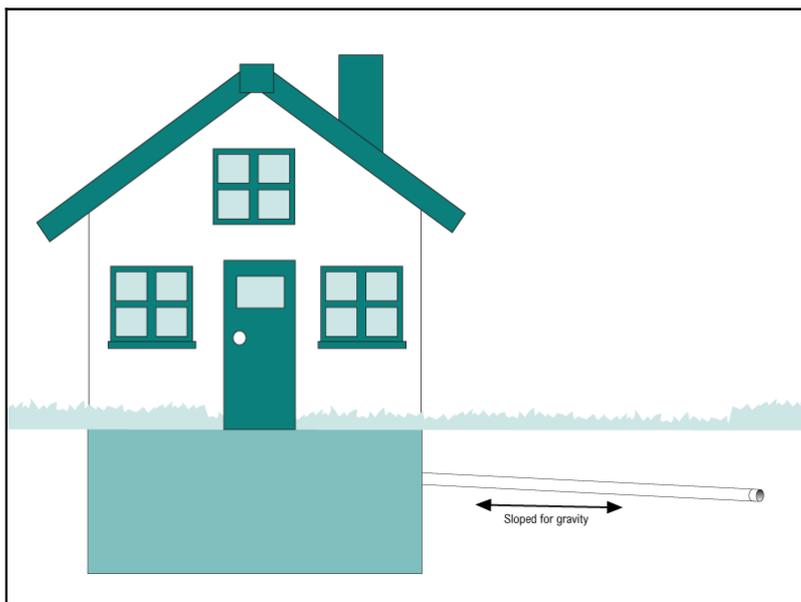


Collection of Wastewater

Your Collection System

Gravity

You have a gravity flow collection system. This means that as the piping leaves the home(s) or structure(s) the pipes are sloped appropriately to have drainage towards the septic system.



Homes gravity flow to septic tanks



Access

All systems require regular maintenance service. It is important to know where the access points are and how to reach them.

Access Type

There are clean outs, textile filter pod lids and tank lids.

Location

Collection System Location

Your treatment system is located partly within and outside your property boundaries.

Easement for Access

There are recorded easements for access to perform service or periodic inspections on the system. There is an agreement for access to service.

Access Location

The access point for your collection system is located above grade.

The system is accessible at each textile unit, pump station and tank and has an access at the surface.

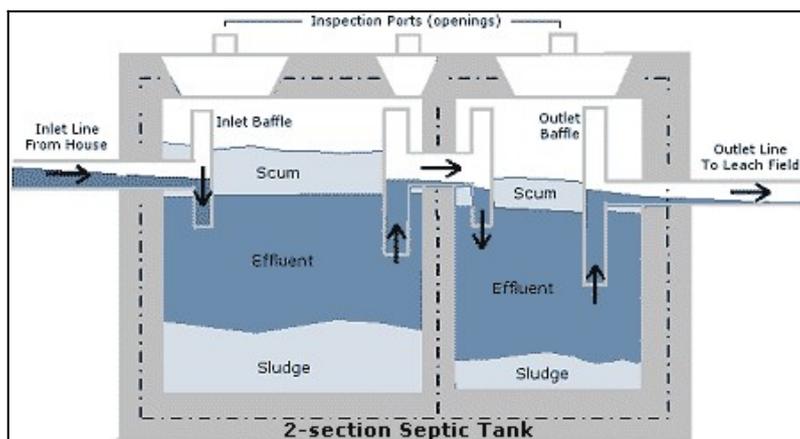


Tanks

Septic Tanks

A septic tank is a watertight, covered receptacle for treatment of sewage from a building. The purpose of the septic tank is to provide an environment for the first stage of treatment in an onsite wastewater treatment system by promoting physical settling, flotation, and the anaerobic digestion of sewage. Additionally, the tank allows storage of both digested and undigested solids until they are removed.

Image



Two compartment septic tank

Location

The location of your septic tank is a combination of on and off your property and is located within the boundaries of the neighborhood. There are three large septic tanks serving all connections.

Material

Your septic tank is made of concrete. In areas of high water tables, tanks can be prone to flotation, so in this situation protection against flotation is needed depending on the weight of the tank, wastewater and soil cover.

Capacity

Your septic tank holds 2000 gallons.

Your septic tank meets local codes.

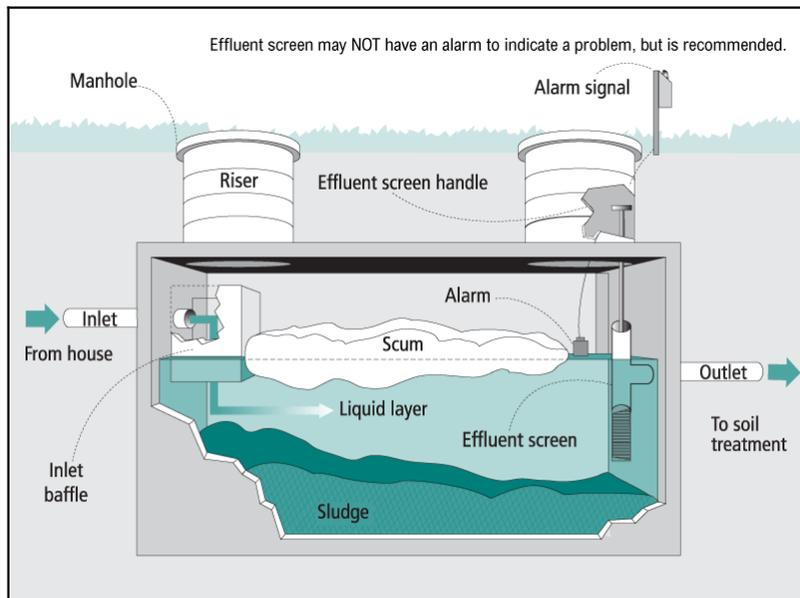
Effluent Screen

Your septic tank has an effluent screen. An effluent screen is a device typically installed in the outlet piping of a tank to keep suspended solids in the tank, thereby protecting your downstream components (typically your



soil treatment area). This effluent screen may have additional maintenance requirements. Check the O&M section for more information.

Screen Alarm



Your septic tank has no high-water alarm. Consider adding a mechanical or electrical alarm to your septic tank as it can notify you BEFORE costly back-ups occur.

Access

The type of access to your septic tank is a tank riser and lid and is above grade which makes maintenance easier to perform.

Access location to the septic tank

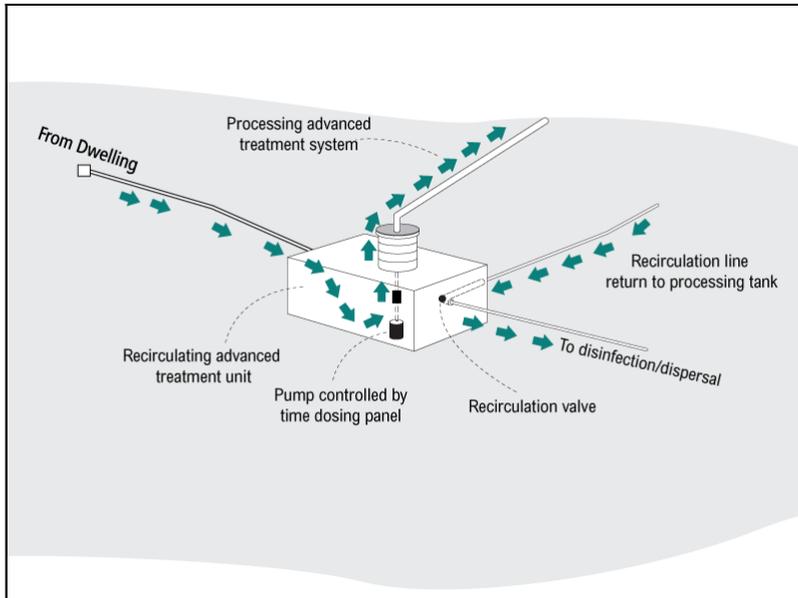
The access is located at the three tank locations throughout neighborhood.



Processing Tanks

A processing tank is a processing tank that receives both the raw sewage from a building and recirculated effluent from a component further in the treatment train in order to enhance nitrogen removal.

Image



Three processing tanks used

Location

Your processing tank is located off your property with 3 processing tanks for 3 textile filters.

Material

Your processing tank is made of concrete.

Capacity

Your processing tank holds 1500 gallons.

Processing tank meets local codes.

Effluent Screen

Your processing tank has an effluent screen. An effluent screen is a device typically installed in the outlet piping of a tank to keep suspended solids in the tank, thereby protecting your downstream components (typically your soil treatment area). This effluent screen may have additional maintenance requirements. Check the O&M section for more information.



Screen Alarm

Your processing tank has a visual high-water alarm. It is located at the control box and via telemetry . Alarms are important because they notify you BEFORE costly back-ups occur and let you know when pumping is required.

Your processing tank has a remote high-water alarm. It is located at the control box and via telemetry . Alarms are important because they notify you BEFORE costly back-ups occur and let you know when pumping is required.

Pump

Your processing tank has a pump. Your pump may have additional maintenance requirements. Check the O&M section for more information.

Pump Alarm

The pump for your processing tank has a visual high-water alarm. It is located at the control box for each processing tank. Alarms are important because they notify you BEFORE costly back-ups occur and let you know when servicing is required.

The pump for your processing tank has a remote high-water alarm. It is located at the control box for each processing tank. Alarms are important because they notify you BEFORE costly back-ups occur and let you know when servicing is required.

Access

The type of access to your processing tank is a tank lid and is above grade which makes maintenance easier to perform.



Advanced Treatment

Recirculating Filters

A recirculating media filter has two components: a recirculation tank and recirculation media filter. Wastewater from the septic tank flows to the recirculation tank and then is dosed into the recirculation media filter where the majority of the treatment takes place. The treated wastewater returns to the recirculation tank where a portion is dosed to the soil treatment area for final treatment and dispersal and the remainder returns to media filter. So the recirculation tank is a blend of wastewater from the septic tank and treated wastewater from the media filter. The recirculation media filter uses coarse sand, gravel, peat, foam, textile, or other media for treating your sewage biologically. The treated wastewater from a recirculating media filter is much cleaner than using a septic tank alone - up to 99% cleaner! If managed, the recirculating filter can also remove a considerable amount of nitrogen.

Recirculating Filters Image



Textile filter

Specific Recirculating Filter Type Information

You have a/an Orenco AX-100 textile filter recirculating filters system.

Location

Your recirculating media filter is located off your property at 3 locations between the homes and river. Be sure the recirculating filters is protected from vehicle or equipment traffic and is accessible for maintenance.



Access

Locating and accessing the recirculating filters is essential for maintenance and the continued proper functioning of the unit. The access to your recirculating filters is at the 3 textile filters between the homes and river.

The type of access to your recirculating filters is a/an textile pod lid and is above grade. Easy access is important for maintenance and the proper functioning of the recirculating filters.

Alarm

Your recirculating filters has a visual alarm located at the control box and includes remote telemetry. Alarms are important because they notify you when your recirculating filters has a problem. This may allow you to find a problem before it becomes worse and more costly to repair.

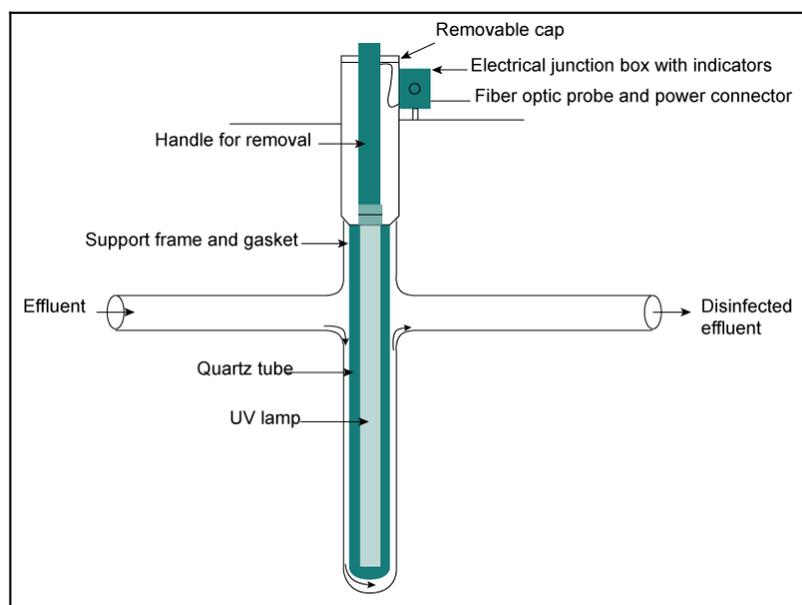
Your recirculating filters has a remote alarm located at the control box and includes remote telemetry Alarms are important because they notify you when your recirculating filters has a problem. This may allow you to find a problem before it becomes worse and more costly to repair.



Ultraviolet Disinfection

Disinfection is the inactivation/destruction of pathogenic organisms to prevent the spread of waterborne diseases. Ultraviolet (UV) radiation can be an effective method of disinfection. In order for disinfection to be effective, the effluent must first be adequately pretreated to remove suspended solids and organic material because these materials can hide the pathogens allowing them to survive. The amount of time that the wastewater is in contact with the UV unit is also important for good disinfection of the wastewater. A variety of UV disinfection systems are available.

General Description



Typical UV light

Uv Disinfection

Specific Uv Brand Information

Your system uses a Salcor UV unit.

Location

Your UV system is located off your property at a location immediately following the textile filters. Be sure the ultraviolet (uv) disinfection is protected from vehicle or equipment traffic and is accessible for maintenance.

Access

Locating and accessing the ultraviolet (uv) disinfection is essential for maintenance and the continued proper functioning of the unit. The access to your ultraviolet (uv) disinfection is at the surface after each textile filter.



The type of access to your ultraviolet (uv) disinfection is a/an box on the outlet side of the textile filter and is above grade. Easy access is important for maintenance and the proper functioning of the ultraviolet (uv) disinfection.

Alarm

Alarms are important because they notify you when your ultraviolet (uv) disinfection has a problem. This may allow you to find a problem before it becomes worse and more costly to repair.

Your ultraviolet (uv) disinfection has a visual alarm located at each UV unit.

Your ultraviolet (uv) disinfection has an alarm that can be monitored remotely located at each UV unit.



Final Treatment and Dispersal

Beds

Your final treatment and dispersal system consists of one or more beds. A bed is a below-grade excavation in the soil that is typically more than 3-ft in width and contains distribution material (like rock or gravel) and more than one distribution pipe. It receives wastewater from the septic tank or other pretreatment component and distributes it to the native soil for final treatment and dispersal.

Number of Systems

You have one bed after each textile filter system(s).

Location

Your final treatment and dispersal unit(s) is located off your property between the homes and the river.

Distribution Media

Your distribution media is rock or gravel. The purpose of the rock or gravel media is to convey and distribute wastewater over or through the soil treatment area, and is the most common type of distribution media.

Distribution Method

Your unit(s) use(s) gravity distribution. Gravity distribution is the most common type of soil dispersal system, and the main function of gravity distribution is to distribute wastewater to the soil treatment system using gravity to move the wastewater rather than a pump.

Configurations

Your unit(s) is/are located below grade.

Replacement Area

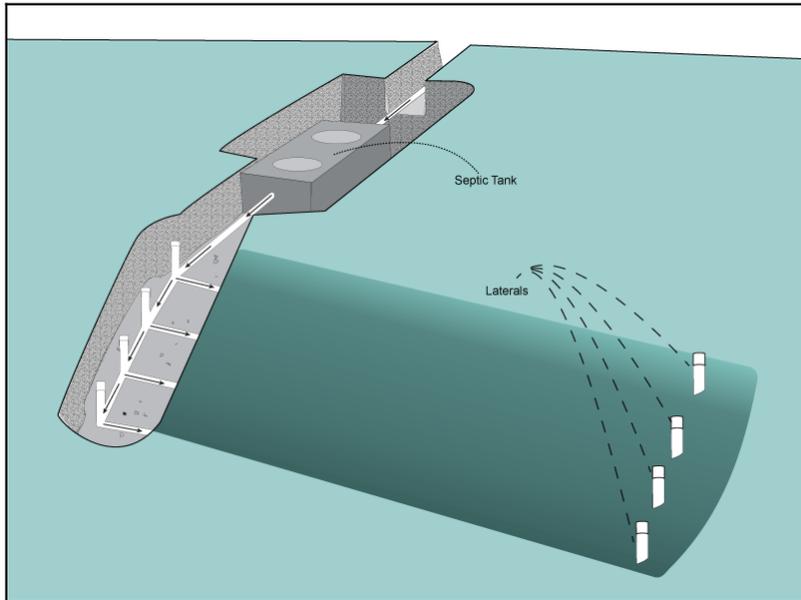
Your replacement area is located off your property adjacent to existing beds.

Access

The type of access to your unit(s) is a inspection port and is above grade which makes maintenance easier to perform.

Image





Absorption bed



Maintenance

Requirements and Recommendations

Your onsite system is a vital part of your property's infrastructure. Taking care of it, just as you would your roof or windows, will ensure longevity and save you money. Depending on your system type there may be specific guidance listed elsewhere in this guide. For conventional systems, a schedule of suggested pumping and cleaning will depend on the size of your property, number of residents, size of tank and type of treatment field. Your current system requires regular service to prevent early failure or poor treatment performance. Below are the components of your system and the suggested maintenance activities, frequencies and responsible parties.

Contracts

Your property has a maintenance contract. Your system will be regularly inspected and serviced by a service provider.

A service contract is required for the life of the system.

Seasonal

Many regions of the US have extreme seasonal climate variations which will influence maintenance events and schedules. In addition, yours is a seasonally used property.

The homes are lake cabins used seasonally.

Limiting water use and being careful of what you send down your drains, together with regular maintenance can greatly extend the useful life for your system. Information below gives some specific suggestions.

Interior Plumbing Operations & Maintenance

Who Pays for These Expenses?

Rocky Nook Assn. pays for these Operations & Maintenance expenses.

Component	Activity	Frequency	Responsible Party
Interior Plumbing	Annual service visits required for pump stations and textile filters	Annually	Service Provider
Interior Plumbing	Follow care of septic system guidelines	Continuous	Owner
Interior Plumbing	Determine when tanks need pumping	annually	Service Provider



Tanks Operations & Maintenance

Component	Activity	Frequency	Responsible Party
Septic Tanks	Tank structural condition. Check to make sure that the tank is watertight (no visual leaks), no rebar is exposed, no corrosion or spalling is present, no cracks are present, no roots are present, no tank deflection is found.	At the time of pumping or annually – whichever is the shorter time period.	Service Provider
Septic Tanks	Tank operating condition. Check to make sure that there is no evidence that the liquid level has been higher or lower than operating level. Check to make sure that there are 3 layers. Check to make sure that the combined scum and sludge layer is less than 25% of the total liquid depth.	At the time of pumping or annually – whichever is the shorter time period.	Service Provider
Septic Tanks	Tank cleaning. Septic tanks need to be pumped/cleaned periodically.	The general rule for determining when a septic tank needs to be pumped is when the total volume of scum and sludge exceeds 25% of the total tank volume. Some tanks may need cleaning within two years or even sooner, while others may go longer before they need cleaning.	Service Provider
Septic Tanks	Access. A riser is recommended if the lid is not accessible from the ground surface. Check to make sure there is no infiltration in the risers. Insulate the riser cover for frost protection. Make sure that lids are securely fastened and in operable condition.	Annually	Service Provider
Septic Tanks	Inspection pipes. Replace damaged caps.	Annually	Service Provider
Septic Tanks	Baffles. Check to make sure the inlet, outlet, and compartment (if a multi-compartment tank) baffles are in place.	At the time of pumping or annually – whichever is the shorter time period.	Service Provider
Septic Tanks	Effluent screen. Check to make sure that effluent screen is accessible from the ground surface.	At the time of pumping or annually – whichever is the shorter time period.	Service Provider



Component	Activity	Frequency	Responsible Party
Septic Tanks	Effluent screen. Remove solids trapped on screen by washing back into septic tank.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Septic Tanks	Electrical. Check to make sure electrical components are sealed and watertight.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Septic Tanks	Alarm. Verify that the alarm float/sensor operates in all modes present (audible, visual, remote) and that there is at least 25% reserve capacity.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Septic Tanks	End of year seasonal property pumping. Remind owner of most frequent causes of tank and building sewer freeze-ups. Ensure that there are no "micro-sources" of water such as a high efficiency furnace or other dripping devices.	Annually	Service Provider
Septic Tanks	Water use. Pay attention to when you use water and how much you use daily. Conserving water saves you money!	Seasonally	Owner
Septic Tanks	Water conditioning devices. When possible, discharge clear water sources to another location. Program the recharge frequency based on water demand (gallons) rather than time (days). Recharging too frequently will result in increased pumping costs.	Annually	Owner
Septic Tanks	Leaks. Check (listen, look) for leaks in toilets and dripping faucets. Repair leaks promptly.	Seasonally	Owner
Septic Tanks	Caps. Make sure that all caps and lids are intact and in place. Inspect for damaged caps at least every fall. Fix or replace damaged caps before winter to help prevent freezing issues.	Annually	Owner
Septic Tanks	Access. Make sure that your Service provider has clear access to the septic tank.	Each visit	Owner
Septic Tanks	Tank cleaning. Make sure the Service Provider completely empties the tank.	Each visit	Owner



Component	Activity	Frequency	Responsible Party
Processing Tanks	Tank structural condition. Check to make sure that the tank is watertight (no visual leaks), no rebar is exposed, no corrosion or spalling is present, no cracks are present, no roots are present, no tank deflection is found.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Processing Tanks	Tank operating conditions. Check to make sure that there is no evidence that the liquid level has been higher or lower than operating level. Check to make sure that there are 3 layers. Check to make sure that the combined scum and sludge layer is less than 25% of the total liquid depth.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Processing Tanks	Tank cleaning. Processing tanks need to be pumped/cleaned periodically.	Annually	Service Provider
Processing Tanks	Access. A riser is recommended if the lid is not accessible from the ground surface. Check to make sure there is no infiltration in the risers. Insulate the riser cover for frost protection. Make sure that lids are securely fastened and in operable condition.	Annually	Service Provider
Processing Tanks	Inspection pipes. Replace damaged caps.	Annually	Service Provider
Processing Tanks	Baffles. Check to make sure the inlet, outlet, and compartment (if a multi-compartment tank) baffles are in place.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Processing Tanks	Effluent screen. Remove solids trapped on screen by washing back into processing tank.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Processing Tanks	Pump operation. Ensure that the pump is operating properly. This may include measuring the amps and volts and making sure the pump turns on and off. Check the pump operation independently from the controls.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Processing Tanks	Pump operation. The pump discharge rate should be checked by timing the period it takes the pump to empty the chamber. If the time has increased significantly, the pump should be removed and inspected for wear, clogging, or impeller damage.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider



Component	Activity	Frequency	Responsible Party
Processing Tanks	Electrical. Check to make sure electrical components are sealed and watertight.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Processing Tanks	Electrical. Check to make sure electrical components are sealed and watertight.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Processing Tanks	Alarm. Verify that the alarm float/sensor operates in all modes present (audible, visual, remote) and that there is at least 25% reserve capacity.	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Processing Tanks	Water-level sensors. Verify that pump floats/sensors are functioning properly	At the time of pumping or annually - whichever is the shorter time period.	Service Provider
Processing Tanks	End of year seasonal property pumping. Remind owner of most frequent causes of tank and building sewer freeze-ups. Ensure that there are no "micro-sources" of water such as a high efficiency furnace or other dripping devices.	Annually	Service Provider
Processing Tanks	Water use. Pay attention to when you use water and how much you use daily. Conserving water saves you money!	Seasonally	Owner
Processing Tanks	Water conditioning devices. When possible, discharge clear water sources to another location. Program the recharge frequency based on water demand (gallons) rather than time (days). Recharging too frequently will result in increased pumping costs.	Annually	Owner
Processing Tanks	Leaks. Check (listen, look) for leaks in toilets and dripping faucets. Repair leaks promptly.	Seasonally	Owner
Processing Tanks	Caps. Make sure that all caps and lids are intact and in place. Inspect for damaged caps at least every fall. Fix or replace damaged caps before winter to help prevent freezing issues.	Annually	Owner
Processing Tanks	Access. Make sure that your Service provider has clear access to the processing tank.	Each visit	Owner
Processing Tanks	Tank cleaning. Make sure the Service Provider completely empties the tank.	Each visit	Owner



Component	Activity	Frequency	Responsible Party
Processing Tanks	Alarm. Monitor alarm daily - make sure the alarm has not signaled. Alarms signal when your tank is nearly full; therefore, NEVER unplug, reset, or cover your alarm if it has activated, but contact your Service provider immediately.	Daily	Owner
Processing Tanks	Alarm. Test the "PUSH TO TEST" button on the alarm panel if present. Replace or repair if necessary.	Monthly	Owner

Advanced Treatment Operations & Maintenance

Component	Activity	Frequency	Responsible Party
Recirculating Filters	Assess condition of Media Filter. Is there an odor near the media filter? Septic odors may indicate improper functioning.	annually	Service Provider
Recirculating Filters	Access. Is there a cover? Is it intact and secure? Are the distribution components accessible?	monthly	Service Provider
Recirculating Filters	Venting/Air supply. Be sure that the air supply is operating properly. Check any air filters or screens and clean or replace as needed.	annually	Service Provider
Recirculating Filters	Media surface. Check to be sure the media appears in good condition and there is no effluent ponding on top. Be sure there is no surface water infiltration onto the media. Ensure that distribution is even over the top of the filter. Check the media for settling. Be sure any regularly required media maintenance is being performed.	annually	Service Provider
Recirculating Filters	Pressure distribution. Check for clogging of distribution pipes. Be sure there is even distribution over the media.	annually	Service Provider
Recirculating Filters	Filter under drain. If pump drained, check for ponding or solids buildup in sump pit. For gravity drained systems, be sure discharge pipe is operational.	annually	Service Provider



Component	Activity	Frequency	Responsible Party
Recirculating Filters	Manufacturer's requirements met? There may be specific manufacturer requirements depending upon the type or brand of recirculating filter. Refer to the manufacturer's website for additional information.	As prescribed by the manufacturer.	Service Provider
Recirculating Filters	Alarms. Check to ensure any alarms are operating properly.	Every 6 months	Service Provider
Recirculating Filters	Collect lab samples if required. Typical tests required may be BOD, TSS and bacteria. Submit required samples to the regulatory authority.	As required by manufacturer or regulatory authority	Service Provider
Ultraviolet Disinfection	Power Supply. Be sure the power supply and UV light are on. Check for corrosion or damage to the electrical system. Note the dates of the last ballast and bulb replacements.	annually	Service Provider
Ultraviolet Disinfection	UV Controls. Is there a lamp intensity sensor? Record intensity reading. Is there an alarm? Does it function?	annually	Service Provider
Ultraviolet Disinfection	Contact chamber, lamp and sleeve conditions. Check for damage or leaks. Clean solids from contact chamber if needed. Check protective sleeve for damage and clean if needed.	annually	Service Provider
Ultraviolet Disinfection	Control panel. Check to be sure control box is watertight. Do controls work properly? Test the alarm to be sure it works.	annually	Service Provider
Ultraviolet Disinfection	UV Light Housing unit. Be sure the housing is in good condition with no cracks or leaks. If there is excessive dust it may be leaking.	annually	Service Provider
Ultraviolet Disinfection	Manufacturers required maintenance performed. Check manufacturer's literature or website for additional requirements.	annually	Service Provider
Ultraviolet Disinfection	Collect lab samples if required. Typical tests required would be E. coli or fecal coliform. Submit required samples to the regulatory authority.	As required by regulatory authority	Service Provider
Ultraviolet Disinfection	Alarms. Check to ensure any alarms are operating properly.	Every 6 months	Service Provider



General Use and Operation Operations & Maintenance

Component	Activity	Frequency	Responsible Party
General Use and Operation	A manufacturer trained service provider is required to maintain this system	At least annual inspections.	Service Provider



Problems and Troubleshooting

What to Do?

If you have having a problem with your system your best plan of attack is to contact a septic professional to evaluate the problem and recommend a course of action. See the Additional Assistance and Contacts to determine who can best assist you with your problem. Some of the most typical general and specific issues are identified below.

Common problems

The three most common causes of septic system failure are:

1. Overuse of water. Abnormally high water use above or close to the amount your system was designed for, leaks, or short periods of very high water use can all cause failure. Even normal water volumes delivered to a partially damaged system may be too much.
2. Improper maintenance. When too many solids are allowed to accumulate in the septic tank, they will be carried out into the soil treatment area and cause plugging. This usually happens because the owner did not have the septic tank pumped regularly.
3. Improper design or installation. This could result from bad choices or mistakes made by designers, installers and inspectors, or homeowners who have remodeled their home increasing or changing the water use without making appropriate adjustments to their septic system.

Septic System Troubleshooting Guide for Homeowners

Diagnosing the specific causes of failure may be difficult for the owner and often requires the skills of a professional. The following chart shows common problems, possible causes and remedies.

Troubleshooting Guide			
Problem	Risk	Potential Causes	Potential Remedies
Sewage odors — indoors	Toxic gases can cause discomfort and illness. Do not light matches/lighters or use appliances that may spark.	<ul style="list-style-type: none"> - Improper plumbing - Sewage backup in house - Unsealed basement sewage pump - Roof vent pipe blocked 	<ul style="list-style-type: none"> • Repair plumbing by checking traps and vent penetrations • Clean septic tank and check pumps • Replace water in drain traps • Check and tighten seals on pumps and cleanouts • Clear roof vent



Troubleshooting Guide

Problem	Risk	Potential Causes	Potential Remedies
Sewage odors — outdoors	Major nuisance, but no serious health risk	<ul style="list-style-type: none"> - Source other than owner's system - Sewage surfacing in yard - Inspection pipe caps damaged or removed - Unsealed manhole cover - Short roof vent pipe(yours/neighbors) 	<ul style="list-style-type: none"> • Clean tank and check pumps • Check and replace damaged caps • Repair or replace system • Seal manhole cover • Extend roof plumbing vent pipe • Add carbon filter to plumbing roof vent
Contaminated surface waters	Swimming in contaminated water can cause health problems such as dysentery, hepatitis, etc. Lowered water quality can negatively impact aquatic life and promote the growth of algae and other weeds.	<ul style="list-style-type: none"> - System too close to water table, or fractured bedrock - Cesspool or seepage pit in use - Sewage discharges to surface or groundwater - High levels from other sources - Broken sewage lines 	<ul style="list-style-type: none"> • Contact your local government to investigate other potential sources • Work with community to upgrade septic systems that are not providing proper wastewater treatment



Troubleshooting Guide

Problem	Risk	Potential Causes	Potential Remedies
<p>System is covered with floodwater</p>	<p>Your septic system is not working if it is flooded. If wastewater is discharged to the system pathogens, solids and other contaminants will be entering the floodwater.</p>	<ul style="list-style-type: none"> - The system is located in an area prone to flooding - The system is located in a position where a lot of surface water drains to the system - A natural disaster occurred 	<ul style="list-style-type: none"> • Pump all the tanks as soon as possible after the flood recedes and prior to resuming use of the system • Protect the soil treatment system from compaction by keeping all traffic off the area • Check electrical connections for damage or wear before turning electricity back on • Check that the septic tank manhole cover is secure and that inspection ports have not been blocked or damaged • Check the vegetation over the system and repair as needed. • If the system will still not accept effluent the pipes or soil might be "plugged". At this time the homeowner should consult a septic system professional



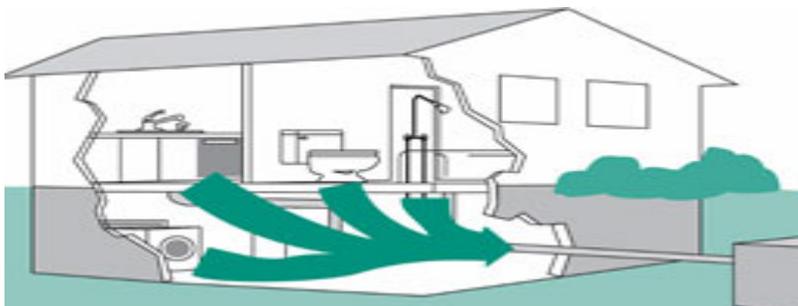
Troubleshooting Guide

Problem	Risk	Potential Causes	Potential Remedies
Distribution pipes and/or soil treatment system freezes in winter	The system may be inoperable	<ul style="list-style-type: none"> - Cold temperature with lack of snow cover - Water standing in pipes, sags, lack of draining back, undersized pump - Foot or vehicle traffic over pipes, trenches, mound or bed - Low flow rates or lack of use - Lack of vegetative cover - Leaking plumbing fixture(s) - Low flow [drip] from high efficiency furnace - Open or cracked manhole or inspection pipes - Saturated system 	<ul style="list-style-type: none"> • Check piping and pumps • Consult a professional • Keep people and vehicles off area • Increase water use and temperature • Have someone use water in house if you are away • Don't use automobile antifreeze, salt, or other additives • Fix leaking fixtures • Add insulation over tanks, pipes and soil treatment area • Do NOT run water continuously • Operate septic tank as a holding tank • Do NOT build a fire over system
Power failure	If electricity is needed to power pumps or treatment components they will not operate during the outage. Could result in improper sewage treatment, surfacing of effluent or back-up of effluent into the home	<ul style="list-style-type: none"> - Nature disaster - Electrical line being cut - Fuse breaker being tripped 	<ul style="list-style-type: none"> • Verify fuse breaker has not been tripped • Report power outage to electrical company • After power is restored if issues persists, have a septic professional evaluate panels, pumps or other components to determine if damaged
Contaminated well	Health risks are magnified by possible ingestion of contaminated water. Drinking contaminated water can cause health problems such as dysentery, hepatitis, and, for infants, methemoglobinemia.	<ul style="list-style-type: none"> - System too close to well, water table, or fractured bedrock - Cesspool or drywell in use - Sewage discharges to surface or groundwater - Improper well construction - Broken water supply pipe - High levels from other sources - Broken sewage lines 	<ul style="list-style-type: none"> • Replace your well and/or septic system • Contact your local government to investigate other potential sources



General Use and Operation

Improving Septic System Performance: Room by Room



The homeowner can improve performance of the septic system and avoid major problems by controlling water use, selecting appropriate products, and making wise disposal decisions. A typical person uses from 60 to 100 gallons of water per day. About 60 percent of that water is used in the bathroom. Reducing water use conserves water resources and helps the septic system. In the course of daily living, many materials used in the home enter the sewage system for disposal and treatment. Some belong down the drain and others belong in the trash.

Home Management Ideas to Improve Septic System Performance:

All Rooms

- Be conservative with water usage. Spread out the usage as much as possible to avoid large volumes of water entering the system.
- Install aerators on faucets to cut down on water use.
- Do not use antibacterial soaps and cleansers.
- Limit use of bleach-based cleansers and detergents. Use more elbow grease.
- Read the label on your cleaning products. Recommended non-toxic cleaners include: baking soda, borax, white vinegar, castile soap and other natural products free of harsh disinfectants, dyes, phosphates, petroleum compounds and artificial perfumes.
- Repair leaky faucets and toilets.
- Do not use septic system additives, feeders or starters. These products make all kinds of claims to improve your system, but lack third party research supporting their use. Simply using your system provides all the good bacteria needed and no additive can replace proper maintenance.

Bathroom

- Repair leaking toilets. A basic repair kit costs about \$5 and can save you hundreds of gallons of water per day.
- Only human waste and moderate amounts of plain toilet paper



should go down the toilet - nothing else. Toilet paper should break down easily.

- Do not flush any other products or items. The toilet is not a garbage can!
- Do not use “every flush” toilet bowl disinfectants; they introduce a chemical each time you flush.
- Do not use disposable toilet brushes. If you must, throw them in the trash - do not flush down the toilet as shown on packaging.
- Install low-flow showerheads and low-flush toilets. Look for EPA WaterSense labeled models.
- Do not use drain cleaners, instead a plumber's snake should be used to clear obstructions.
- Do not use cleaners meant to spray on shower stalls after each use - this also introduces chemicals with every use.
- Use bath oils, soaps, shaving creams and other products sparingly.
- Large whirlpool bathtubs use large volumes of water which may overload the system. Be sure the tank has additional capacity. Avoid laundry or other large water uses at the same time.
- Shut off water while shaving and brushing teeth (save up to five gallons per minute).
- Quick showers use less water than tub baths - particularly big Jacuzzi style tubs.
- Do not flush unwanted medications. Return to the pharmacy, or place in zip-lock bags in the original containers, place in the trash (be sure to remove identifying information from labels).

Kitchen

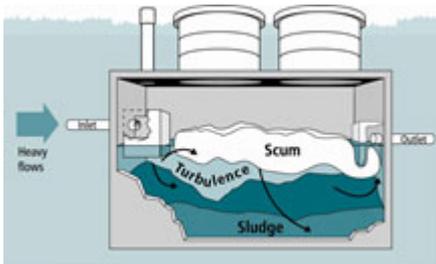
- Scrape plates into garbage or compost.
- Use gel or highly biodegradable dish washing detergents. Read labels and purchase those with no phosphorus content.
- When replacing a dishwasher, consider a low-water use model. Scrape dishes well before placing in the dishwasher. New models advertised as “no-scraping needed” have a built-in garbage disposal. Scraping dishes into the trash reduces solids in the tank.
- Do not use a garbage disposal or dispose of vegetables, meat, fat, oil, coffee grounds, and other undigested food products in the septic system- it adds solids to your tank and uses large amounts of water. Compost kitchen wastes or throw them in the garbage.
- Be sure there is a shutoff valve on the drinking water treatment device so the system does not run continuously when the reservoir is full.
- Keep a pitcher of drinking water in the refrigerator instead of running the tap for cool water.
- Reduce clogs in piping by minimizing the amount of grease and food that go down the drain.



Laundry

- Use liquid or highly biodegradable powdered detergents with no clay filler.
- Do not use liquid fabric softeners. They add petroleum into your system. Instead, use dryer sheets, vinegar or “dryer balls” to soften your clothes.
- Only use detergents containing bleach when absolutely necessary – not every load.
- Use the minimum amounts of detergents or bleach required to do the job.
- Select a front-loading washing machine which uses 40 — 65% less water and less electricity to dry the clothes, or a new water efficient top loader when replacing your washer. Look for EPA WaterSense label.
- Distribute wash loads evenly throughout the week to avoid overloading the system in a short period of time. A good rule of thumb is one load of laundry per day.
- Wash only full loads when possible; adjust the water level to fit the load.
- Install a filter on the washer to remove lint and an effluent screen on the septic tank outlet baffle.
- Avoid installing second-floor laundry. It will reduce tank performance due to the rapid speed of water entering the tank. If laundry is on 2nd floor, extra septic tank capacity and an effluent screen are recommended.

Basement, Utility Rooms and Lawn Sprinkling



- Reroute water softener, iron filter and other treatment filter recharge outside of the septic system. Consider using an old drainfield or dig a dry well. The salts used in these systems are hard on concrete septic tanks.
- Route condensation water from a high-efficiency furnace outside of the septic system to prevent freezing problems. It can run to a sump pump, be directed to an old drainfield or dry well or be vented directly out of the house onto the ground.
- Recharge the water softener as infrequently as possible. If replacing, look for an on-demand unit so the system recharges only as needed.
- Be sure sump pumps, floor drains, garage drains, roof drains and



other methods of routing water away from your house are not going into the septic system. This is clean water and can easily overload the system due to the high volume.

- Route chlorine treated water from hot tubs and pools outside of the septic system.
- Install a water meter to monitor water use.
- Dispose of solvents, paints, antifreeze and chemicals through recycling and hazardous waste channels. Do not wash paint brushes in the sink. Disposable paint brushes are a good idea.
- Be sure your automatic lawn sprinkler system does not water the soil treatment area.

Landscaping Your Septic System

Landscaping near, around, and on septic systems is of concern to many homeowners. To ensure a properly functioning soil-based septic system, a suitable vegetative cover must be established. The right vegetation cover helps the soil to stay in place, helps the septic system to function optimally by removing moisture and nutrients from the soil treatment area, and makes the area more attractive. Minimizing irrigation is critical for long-term performance of the system.

Herbaceous plants such as turf grasses, wildflowers, and native grasses are suitable cover for septic systems. Turf grasses have fibrous root systems that hold soil in place, require maintenance similar to a lawn, and are available in a variety of mixes designed to suit site conditions. Wild flowers and native grasses are an attractive alternative to turf grass while providing many of the same benefits including fibrous roots, low maintenance (once established), and tolerance of dry soil conditions. Do not place trees and shrubs on the septic system, their roots may invade the piping and cause damage.

Look for good advice on how to landscape your septic system from your local Conservation District or Extension.

Electricity in the System

Refer back to the O&M Section concerning the pumps and control panels as they should have alarm devices to warn of problems. Be prepared in case of a power outage. For most homes with a private well the well pump will also be not operating limiting the use of water, but if you have a public drinking water supply be sure to self limit usage unless you have a back-up generator to run your septic system. If the wiring is damaged or accessible there is also a danger of electrocution so be sure if at any time the wiring is damaged it is repaired appropriately.

Property Transfer Requirements

In your jurisdiction, a change in ownership triggers an inspection requirement to determine if the system has any significant flaws or



problems. In most cases the inspection will be a report of current conditions not a projection of future use or concerns. An inspection should check the entire system. Individual jurisdictions may place a requirement on the seller, the buyer or both. You should determine where such an inspection report should be filed and who the regulatory body certifies to complete the work.

Iowa law requires a time of transfer inspection at the time of sale of the property.

