From Rick & Ron Shaw’s “Little Brown Building”

“And I’d sit me down to rest
Like a snowbird on his nest.
And read the Sears and Roebuck Catalogue.”
Understanding Septic Systems Webinar

May 5, 2020
Now that we are all at home more we could be creating an extra load on our septic systems because of:
• more usage: toilets, showers and laundry
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• More cooking, including fats oils and greases going down the drain
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• More cooking, including fats oils and greases going down the drain
• Increased usage of disinfectants that can kill off the GOOD bugs in the septic tank
And then there is the toilet paper drought
In many cases septic systems are one of the more costly components of a rural home, costing thousands of $ to install and maybe even more to replace.
Septic systems can fail in only a few years of use or can last for generations depending on several factors.
Factors affecting septic system life:
• Design
• Construction
• Usage
• Maintenance
• They are typically out of sight and out of mind until something goes wrong...
The frantic call:
I think I have a crushed pipe in my leach field because water is backing up into the basement
But first, how we got there
Evolution of the septic system

Note that your system (any sewage disposal system) fits somewhere into this evolutionary chart
Outhouse
Then, Sir Thomas Crapper perfected the appliance that now often bears his name...
Cesspool
Too much water for the cesspool to handle…
The cesspool became a:
Drywell
“Biomat” buildup
This secondary drywell is still built just like the original pit below the outhouse but receives only effluent that has been much more “clarified.”
NH RSA 149-E
1967
DES Subsurface Bureau
SHWT
Seasonal High Water Table

The most critical factor governing today’s septic systems
Mound or Raised Systems:
to get the bottom of the leaching area above the SHWT
The modern septic tank
And still some of these...
Outlet baffle:
Plastic chambers
NH designed and manufactured

Enviro-Septic®
This revolutionary onsite treatment system wastewater contaminants, recycling clean recharging natural water supplies.
Concrete chambers
What constitutes failure?
BE CAREFUL TO AVOID UNDERGROUND UTILITIES. BEFORE DIGGING, CONTACT YOUR LOCAL UNDERGROUND DAMAGE PREVENTION SYSTEM.

Septic System Troubleshooting Guide

- ROUTINE INSPECTION
- POOR FLUSH
- TOILET AND DRAIN BACKUP
- ODOR OR WATER ON GROUND

Items in bold are explained in the Glossary. Items numbered are explained in accompanying notes.
**ROUTINE INSPECTION**

IF POOR OR NO FLUSH ONLY AND OTHER PLUMBING OK check and snake toilet. See:
1. check lowest fixture or drain

GRAVITY SYSTEM (no pumps)

IF PUMPED SYSTEM: check pump(s) from house to tank OR tank to *EDA (pumps may be on own electrical circuit with or without alarm on separate circuit)

PUMP(S) WORKING OK

CHECK OUTSIDE HOUSE IN SUSPECTED LOCATION OF SYSTEM

NO ODOR OR WET SURFACE.

IF SEPTIC TANK NOT EASILY FOUND OR UNCOVERED Snake from toilet or cleanout toward septic tank. See: 4. Snake safety

IF CLOG IS REMOVED: there may still be a partial obstruction, monitor the problem. See: 7. pipe problems

IF CLOG REMAINS

8. FIND SEPTIC TANK

Once tank is located see:
9. determining type of tank

NOTE LIQUID / SOLIDS LEVEL IN TANK

SEE NEXT PAGE

**POOR FLUSH**

IF *EDA SYSTEM IS KNOWN TO BE INSTALLED ON SLIDE HILL (ON CONTOUR) See: 2. Dbox problems

OTHERWISE

**TOILET AND DRAIN BACKUP**

**ODOR OR WATER ON GROUND**

*EDA: Effluent Disposal Area can be any one of several types of structures such as a drywell, a stone-in-pipe leach field or trenches that are level or stepped on the ground contour, concrete chambers in a bed configuration, plastic chambers or pipes in either a bed or stepped configuration or any of several modern proprietary treatment systems.
5. Failed EDA Field: Usually means soil plugged due to age, overuse, underdesign, lack of maintenance, or a combination of these. Requires field replacement or rest. See: Glossary: Alternating Fields.

6. Failed EDA Drywells: Usually means soil plugged due to age, overuse, under design, lack of maintenance, or a combination of these. Requires field replacement or rest. Drywells can sometimes be excavated around and repacked with crushed stone to create a new soil surface for absorption. Check codes.
NOTE LIQUID LEVEL IN TANK

LEVEL FAR BELOW TANK INLET
Tank probably has no outlet

LEVEL NORMAL
(at bottom of outlet pipe)

LEVEL HIGH
(Above outlet pipe)
Did you check pump above?
Check for outlet obstruction

IF FRESH WASTE PRESENT
(likely an old system)

NO FRESH WASTE

see: cesspool

see: drywell

LOOK FOR SEPTIC TANK
CLOSER TO HOUSE

IF WATER IS ENTERING
FROM HOUSE, FLUSH SEVERAL
TIMES IF POSSIBLE AS
WATER MAY HAVE SETTLLED
OUT OF TANK SLOWLY.
IF WATER COMES UP OVER
OUTLET PIPE

SNAP, HOSE OR
PRESSURE WASH
BACK TOWARD
HOUSE

IF WATER NOT ENTERING
FROM HOUSE

LOCATE & CHECK DRAINFIELD
D-BOX OR DRYWELL CLEANOUT
see: 11. Locating *EDA
(Effluent Absorption Area)
If D-Box cannot be located, dig
hole(s) anywhere in suspected
absorption area to try to locate
water level in stone or in alter-
native pipes or chambers

IF WATER IS NOT OVER PIPES
IN ABSORPTION SYSTEM

IF WATER IS OVER PIPES IN D-BOX, OVER
STONE OR TO TOP OF CHAMBERS OR OVER
INLET IN DRYWELL
see: failed *EDA (Effluent Disposal Area)
Note that if absorption system is stepped
trenches, chambers, or pipes on descend-
ing contours, it may be necessary to locate
and check water level in several or every
segment to determine condition
also see: 11. serial distribution

This guide works best for older septic systems. Modern
systems, especially in difficult conditions, may have a
proprietary treatment system that will require
contacting the manufacturer, designer or installer for
information regarding its operation and maintenance.
What constitutes failure?

• Sewage backup into the house?
Settled inlet pipe traps solids
Roots can clog a system
What constitutes failure?

• Sewage backup into the house?
• Smelly puddles on the lawn?
Yes, this still happens
Conventional stone & pipe system
Biomat is that black gooey stuff that forms a layer where wastewater reaches the soil

- Is an important part of the treatment of wastewater as it leaves the system
- Too much buildup can cause wastewater to backup
- Too little can let wastewater back into the soil with little treatment
Biomat buildup
New system, wrong sand
Ironically, systems that fail to allow water to go back into the ground have failed as far as the homeowner is concerned, but typically do little to pollute groundwater because they allow very little or no effluent to leave the system.
Tank alarm, usually in the basement
Does NOT mean it is time to pump the septic tank!
But that you have a problem with your septic pump
What NOT to put down the toilet or drain

- Quaternary ammonia-disinfectants, surfactants, fabric softeners

Use baking soda, vinegar or borax
What NOT to put down the toilet or drain

• Quaternary ammonia- Use baking soda, vinegar or borax
• Antibacterial soaps
What NOT to put down the toilet or drain

• Quaternary ammonia- Use baking soda, vinegar or borax
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• Toilet bowl cleaners
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What NOT to put down the toilet or drain

- Quaternary ammonia - Use baking soda, vinegar or borax
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- Toilet bowl cleaners
- Drain cleaners
- Bleach
And it is everywhere!
Reduce the amount of strong cleaning chemicals and antibacterial soaps used in the home. Bleach and other antibacterial products can kill the beneficial bacteria in the septic tank, reducing the rate of solids decomposition.
What NOT to put down the toilet or drain

Do not dump fats, oils and grease down the drain; instead, put them in the garbage.
Garbage disposals and dishwashers with food grinders add unnecessary solids to a septic tank. Minimize the use of the garbage disposal or eliminate its use altogether by placing food scraps into a compost bin or trash can. Scrape all dishes well before placing them in the dishwasher.
Toilet is not a trash can. Nothing but human waste and toilet paper should be flushed.

No tissues, hygiene products, cigarette butts, etc.
Do not flush unused or expired medications. These products can kill the beneficial bacteria in the septic tank.
• Chemotherapy: designed to kill bad cells can have the same effect on septic tank bacteria
• Unfortunately, not much can be done about this
Do not use products advertised as septic additives or septic cleaners. These products are not necessary and may kill the beneficial bacteria in your septic tank.
Septic tank additives
Homeowner used RidX!
A rule to follow:

• If you wouldn’t put it through your own digestive system, DON”T put it down the toilet or drain
Large volumes of wastewater generated in a short period of time can result in turbulence in the septic tank:

Parties
Weddings
Hot tubs
Leaks
Spread wash loads throughout the week and wash at times when there is not a lot of water being used in the home. Do not run multiple water-using devices at the same time, such as showering or running the dishwasher while doing the laundry.
Washing machines can add a significant amount of lint. Avoid this by placing a simple lint filter on the end of the outlet hose.
Reroute water treatment devices such as iron filters and water softeners from the septic system. The discharge water from these devices may add extra solids in the case of iron filters and affect settling in the case of softeners.
VACATION HOME FOR RENT

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What you *should* do to protect your system...
Conserve water

- Yellow is mellow, if it’s brown you know the rest.
- Dual flush toilets
- Water saving showerheads
• Locate your system and its components and make the tank inlet and outlet accessible, especially for emergencies

(town hall may have your plan)
Be careful, not everyone pays attention to where your septic tank is
• Make a sketch with the dimensions to the tank cleanout and post it in your utility room or next to where the waste pipe exits your basement or crawl space
Septic filters, a good idea
Plastic baffles & filters
Keep the area over your leach field clear of trees and shrubs
And the area around the leach field because roots tend to travel
And the elephant in the room: How often do you need to pump your tank?
Checking how well a system draws air through it
Dirty Bird Septic Vent Cover
NHDES rules:

- Where an Individual Sewage Disposal System that serves a residence needs to be repaired or replaced the system owner must now submit a complete application for review and approval to the DES by the homeowner or by a permitted (licensed) septic designer.
Foundation drains
Keeping your Home's Feet Dry

How to dry out existing basements
and
Keep new basements from ever getting wet
A Ditch In Time

An owner’s manual for those who live and travel on dirt and gravel roads

by Russ Lanoie, Conway, NH

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Toto

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ADD TO CART
And that crushed pipe in the leach field...
Granite State Designers and Installers Association

www.gsdia.org