

# Residential Sewer Systems and Septic Tanks

By: Brooke Cosenza and Farheen Hyder  
Farmingdale State College

## Sewer Systems

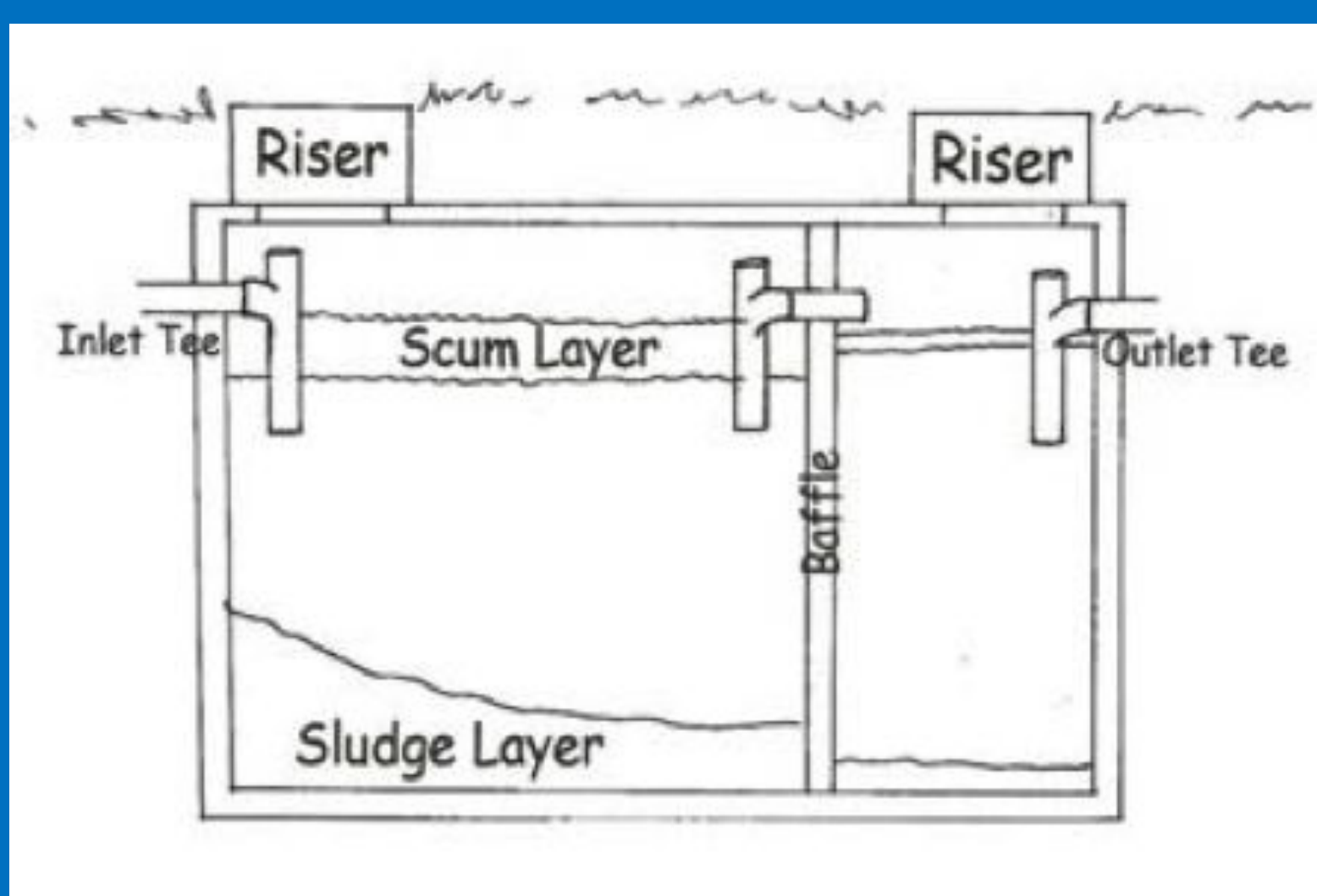
- Sewer systems (or sewage treatment) is the process of getting rid of contaminants from the wastewater, primarily from the household sewage. Removing these contaminants, leads to a safer environment. Sewer systems (or sewage treatment) is the process of getting rid of contaminants from the wastewater, primarily from the household sewage. Removing these contaminants, leads to a safer environment.

## Why sewers are important

- Wastewater flows through pipelines connected from drains and toilets and flows through pipelines underground. The sewage once underground, flows to the main sewer line and the solids get broken down into sludge water from there.
- That wastewater is filled with harmful chemicals and it is important to get rid of them safely.

## Septic Tank

- The process Septic tanks use is known as "grit and screening". The wastewater from this process is taken to a landfill for a safer disposal.
- The sewage would then flow to a septic tank where 60% of solids are broken down to a sludge mixture with water so this sewage would flow easier for disposal.
- The scum, water and sludge all separate into layers. This process takes out most toxic chemicals.



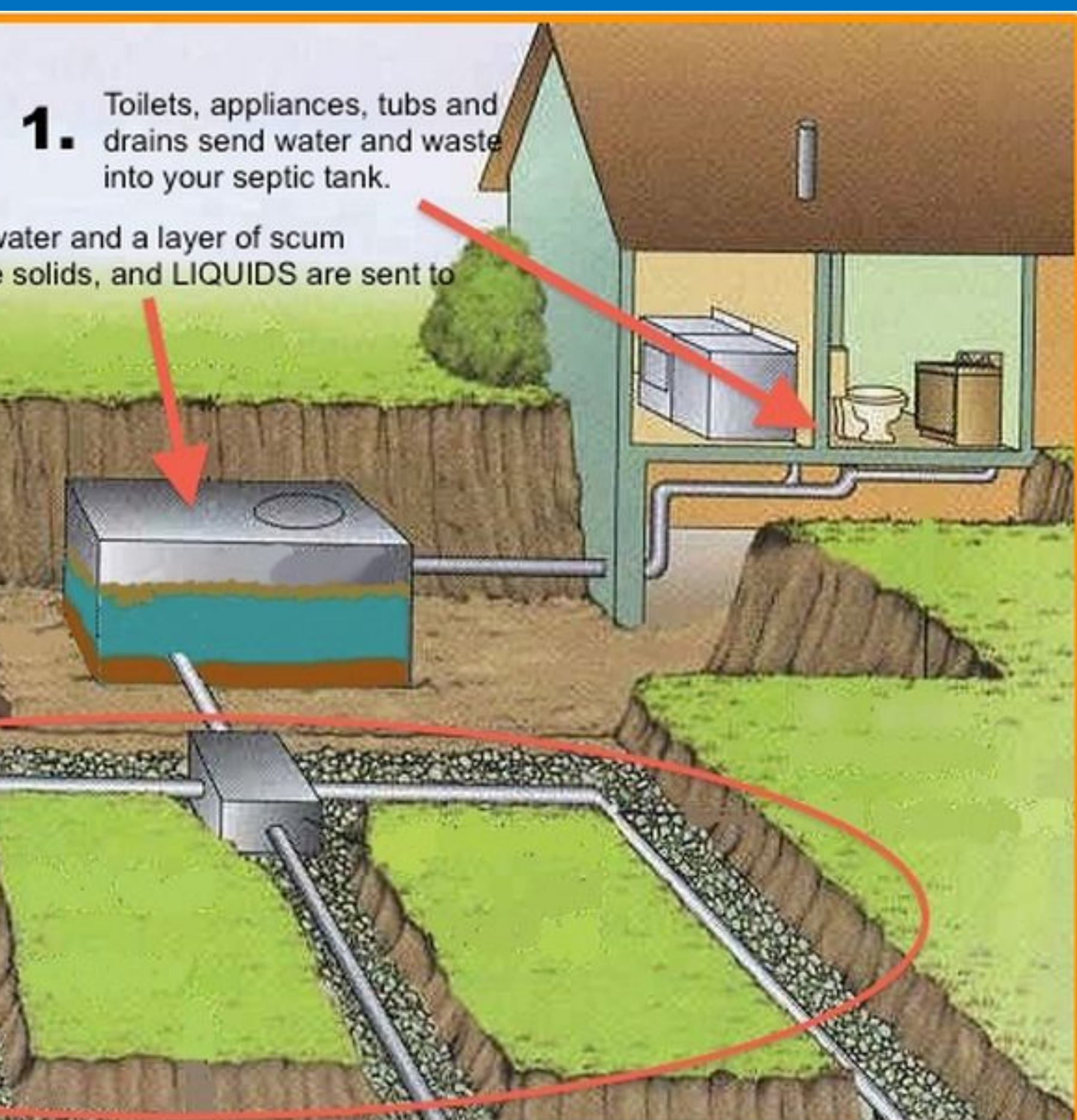
## Septic Tank

1. Toilets, appliances, tubs and drains send water and waste into your septic tank.

2. In the septic tank, sludge, water and a layer of scum separate. Bacteria eats the solids, and LIQUIDS are sent to the drain or leech field.

Liquid waste goes into the drain or leech field to safely and smoothly filter into the ground.

3.

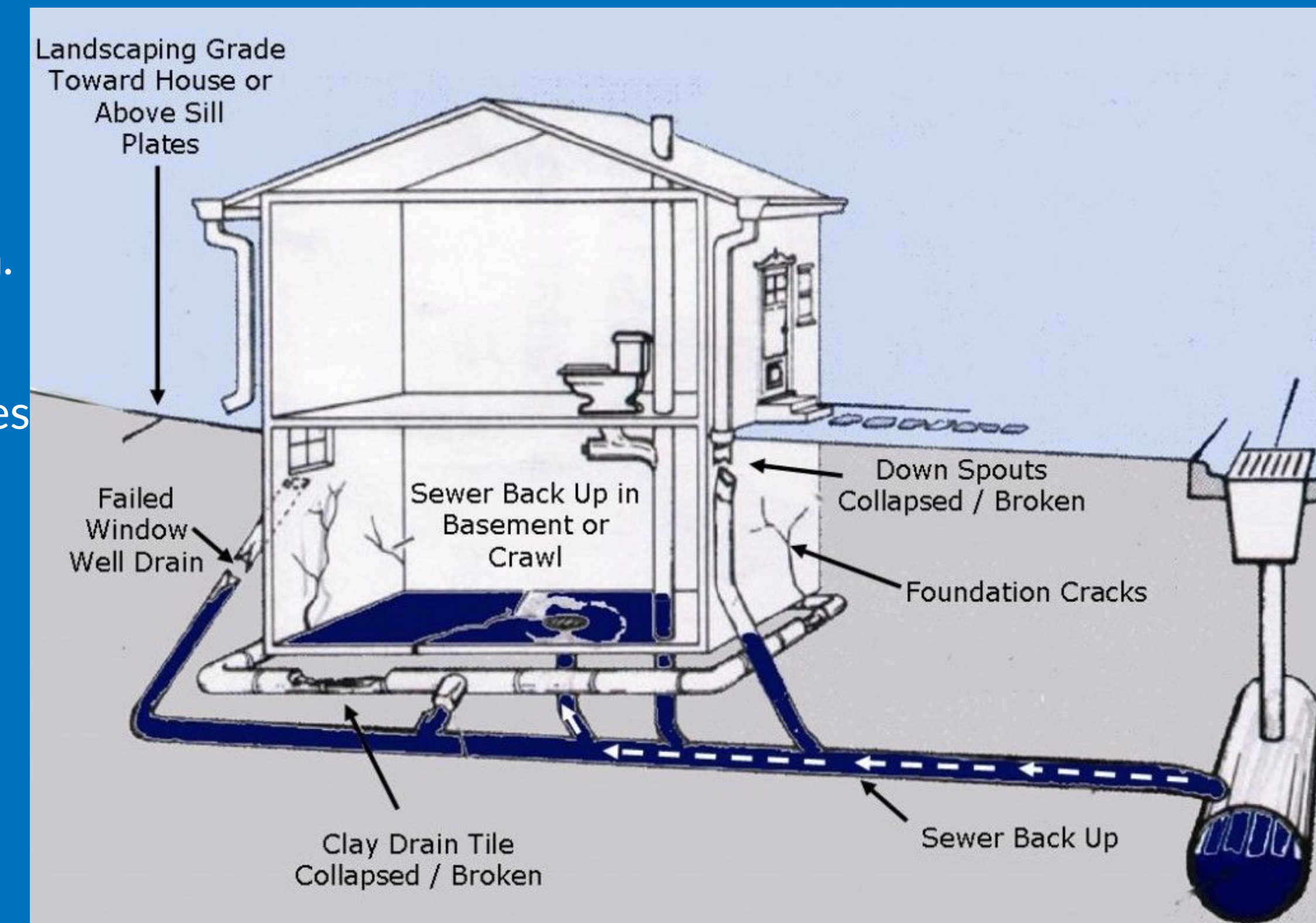


## Why septic tanks are important

- We use septic tanks for an easier disposal of waste. By using this waste removal method, the solids within the tank breaks down into smaller components and sink down to the bottom. The wastewater flows on top and helps break up the components into sludge so it will be used as ground waste, rather than using pipes to transport and break them down.

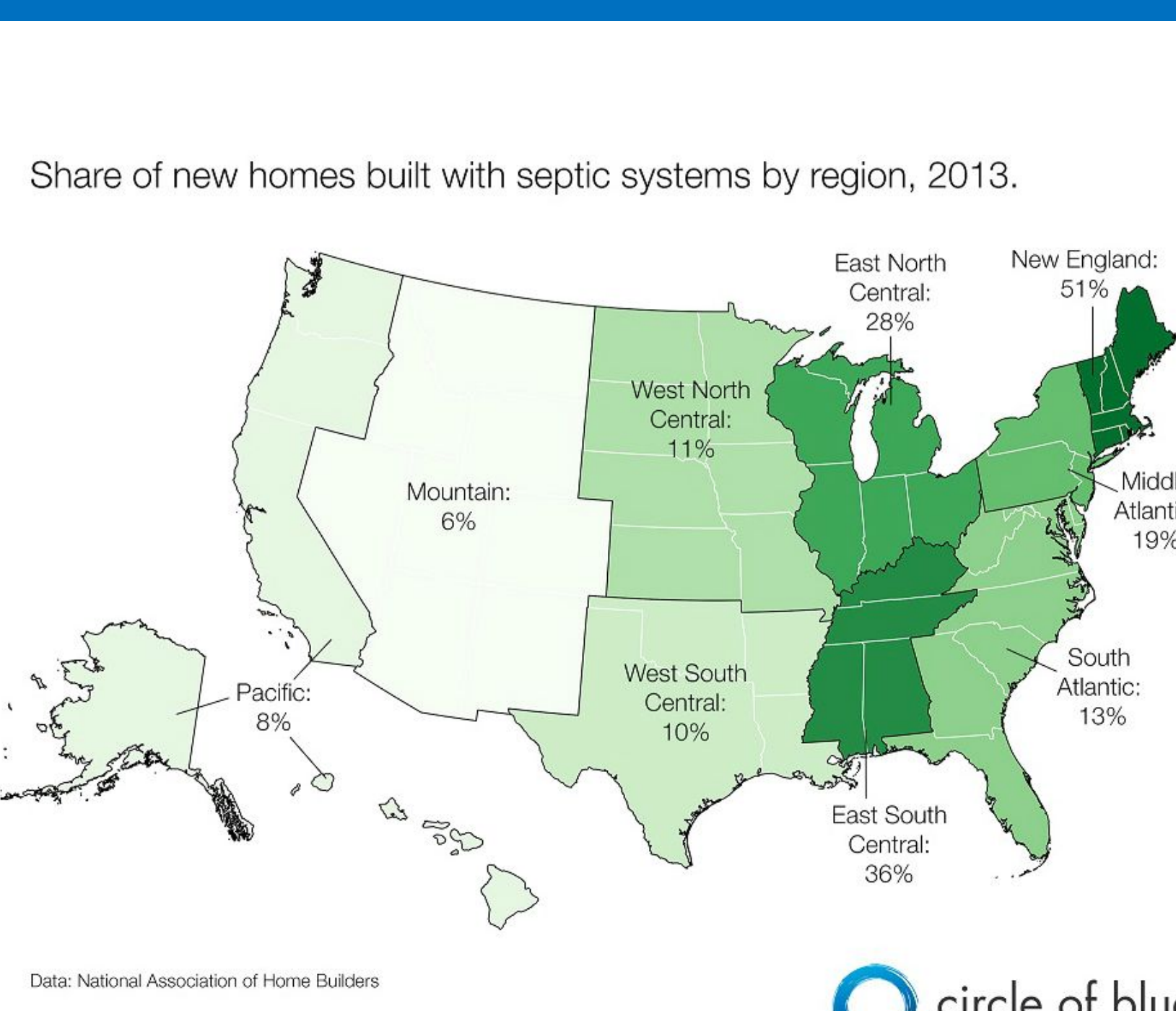
## Problems and solutions for sewer lines:

- **Problem:** Blocked sewer lines can be a big problem. This results when grease or other materials in the pipe are preventing the smooth water flow. The drains from our bathroom sink, showers, toilets, kitchen sink...they tend to clog and the water overflows; which is the number one problem from these sewer lines.
- **Solution:** Make sure your lines have accessible traps and cleanouts in the pipe lines to prevent clogging. If the clogging problem is major, then it would be costly to take apart the entire system, rather than to have points in the line that are meant to be taken off and put back on.
- **Problem:** When a section of the line/pipe has sunken into the ground, it creates a space for the waste to mix up (a bellied pipe). When the waste converges with other materials, it can cause problems over a period of time.
- **Solution:** make sure that the drain pipe is supported well from underneath. Poor support can cause a lot of pressure on one side of the line.
- You can hang the drain pipe system from pipe hangers and attach them to a firm structure. This way, the waste can flow smoothly in the pipes, without straining them.



## Problems and solutions for septic tanks

- **Problem:** Excess water in the tank can lead to a higher water level in which the waste can't be broken down.
- That waste passes from the tank into the distribution pipes (note that the pipes are only for liquids, not solid waste)
- **Solution:** Minimize the amount of water you would use in a day. Take shorter showers or don't leave any faucets running for too long. Small things like these can make a difference to the water levels in septic tanks.
- **Problem:** Putting items like pads, tissues, paper towels, tampons, garbage, pet litter, etc. down any drain pipe that leads to a septic tank can be very dangerous.
- These items are non-biodegradable, which means they won't break down. Instead, they distribute through the septic tank and into the soil.
- **Solution:** Keep these wastes out of the septic system completely. Properly dispose of them in garbage bags.
- No oil or grease should be put down kitchen drains either.



Tank Size (Gallons)	Recommended Septic Cleaning Schedule									
	Number of Residents per Household									
	1	2	3	4	5	6	7	8	9	10
500	5.8	2.6	1.5	1.0	0.7	0.4	0.3	0.2	0.1	-
750	9.1	4.2	2.6	1.8	1.3	1.0	0.7	0.6	0.4	0.3
1000	12.4	5.9	3.7	2.6	2.0	1.5	1.2	1.0	0.8	0.7
1250	15.6	7.5	4.8	3.4	2.6	2.0	1.7	1.4	1.2	1.0
1500	18.9	9.1	5.9	4.2	3.3	2.6	2.1	1.8	1.5	1.3
1750	22.1	10.7	6.9	5.0	3.9	3.1	2.6	2.2	1.9	1.6
2000	25.4	12.4	8.0	5.9	4.5	3.7	3.1	2.6	2.2	2.0
2250	28.6	14.0	9.1	6.7	5.2	4.2	3.5	3.0	2.6	2.3
2500	30.9	15.6	10.2	7.5	5.9	4.8	4.0	3.5	3.0	2.6

## Citations

- <http://www.mwra.state.ma.us/03sewer/html/sewhow.htm>
- <https://www.rotorooter.com/blog/most-common-types-of-sewer-problems/>
- <https://www.doityourself.com/stry/common-septic-system-problems>
- <http://www.balkanplumbing.com/belly-in-sewer-line-causes-repair>
- [https://www.google.com/search?biw=1920&bih=974&tbn=isc&sa=1&ei=cMfxWqiAMunJiwSOzLnoCw&q=septic+tank+system&og=septic+tank+&gs\\_l=img.3.2.0i67k1j0l4j0i67k1j0l4.23.8553.240396.0.243404.8.8.0.0.0.111.687.7j1.8.0...0...1c.1.64.img..0.8.684...0i5130k1.0.itrxS94N9JY#imgrc=cK8C50e7felK-M;](https://www.google.com/search?biw=1920&bih=974&tbn=isc&sa=1&ei=cMfxWqiAMunJiwSOzLnoCw&q=septic+tank+system&og=septic+tank+&gs_l=img.3.2.0i67k1j0l4j0i67k1j0l4.23.8553.240396.0.243404.8.8.0.0.0.111.687.7j1.8.0...0...1c.1.64.img..0.8.684...0i5130k1.0.itrxS94N9JY#imgrc=cK8C50e7felK-M;)
- [https://www.google.com/search?q=septic+tank+diagrams&source=inms&tbn=isch&sa=X&ved=0ahUKewihgs6KvPbaAhXp24MKHcx8B1gQ\\_AUICigB&biw=1920&bih=974#imgrc=MHmfQZNakOgWKM;](https://www.google.com/search?q=septic+tank+diagrams&source=inms&tbn=isch&sa=X&ved=0ahUKewihgs6KvPbaAhXp24MKHcx8B1gQ_AUICigB&biw=1920&bih=974#imgrc=MHmfQZNakOgWKM;)
- [https://www.google.com/search?q=septic+tank+diagrams&source=inms&tbn=isch&sa=X&ved=0ahUKewihgs6KvPbaAhXp24MKHcx8B1gQ\\_AUICigB&biw=1920&bih=974#imgrc=plp6FUsDEpzCM;](https://www.google.com/search?q=septic+tank+diagrams&source=inms&tbn=isch&sa=X&ved=0ahUKewihgs6KvPbaAhXp24MKHcx8B1gQ_AUICigB&biw=1920&bih=974#imgrc=plp6FUsDEpzCM;)
- [https://www.google.com/search?biw=1920&bih=974&tbn=isc&sa=1&ei=AcnxWrXeDalJiwTU0ou4DQ&q=sewer+diagram&og=sewer+diagram&gs\\_l=img.3.0l3i0i5130k1l2j0i8130k1l5.5.8977.61363.0.61637.7.0.0.0.96.603.7.0...0...1c.1.64.img..0.7.600...0i67k1.0.2Tf7uYlcnr0#imgrc=XNEmRUTPp1uYAM;](https://www.google.com/search?biw=1920&bih=974&tbn=isc&sa=1&ei=AcnxWrXeDalJiwTU0ou4DQ&q=sewer+diagram&og=sewer+diagram&gs_l=img.3.0l3i0i5130k1l2j0i8130k1l5.5.8977.61363.0.61637.7.0.0.0.96.603.7.0...0...1c.1.64.img..0.7.600...0i67k1.0.2Tf7uYlcnr0#imgrc=XNEmRUTPp1uYAM;)