

Grade 8 Science **Rural Wastewater Treatment**

Name: _____ Class: _____ Date: _____

In urban areas (like where we live in Ancaster, our wastewater is collected in a sewer system that we really take for granted since it is operated by the city but it is expensive and needs specialized people to keep operating properly. In rural areas, this system is not practical since there are larger distances between homes. In these cases, local systems are put in called septic systems. Watch the following short video explanation: <https://youtu.be/3DWg-UI4sTE>

A septic system consists either of a septic tank and a weeping bed or a septic tank and a tertiary system, which may or may not have a weeping bed.

Anything which goes down your drain will exit the house through an underground pipe and enter the septic tank. The tank itself consists normally of two chambers. The first chamber allows the heavier solids to settle to the bottom of the tank, the second chamber allows for finer solids to settle. A layer of scum is common in many septic tanks and generally consists of toilet paper, oils, grease, fats and soap.

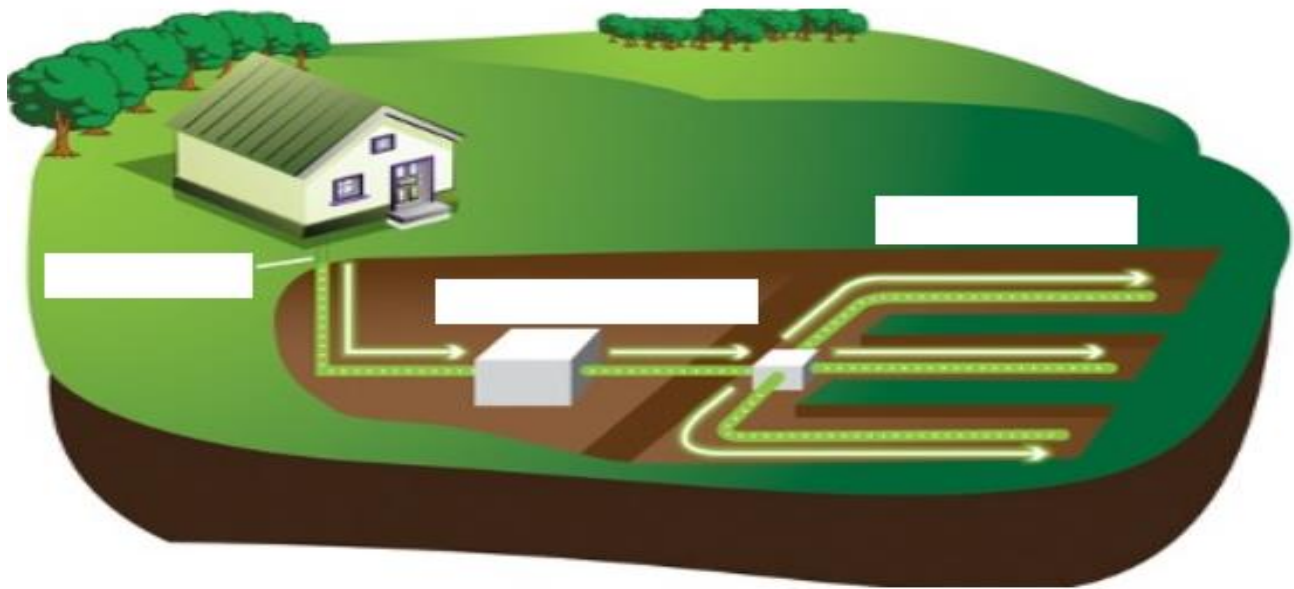
A septic tank is always “full” in that the level should remain constant. The level should be just below the outlet pipe (the one leading from the tank to the weeping bed or tertiary system). Every time waste water enters the septic tank, the same amount will exit it as a result of displacement.

Organic materials which are in the tank will be broken down by anaerobic bacteria, and a certain degree of treatment is therefore achieved.

Modern tanks (generally since January 2007) will contain an effluent filter. This is located at the outlet pipe and prevents solids from entering and clogging the weeping bed or tertiary system. It also allows for more treatment of solids to occur by the bacteria in the tank.

One must place the septic system carefully in rural areas since most rural homes get their drinking water from groundwater into which the weeping bed also drains. If the wastewater is not properly broken down, it will contaminate the water source for the home.

Label the following diagram:



Word Bank: Septic Tank Drainfield or Weeping bed Pipe

Questions:

1. Why are septic systems used in rural areas?

City systems would be too expensive since the homes are very far apart and the installation and upkeep would cost too much with too few people to pay for it.

2. What does the first chamber of the septic tank do?

The first chamber allows the heavier solids to settle to the bottom of the tank.

3. What does the second chamber of the septic tank do?

The second chamber allows for finer solids to settle.

4. How are organic materials treated or broken down?

Organic materials which are in the tank will be broken down by anaerobic bacteria, and a certain degree of treatment is therefore achieved.

5. Why is it important to have a properly places and functioning septic system in rural areas?

One must place the septic system carefully in rural areas since most rural homes get their drinking water from groundwater into which the weeping bed also drains. If the wastewater is not properly broken down, it will contaminate the water source for the home.