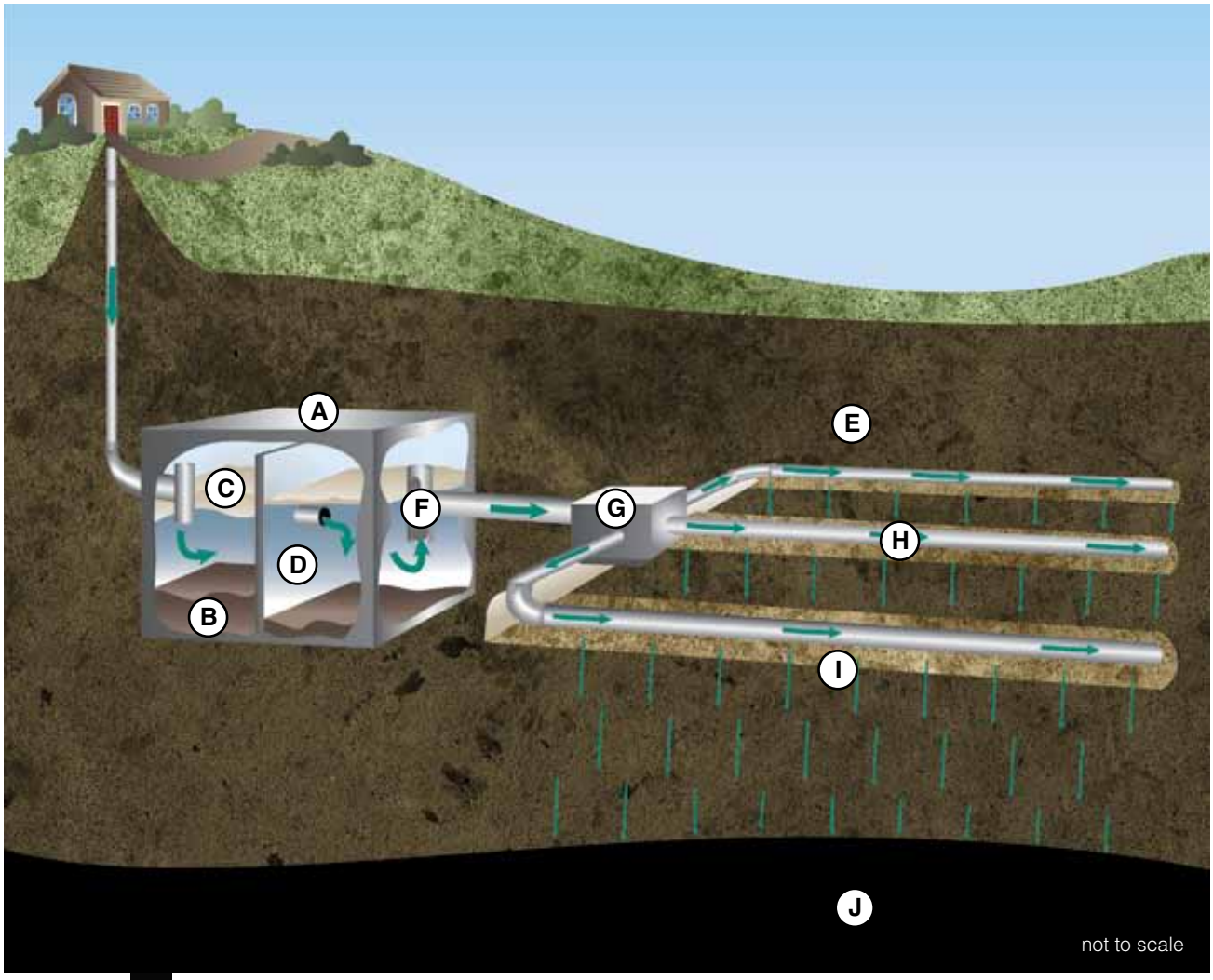
How Does Your Septic System Work?

Properly functioning and maintained onsite septic systems are an excellent natural means of treating domestic wastewater. Although many different types of systems are used, they generally operate under the same principles.



A **Septic Tank**

B **Sludge**

C **Scum**

D **Partially treated (or "primary treated") wastewater**

E **Drainfield**

F **The Effluent Filter**

G **Distribution Box**

H **Drainfield Pipes**

I **Voids**

J **Water Table**

** see next page for full descriptions of each of these elements in the system*

In a typical Type 1 septic system, all wastewater from your home including kitchen and bathroom sinks, dishwashers, bathtubs, showers and toilets, laundry washing machines and tubs drain from the house into a **septic tank** (A). The septic tank uses time, floatation and gravity to separate the oils, grease and coarse solids from the wastewater into three layers:

i) Sludge (B): Heavy materials including feces, toilet paper, grit, plastic and solid food waste settle to the bottom of the septic tank. Naturally-occurring bacteria slowly digest the accumulated solids; however, the solids build up faster than they can be digested and accumulate until they reach a level where they need to be pumped out. Otherwise they risk flowing out and clogging the drainfield. *Therefore, the fewer solids you put down the drain, the less often you'll need to pump out your septic tank.*

ii) Scum (C): Light soaps, fats, oils, grease and similar materials that float to the surface of the septic tank.

iii) Partially treated (or "primary treated") wastewater (D): The remaining water that sits in the middle of the tank containing some suspended solids and soluble organic contaminants. This wastewater is transferred either to a second chamber, or directly drained to the drainfield.

Your septic tank should be large enough to store wastewater for two days before it is released to the **drainfield** (E).

If your septic tank is properly operated and pumped out regularly, the liquid leaving the septic tank will contain very few solid particles. However, if solids build up and are not pumped out, they can flow through to the drainfield, potentially blocking the small holes in the drainpipe and damaging the field. Solids can build up fast for many reasons:

(1) Your septic tank could be undersized for the size of your house or the number of occupants.

(2) Your tank is not being pumped out frequently enough.

(3) High volumes of water from bath tubs or hot tubs are being discharged pushing solids through the tank before they have a chance to settle.

Regardless whether your septic tank has one or two chambers, it is highly recommended to install an effluent filter. **The effluent filter** (F) catches solids before they leave the tank ensuring they are not released to the drainfield. Common wisdom is that it is better to have a clogged filter that needs cleaning (and also usually serving notice the septic tank needs pumping), than to have a clogged drainfield.

Gravity-fed septic systems distribute wastewater coming out of the septic tank through a **distribution box** (G). The distribution box evenly distributes the wastewater into the perforated **drainfield pipes** (H) that lie buried in drain rock, in trenches, or in a bed beneath the ground. Larger systems use pumps to distribute the wastewater over the leaching bed area. Small holes in the drainpipes allow the wastewater to seep into and be stored in the **voids** (I) around the drain rock and then gradually seep into the soil. Natural filtration and bacteria in the soil clean the water. The soil must be both coarse enough to allow water to easily flow through it, but also fine enough to ensure it flows slowly enough to be properly treated. When the liquid finally reaches the **water table** (J), the wastewater has been treated and cleansed.

When septic systems work properly, they are efficient, inexpensive to maintain and safe for people and the environment. However, if they fail, they can cause odours, water pollution, major repair costs and health hazards. Contaminants can leach into groundwater and drain directly into our lakes, streams and backyards!