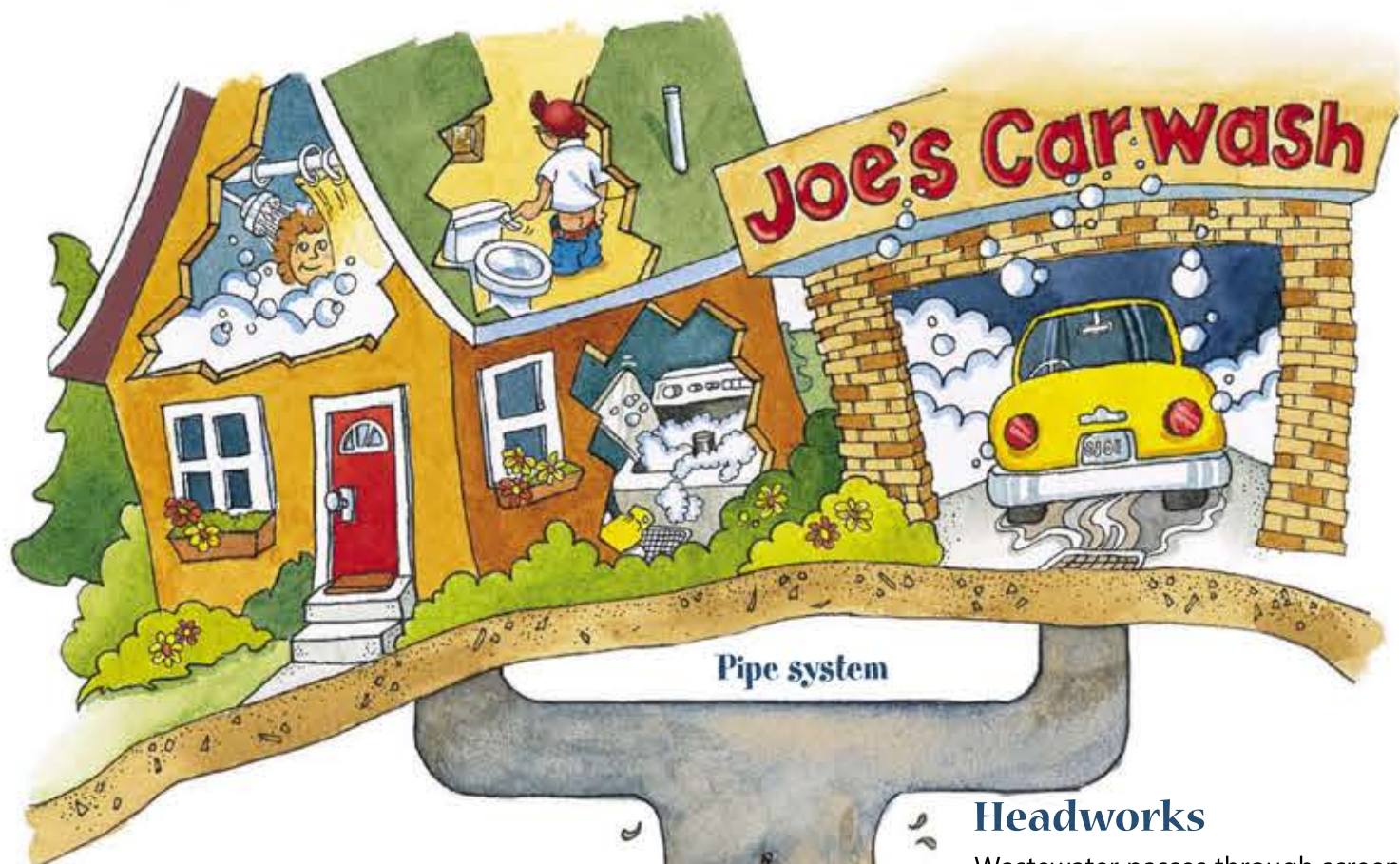


Here's how it all flows...



The City of Brockville collects all the wastewater that comes out of homes, schools, hospitals, businesses, car washes and industries in a sanitary sewer system. The wastewater flows through the pipe system by gravity or is pumped to the wastewater treatment plant.

Let's examine the steps that the wastewater has to follow through the pipe system and at the wastewater treatment plant.

Pipe system

All the water that is flushed down toilets, drained from bathtubs or used for brushing teeth, doing dishes and washing your clothes drains into a pipe system. As the wastewater gets closer to the treatment plant, the size of the pipes get bigger and bigger.

Treatment plant

Once the water gets to the treatment plant, it goes through a series of processes before it is released as clean water into the St. Lawrence River.

Headworks

Wastewater passes through screens that remove larger materials like plastic bags, wads of toilet paper, toys, sticks and tennis balls. The wastewater then travels into grit tanks, where the heavier dirt and "stuff" settles to the bottom, before it goes through the primary clarifiers.

Primary Clarifiers

The water stays in these large, open-air tanks for about three hours. After that, more "stuff" settles to the bottom. This sludge and the skimmings off the top are pumped to the digesters. The overflow (primary effluent) from these tanks is treated in the bioreactors.

Bioreactors

These large, open-air tanks mix primary effluent with microbes, or "good" bugs, and air. These bugs eat the dissolved nutrients and organic material, which helps them produce new bugs. Having the microbes eat the nutrients is a good thing because these nutrients encourage plant growth in the St. Lawrence River. An overabundance of plant life in the river will use up oxygen which fish need to live. The liquid flowing out of the bioreactors flows into secondary clarifiers.

Secondary Clarifiers

The microbes settle to the bottom of these tanks as sludge. From here, some of these "good" bugs are sent to the bioreactors to re-stock the bug supply. The remainder are sent to the digesters. The overflow (secondary effluent) from these tanks goes to the ultraviolet disinfection process for further treatment.

Disinfection

The treated wastewater is pretty clean, but it contains a large number of invisible, disease-causing microbes. To make these microbes harmless, all treated wastewater passes between light tubes emitting ultraviolet light. The ultraviolet light changes the organisms' DNA structure so they cannot reproduce. The water (final effluent) then flows into the St. Lawrence River.

Digesters

These are large enclosed vessels where the settled sludge, skimmings and secondary waste sludge are pumped for anaerobic (without oxygen) decomposition. The products of this process are digested sludge (biosolids) and gas. The gas is used as a fuel to produce heat. The biosolids are processed through a centrifuge. This process creates a liquid called centrate, which is discharged back into the treatment process, and cake, which is a solid product that is transported off-site for disposal.

