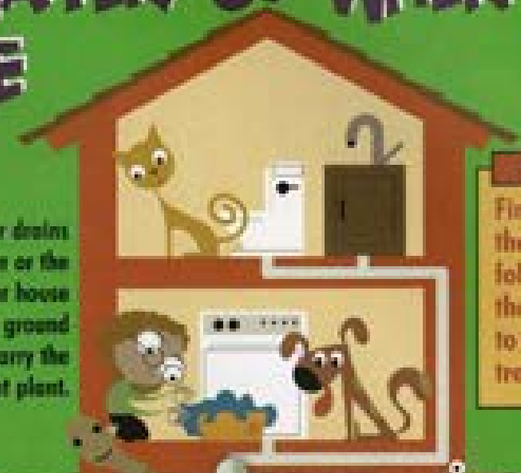
GIVE WATER A SECOND CHANCE... RE-CYCLE IT!

AN ACTIVITY BOOKLET FOR UPPER ELEMENTARY SCHOOL STUDENTS

WHERE DOES WATER GO WHEN IT GOES DOWN THE DRAIN?

When you flush the toilet, or the water drains out of the clothes washer or the shower or the sink, where does it go? Pipes in your house carry the water into pipes under the ground and streets called sewer pipes, which carry the wastewater to the wastewater treatment plant.



DIRECTIONS BOX

Find the path that the wastewater follows as it leaves the house and flows to the wastewater treatment plant.

What would happen if wastewater didn't get treated? Wastewater in cities would collect in big nasty, yucky, gunky, smelly ponds that would eventually seep into groundwater or drain into creeks that would carry the polluted water to rivers. More sewage would flow into the river as it passed more communities. Most of us live downriver from someone else ... would you want to drink that water? No way! Cities do treat river water before delivering it to homes, but the more pollution in the river water, the more expensive it is to treat. However, in smaller communities, where there are no sewer systems, wastewater from homes can be treated by septic systems. Septic systems are like miniature wastewater treatment plants for homes. They use microorganisms to break down waste and gunk before the water moves into groundwater aquifers.

By the time the water in the Mississippi River gets to Louisiana, it has been used about seven times.

WASTEWATER TREATMENT PLANTS—WATER LAUNDRIES

Primary (first) treatment

Large stuff is screened out. Floating fats, oils, grease, plastic and soap scum are skimmed off. Solids sink down (sometimes a chemical called alum is used to get the solids to stick together). Sludge is hauled away. Some sewage sludge is treated to kill any bacteria or viruses and is mixed with other components to become fertilizer.

Secondary (second) treatment

Air is bubbled through the water to add oxygen. Oxygen helps microbes live so they can consume the organic stuff in the water. Sediment and microbe poop sink to the bottom of the tank. Sometimes secondary water is disinfected with chemicals like chlorine to kill germs. Secondary treated wastewater is clean enough to be released to a river or the ocean, or can be used to surface irrigate orchards and vineyards.

Tertiary (third) treatment

Water is filtered through anthracite, sand, membranes or cloth to remove any remaining particles and chemicals. Chlorine or other chemicals are added to disinfect the water (kill bacteria and viruses). Tertiary treated wastewater can also be released to a river or the ocean. Tertiary treated wastewater is "recycled water" and it can be used to irrigate parks, playgrounds and other landscaping, to flush toilets in some office buildings, and for some industrial uses.

Don't drink from purple pipes! Purple pipes contain recycled water, not drinking water.

The largest item ever screened out of the City of San Diego's wastewater was the front end of a car. It was a VW Beetle!

GIVE WATER A SECOND CHANCE

No matter where you live, water is a precious resource. Many areas of the country have periods of drought (not enough precipitation). All of us must use our water wisely. One way to make sure we have enough is by recycling our wastewater. This dirty water can be cleaned in wastewater treatment plants so it can be used again in many different ways.

Recycled water can be used for irrigating landscapes in parks, golf courses and beside freeways. It can be used to flush toilets, to fill decorative fountains and ponds, in recreational lakes and in industrial processes.

Recycled water that has been treated to drinking water standards can be pumped into the ground to prevent salt water from seeping inland into fresh water aquifers. It can also be put in ponds where it can percolate into the ground to replenish groundwater aquifers. Recycled water can also be used to create wetlands and make natural environments better for fish, wildlife and aquatic insects to live in.

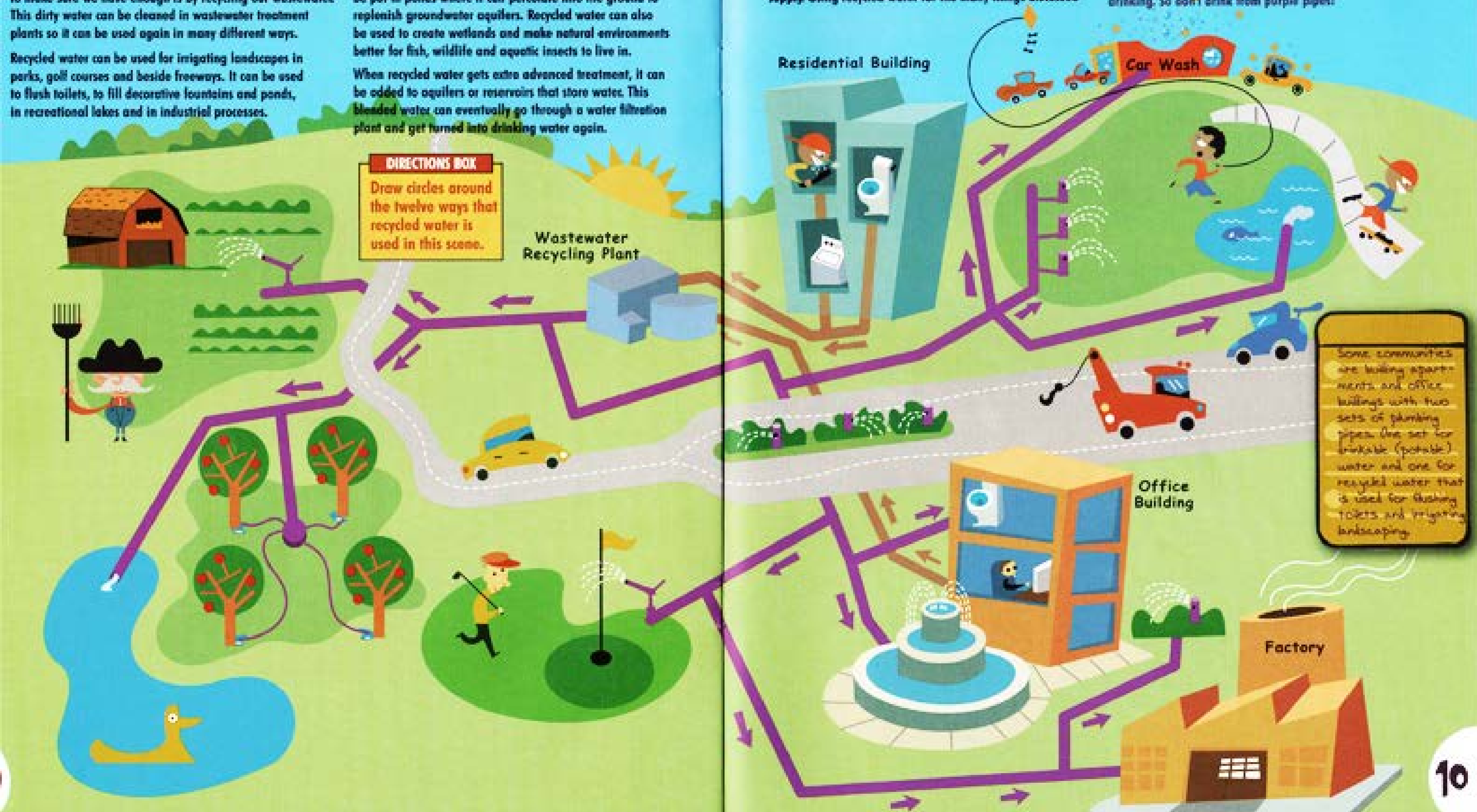
When recycled water gets extra advanced treatment, it can be added to aquifers or reservoirs that store water. This blended water can eventually go through a water filtration plant and get turned into drinking water again.

Droughts occur often in many parts of the country ... recycled water can help us get through these dry times. Recycled water helps us S - T - R - E - T - C - H our water supply. Using recycled water for the many things discussed in this section helps us save potable water for drinking and other uses inside our homes.

Remember: so far, recycled water has not been approved for drinking. So don't drink from purple pipes!

DIRECTIONS BOX

Draw circles around the twelve ways that recycled water is used in this scene.



Some communities are building apartments and office buildings with two sets of plumbing pipes. One set for drinkable (potable) water and one for recycled water that is used for flushing toilets and irrigating landscaping.