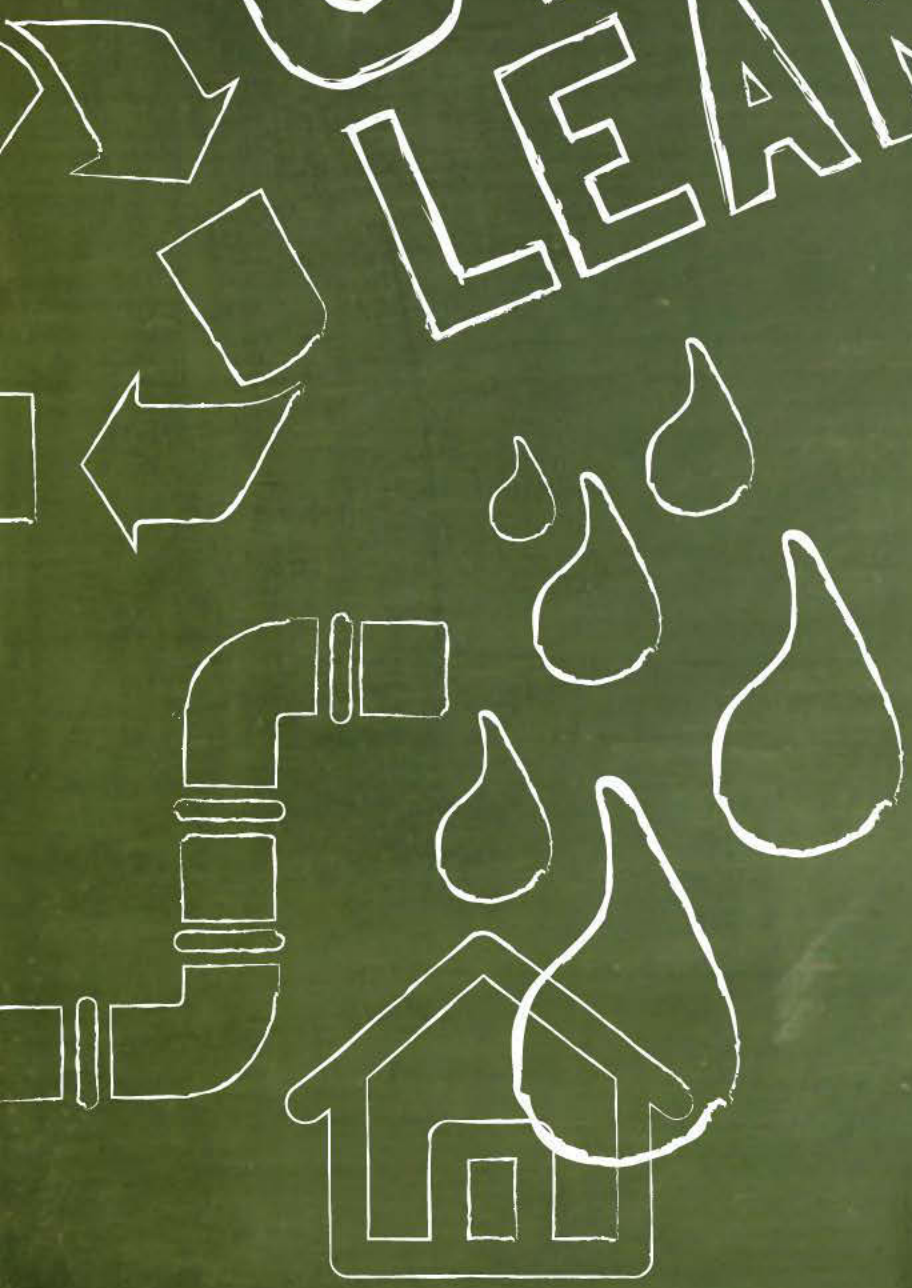
askHRgreen.org

GREEN LEARNING



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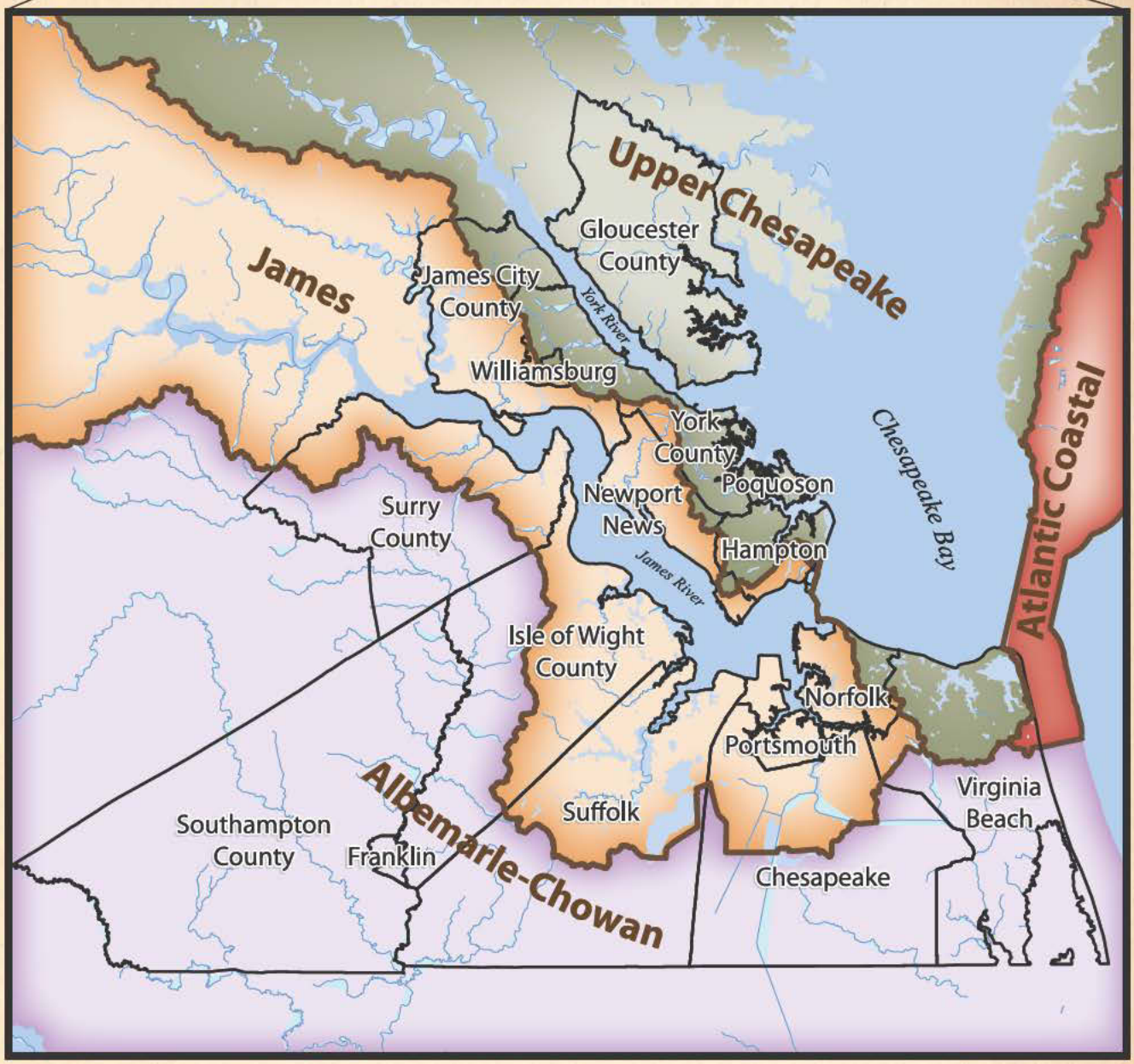
What is a WATERSHED?

MAJOR WATERSHEDS IN VIRGINIA

MAJOR WATERSHEDS IN HAMPTON ROADS



MAP KEY

- Watershed Boundary
- City or County Boundary
- Rivers

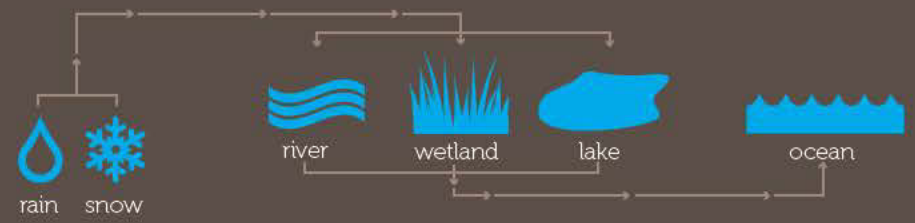
James Major Watershed Name
Hampton City or County Name

TO DO...

Locate your school on the Virginia watershed map and identify the watershed in which it is located.

Which two Hampton Roads watersheds are part of the Chesapeake Bay watershed?

What activities do you participate in at home or at school that could have a negative impact on the Chesapeake Bay?



When it rains or when snow melts, the precipitation flows across the ground's surface and begins to make its way to a nearby tributary, wetland, river or lake, and then on to a larger body of water, such as a bay or ocean. The land that the water flows across on this journey and the waterways that receive it are called a **watershed.**

THE **CHESAPEAKE BAY** WATERSHED

SPANS PORTIONS OF **SIX STATES** & COVERS A TOTAL OF **64,000** SQUARE MILES

AND POURS

BILLIONS

(THAT'S BILLION, WITH 9 ZEROES!)

OF GALLONS OF WATER **INTO THE BAY**

YOU'RE CLOSER THAN YOU THINK!

Even though you may not be able to see the Chesapeake Bay from your backyard, you're closer than you think! No matter where you live in the Chesapeake Bay watershed, it would take about 15 minutes to walk to a stream, river or body of water that flows into the Chesapeake Bay.

The watershed encompasses a diverse landscape

Is home to several thousand species of plants & animals

And over 15,000,000 people!

THE 411 ON TMDL

TMDL stands for Total Maximum Daily Load. It describes how much of a pollutant a body of water can receive while still meeting water quality standards. Think of it in terms of ice cream; you can only eat a certain amount in one day without overloading on calories. Too much of the same type of pollutant can have the same effect on a body of water, overloading its environment.

It may surprise you to know that some naturally-occurring pollutants, such as phosphorus, nitrogen and sediment are necessary components of a healthy waterway. The trouble is that human activity, such as over-fertilizing your lawn or not picking up pet waste, greatly increases their concentration in waterways which harms aquatic life.

According to the Environmental Protection Agency (EPA), the Chesapeake Bay's water quality is poor. To help reverse this course, the EPA has set a TMDL for nitrogen, phosphorus and sediment. It is our responsibility as citizens to reduce the amount of these pollutants in our waterways.

THIS GUIDE IS PACKED WITH EASY THINGS TO DO AT HOME AND AT SCHOOL TO HELP KEEP POLLUTANTS OUT OF OUR WATERWAYS. A HEALTHY CHESAPEAKE BAY STARTS WITH YOU!

WATERSHED PUZZLER

A watershed

B water quality

C bay

D salinity

E brackish

F infiltration

G tributary

H estuary

I aquatic

J turbidity

K wetland

L ecosystem

MATCH THE WORDS WITH THEIR DEFINITIONS

1. The cloudiness of water
2. Living in or growing on the water
3. Process of water soaking into the ground
4. A mixture of fresh and salt water
5. An area of land that is permanently or seasonally saturated with water and contains vegetation that is adapted to its unique soil conditions
6. Physical, chemical, and biological characteristics of water
7. Rain that falls on this area all drains into the same body of water
8. A community of living organisms and non-living elements interacting as a system
9. The amount of dissolved salt in water or soil
10. An inlet of water surrounded by land on three sides
11. A stream or river that flows into a larger river, lake, or bay
12. A partially enclosed body of water where fresh water from rivers and streams mixes with salt water from the ocean

Answers page 18

STORMWATER POLLUTION

As rain falls from the sky, it collects...

GUTTER RUNOFF
picks up leaves, sediment left behind in gutters

LAWN RUNOFF
picks up soil, pet waste, fertilizer, trash

DRIVEWAY RUNOFF
picks up oil, gasoline, sediment, trash

ROAD RUNOFF
picks up oil, gasoline, sediment, trash, tar

STORM DRAIN
All water goes to a storm drain which leads to...

RIVER, LAKE OR OCEAN
By the time the rain makes it to the ocean, it has picked up pollutants from hundreds of sources.

The way we use our watershed's lands affects the health of the watershed and the ecosystems within it. With the development of our communities over time, we have hardened much of the watershed's lands with driveways, rooftops, sidewalks, parking lots, and other hard surfaces. When it rains or when the snow melts, water flows over these impermeable surfaces instead of being soaked into the ground. As the water travels it picks up dirt, trash, oil, grease, fertilizers, and other pollutants – all of which get washed into the storm drain system and then directly into our waterways. Once in our waterways, the nitrogen, phosphorus, sediment, and trash threaten the waterways' health.

IMPERMEABLE

7 14.007
N
NITROGEN

Nitrogen is a chemical element (N) found in all of nature. When there is too much nitrogen in a waterway, it fuels the growth of algal blooms. Algal blooms are dense clusters of algae that block sunlight from other organisms. When an alga from the bloom dies, the decay process consumes dissolved oxygen in the water, which is needed by fish, blue crabs, and other organisms.

» ***Sources of nitrogen include fertilizers, household septic systems, and municipal and industrial wastewater.***

15 30.973
P
PHOSPHORUS

Phosphorus is a chemical element (P). Like nitrogen, when there is too much phosphorus in a waterway, it fuels the growth of algal blooms.

» ***Sources of phosphorus include fertilizers, herbicides, and wastewater.***

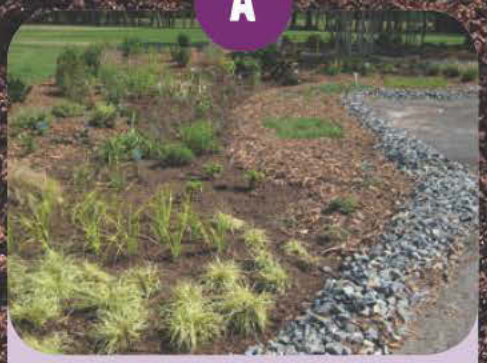
S
SEDIMENT

Stormwater, which may be carrying sediment from eroding land, picks up velocity as it travels over impervious surfaces. The speed of the water causes stream bank erosion, which deposits more sediment in the water. Too much sediment suspended in the water clouds the water (turbidity), harming fish, oysters, and aquatic grasses.

SLOW THE FLOW

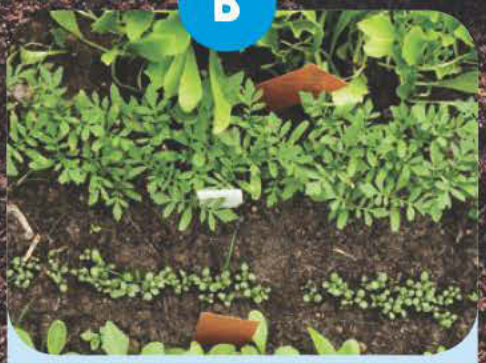
Keeping pollutants off of the land is one way to help keep our waterways clean. Another way is to Slow the Flow of stormwater by using Low Impact Development (LID) techniques. LID methods reduce the harm of stormwater by utilizing natural designs to keep stormwater on site. ***See if you can match these simple, household Slow the Flow pictures with their descriptions.***

A



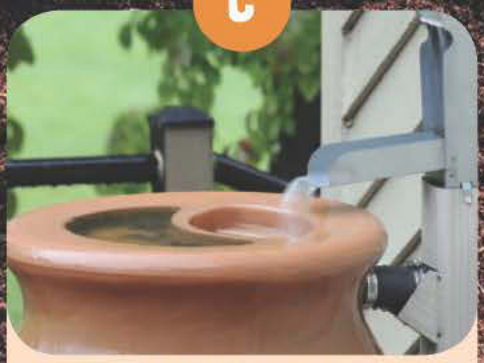
RAIN GARDEN

B



BUFFER GARDEN

C

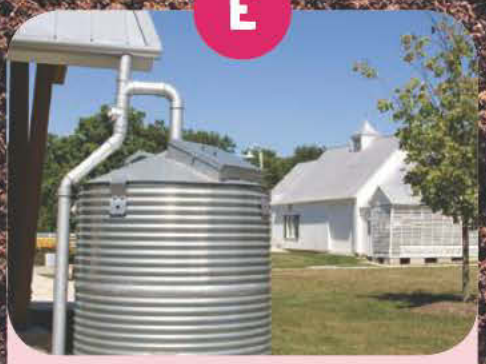


RAIN BARREL

D

DIVERTER

E



CISTERN

Can you install any of these SLOW THE FLOW features at your home or school?

1. A small water catchment device that captures and stores rain water for later use. These containers can hold 30 - 100 gallons, depending on the size of the container. This natural rain water can later be used to water gardens or for other yard activities. It is not potable water.

2. A depressed garden that has porous soils and specialized, water loving plants. This type of garden holds stormwater and allows the water to infiltrate slowly into the ground instead of rushing into the stormwater system.

3. A flexible hose that attaches to guttering or a downspout to redirect stormwater to flow into gardens or landscaped areas instead of allowing water to move directly across a driveway or sidewalk.

4. A large scale water catchment device that can hold hundreds of gallons of rainwater which can be reused for flushing toilets and other non-potable household water uses, as well as watering large garden areas.

5. A naturally vegetated or planted area that separates a formal lawn area from a waterway. These can also be planted along curbed or ditched areas to slow storm water before it enters the stormwater catch basin or pipe.

Answers page 18

POINTING TO THE SOURCE OF POLLUTION

The Atlantic Treatment Plant in Virginia Beach is one of nine award-winning HRSD treatment plants in Hampton Roads.

POINT SOURCE POLLUTION comes from identifiable sources that can be controlled. Factories and wastewater treatment plants are two common types of point sources. The federal government regulates point source pollution. HRSD treats the wastewater generated in Hampton Roads so it can be safely discharged to area waterways. HRSD staff work tirelessly to meet the federal water quality regulations to keep our local waterways clean. *Hint: It is easy for you to point your finger at the source of point source pollution.*

NONPOINT SOURCE POLLUTION is pollution that travels over land as a result of runoff and whose source cannot be identified or controlled. Nonpoint source pollutants come from urban and rural areas, businesses, roads, parking lots, farms, and even forests. A few examples include roadside trash or animal droppings on the ground. When it rains, nonpoint source pollution is washed off the land and into our waterways. This is called stormwater runoff. It's difficult to point your finger to the source of nonpoint source pollution.

CHECK YOUR POLLUTION SOURCE I.Q.

Listed below are pollutants commonly found in the Chesapeake Bay. Mark a "P" on the line for point source pollution and "NP" for nonpoint source pollution.

1. _____ Vehicle oil on parking lot
2. _____ Fertilizer on sidewalk
3. _____ Soap in the street from a carwash
4. _____ Wastewater treatment plant
5. _____ Grass clippings in street
6. _____ Duck and geese feces on the ground
7. _____ Emissions from a power plant
8. _____ Sediment on a parking lot
9. _____ Trash alongside the road
10. _____ Cigarette butt on ground
11. _____ Leaves and branches on street
12. _____ Erosion
13. _____ Dog feces on the ground
14. _____ Crop fertilizer

Answers page 18

All About Water

QUENCH YOUR THIRST FOR INFO

Water is a valuable natural resource used for many purposes—for drinking, keeping clean, growing crops, swimming and recreation, generating power, and manufacturing goods.

In Hampton Roads, the water that flows through your taps comes from a variety of sources. Depending on where you live, your water may come from surface sources, such as lakes and rivers, or from groundwater. In some rural areas, people get their water from private wells that bring the water to their homes from aquifers, located under the ground. But in most parts of our region, water providers, such as your city or county water utility department, collect and treat water to make it clean and safe to drink. Then it's sent to people's homes through a system of underground pipes.

Water utilities can be privately owned or part of a department within your municipal government. The utilities charge customers for the services they provide, and the revenue pays for the electricity used to pump the water and the chemicals used to treat the water. It also is used to pay for the costs of managing the watershed, protecting water quality, and repairing or replacing the pipes, dams, treatment plants, and other infrastructure used to provide your water. If rates are too low to cover the cost of operations, water utilities sometimes have to postpone repairing or replacing leaky, worn out pipes.

A lot of water can be wasted through leaks. It doesn't matter if the leak occurs in a water main or in your home. Even if you get your water from a private well, wasted water means wasted money. People who use well water must pay for the energy to pump the water, and everyone pays for energy to heat water.

Wasting water can cause other problems:

It leaves less for others to use.

Wells can run dry and aquifers can be depleted, especially during droughts.

Septic systems can be overloaded by too much water.

Low river, stream, and reservoir levels hurt ecosystems and reduce recreational opportunities.

When water supplies get low, water utilities need to develop new water supply resources.

You can do your part by using water wisely.

Check for leaky faucets and toilets (fixing leaks is a big water saver). Turn off the faucet while you're brushing your teeth. Wash only full loads of dishes and laundry. Take shorter showers or use less water to fill the bathtub. Can you think of other ways to save water?

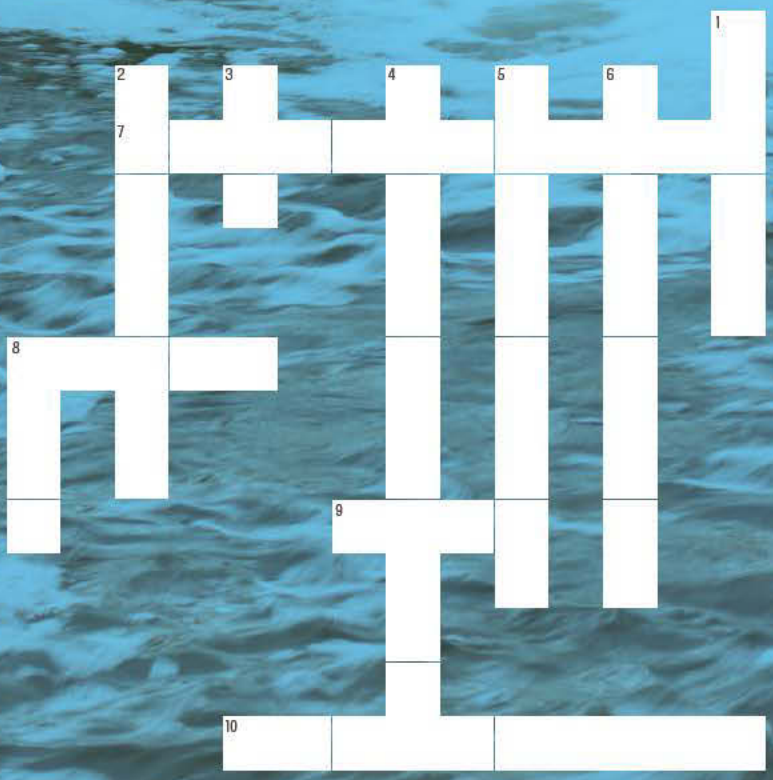
hydroplane
hydration
hydrophobia
hydroelectric
hydrosphere
hydrotherapy
hydroponics
hydraulic
hydrant
hydrology

These English words are formed from the root word "hydra." Hydra is the Greek word for water. Try to guess the meanings of the words, then look up their definitions in the dictionary. Were you right?

Meet Your Local Water Provider

Use the Internet to find your local Water Quality Report to learn about your drinking water provider and answer the following questions:

- What is the name of your local drinking water provider?
- Do you get your water from this provider at home? At school?
- What role does a water utility play in providing for public health and safety?
- What is/are the source/sources of your drinking water? *(For example, surface water or groundwater; if surface water, give the name of the river, lake, or stream.)*
- What is desalination?
- What is the treatment process used by your water utility and what chemicals do they use to make the water clean and safe to drink?



Across

7 You can help stop water shortages from spreading by practicing _____.

8 A _____ toilet can waste up to 20 gallons of water per day.

9 To save water, plant flowers and shrubs in the spring or in the _____ when the watering requirements are lower.

10 Install one of these at your downspout to collect stormwater that can be used to water flowers and wash your car. (2 words)

Down

1 Rain that falls on streets and carries pollutants such as fertilizers, oil, and bacteria into streams, rivers, and lakes is known as stormwater _____.

2 This type of precipitation is a result of atmospheric moisture mixing with sulfur and nitrogen oxides emitted from the burning of fossil fuels. (2 words)

3 Less than _____ percent of the Earth's water is drinkable.

4 Surface water (water in lakes, rivers, and streams) is naturally lost through evaporation and naturally replenished by _____.

5 The process by which water renews itself. (2 words)

6 This process removes undesirable particles from water during the treatment process.

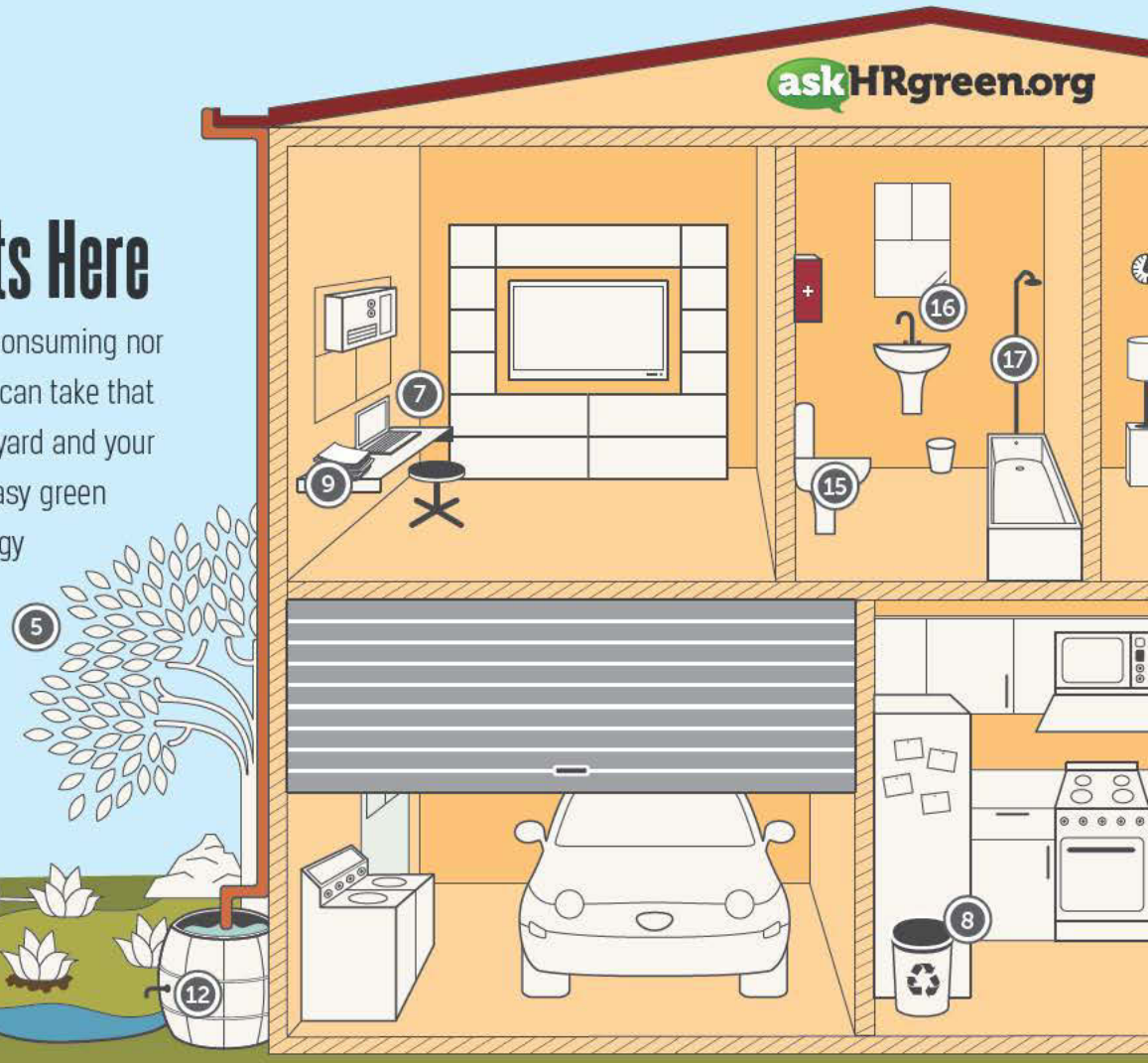
8 These were hollowed out to make the first water pipes in the U.S.

Answers page 18

GOOD to DO

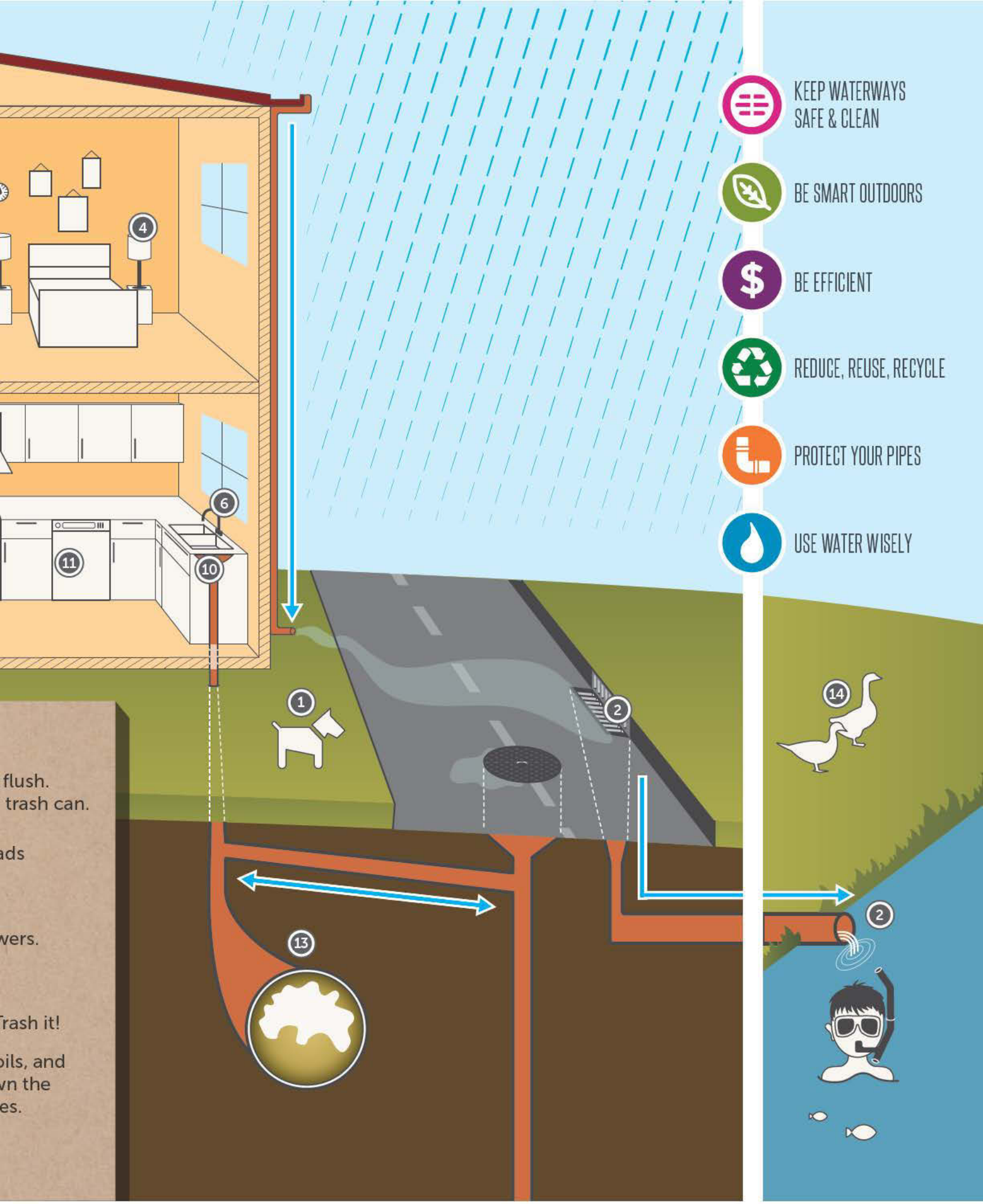
Green Living Starts Here

Sustainable living is neither time-consuming nor costly. There are simple steps you can take that are good for you, your home, your yard and your community. Take a look at these easy green tips, then map out your own strategy and get started. Mother Earth will thank you.



Fill the circles with the corresponding numbers in the diagram.

- ( ) Turn off the faucet while brushing your teeth.
- ( ) Only rain down the storm drain.
- ( ) Reduce and recycle paper, junk mail, and telephone books.
- ( ) Recycle paper, plastic, glass and aluminum.
- ( ) Catch the rain to water plants.
- ( ) Do not use the garbage disposal.
- ( ) Switch to more efficient light bulbs.
- ( ) Unplug electronics when they are not in use.
- ( ) Use a hose nozzle when watering your garden or washing your car.
- ( ) Drink tap water instead of bottled.
- ( ) Don't feed ducks or geese.
- ( ) Choose native, drought-tolerant trees, shrubs, and plants.
- ( ) Think before you The toilet is not a
- ( ) Only wash full loa of dishes.
- ( ) Take shorter show
- ( ) Pet Waste: Scoop it! Bag it! T
- ( ) Never pour fats, o grease (FOG) dow drain, it clogs pip


KEEP WATERWAYS SAFE & CLEAN
BE SMART OUTDOORS
BE EFFICIENT
REDUCE, REUSE, RECYCLE
PROTECT YOUR PIPES
USE WATER WISELY
4
6
11
10
1
2
14
2
13
flush.
trash can.
ads
wers.
Trash it!
oils, and
wn the
es.

DO THE MATH

How Much Water Does Your Household Use?

This home water audit will give your family an idea of how much water your household uses daily. Your family will need to help you gather some of the answers for this audit. Answer only the questions that apply to your house.

This home water audit was adapted from St. Johns River Water Management District's Family Water Use Survey.

Household Information

TYPE OF DWELLING

- ☐ Detached single family residence
- ☐ Town house residence
- ☐ Condominium residence
- ☐ Apartment residence

Does your dwelling have an individual water meter?
☐ Yes ☐ No

_____ Number of adults living in home
_____ Number of children living in home

_____ Number of toilets
_____ Number of showers

Dishwasher? ☐ Yes ☐ No
Clothes washer? ☐ Yes ☐ No

Water Use

1. SHOWERS: How many showers does your family take a day? About how long is each one?

_____ X _____ =
Number of showers | Number of minutes | Total shower time per day

2. BATHS: How many baths does your family take a day? A half-full tub is about 18 gallons, a full tub is about 36 gallons.

_____ X _____ =
Number in family | Number of baths | Total of baths per day

3. TOILETS: How many times a day does your family flush the toilet? (The average is four flushes per person.)

_____ X _____ =
Number in family | Flushes per day | Total flushes per day

4. TEETH: Most family members brush their teeth at least twice a day for about two minutes each time. Leaving the faucet on while brushing your teeth wastes a lot of water. How often does you family brush?

_____ X _____ =
Number in family | Number of brushes per day | Total number of brushes per day

_____ X 2 MINUTES EACH BRUSH =
Total number of brushes per day | Total minutes of brushes per day

5. HAND DISHWASHING: How many times a day does your family wash dishes by hand? About how long does the water run each time?

_____ X _____ =
Washes per day | Minutes water runs | Total washing time per day

6. DISHWASHER: Answer this question only if you have a dishwasher. How many times a week does your family run the dishwasher?

_____ ÷ 7 DAYS PER WEEK =
Uses per week | Average loads per day

7. LAUNDRY: Answer only if you have a washing machine. How many loads of laundry does your family do each week?

_____ ÷ 7 DAYS PER WEEK =
Loads per week | Average loads per day

8. OTHER INDOOR WATER USES: Your family also uses water indoors in other ways. List some of these ways.

_____

_____

_____

9. LAWN WATERING: How many times a week does your family water the lawn? About how many minutes do you water each time?

_____ X _____ =
Watering days per week — Watering minutes per day — Total minutes per week

_____ ÷ 7 DAYS PER WEEK =
Total watering minutes per week — Average watering time per day

10. OTHER OUTDOOR WATER USES: Your family may use water outdoors in other ways. List some of the ways.

_____

_____

_____

FIGURE YOUR FAMILY'S TOTAL DAILY USE

Put your DO THE MATH answers in column C. Multiply columns B and C and put your answers in column D. This is the amount of water your family uses daily for each activity. Next, add column D to reveal the estimate of the total gallons of water your family uses daily.

A Water Use Activity	B Gallons per Minute or Use	C Minutes or Uses per Day	D Total Water Use Per Day
1. SHOWERS	5 gallons per minute	X	=
2. BATHS	36 gallons per use	X	=
3. TOILETS	5 gallons per flush	X	=
4. TEETH	3 gallons per minute	X	=
5. HAND DISHWASHING	3 gallons per minute	X	=
6. DISHWASHER	30 gallons per use	X	=
7. LAUNDRY	48 gallons per use	X	=
8. OTHER INDOOR USE	Put answer from above		=
9. LAWN WATERING	10 gallons per minute	X	=
10. OTHER OUTDOOR WATER USES	Put answer from above		=

TOTAL FAMILY USE PER DAY _____ GALLONS

MAKING THE RIGHT CHOICES

= 1 GALLON **DIRECT USE**
the water you actually use

= 1 GALLON **VIRTUAL USE**
the water that helped make the things you use

= 100 GALLONS **VIRTUAL USE**

HOW MUCH WATER IS USED FOR EACH?

Shower 10 minutes
3.8 gallons/minutes

VS.

Low-flow shower 10 minutes
2.3 gallons/minute

Apple
18 gallons

VS.

Orange
13 gallons

Soda 14 oz. bottle
33 gallons

VS.

Tap Water 16 oz. glass
.125 gallons

Bag of Chips
49 gallons

VS.

Slice of Bread
11 gallons

1 lb. of Beef
1,500 gallons

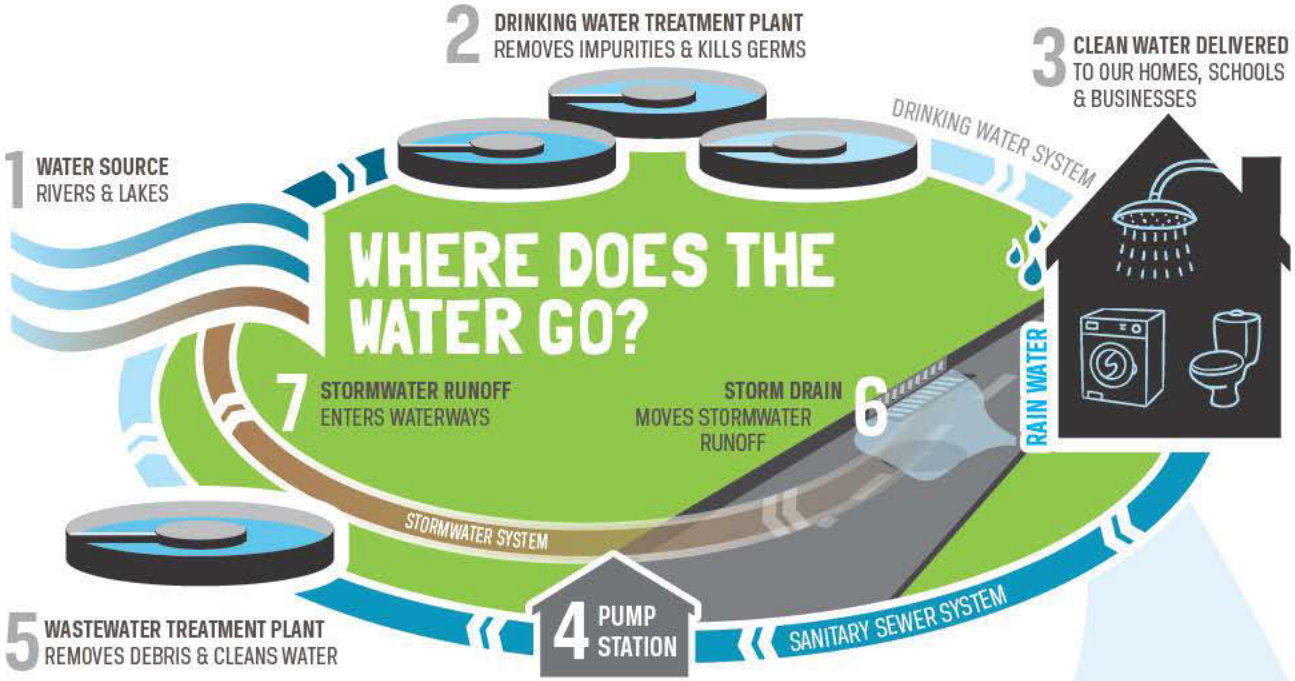
VS.

Cheese Pizza
79 gallons

Hamburger
634 gallons

VS.

Salad
31 gallons



You've flushed a toilet, let the faucet flow and watched water rush down the street during a rainstorm. But do you really understand where the water goes? **In the Hampton Roads region, there are three very important pipe systems that are part of our regional infrastructure.** The drinking water system brings clean water **to** our homes, while the sanitary sewer system and the stormwater system are two separate systems that take water away **from** our homes and streets.

1 Most of the drinking water in Hampton Roads comes from rivers and lakes. 2 This surface water is pumped through huge pipes to a water treatment plant, where impurities are removed and germs are killed. Some people in our region use water that is pumped from deep underground. Unlike surface water, groundwater usually isn't treated to remove impurities, but it is disinfected to kill germs. 3 Once the water is clean and safe to drink, it is pumped through a network of pipes and storage facilities into our homes.

When water leaves our individual homes through sinks, showers, and toilets, it flows through a single small pipe which connects to a larger main pipe in the street. 4 The wastewater is carried through the sanitary sewer system by gravity to a pump station. 5 The pump station collects the wastewater and pushes it by force further down the pipes to the wastewater treatment plant. At the treatment plant, debris is removed and the water is cleaned to remove germs and bacteria before it is released back into our waterways.

6 Rainwater runoff from rooftops and gutters is directed to the stormwater system. The drain usually looks like a small opening in the curb or a grate in the pavement. 7 **Unlike the sanitary sewer system, water that enters the stormwater system is never treated and flows directly to our local waterways. This is why it is so important not to litter.** Cigarette butts, trash, dirt and grass clippings are all carried by the rain into the storm drain and out to rivers, lakes, or the ocean. This pollution is harmful to our waterways and local wildlife.

EACH SYSTEM HAS A SEPARATE AND SPECIFIC PURPOSE FROM THE OTHERS, AND IT IS IMPORTANT TO UNDERSTAND WHERE THE WATER GOES.

For the following questions, use the information to the left to explain how much water is used to make the items. Explain which requires more water. Then turn your explanation into a ratio.

Example: How much water is used to produce an apple versus an orange?

1 apple = 18 gallons of water & 1 orange = 13 gallons of water

It takes 18 gallons of water to produce an apple and 13 gallons of water to produce an orange. It takes more water to produce an apple than an orange. The ratio of water use is 18:13.

1 How much water is used to produce a hamburger and chips vs. a cheese pizza?

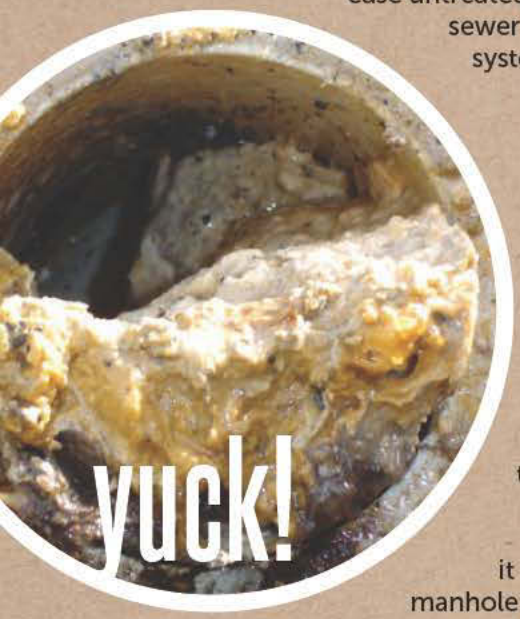
2 How much water is used to produce a 14 oz. bottle of soda vs. a 16 oz. glass of tap water?

3 Create your own question and test a classmate!

Answers page 18

Fat-free Drains AS EASY AS 1, 2, 3

The sanitary sewer system and stormwater system are efficient ways to collect and contain two different types of water. Water in the sanitary sewer system is treated, while water in the stormwater system is not. However, sometimes a sanitary sewer overflow does occur, in which case untreated wastewater from the sanitary sewer system enters the stormwater system. These occurrences can be prevented, but it is important to understand the causes and consequences.



Grease is the most common cause of sanitary sewer overflows. When people cook and pour fats, oils, and grease (also known as FOG) down the drain, the FOG turns from a liquid to a solid as it cools, clogging the pipe. When the water can't make it past the greasy mess, the pipes back up. Sometimes it is so powerful it can push up a manhole and flow into the street. Once wastewater is on the street, it acts just like rainwater and flows to the storm drain.

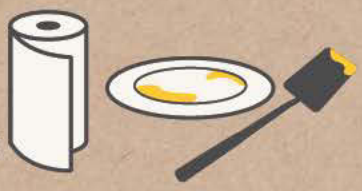
Since stormwater never goes to a treatment plant, raw sewage from a sanitary sewer overflow can contaminate our waterways. Depending on the level of contamination, beaches may need to be closed to protect human health, or fish can die from ingesting the dirty water.

Here are three easy ways to keep your drains fat-free:

Can the Grease

❶ Pour used cooking grease into an empty, heat-safe container, such as a soup can, and ❷ store it in the freezer. Once solidified, ❸ toss the can into the garbage.

Scrape the Plate



Wipe all pots, pans, dishes and cooking utensils with a paper towel prior to washing to absorb the grease.

Catch the Scraps

Eliminate using the garbage disposal. Catch food scraps in your sink with a basket or strainer and toss them into the trash.

Don't let your sanitary sewer system back up. Once it's in the stormwater system, it's too late!

Conservation Professionals

Meet **Daniel A. Baxter**, Business Recycling Coordinator, City of Newport News Public Works Resource Recovery Division

Tell us about your job.
My job involves promoting recycling, waste reduction, and resource management among local businesses; overseeing recycling and resource recovery programs for municipal buildings and schools; coordinating electronics recycling for municipal operations and schools; providing education and outreach to businesses and residents; and auditing the household hazardous waste, e-cycling, and recycling contractors with whom we work.

Why did you decide to go into this field?
I have been involved and interested in conservation since I was a child. After 20-plus years in the Navy, I returned to college and pursued degrees in environmental geology, oceanography, and land use management.

What do you enjoy most about your job?
I enjoy meeting new people and working with innovators to develop and evaluate new solutions to challenges.

What did you study in high school and college that helped prepare you for this line of work?
Math (especially applied statistics up to advanced trigonometry), science, geography, English, civics, and foreign languages.

What advice do you have for students about recycling?
Recycling is a multifaceted discipline. It is constantly changing to meet new challenges. So, I'd advise you to be willing to learn and work with others to develop new innovations in recycling that will make a difference.

resource management matters

Every day people make hundreds of choices regarding resource use: ride in a car or ride a bike; recycle or throw away your soda can; turn off the water or leave it running while you brush your teeth.

All of these decisions have costs and benefits. Renewable resources such as air, water, and trees are able to replenish themselves over time, yet it is important to balance their use with how quickly the resources can be replenished.

Nonrenewable resources such as coal, oil, natural gas, and nuclear power cannot be reproduced. When these are gone, the resources are gone for good.

TEST YOUR RECYCLING IQ

1. A soda can that is recycled today could be back in your house as a new can in just two months.
   True or False
2. Aluminum can be recycled up to four times.
   True or False
3. The average American generates four pounds of trash a day.
   True or False
4. Glass can be recycled forever.
   True or False
5. It takes 50 years for aluminum cans to decompose in a landfill.
   True or False
6. Plastic bags and product wraps can be recycled at most grocery stores.
   True or False
7. Electronics can be placed in the curbside recycling bin.
   True or False
8. Recycling conserves resources and saves energy.
   True or False

Answers page 18

TO RECYCLE, OR NOT TO RECYCLE?

Recycling plays an important role in responsible resource management.

Pitch in to make a difference by always recycling the following items:

FOR THE RECYCLING BIN

- **Aluminum, steel and tin cans**
- **Clean plastic bottles and jugs with neck or pour spouts**
- **Glass bottles and jars**
- **Mixed paper (office paper, paper bags, magazines, newspaper and inserts, telephone books, junk mail)**
- **Empty food boxes and cardboard**

FOR SPECIAL RECYCLING

- **Plastic bags** – Recycled at most grocery stores. Visit ***abagslife.com*** to find a store near you.
- **Compact fluorescent light bulbs** – Recycled at a household hazardous waste event or facility. ***askHRgreen.org/household-hazardous-waste***

- **Electronics** – Recycled at most electronic stores and at electronic recycling events. ***askHRgreen.org/electronics-recycling***

- **Rechargeable batteries** – Recycled at household hazardous waste events and most electronic stores. ***askHRgreen.org/household-hazardous-waste***

CLIP AND SAVE!

ANSWER GUIDE

page 4

1. J
2. I
3. F
4. E
5. K
6. B
7. A
8. L
9. D
10. C
11. G
12. H

page 6

1. C
2. A
3. D
4. E
5. B

page 7

1. NP
2. NP
3. NP
4. P
5. NP
6. NP
7. P
8. NP
9. NP
10. NP
11. NP
12. NP
13. NP
14. NP

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16	4	15
2	7	11
9	3	17
8	6	1
12	14	13
10	5	

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1. It takes 683 gallons of water to produce a hamburger and chips and 79 gallons of water to produce a cheese pizza. It takes more water to produce a hamburger and chips than it does to produce a cheese pizza. *The ratio of water use is 683:79. The ratio of water use is 683/79. The ratio of water use is 683 to 79.*

2. It takes 33 gallons of water to produce a 14 oz. bottle of soda and .125 gallons of water to produce a 16 oz. glass of tap water. It takes more water to produce a 14 oz. bottle of soda than it does to produce a 16 oz. glass of tap water. *The ratio of water use is 264:1. The ratio of water use is 264/1. The ratio of water use is 264 to 1.*

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1. True
2. False (Forever)
3. True
4. True
5. False (100 years)
6. True
7. False (take to special electronics collection)
8. True

GLOSSARY

Acid rain: Rain or any other form of precipitation that is unusually acidic due to emissions of sulfur dioxide and nitrogen oxides.

Algal Bloom: A dense cluster of algae often caused by excess nitrogen and phosphorus. As it grows it blocks sunlight from reaching organisms that live beneath it and it consumes dissolved oxygen that is needed by fish and crabs.

Aquatic: Living or growing in water.

Aquifer: An underground body of porous rock, sand, or gravel through which water can easily move.

Bay: An inlet of water surrounded by land on three sides.

Brackish: A mixture of fresh and salt water.

Desalination: The process of removing salt from water so it can be used for drinking or irrigation.

Ecosystem: A community of living organisms and non-living elements interacting as a system.

Estuary: A partially enclosed body of water where fresh water from rivers and streams mixes with salt water from the ocean.

Herbicide: A substance for killing plants, especially weeds.

Impermeable: Not able to let water or liquid pass through.

Impervious: Not able to let anything through.

Infiltration: The process of water soaking into the ground.

Infrastructure: The system of public works such as roads, drinking water pipes, stormwater ditches, ponds and pipes, and wastewater pipes.

Municipal: Referring to a town, city or its local government.

Porous: Able to let water or liquid pass through.

Potable: Fit to drink; drinkable.

Revenue: The income of a government from taxation, user fees, customs, or other sources.

Runoff: The water that flows off from the land and into a waterway.

Salinity: The amount of dissolved salt in water or soil.

Septic system: A small scale treatment system that collects and treats wastewater. These systems require periodic pumping and maintenance.

Tributary: A stream or river that flows into a larger river, lake, or bay.

Turbidity: The cloudiness of water.

Velocity: The rate of speed with which something happens.

Wastewater: Water that has been used in washing, flushing, or manufacturing.

Watershed: Rain that falls on this area all drains into the same body of water.

Water main: A principal pipe that distributes drinking water.

Water quality: The physical, chemical, and biological characteristics of water.

Wetland: An area of land that is permanently or seasonally saturated with water and contains vegetation that is adapted to its unique soil conditions.

CASH FOR THE CLASSROOM

EDUCATORS, TAKE NOTE.

Did you know that **askHRgreen.org** offers environmental education mini-grants of up to $500? Intended to provide funding for environmentally-themed projects, the mini-grants may be used to fund a portion of, or an entire project.

All Hampton Roads school teachers (K-12), youth leaders, or organizations working with youth are eligible to apply. Projects must be specifically tied to suggested environmental topics, which can be found at **askhrgreen.org/hr-green-mini-grant-application-package**, along with an online application and details.

There is no deadline for applications, which are accepted year round as long as funding is available.

GOOD to DO

PROTECTING THE ENVIRONMENT IS EVERYONE'S RESPONSIBILITY.

Every decision you make and every action you take **makes a difference**!

- ☐ Scoop, bag, and trash your dog's waste
- ☐ Recycle paper, plastic, glass, and aluminum
- ☐ Bring reusable bags to the grocery store
- ☐ Turn off the lights when leaving a room
- ☐ Choose tap water instead of bottled water
- ☐ Turn off the water while brushing your teeth
- ☐ Let only rain go down the storm drain
- ☐ Plant a tree
- ☐ Read more and watch less TV
- ☐ Pick up any trash you or others may have dropped

askHRgreen.org

askHRgreen.org is your go-to resource for all things green in Hampton Roads — from recycling tips and pointers for keeping local waterways clean to water-saving ideas and simple steps to make local living easy on the environment.

askHRgreen.org is administered through the Hampton Roads Planning District Commission (HRPDC) and powered by the following members: the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg; the counties of Gloucester, Isle of Wight, James City, Southampton, Surry and York; and HRSD.

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