



ANSWERS ON TAP

Discover amazing stuff about your water.

Tampa Bay
Times
NIE
newspaper in education
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TAMPA
BAY

WATER

NEWSPAPER IN EDUCATION

The Tampa Bay Times Newspaper in Education (NIE) program is a cooperative effort between schools and the *Times* to promote the use of newspapers in print and electronic form as educational resources. Our educational resources fall into the category of informational text. Informational text is a type of nonfiction text. The primary purpose of informational text is to convey information about the natural or social world.

Since the mid-1970s, NIE has provided schools with class sets of informational text in the form of the daily newspaper and our award winning original curriculum, at no cost to teachers or schools. In the Tampa Bay area each year, more than 5 million newspapers and electronic licenses are provided to teachers and students free of charge thanks to our generous individual, corporate and foundation sponsors. In addition to providing free supplemental materials to educators, NIE hosts free educator workshops and webinars. Our teaching materials cover a variety of subjects and are consistent with Florida's educational standards.

For more information about NIE, visit tampabay.com/nie or call 800-333-7505, ext. 8138. Follow us on Twitter at [Twitter.com/TBTimesNIE](https://twitter.com/TBTimesNIE). For additional copies of this NIE publication, email ordernie@tampabay.com.

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FLORIDA STANDARDS

This publication and the newspaper activities focus on the following Florida Standards for middle school:

Language Arts: LAFS.6-8.RI.1.1; LAFS.6.RI.1.2; LAFS.6-8.RI.1.3; LAFS.6-8.RI.2.4; LAFS.6-8.RI.2.5; LAFS.6-8.RI.2.6; LAFS.6-8.RI.3.7; LAFS.6-8.W.1.1; LAFS.6-8.W.1.2; LAFS.6-8.W.2.4; LAFS.6-8.W.2.5; LAFS.6-8.W.2.6; LAFS.6-8.W.3.7; LAFS.6-8.W.3.8; LAFS.6-8.W.3.9; LAFS.6-8.SL.1.1; LAFS.6-8.SL.1.2; LAFS.6-8.SL.1.3; LAFS.6-8.SL.2.4; LAFS.6-8.SL.2.6; LAFS.6-8.L.1.1; LAFS.6-8.L.1.2; LAFS.6-8.L.2.3; LAFS.6-8.L.3.4; LAFS.6-8.L.3.5; LAFS.6-8.L.3.6
Math: MAFS.6-8.NS.2.2; MAFS.6-8.NS.2.3; MAFS.6-8.SP.1.1; MAFS.6-8.SP.2.5; MAFS.6-8.EE.2.3; MAFS.6-8.EE.2.4
Science: SC.6.N.1.1; SC.6.E.6.1; SC.6.E.6.2; SC.6.E.7.2; SC.7.N.1.1; SC.7.L.15.3; SC.7.L.17.3; SC.7.E.6.1; SC.7.E.6.2; SC.8.N.1.1; SC.8.N.4.1; SC.8.N.4.2

LET'S START AT THE SOURCE.

It all begins with a raindrop. But after that raindrop falls from the sky, where does it go?

It depends on where that raindrop lands. Tampa Bay Water, the regional wholesale drinking water utility, takes that raindrop — and millions more — from three different sources and blends them together. Those sources are groundwater, surface water and desalinated seawater. Tampa Bay Water is the only water utility in the United States to take advantage of these three sources of water combined.

GROUNDWATER

If that raindrop falls onto the ground, it will soak into the earth and eventually be stored in the Floridan Aquifer, an underground layer of limestone that works like a sponge to store trillions of gallons of water. Groundwater was once the sole source of drinking water for the region.

SURFACE WATER OR RIVER WATER

If that raindrop falls into the Tampa Bypass Canal, the Alafia River or the Hillsborough River, it is considered surface water. When available, water is skimmed from these rivers. Some is treated for immediate use at the Tampa Bay Regional Surface Water Treatment Plant, and surplus water is stored in the 15.5-billion gallon C.W. Bill Young Regional Reservoir to supply the water treatment plant during dry times.

SEAWATER FROM TAMPA BAY

If that raindrop falls into the waters of Tampa Bay, it might be destined for the Tampa Bay Seawater Desalination Plant. This facility is a drought-proof, alternative water supply that provides up to 25 million gallons per day of drinking water to the region.

Seawater coming into the plant goes through a rigorous pretreatment process then freshwater is separated from the seawater using reverse osmosis. The end product is high-quality drinking water that supplies up to 10 percent of the region's needs.



FOLLOW WATER ON ITS INCREDIBLE JOURNEY.

From raindrop to kitchen faucet...down the drain and even back into the air, the water you drink every day has an amazing journey...that never really ends.

WATERING YOUR LAWN

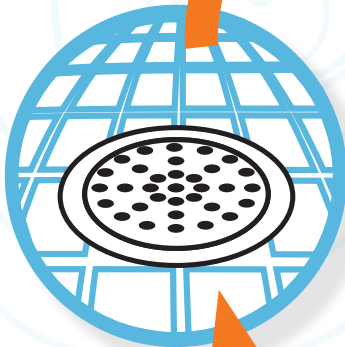
Some of the water used for sprinkling your lawn or landscape will eventually evaporate and return to the sky and fall as rain, and the water cycle will begin again.



RAINFALL
Rain drops onto Hillsborough, Pasco and Pinellas counties, where it seeps into the ground; fills the creeks, rivers, lakes and wetlands; or ends up in the waters of Tampa Bay.

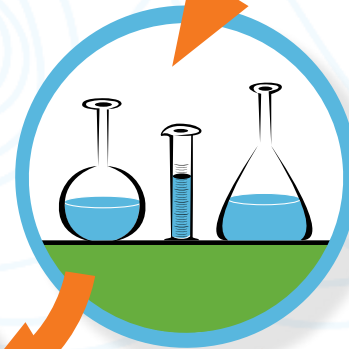
FROM YOUR DRAIN

This water may go to a reclaimed water facility, where it is cleaned for lawn watering or disposal.



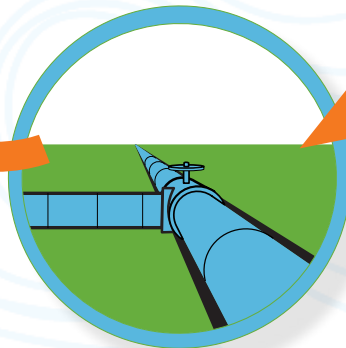
WATER SOURCES

A variety of water sources ensures a diverse, reliable water supply network. Sources include groundwater from the Floridan Aquifer, seawater, river water and water stored in a reservoir.



AT YOUR HOUSE

High-quality drinking water is delivered to your house, available simply by turning on the faucet. Tampa Bay Water meets or surpasses all federal, state and local drinking water requirements.



TREATMENT
Water from the rivers, the Tampa Bypass Canal and a regional reservoir is pumped to a water treatment plant, where it is filtered and disinfected, then blended with desalinated seawater and treated groundwater.

DELIVERY

Treated, blended water is pumped to local utilities for any added treatment, such as softening or fluoridation.

LET'S KEEP IT CLEAN.

DID YOU KNOW...

Before the early 1900s, many people in the U.S. died from diarrhea-causing diseases such as cholera and dysentery, as well as typhoid fever — all because of unsanitary drinking water. Yes, that's right...diarrhea could kill you!

Poor sanitary practices and a lack of treatment meant microbes and other parasites were often found in drinking water. Thousands of infants, children and adults died from contaminated drinking water.

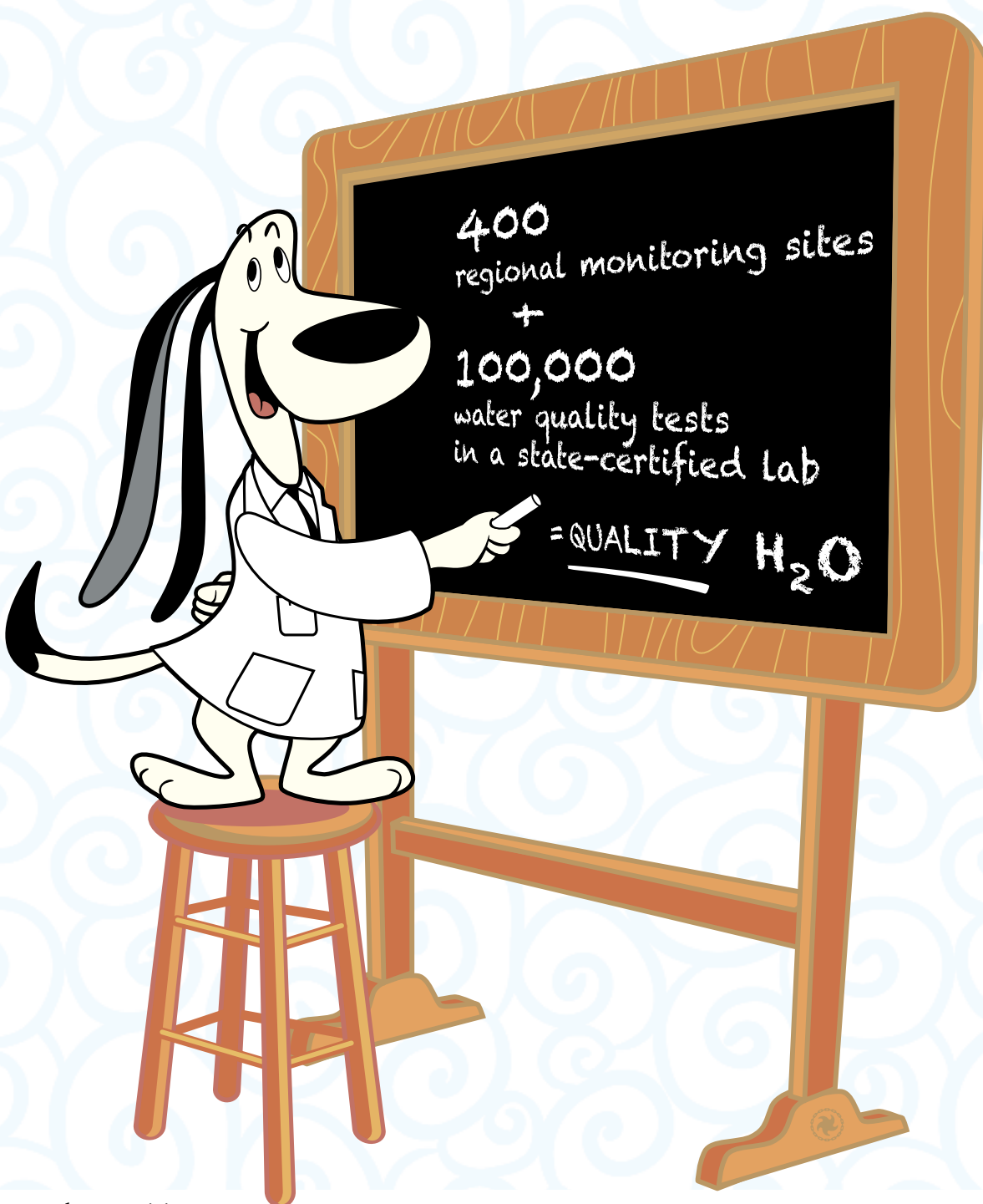
All that changed in the early 1900s when scientists found a way to disinfect drinking water using chlorine. Chlorination of drinking water has been called one of the most significant advances in public health protection. In fact, the mortality rate went down 50 percent in the 20th century, thanks to water treatment.



GETTING THE ACT TOGETHER

In 1974, the United States Environmental Protection Agency passed the Safe Drinking Water Act to protect public health. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources.

The regulation sets health-based standards for drinking water and requires treatment and monitoring to meet those standards. The Safe Drinking Water Act establishes maximum contaminant levels and treatment techniques for chemicals, metals and pathogens. The regulation also includes penalties for utilities that don't comply with the standards.



EXPLORE SAFE DRINKING WATER ACT CRITERIA AT:
<http://water.epa.gov/drink/contaminants/upload/mcl-2.pdf>

MEETING QUALITY STANDARDS

Tampa Bay Water consistently provides high-quality drinking water. In fact, the local governments we serve have standards that are even stricter than the Safe Drinking Water Act. We meet or surpass more than 100 local, state and federal drinking water parameters.

Tampa Bay Water continuously monitors water quality through:

- 400 regional monitoring sites
- 100,000 water quality tests in a state-certified lab

Tampa Bay Water uses chloramines to disinfect water so it is safe to drink. Chloramine is a combination of chlorine and ammonia. It is a powerful disinfectant that reduces the formation of suspected cancer-causing compounds and provides consistent water quality.



GOING BEYOND THE TEXT

Research the Safe Drinking Water Act and its history. Why was the law implemented? What changes were made in 1986 and in 1996? Write a report with the information you find. Note the most interesting fact that you learned, and share that with your class. Explain why you found that specific information interesting. Also be sure to note what information you learned that you did not know before the research.

LEARNING WITH THE *TIMES* LEARNING NEW WORDS

There are so many cool words on these pages — contamination, utilities, disinfectant. Have you heard these words before? What do they mean? How can you figure out what they mean using the context clues within the sentences? When you study new things, you often come up against some tough vocabulary words. While you read this publication, be sure to highlight or circle all of the words you don't know. Try to figure out the words' meanings by looking for clues in the sentences around them. Write down your best guess, and then look up the words in a dictionary. As a group activity, make a list of the words your classmates identified and see which ones stumped the class. Next, use these words for a news scavenger hunt. See if you can find these words in the *Tampa Bay Times*. The group that finds the most words wins the game.



PROTECTING DRINKING WATER STARTS WITH YOU!

The pond behind your home...the river where you like to fish...the waters at your favorite beach...this water belongs to the state, and you as a user of this water must be considerate of what you do in and around it.

SAFE DRINKING WATER STARTS AT THE SOURCE

Now you know your drinking water comes from the Floridan Aquifer, rivers and even Tampa Bay. Protecting these sources from contamination protects your drinking water, the environment, and saves money and energy. The cleaner the source water, the less treatment that's required — which means less energy and chemicals are needed to clean the water.

SAFEGUARDING RIVERS AND TAMPA BAY

Surface water, like Tampa Bay and area rivers and streams, are especially vulnerable to contaminants. Everything that happens on the ground can make its way to surface waters. When it rains, animal droppings, fertilizer, trash, petroleum and more gets washed into surface waters. This pollution not only hurts the creatures and plants living in these waters, but also impacts your drinking water sources.

It's everyone's job to protect Florida's waterways and to ensure there will be plenty of water for future generations.



We all live in a **watershed** and everything we do *on land* can affect the health and well-being of our *surrounding water bodies*. **What you do** in and around your home and in your community **impacts our watershed**. We all *share the responsibility*, so we can all make **simple changes** to help *prevent pollution* and promote a *healthy watershed* for all of us.



Graphic courtesy of Pinellas County Communications

SMARTER THINKING MEANS SAFER DRINKING.

PUT TRASH IN THE PROPER PLACE

Whether it's the trash can or recycle bin, put trash where it belongs. Plastic does not decompose and can harm many animals and fish as well as pollute the water.

HELP YOUR PARENTS DISPOSE OF POLLUTANTS PROPERLY

Flushing old medicine? No!! Throwing away the rest of the paint in your household garbage? **DON'T DO IT!** Used motor oil, antifreeze, paint, roof tar, rechargeable batteries, unused fertilizer, unused medicine and other similar contaminants can be recycled at your local solid waste plant. It's free for everyone, so why not?

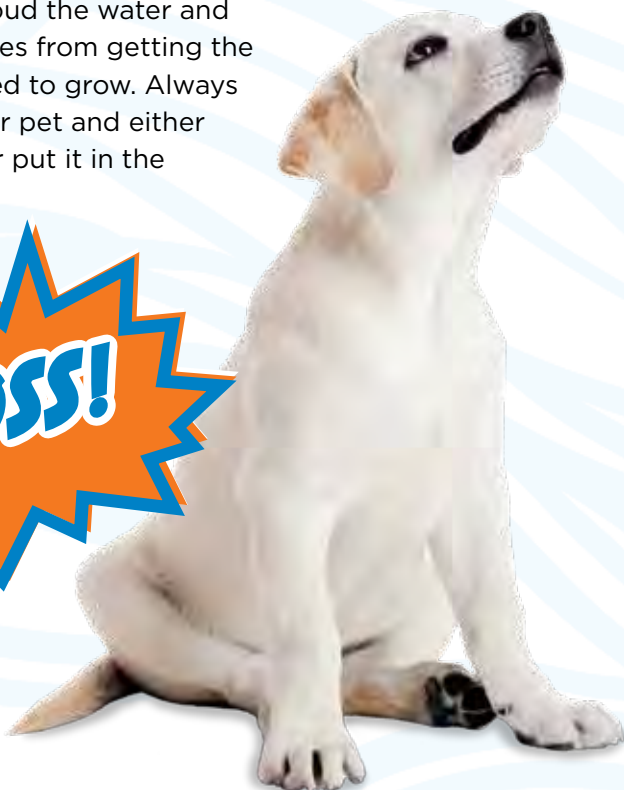
USE FLORIDA-FRIENDLY FERTILIZER

Remind your parents to use slow-release fertilizer in the garden and on the lawn with only 1/4 inch of water. Watch the weather and never fertilize before rain. Rain washes fertilizer into the environment. When possible, use Florida-friendly plants — they use minimal water and fertilizer.

SCOOP THE POOP!

One ounce of dog poop contains **23 million microorganisms** of disease-causing fecal coliform bacteria. **GROSS!** It also adds nutrients to our waterways that promote algae growth, cloud the water and prevent seagrasses from getting the sunlight they need to grow. Always pick up after your pet and either flush the poop or put it in the garbage.

GROSS!



GOING BEYOND THE TEXT DO THE MATH:

If the average size dog produces .5 pounds of poop each day and there are 500,000 dogs in the Tampa Bay area, how many pounds of total dog poop is produced each day? Each week? Convert both answers to tons.

If 40 percent of dog owners don't pick up after their pets, how much dog poop is left on the ground each day? (Use the answers from the above question)

LEARNING WITH THE *TIMES* ANALYZING INFORMATION CRITICALLY

It is time to use your critical thinking skills. After all, that is a main focus of learning about yourself and what makes you a strong individual. Using the *Tampa Bay Times*, review the articles and ads for a one-week time period. Save all articles that focus on conservation and the environment. Write down the main points for each article. Be sure to comment on whether the article is focusing on positive or negative choices. Choose one of the points represented in one of the articles to write a research paper. You can focus your research and paper on any aspect of the article. After your paper is written, create an oral presentation for your class. Explain whether the information you found is positive, negative, helpful or harmful. Be sure to use specific examples from the article and your research in your paper and presentation.



APRIL IS WATER CONSERVATION MONTH. HELP SAM SAVE WATER!

SAM'S DAY IN WATER

Think about Sam's day. It starts and ends with water. And water plays a central role throughout his day. As you go through your day, think about how much water you use and how much you can save, if you use only what you need.

AT HOME:

TIP: ✓
Shorten your shower to 5 minutes and use only 10 gallons per shower.

Shower use about 2 gallons a minute or 16 gallons for the average shower.

TIP: ✓
Only run the dishwasher when you have a full load.

Older dishwashers use 10-15 gallons; water-efficient dishwashers use 4-7 gallons.

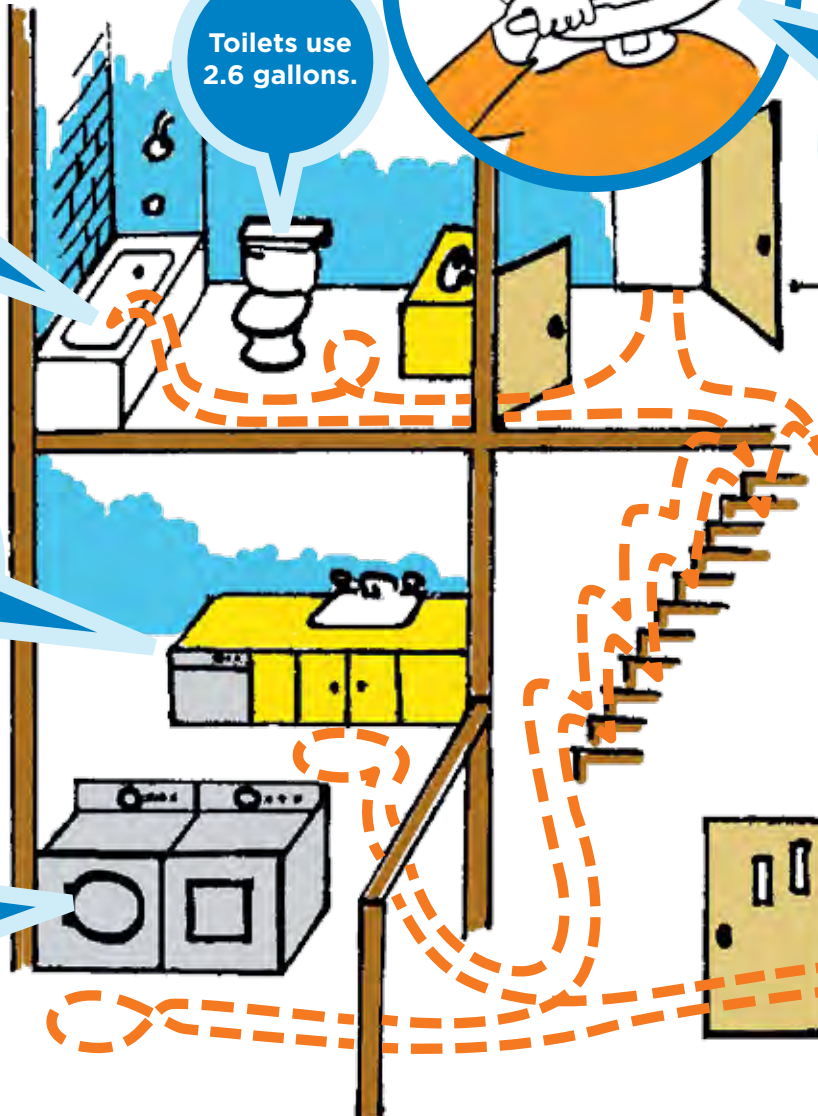
TIP: ✓
Only run the washer with a full load; high-efficiency clothes washers use 14-25 gallons.

Washing laundry uses 20-45 gallons per load.

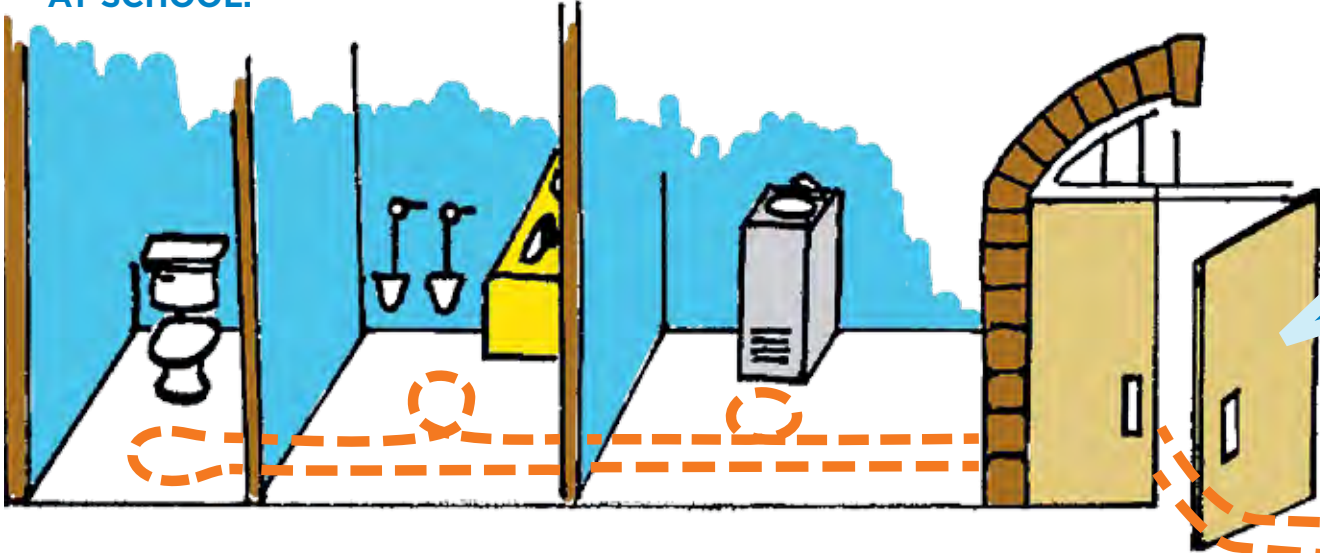


Brushing teeth uses 2 gallons. Sam turns off the faucet when he brushes his teeth, saving 2 gallons of water per minute.

Toilets use 2.6 gallons.



AT SCHOOL:



Sam uses about 10-12 gallons of water at school — using the toilet, washing hands and drinking from the water fountain.

GO ON YARD PATROL.

Up to 50 percent of water used at home is used to water grass and plants. You can help your parents or guardians save water in their yards by helping them follow the nine Florida-Friendly Landscaping™ principles.

OUTSIDE YOUR HOME

9 Principles of Florida-Friendly Landscaping™

1. RIGHT PLANT, RIGHT PLACE:

Select plants that match your yard's soil type, amount of sun and shade, and amount of water received.

2. WATER EFFICIENTLY:

Group plants with similar water needs together and only water in the early morning. Be sure to follow your local watering restrictions.

3. FERTILIZE APPROPRIATELY:

Never fertilize within 10 feet of a water body or before it rains.

4. MULCH:

Keep 2-3 inches of mulch in plant beds to hold in moisture, protect plants and prevent weeds. Leave 2 inches of space around trees to prevent rot.

5. ATTRACT WILDLIFE:

Choose plants with seeds, fruit, foliage and flowers to attract wildlife and insects that eat pests and pollinate flowers.

6. MANAGE YARD PESTS RESPONSIBLY:

Minimize pesticide use by planting pest-resistant plants.

7. RECYCLE YARD WASTE:

Try composting yard clippings and trimmings. You can mix grass, branches,



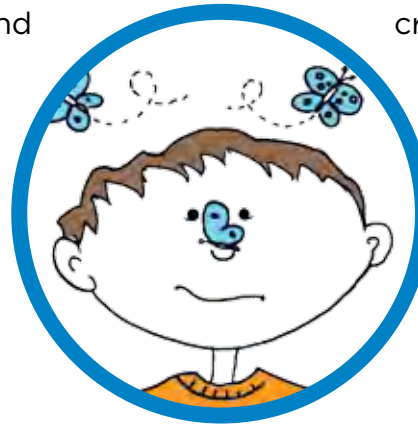
weeds, egg shells, coffee grounds, tea bags, pine needles, corncobs, and even shredded cardboard. Adding this mixture to your soil releases nutrients back into your yard for a healthy landscape — and less garbage in landfills!

8. REDUCE STORM WATER RUNOFF:

Create permeable walkways and driveways to allow rain to soak into the ground.

9. PROTECT THE WATERFRONT:

If you live on or near the water, create a 10-foot “maintenance free” zone around your landscape where you don't have to mow, fertilize or use pesticide. This will keep our waterways clean!



For help with Florida-Friendly Landscaping™ ask your local UF/IFAS County Extension. <http://sfyl.ifas.ufl.edu/map/index.shtml>



GOING BEYOND THE TEXT DO THE MATH:

The average person uses 16 gallons of water per shower. If the average number of students in your class live in a household with three other people, what is the total number of people represented by your class? How many gallons of water does each household from your class use each day? What is the total amount of water used for showering for each household in a month? What is the total water used from showering by all of the households? Explain how you arrived at this answer.

LEARNING WITH THE TIMES CAUSE AND EFFECT

Waste can result in a shortage of natural resources, including water. Wasting resources is increasing at an alarming rate in the world and in our neighborhoods. Waste can be the result of carelessness or convenience. Look for an article in the *Tampa Bay Times* that focuses on waste. Discuss the article with your class. Write down the main points presented in the article. Discuss the ways you can offset this problem. As a class, write down the steps you can take to offset the problem. Then break into small groups and create a poster outlining those steps to share with others.



DELIVERING UNDER PRESSURE.

PUMP IT UP

So how do utilities capture water? Depends on the source, but they all involve pumping.

GROUNDWATER is pumped out of the Floridan Aquifer through wells drilled hundreds of feet into the ground — all the way down into the aquifer. Water is pumped from the wells to holding tanks where it waits to be treated. Tampa Bay Water’s 13 wellfields include 189 wells that can produce nearly 300 million gallons of water instantaneously.

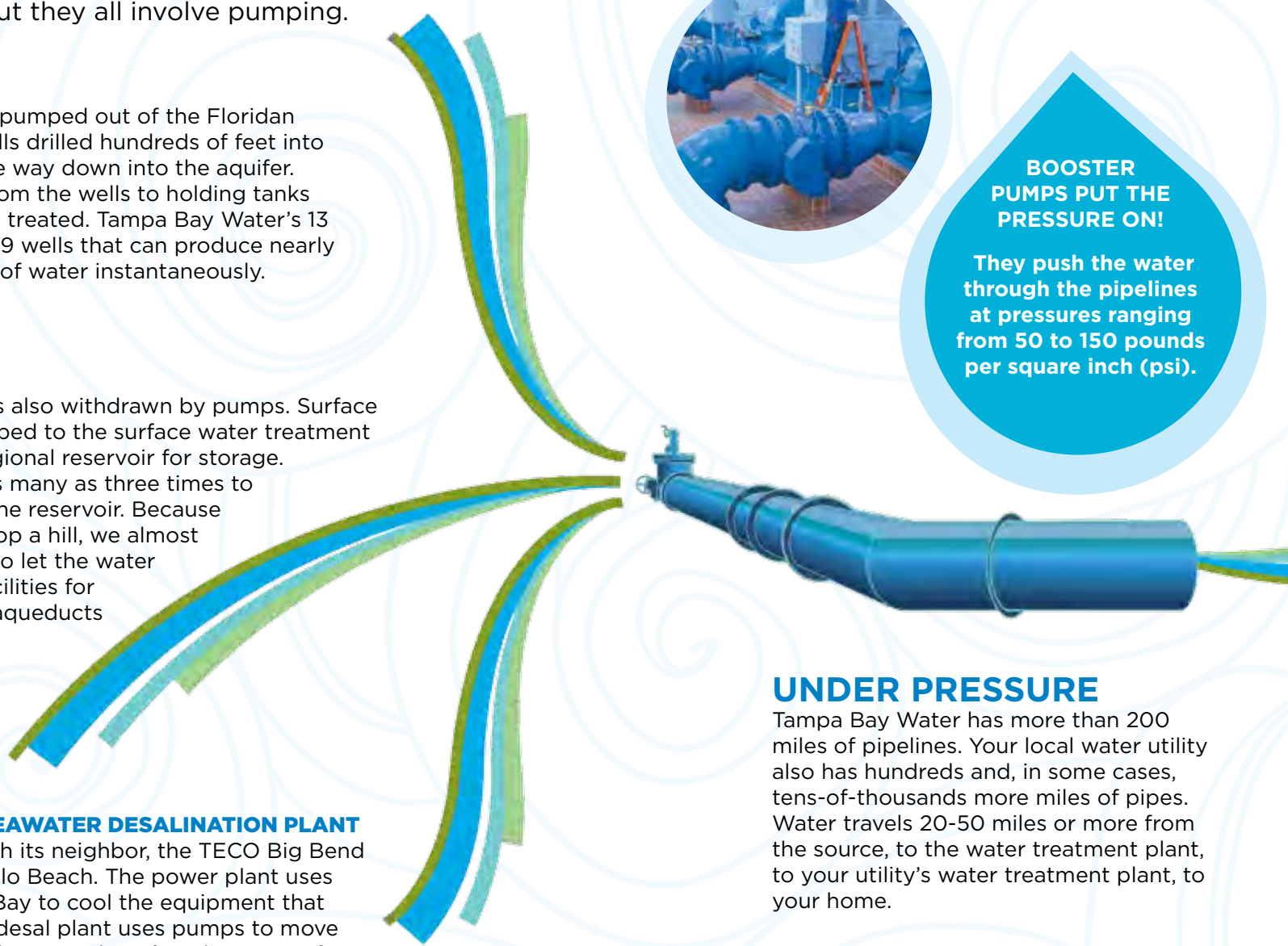
SURFACE WATER is also withdrawn by pumps. Surface water is either pumped to the surface water treatment plant or into the regional reservoir for storage. Water is pumped as many as three times to make it “uphill” to the reservoir. Because the reservoir sits atop a hill, we almost always use gravity to let the water flow back to our facilities for treatment, like the aqueducts of ancient Rome.

THE TAMPA BAY SEAWATER DESALINATION PLANT shares seawater with its neighbor, the TECO Big Bend Power Plant in Apollo Beach. The power plant uses water from Tampa Bay to cool the equipment that makes energy. The desal plant uses pumps to move up to 44 million gallons per day of cooling water for desalination.



BOOSTER PUMPS PUT THE PRESSURE ON!

They push the water through the pipelines at pressures ranging from 50 to 150 pounds per square inch (psi).



UNDER PRESSURE

Tampa Bay Water has more than 200 miles of pipelines. Your local water utility also has hundreds and, in some cases, tens-of-thousands more miles of pipes. Water travels 20-50 miles or more from the source, to the water treatment plant, to your utility’s water treatment plant, to your home.

WATER PRESSURE BY THE NUMBERS



Average garden hose	50 psi
Typical fire hose	200-275 psi
Coin-operated car wash spray nozzle	700 psi
Desalination reverse osmosis pressure	1,000 psi
Pressure washer	1,000-4,000 psi



Tampa Bay Water's system has dozens of booster pumps throughout its 2,000 square miles, ranging in size from 100 horsepower to 3,000 horsepower; that's the difference between a motorcycle and a drag racer.

Hydraulics sound simple, but it can be complex. Hydraulic engineers must keep adequate water pressure everywhere in the system at all times, even though people use different amounts of water at different times during the day.

Why would that be hard? Because pipelines aren't straight and aren't the same size or age. Pipeline sizes vary. Some connect to larger pipes and some connect to smaller pipes. Also, there are turns to consider as well as the amount of water in the pipeline.

The water makes that trip quickly thanks to hydraulic engineering — the science of collecting, storing and transporting water.



THINK ABOUT IT

What's one of the first things you do when you wake up? According to water use data, you and thousands of other people in our area head to the bathroom. Our daily water use peaks in the mornings, going as high as 240 million gallons per day. Whether you are at home, school or the orthodontist's office, water needs to be ready for you at each place.

Water pressure is critical to the public's safety. If a water system ever loses pressure, contaminants could enter the system.

System pressure ensures water reaches the top floors of hospitals, hotels and high rises, but it is also critical for fire suppression. Fire hydrants must be able to supply from 1,000-3,000 gallons per minute, with at least 20 psi to feed the fire truck pumps.

LEARNING WITH THE TIMES AN ALTERNATE WORLD

Now that you have learned about all of the importance of conserving water and keeping our water supply clean and monitored, imagine a future if people did not conserve resources and the Clean Water Act was repealed. What would that world look like? Science fiction is a literature of imagination, of ideas

and thought experiments, of "what if." A science fiction story may be set on another planet; thousands of years in the future; in a universe with different physical laws; within a society with more, less or different races or genders; or in a world similar to our own but with a different past. Working in small groups, create a future world that has been shaped by people disregarding the messages in this educational publication. Write a fully

developed paragraph describing your world. Using the front page of the *Tampa Bay Times* as a model, create a newspaper for this science fiction world you have created. Each student in your group should be responsible for different stories giving the reader a good view of this new world. Share the description of your world and your stories with your classmates.



THE TREATMENT IT DESERVES.

GROUNDWATER - HIGHEST WATER QUALITY

- Requires very little treatment.
- Disinfected before being blended and distributed.

SURFACE WATER - WATER QUALITY VARIES

- River water is strained to keep fish and debris out of the system.
- Chemicals are added that clump small particles together and make them sink.
- Water is disinfected with ozone, the most powerful disinfectant in water treatment today.
- The water moves to biologically active filters where “good bacteria” remove any remaining organic molecules.
- Water is disinfected before being blended with Tampa Bay Water’s other sources and distributed.



SEAWATER - THE HARDEST TO TREAT

- Seawater from Tampa Bay is strained to keep fish, shells and other debris out of the system.
- Chemicals are added that clump small particles together and make them sink.
- Seawater flows through progressively finer filters to remove any remaining matter.
- Highly filtered seawater is forced at high pressure through reverse osmosis membranes that remove salt. The size of each membrane pore is about .001 microns, which is about 1/100,000th the diameter of a human hair.
- Chemicals are added to stabilize the desalinated seawater, which is then disinfected with chloramines before being blended with Tampa Bay Water's other sources and distributed.
- Each gallon of seawater treated yields only about 57 percent freshwater. The 43 percent that is leftover is basically concentrated saltwater that must be diluted and then returned to Tampa Bay.

GOING BEYOND THE TEXT

DO THE MATH:

If the desalination plant can treat 44 million gallons of seawater each day, how much freshwater can be produced? How much concentrated seawater?

Using the answer from the above problem, how much seawater is needed to dilute the leftover concentrated seawater if it is blended at a 70:1 ratio?

How much total force (pounds) is applied to the surface area of 1 square foot of pipe if the water pressure is 50 psi inside the pipe?

LEARNING WITH THE *TIMES* CONSERVING WATER

Look for an article or photograph related to water use and/or conservation in current issues of the *Tampa Bay Times*. How are people using the water? Are they drinking it, using it for industrial production or enjoying it for recreation? Is water being used conservatively or does the article or photograph suggest the water is being wasted? What can you and your family do to help conserve water? Write a letter to the editor about this issue.



DIVE INTO A CAREER IN WATER.

There is no doubt that the people who work at Tampa Bay Water make a difference in their community, from doing construction to testing water to communicating with the public, there are career opportunities for all education levels and varieties of interest.

HIGH SCHOOL DIPLOMA/VOCATIONAL TRAINING/SOME COLLEGE

ADMINISTRATIVE ASSISTANT Average Annual Salary: \$35,000 to \$50,000

Education: Associate degree in business administration or on-the-job training.

Manages office operations by answering phone calls, welcoming office visitors, sorting mail, arranging conferences and meetings, and maintaining appointment schedules.

BOOKKEEPER Average Annual Salary: \$35,000 to \$50,000

Education: Associate degree with emphasis in accounting, finance or business administration with three years of experience; or a high school diploma with six years of experience.

Description: Manages money moving into, through and out of the organization; prepares financial reports and coordinates payroll.

CAD DESIGNER Average Annual Salary: \$40,000 to \$60,000

Education: On-the-job training or associate degree in drafting.

Description: Uses computers to prepare design drawings and charts; prepares maps of an area showing distribution facilities; creates and updates plot books, charts, graphs and contract designs.

INSTRUMENTATION AND CONTROLS SPECIALIST Average Annual Salary: \$50,000 to \$70,000

Education: High school diploma, technical certification or on-the-job training.

Description: Maintains and calibrates instrumentation and control equipment; repairs printed circuit boards and related equipment.

MAINTENANCE TECHNICIAN Average Annual Salary: \$35,000 to \$50,000

Education: Associate degree in mechanical, electrical or industrial maintenance.

Description: Maintains, troubleshoots and repairs equipment according to safety, predictive and productive maintenance systems and processes.

RECORDS TECHNICIAN Average Annual Salary: \$28,000 to \$45,000

Education: High school diploma.

Description: Performs administrative duties for managing records, archives, public records requests and other related inquiries.

WATER TREATMENT PLANT OPERATOR Average Annual Salary: \$40,000 to \$60,000

Education: High school diploma, may require associate degree or technical certificate.

Description: Operates equipment that controls water treatment processes; monitor the treatment process and maintain operation logs; collect water samples and record various readings.



FOUR-YEAR DEGREE/HIGHER EDUCATION

BIOLOGIST Average Annual Salary: \$40,000 to \$80,000

Education: Bachelor's degree in biology with some study of chemistry.

Description: Coordinates and implements programs to monitor fish and wildlife; logs data and prepares reports.

CHEMIST Average Annual Salary: \$40,000 to \$80,000

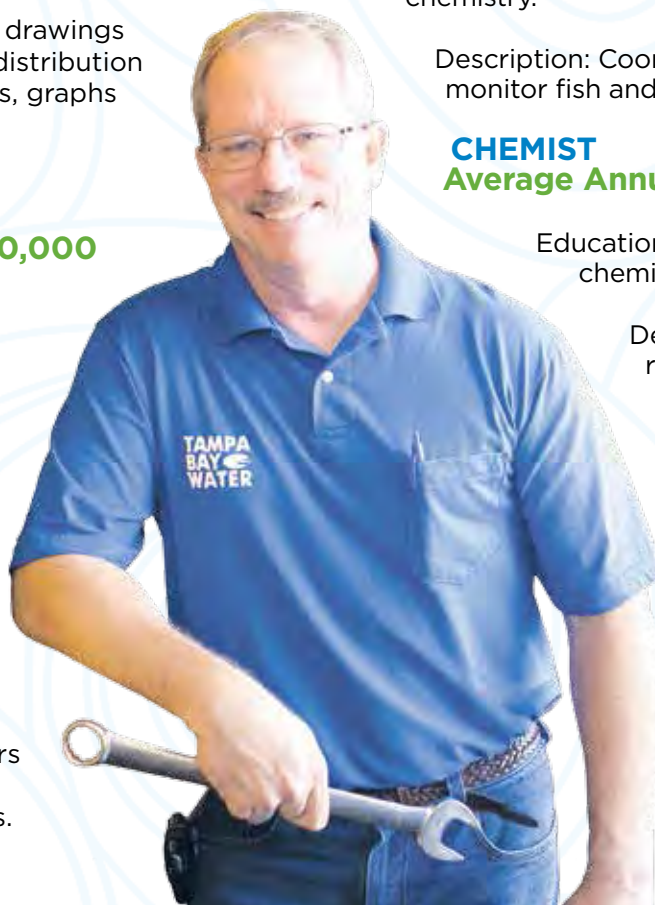
Education: Bachelor's or graduate degree in chemistry.

Description: Studies the characteristics of raw and treated water of a water utility; determines how water quality will affect a system and corrects any potential water chemistry problems.

CONSTRUCTION MANAGER Average Annual Salary: \$55,000 to \$100,000

Education: Bachelor's degree in engineering or related field.

Description: Oversees the entire construction process; reviews plans, oversees schedule and budget; manages workflow and ensures work meets contractual requirements.



ENGINEER

Average Annual Salary: \$40,000 to \$70,000

Education: Four- or five-year degree from an accredited engineering school, Professional Engineer (P.E.) license.

Description: Designs and engineers dams, reservoirs, pumping stations, pipelines, water treatment plants and other water supply and delivery facilities. Hydraulic specialty may require additional coursework.

ENVIRONMENTAL PLANNER

Average Annual Salary: \$40,000 to \$80,000

Education: Four-year or graduate degree in environmental engineering, urban planning, public policy, public administration, economics, and physical or natural sciences.

Description: Plans, prepares, and monitors environmental research and evaluates potential environmental impact of projects. Ensures environmental projects are in compliance with the state and federal regulations.

HUMAN RESOURCES GENERALIST

Average Annual Salary: \$35,000 to \$60,000

Education: Bachelor's degree in human resources, business administration or related field.

Description: Recruits, interviews and hires qualified people for available jobs; administers employee benefits and safety programs; ensures personnel rules and regulations are followed.

LAB TECH

Average Annual Salary: \$35,000 to \$55,000

Education: On-the-job training, two- or four-year degree in laboratory science.

Description: Conducts chemical and biological tests to measure water quality, monitor disinfectant levels; record findings.



PUBLIC INFORMATION SPECIALIST

Average Annual Salary: \$40,000 to \$65,000

Education: Bachelor's degree in communications, journalism or related field.

Description: Communicates with customers about water quality and conservation; produces news releases, brochures and newsletters; schedules and conducts facility tours; creates and participates in special events.



WATER CONSERVATION SPECIALIST

Average Annual Salary: \$40,000 to \$70,000

Education: Bachelor's degree in natural or physical science, environmental or civil engineering, economics urban or regional planning or public administration.

Description: Uses water conservation expertise to calculate water savings of large conservation programs; helps forecast short-term and long-term water supply and demand; recommends ways that businesses, agriculture and consumers can save water; helps create and promote conservation regulations.



GOING BEYOND THE TEXT

Read the job descriptions, education requirements and salary ranges for the jobs on this page. Discuss the jobs with your class and families. Make a chart of each job and include how many years of education you will need for that job. Also include what skills a person wanting this type of job needs. You may need to do some research to help you determine the skills.

LEARNING WITH THE TIMES CAREERS VS. JOBS

What is the difference between a career and a job? Look up the word "job" and the word "career" in the dictionary. Write down the definitions and think about how these terms differ in terms of what you want to do when you grow up. The jobs listed on this page would fit into the definition of a career. Look through the classified section of the *Tampa Bay Times*. List the jobs that you find in the newspaper. Decide whether these jobs could be put in the career category. Write a sentence or two explaining why they would or would not be a career.



MEET THE PLAYERS IN YOUR WORLD OF WATER



Tampa Bay Water supplies wholesale drinking water to Hillsborough County, Pasco County, Pinellas County, New Port Richey, St. Petersburg and Tampa. We supply water to more than 2.3 million people through the governments we serve. Tampa Bay Water's mission is to provide clean, safe water to the Tampa Bay region now and for future generations.

BOTTOM LINE: Tampa Bay Water is the region's water supplier. We serve local governments to ensure there is enough clean drinking water available for all users in the Tampa Bay area — including you.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)

The overall mission of the EPA is to protect human health and the environment. The EPA has established minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary (health-related) standards. The EPA has also implemented pollution control programs such as setting wastewater standards for industry. It has also set water quality standards for all contaminants in surface waters.

BOTTOM LINE: The EPA sets the guidelines for water quality that all other players must follow.



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP)

The FDEP is the lead agency in the state of Florida for environmental management and stewardship — protecting air, water and land. It regulates all the public water systems in Florida and is responsible for setting surface water and ground water quality standards. FDEP also implements a variety of programs to monitor the quality of those water resources.

BOTTOM LINE: FDEP makes sure local utilities comply with the Safe Drinking Water Act to ensure the quality of water that you eventually will drink from your tap.

Southwest Florida Water Management District

SWFWMD was formed by the state to manage and regulate water resources in west-central Florida. Its responsibilities include flood protection, water conservation and restrictions, land acquisition and water resource planning.

BOTTOM LINE: SWFWMD regulates water withdrawals. It is a permitting agency that determines how much water can be withdrawn safely for the environment and for continued beneficial use.

