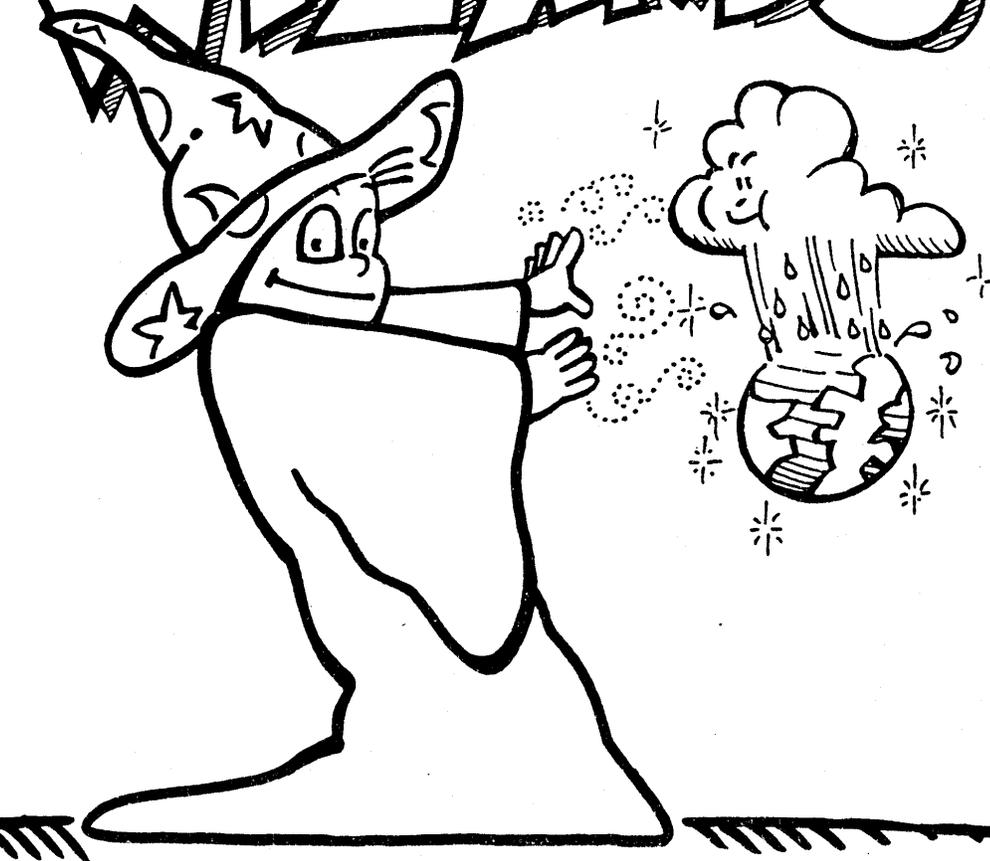


WATER WIZARDS



CLINCH-POWELL RC&D COUNCIL

WATER WIZARD

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Water Wizards

Dear Water Wizard Parent:

Your child is participating in a very special program this year called Water Wizards. As a Water Wizard, your child will be learning about the importance of clean water to his/her world and learn about many of the related environmental issues affecting water.

Your child will be given a workbook, and as a Water Wizard participant. During Water Wizards, your child will learn about topics which are important here in your county and will participate in an experiment about water. He/she will be given a Water Wizard Home Brew sheet to bring home to share with you. Home Brew will highlight what the student has learned that day and includes ways you and your child can build on that knowledge. Our children will inherit an earth much less healthy than the earth of their grandparents. They will pay the price for the bad habits of their ancestors. It is critical that they be armed with knowledge and appreciation of their environment so that they can make informed decisions in their lives. As parents we can help our children by being involved and by setting a good example ourselves. Even small changes can make a difference when taken by many.

Children of this age are very open and eager to learn about the world around them. Let's help them all we can! This program is provided by the Clinch-Powell RC&D Council at no cost to you or your school system. The Council includes Claiborne, Grainger, Hancock, Hawkins and Union Counties.

TEACHER

"The Big Earth Burp"

Once upon a time, billions and billions of years ago, the earth was dry. There was no water. No life existed. This was when the earth was very young (in planet years)!

The center of the earth was very hot and unsettled like a whole world of volcanoes! It got so hot the earth "burped" to let some of the heat and gases out.

The hot gasses cooled off when they reached the atmosphere and then fell back to earth as rain. ALL the water the earth will ever have fell at that time.

So really there is no such thing as "fresh" water. All our water is billions of years old and has been recycled many times!

Our clean water is in trouble and needs your help or it may become extinct. Humans are polluting the water faster than the earth can recycle it to make it clean again.

Water Wizards can help save our clean water by learning about how water is polluted and telling others. They can also change things they do which pollute the water and ask people they know to change too!!

We created Water Wizards especially for you! So get ready to have fun learning about the water and what you can do to save it!!

Clinch-Powell

Resource Conservation and Development Council

Route 2, Highway 11W

P O Box 379

Rutledge, Tennessee 37861

(865) 828-5927

"Water You Know"

YOU WILL LEARN

- * **How water is important to living things and how much is drinkable.**

WHY IS THIS IMPORTANT?

Have you ever been so thirsty it felt like your lips were stuck together? Have you ever seen the grass in your yard turn brown in summer? Have you ever seen a flower droop when you forgot to water it? These are some of the things that happen when people and plants need water.

All living things need water to survive. Your body is 75% water. In other words, if your body were a puzzle with one hundred pieces, 75 pieces would be water! People and animals can only live a few days without water. Plants need water too. They drink moisture from the soil through their roots. If the soil does not have water the plant may die. This is called a drought.

You may use water in many ways every day. Clean water is necessary for life, but not all water is clean. Water Wizards know why clean water is important and they teach others who don't.

Because the supply of water seems to go on forever, we forget that clean water is truly precious. At least 25 million people in poor countries die each year (three out of five are children) due to unclean drinking water and from diseases carried in unclean water supplies.

DO THIS...

Pay attention to your teacher and follow directions. You are going to discover how much water on earth is drinkable.

WATER WIZARD, CAN YOU TELL ME...

- How water is important to living things?
- How much of your body is made of water?
- Eight ways that people use water?
- Three ways that people can conserve water?

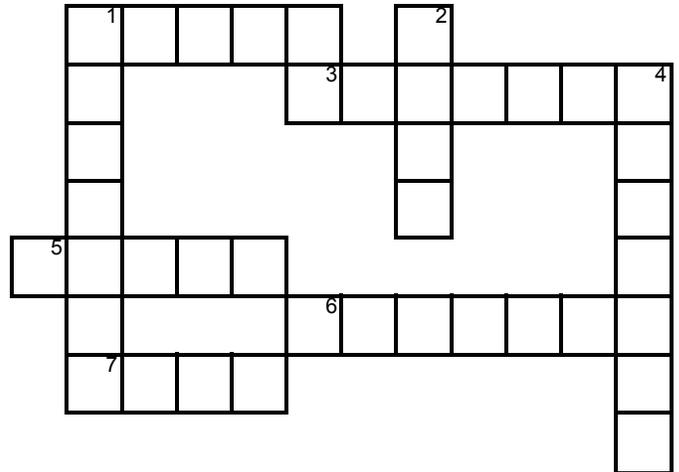
WATER WIZARD WORKOUT

ACROSS

1. Pets need fresh _____ to drink.
2. When it is very dry because it has not rained for a long time it is called a _____.
5. _____ are large plants that grow in the forest.
6. Daisies and tulips are two kinds of _____.
7. _____ is frozen rain.

DOWN

1. Water _____ know clean water is important.
2. Your _____ is mostly water.
4. If you need a drink of water, you are _____.



Water Wizards

"HOME BREW" TAKE HOME SHEET WATER YOU KNOW

WATER WIZARD:

You learned a valuable lesson about water today. Share what you learned with your parents. Do you remember talking about these things?

1. Why water is important.
2. Your body is 75 percent water
3. Plants drink water through roots.
4. The many ways we use clean water every day.
5. How much of the water on earth is drinkable.

MORE WIZARD THINGS TO KNOW!

1. Name ten ways you and your family use clean water at home.
2. Find out where your water comes from.
3. Water comes out of the faucet very fast. The water wasted while you wait to get a cold drink could fill three gallon milk jugs.
4. If you leave water running while you brush your teeth, you can waste enough water to fill five gallon milk jugs.

WATER WIZARD WAYS TO SAVE THE EARTH!

1. If you like cold water to drink, keep a jar in the refrigerator instead of letting water run.
2. When you brush your teeth, just wet your brush and then turn off the water. Turn it on again when you need to rinse.
3. Think of other ways you can save water!

Easy, right? Not only will you save water, but you will also save the electricity it takes to run the pump to pump the water. Be sure to tell your family what you have discovered so they can be Water Wizards too!

DO YOU CARE ENOUGH?

The Clinch, Powell and Holston Rivers flow out of the rugged mountains of southwest Virginia into Tennessee. In Tennessee, all or portions of Claiborne, Grainger, Hancock, Hawkins, and Union Counties drain into these rivers. The Clinch and the Powell feed into Norris reservoir which was the first dam in the great Tennessee Valley system.

"ACID RAIN"

YOU WILL LEARN...

- How acid rain is made.
- Where gases that pollute rain come from.
- How acid rain is bad for our environment.

WHY IS THIS IMPORTANT?

All rain is not good for the earth. Acid rain can make trees, plants and aquatic life sick. If the acid is strong enough it may even kill the trees, plants and aquatic life. Acid rain is a problem in Tennessee.

What causes acid rain? Acid rain is created when rain falls through air pollution. The pollutants dissolve in the water and fall to the ground as acid rain. Plants and animals cannot stand too much acid. Our rivers and lakes are being damaged by acid rain.

What causes the air pollution? Much of it comes from the exhaust of automobiles and trucks. The exhaust turns into gases that float up into the sky. Some industries and manufacturing plants give off pollution too. Have you ever seen smoke come out of a smoke stack? This smoke adds to the air pollution.

Do you know someone who burns wood or coal to heat their home? This is also air pollution. Air pollution is a big problem. We can control acid rain by reducing air pollution.

DO THIS...

Pay close Water Wizard attention to your teacher and follow her directions.

WATER WIZARD, CAN YOU TELL ME...

- * What acid rain is? * What causes acid rain?
- * What acid rain could do to rivers, plants, fish and people?
- * Two ways that people can solve the problem of acid rain?

COMPLETE THE WATER WIZARD WORKOUT

ROCK
ACID RAIN
ATMOSPHERE
GASES
GARDENS
VINEGAR
BUILDINGS
VINEGAR
BUILDINGS
POLLUTION

O T R O G N Q F R P P
V K U E A A E W L B O
B N M A R Z Y V W O L
U B D M D H L I Q E L
I R I V E R S N R X U
L S A K N B X E O I T
D J T D S E H G C K I
I D C L E P D A K V O
N Z T Q S U F R U M N
G C E O A C I B V A G
S J M S G C P H G S Z
I T O H J N G A W Y P
A C I D R A I N R F X

Find the words listed above and circle them. Words may be upside down, diagonal or even backward! You can use each letter more than once. The first one is done for you.

WATER WIZARDS

"HOME BREW" TAKE HOME SHEET

ACID RAIN

WATER WIZARD:

You learned a valuable lesson about water today. Share what you learned with your parents. Do you remember talking about these things?

1. How acid rain is made.
2. Where gases that pollute rain come from.
3. How acid rain affects plants and animals.

MORE WIZARD THINGS TO KNOW!

1. It takes about 400 pounds of coal to keep a single 100-watt light bulb burning for twelve hours each day for one year.
2. Burning the coal to make the energy to light the bulb makes about 90 pounds of pollution that causes acid rain.
3. It costs about \$39.00 to light the bulb for a year at 8.8 cents per kilowatt hour.
4. Ask a parent to explain these things to you. Then count all the light bulbs at your house (don't forget the porch). Multiply the number of lights times 90 pounds of pollution caused from lighting your house for one year. WOW!

WATER WIZARD WAYS TO SAVE THE EARTH!

1. Turn the lights off when you leave the room.
2. Use daylight when possible. Sit by the window to get more light.
3. Use fixtures that use only one bulb. One 100-watt bulb uses less energy and gives of 20 percent more light than two 60-watt bulbs.
4. Encourage your parents to switch to new fluorescent light bulbs which will fit regular light fixtures. One 18-watt fluorescent bulb provides the light of a 75-watt incandescent bulb. Even though they cost more, it lasts ten times longer and a single bulb will keep more than 80 pounds of coal in the ground and out of the air. Ask your parents to help you understand this.

Your work is awesome!

DO YOU CARE-ENOUGH?

The Clinch and Powell Rivers are very important to everyone in East Tennessee, even those who don't live directly in the drainage basin. The rivers are recreation areas which provide important living conditions for many kinds of wildlife.

"Water Recycle"

YOU WILL LEARN...

- How the water cycle works.

WHY IS THIS IMPORTANT

Water is recycled. Think about the water on the ground. The water on the ground evaporates when the ground gets warm. Think about the warm air rising. The air and water vapor expand and rise high. The air is cooled when it rises. When the air is cooled, the water vapor condenses to make clouds. Cloud drops come together to make bigger water drops. The bigger drops are rain. Rain that falls on the ground is called precipitation. The water evaporates again. Some of the water seeps into the ground. This is called infiltration. The water left on the ground evaporates again. The vapor condenses. Rain falls to the ground. This is called the WATER CYCLE!

DO THIS...

Pay special attention to your teacher. Your teacher will make it rain right in your classroom!

Complete the Water Wizard workout.

WATER WIZARD, CAN YOU TELL ME

- *Where rain comes from?
- *How clouds are made?
- *How plants affect the water cycle?

WATER WIZARD WORKOUT

Make as many new words as you can from the following word. Good Luck!

PRECIPITATION

_____	_____	_____
_____	_____	_____
_____	_____	_____

WATER WIZARDS

"HOME BREW" TAKE HOME SHEET

WATER RECYCLE

WATER WIZARD:

You learned a valuable lesson about water today. Share what you learned with your parents. Do you remember talking about these things?

1. How water from earth evaporates into the sky.
2. How the warm vapor condenses when it reaches the cool air.
3. How the condensed vapor falls back to earth as precipitation (rain or snow)
4. How the precipitation either infiltrates into the groundwater or runs off into the rivers and lakes.
5. This is called the Water Cycle.

MORE WIZARD THINGS TO KNOW!

1. Trees are our best friends when it comes to cleaning our air. They take in carbon dioxide (one kind of pollution) and use it to make oxygen which they release back into the air. What a Water Wizard trick!
2. It takes 500,000 trees to make the Sunday newspapers for just one Sunday in the U. S.!!
3. Rainforests are where most of our oxygen is produced and where half of the worlds different kinds of plants and animals live. Rainforests are very important in cleaning our air of pollution.
4. Rainforests are being destroyed at the rate of 100 football fields every minute! At this rate they will all be gone in your lifetime.

WATER WIZARD WAYS TO SAVE THE EARTH!

1. Plant trees! Trees make oxygen, they provide shade and homes to animals and they are beautiful to look at.
2. Don't waste paper! It takes a whole tree to make a stack of paper four feet high. Each year our nation uses about 67 million tons of paper. That's 580 pounds per person!! Save trees by taking your old bags to buy new groceries. Write on both sides of paper. If your parents work in an office, ask them to save scrap paper with a blank side for you to use!
3. Tell your parents about the problems of the rainforests. Ask them not to buy products (except medicines) that come from destroying the rainforests. Some of your favorite fast-food restaurants use beef produced on destroyed rainforest land. Ask the restaurant manager (or get your teacher to help you write the President of the company and ask them) to buy American beef. Be sure to tell them why!

Take a deep breath Wizard, if you did these things there is more clean air to breathe!

DO YOU CARE-ENOUGH?

The Clinch and Powell Rivers played very important roles in our frontier history. They provided drinking water, fish, game transportation and fertile bottom land for growing crops for food and fiber. Daniel Boone even traveled these waters and forged trails for other early settlers.

"WATER STOPPERS"

YOU WILL LEARN...

- How to tell the difference between three types of soil.
- How water moves through soil.
- How to measure water.

WHY IS THIS IMPORTANT?

Have you ever thought about the soil you walk on in your yard? How does it feel when you squeeze it? Is it different from the soil at your school?

Soils are like people, they are all different. In the United States there are more than 70,000 different kinds of soil. Soils are made of three kinds of soil particles, sand, silt and clay. Water is also an important ingredient in soil. The water holds the soil particles together.

When it rains, water moves through the air spaces between soil particles. If a soil has many air spaces then the water drains quickly. If the air spaces are very small, the water drains very slowly.

DO THIS...

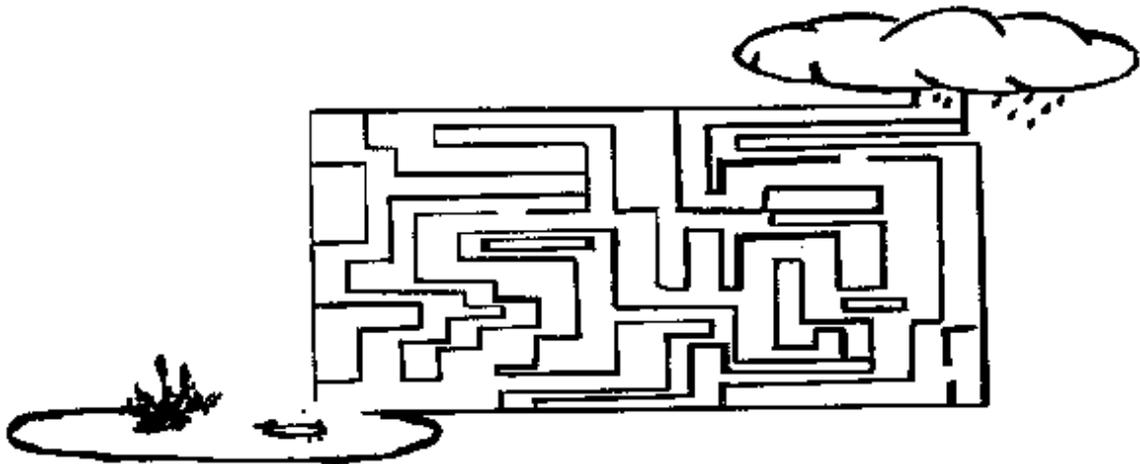
Pay close attention to your teacher. Your teacher will show you how water moves through soil. You are going to enjoy this!

WATER WIZARD, CAN YOU TELL ME...

- * How soils are like people?
- * What the three kinds of soil particles are?
- * If your yard stays muddy for a long time after it rains, what kind of soil is it?
- * What three types of soil look like?
- * What three types of soil feel like?

WATER WIZARD WORKOUT

Help the rain from the cloud get to the duck pond.



WATER WIZARDS

"HOME BREW" TAKE HOME SHEET

WATER STOPPERS

WATER WIZARD:

You learned another valuable lesson about water today. Share what you learned with your parents. Do you remember talking about these things?

1. The different kinds of soils.
2. How water moves through soil.
3. How to measure water.
4. How water is an important ingredient in soil.
5. The experiment you conducted.

MORE WIZARD THINGS TO KNOW!

1. Tiny leaks can waste a lot of water. A dripping faucet will waste thousands of gallons of water in a year.
2. Twenty out of every hundred toilets in America are leaking water right now. In a year that is enough water to take three baths every day (22,000 gallons).
3. Look out your window the next time it rains hard. Where does the water go that falls on your driveway? Where does the water go that falls on the grass? How long does it take your yard to dry out? Do you think your soil has more clay or more sand in it? Ask your mom if she knows!

WATER WIZARD WAYS TO SAVE THE EARTH!

1. Investigate all the faucets at your house (don't forget outside) to check for drips. Tell your parents what you find. Leaky faucets can be easily fixed and you will save thousands of gallons of water.
2. Ask your parents to help you check the toilet for leaks. Remove the lid from the toilet tank, drop about 12 drops of food coloring into the tank and replace the lid. Wait 15 minutes and then look in the toilet bowl. If colored water shows up you've found a leak! Be sure you don't

flush the toilet while you wait. Tell your parents what you've found and ask them to fix the leak.

DO YOU CARE-ENOUGH?

The Clinch River contains many different kinds of shellfish and nearly 50 kinds of mussels. Some of these are endangered. Mussels die easily when the rivers and streams become polluted. The Clinch River is known worldwide for its wealth of mussels. A long time ago buttons were made from mussel shells and wood before plastic was invented.

WESOME FILTER"

YOU WILL LEARN...

- How water can be cleaned through filtering

WHY IS THIS IMPORTANT?

Can polluted water be turned into clean water? Yes, but it isn't easy. A process called filtration is used to remove the pollution from the water.

Filtration is a process where polluted water is poured through filters. As the water trickles through different layers of soil, the pollutants become attached to the soil particles. The water keeps draining and is clean after it moves through all the layers.

Many cities use filtration as a water treatment process. Water is used in homes and then goes into a sewer system. The sewer system takes the water to the waste water treatment plant. Chemicals are added to the water to kill all the bacteria. Then filtration is used to finish cleaning the water.

DO THIS...

Pay attention as your teacher shows you how water can be cleaned by filtering. Complete the Water Wizard Workout.

WATER WIZARD, CAN YOU TELL ME...

- * The meaning of the word filtration?
- * How cities can use filtration as a water treatment process
- * What a sewer system does?

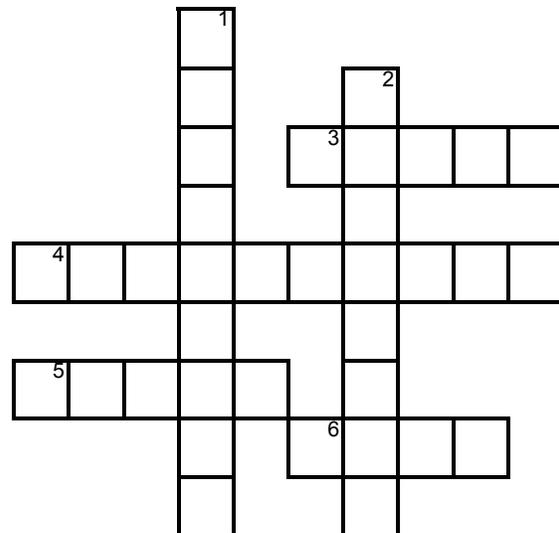
WATER WIZARD WORKOUT

Across

3. We need clean _____ to drink.
4. A process called _____ is used to remove pollution from water.
5. A _____ system takes dirty water to the waste water treatment plant.
6. Chemicals _____ the bacteria in the water.

Down

1. A waste water _____ plant turns dirty water into clean water.
2. Chemicals are added to polluted water to kill _____.



WATER WIZARDS

"HOME BREW" TAKE HOME SHEET

AWESOME FILTER

WATER WIZARD:

You learned a valuable lesson today. Share what you learned with your parents. Do you remember talking about these things?

1. How water can be cleaned through filtering.
2. How filtering is used in waste water treatment plants.

MORE WIZARD THINGS TO KNOW!

1. Ask your parents where the waste water from your home goes. If it goes to a septic tank, ask how it works.
2. The water you flush down the toilet starts out as clean drinking water. Each time you flush, you use five to seven gallons of fresh water!
3. A bath uses twice as much water as a shower. A five minute shower uses about 25 gallons of water. How much water does a bath use?

WATER WIZARD WAYS TO SAVE THE EARTH!

1. Ask your parents for permission and help with this project. Wash out an empty plastic jug and put some rocks in the bottom. Fill it with water and set it in the toilet tank. Now your toilet will save between one and two gallons of water when you flush it! Make sure your jug fits without getting in the way of the arm and chain.
2. Take showers instead of baths, they use half as much water and they are quicker!
3. Tell your parents about "low-flow" shower heads. These shower heads add air to the water so it cuts the amount of water used and feels great. The next time they need to replace the shower head they might want to consider buying a "low-flow" head.

Keep up the good work Water Wizard, you're no drip!

DO YOU CARE-ENOUGH?

Sport fishing is the most popular outdoor activity in East Tennessee. Over 30 percent of the people who live here fish regularly. Each fisherman spends an average of \$220 per year fishing. That means that the Clinch and Powell Rivers bring MILLIONS of dollars into our local economy. That is another good reason to protect the quality of water in the Clinch and Powell Rivers.

"DEADLY WATERS"

YOU WILL LEARN...

- About different kinds of water pollution
- How polluted water affects the animals and plants that live in water.
- Some ways that pollution can be stopped.

WHY IS THIS IMPORTANT?

Did you know that all the water that will ever be on earth is on earth right now? All the rain and snow that falls on the land either soaks into the ground or is carried to the sea. All along the way, water evaporates or finds its way through plants and transpires back into the atmosphere to make clouds and precipitate again.

We know how important water is to living things. It is what keeps us alive. But each day humans damage the water supply by polluting it. This polluted water causes illness and death in wildlife. It can also cause illness and death in humans.

Many things can get into water and cause it to become polluted. Most of the pollution is caused by people being careless and not knowing the damage they are causing.

DO THIS...

Listen carefully to your teacher for instructions. You are going to be a scientist.

WATER WIZARD, CAN YOU TELL ME...

- * Five kinds of pollution that affect our water?
- * Five things you can do - starting today- in your own life to reduce the number of pollutants you add to the environment?

WATER WIZARD WORKOUT

P A Z D H U M A N S X
R E K L S Z P F Z L T
E P V E W Y R I E A R
C R Q A N S Z L P M A
I D M R P N A P O I N
P H B T L O I Q L N S
I Z U H U W R S L A P
T O I R P A P A U N I
A G V X S M B I T Q R
T X E J R D G B E E E
E Y T A B Z Y A P U S

Find these words and circle them. Words may be upside down, diagonal or even backward! You can use each letter more than once. The first one is done for you.

Snow
Precipitate

Evaporates
Pollute

Animals
Transpires

Earth
Humans

WATER WIZARDS

"HOME BREW" TAKE HOME SHEET

DEADLY WATERS

WATER WIZARD:

You learned a valuable lesson today. Share what you learned with your parents. Do you remember talking about these things?

1. The 10 different kinds of water pollution.
2. How polluted water affects the plants and animals that live in water.
3. Some ways that pollution can be stopped.

MORE WIZARD THINGS TO KNOW!

1. It is very easy to pollute water. For example, a gallon of paint or a quart of motor oil can seep in the Earth and pollute 250,000 gallons of drinking water. A spilled gallon of gasoline can pollute 750,000 gallons of water.
2. Litter and garbage often find their way into rivers and lakes and pollute the water.
3. Deer and other animals often cut their tongues on open cans. Animals are sometimes hurt when they eat cigarette butts, plastic wrappers or styrofoam.
4. When your parents were young they didn't worry about saving the environment because they didn't know it was in trouble. They developed some bad habits. They made as much garbage as they wanted, they wasted energy whenever they wanted and they used up the earth's resources very fast. Today they know better, but they still have a lot of bad habits. That's because it's hard to break bad habits.

WATER WIZARD WAYS TO SAVE THE EARTH!

1. If you know a farmer, ask him to please be careful when he throws away chemicals he uses. Even empty containers are dangerous, especially if they get in the water.
2. Be a nice neighbor. Pick up litter and throw it in the trash and definitely don't litter yourself. Keep our rivers and lakes clean enough for swimming!
3. Ask your family about adopting a stream. Your teacher can find out more about it.
4. Ask your grandparents what it was like to go shopping when they were kids. How is it different now? Which way is better for the environment?
5. Gently tell your parents about your concern for the environment. Don't bug them, but tell them how important it is to take care of the Earth so it will be healthy when you grow up.

DO YOU CARE-ENOUGH?

Water quality in streams and rivers depends on the actions of humans who live or play around them. Farming, timber cutting and mining for coal are practices which can kill a river. If these practices are done carefully using good conservation methods they will not harm the rivers.

KINDS OF WATER POLLUTANTS

SEDIMENTS

Tiny pieces of soils wash from land and paved areas into creeks and streams. When a lot of pieces get into water, they are called pollutants. Sediments come from places where buildings are being built or where farmers are growing crops. Sediments can kill fish by covering fish nests and clogging the gills of some fish.

PETROLEUM PRODUCTS

Oil and other petroleum products like gasoline and kerosene get into water from ships, automobile service stations, and streets. Oil spills kill animals that live in or near water. Birds can not fly when oil covers their feathers. Fish are poisoned. Oil is very hard to clean up.

ANIMAL WASTE

Flooding of barnyards or stock pens can cause animal waste to flow into our streams and rivers. Not only does the water look ugly and smell bad, but it is also harmful to our wildlife.

MUNICIPAL WASTE

Human wastes that are not properly treated at a waste treatment plant may have a lot of germs in it that will make people sick. This usually happens when sewage gets into water. Normally sewage, or water and waste from toilets, is stored in a septic tank. Sometimes septic tanks fill up and sewage runs out into our water.

HOUSEHOLD WASTE

Detergents and pesticides can get into our water system. Many of these can kill fish and make humans sick. They cause water to taste and smell bad.

MINING WASTE

Some pollutants from farms is fertilizer. These pollutants cause streams to stay dirty. They also kill fish and plants that live in water.

FERTILIZERS

The main pollutant from farms is fertilizer. When it rains, the fertilizer is carried into streams and rivers. It uses up all of the oxygen in the water. Then the animals in the water die.

HEATED OR COOLED WATER

Electric power plants use a lot of water. They often return heated water to streams. This heated water has less oxygen in it, so it kills fish and other animals that live in water. Water that is colder than normal can also harm wildlife.

ACID RAIN

Animals and plants that live in water like clean water. When water gets too much acid in it, fish and plants die.

PESTICIDES

Farmers sometimes spray chemicals on weeds or bugs to kill them. Rain carries these chemicals into our streams, rivers, lakes and oceans.

"NATURAL FACT"

YOU WILL LEARN...

- The difference between natural and man-made objects in the environment.
- How to define an unsafe and a safe way to dispose of garbage.

WHY IS THIS IMPORTANT?

Most Tennesseans understand that natural resources are growing more scarce. The "ecological movement" that began in the 1960's began a far-reaching attempt to conserve what was given to us when earth was created. Nonrenewable resources such as oil and minerals are used to produce millions of products. Even renewable resources such as trees are carelessly wasted. When products are "thrown away", they are buried in landfills, ending the cycle and availability of renewable and nonrenewable resources.

Tennesseans "throw away" an average of six pounds per person per day. Of this six pounds of trash and garbage, about 40% is made from nonrenewable resources. Another 35% is made from paper which comes from trees (a renewable resource).

DO THIS...

Follow your teachers instructions. Put your thinking caps on!

WATER WIZARD, CAN YOU TELL ME...

- * Name five toys you have at home made from paper, plastic or metal
- * Name five toys you have at home made from natural materials.

WATER WIZARD WORKOUT

Make as many new words as you can from the following phrase. Good Luck!!!

RENEWABLE RESOURCES

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

WATER WIZARDS

"HOME BREW" TAKE HOME SHEET

NATURAL FACT

WATER WIZARD:

You learned a valuable lesson today. Share what you learned with your parents. Do you remember talking about these things?

1. The difference between natural and man-made.
2. The difference between renewable and non-renewable resources.

MORE WIZARD THINGS TO KNOW!

1. Batteries that are thrown away contain mercury which is very bad for the earth and water.
2. Americans throw away 25 billion styrofoam cups every year. That's enough to circle the earth

436 times! Many styrofoam cups get into rivers and lakes where the fish may be harmed by eating them.

3. Many six-pack rings wind up in the water. Why? Sometimes careless people leave their garbage after picnicking, or camping or boating. Sometimes the wind blows them from the garbage to the water. Fish easily get caught by trying to swim through the holes. In the ocean, turtles eat them and then die because they look like jellyfish.

WATER WIZARD WAYS TO SAVE THE EARTH!

1. Ask your parents to consider buying rechargeable batteries and a recharger. They are more expensive but they will last much longer.
2. Just say no to styrofoam. If you have a choice between styrofoam and paper, always choose paper. At least it is recyclable.
3. Before you throw away a six-pack ring, snip the circles so that no animal can get caught in it. Pick up any rings you see and do the same thing.

Your fishy friends will thank you for your good work Wizard!

DO YOU CARE-ENOUGH?

Our rivers and streams are important natural treasures. Without these natural waterways, the cost of getting water to our homes, farms and factories would be very expensive. Clean, running waters are necessary for good fishing, hunting, swimming, boating, camping, nature study and wildlife.

"SHOPPING FOR THE ENVIRONMENT"

YOU WILL LEARN...

- How to select products which are the least damaging to the environment.

WHY IS THIS IMPORTANT?

When choosing what to buy at the store, people make choices for many different reasons. Some always choose the least expensive item, while others (for whatever reasons) always choose the most expensive. Some look for the best value, some a certain brand, and still others will consistently choose the blue one.

It takes a lot of water to make natural and man-made products. But the water in man-made processes makes it very polluted. One of the biggest man-made products in our lives is plastic. It takes a lot of water and oil to make plastic. Oil is a nonrenewable resource buried deep in the earth. It took millions of years to make oil and when it is all used up it will be gone forever.

We use oil to make most of the things we use in our life. Plastics are in your toys, clothes, cars, food containers and the packages they come in. Plastics make our life convenient, but they are creating a terrible environmental problem. When we throw plastics away they don't go away. Scientists estimate that it will take a million years to evolve microorganisms capable of breaking down plastic.

Water Wizards can make a difference. You can learn how to make shopping decisions which are "best for the environment" and teach your family and friends how to do it too. It isn't always easy. Items which are best for the environment, are not always the "coolest" or "prettiest", so your decision may be difficult to make.

DO THIS...

You are going shopping to choose items "best for the environment." Listen to your teacher for instructions.

WATER WIZARD, CAN YOU TELL ME...

- * Five things made from or with oil?
- * Two ways to use less plastic
- * How does it feel to make a choice "best for the environment" if it is not the product you really want.

WATER WIZARD WORKOUT

CIRCLE THE HIDDEN WORDS.

BEST	CONSERVE
STOP	ENVIRONMENT
PLASTIC	NATURAL
OIL	CHOOSE
SAVE	WATER
WIZARD	PACKAGE
TOYS	DECISION

T Z S E M Y R P P O H S
S U A A C W I Z A R D O
E N V I R O N M E N T N
B P E E U D N Q F A G O
C T O Y S C T S V T W I
H A I W E H R N E U B S
O P L A S T I C K R L I
O X I T R Z J N T A V C

S M O E O W D U M L I E

WATER WIZARDS

"HOME BREW" TAKE HOME SHEET

SHOPPING FOR THE ENVIRONMENT

WATER WIZARD:

You learned a valuable lesson about water today. Share what you learned with your parents. Do you remember talking about these things?

1. Shopping Decisions affect the environment.
2. Plastic is one of the biggest man-made products in our life.
3. Oil is a nonrenewable resource used to make plastic.

MORE WATER WIZARD THINGS TO KNOW!

1. Oceans cover two-thirds of the earth's surface and produce most of the weather systems.
2. The dyes used to color paper towels, napkins, and toilet paper can pollute the groundwater.
3. Plastic and foam picnic items do not decompose when you throw them away. They can be bad for the environment. It takes a valuable resource called oil to make plastics and foam. We need to use oil wisely.

WATER WIZARD WAYS TO SAVE THE EARTH!

1. Ask mom to buy plain white paper products like paper towels, napkins and toilet paper to keep dyes out of the groundwater. Better yet, use cloth napkins!
2. Ask mom to use reusable items for picnics. You can help by offering to help wash them!
3. Choose your fast-food wisely. Does the hamburger come packaged in paper or styrofoam? Paper will decompose and takes up less space in the landfill. Ask your parents or teachers to help you write a letter asking restaurants to use paper instead of styrofoam. The food tastes the same!!

Pat yourself on the back Water Wizard! If you did these things you are helping to keep our water cycle clean.

DO YOU CARE-ENOUGH?

Many things are damaging the water in the Clinch and Powell and other rivers of our area. You have learned about some of those in Water Wizards. Pollution caused by soil washing into the streams, chemicals getting in the water, acid from air pollution, fertilizers, animal wastes, untreated sewage, oil, gas and coal mining wastes are choking the life out of the streams and rivers. People are causing these things to happen and people can stop them.

STUDENT SHOPPING LIST

SHOPPING FOR THE ENVIRONMENT

NAME _____

ITEM	YOUR CHOICE	ECO-RATING
APPLE		
LIGHT BULB		
CANDY		
SNACK		
BUG KILLER		
SODA POP		
LAUNDRY DETERGENT		
MILK		
PICNIC PLATE		
NAPKIN		
DIAPER		
DOLL		
MATCHBOX CAR		
BATTERY		
NOTEBOOK PAPER		
SANDWICH CONTAINER		
POPCORN		
FAST FOOD		
CLOTHES		
BARBIE		
TOY		
TOTAL SCORE		

"WICKED WASTE"

YOU WILL LEARN...

- How precipitation on a landfill can leach chemicals into the groundwater contaminating wells, ponds and streams
- How to define an unsafe and a safe way to dispose of garbage

WHY IS THIS IMPORTANT?

Where does your trash go after you throw it in the can? Does it magically disappear? No! After trash leaves your house, it goes to a landfill. A landfill is a very large place where all the garbage is buried in the ground. After it is buried in the ground do you think the garbage decomposes? Some of it will, but most of it won't. It just sits there and never goes away. The milk carton you threw away at lunch will still be the same and be in the landfill when you are an adult and have a child in the third grade!

When it rains on the landfill, the water travels down through the soil and the garbage, and becomes polluted water called leachate. Leachate is very dangerous to people and animals. The leachate usually stays in the ground but sometimes comes out on the ground surface. It is very important to keep leachate away from people and animals.

Landfills are safe places for garbage when they are operated correctly. It is very expensive to operate a good landfill, so we need to reduce our garbage so they don't fill up as fast.

Dumps are also places where garbage goes, but dumps are very bad for the environment. They pollute the water, they breed germs and diseases which can make people and animals sick and they attract rats which can carry diseases. Dumps are against the law and they are very bad. Water Wizards need to do their best to teach others not to dump illegally.

These are ways we can reduce the amount of garbage being buried in the landfill. We can reduce the amount of garbage we make by buying products which have less packaging or are made from all natural materials. We can reuse items instead of throwing them away. We can recycle items so that they can be processed into other goods we can buy again. When we do these things we will save landfill space and save precious natural resources and be good friends to the earth.

DO THIS...

Your teacher will help your class build a model of a landfill, so you can see how the groundwater becomes contaminated. Give your teacher all of your Water Wizard attention.

WATER WIZARD, CAN YOU TELL ME...

- Where trash goes after it leaves your house?

- What leachate is?
- What happens when it rains on a landfill?

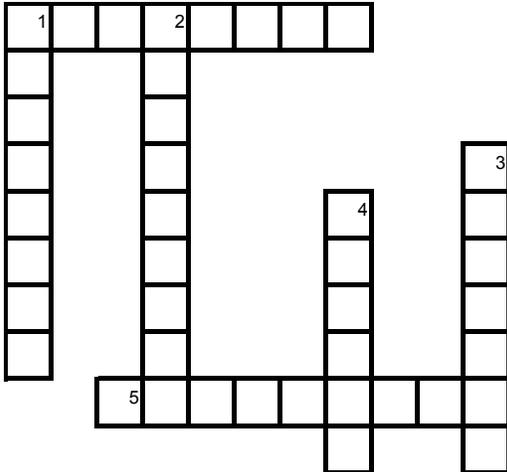
WATER WIZARD WORKOUT

Across

1. A _____ is where garbage is taken and buried in the ground.
5. We can reduce garbage by _____ aluminum cans and other products.

Down

1. _____ is a very polluted liquid which flows out of landfilled garbage.
2. Garbage takes many years to break down, or _____ after it is buried.
3. We provide _____ when we throw things away.
4. _____ are the biggest polluters.



WATER WIZARDS

"HOME BREW" TAKE HOME SHEET

WICKED WASTE

WATER WIZARD:

You learned a valuable lesson today. Share what you have learned with your parents. Do you remember talking about these things?

1. How precipitation on a landfill can leach chemicals into the groundwater and pollute wells, ponds and streams.
2. The difference between a landfill and a dump.
3. What kind of things decompose and what kind of things don't.

MORE WIZARD THINGS TO KNOW!

1. Recycling is a very good way to reduce the amount of garbage we throw away.
2. Recycled products are made from products which were used before.
3. Sometimes you pay as much for the package your new toy comes in as you do for the toy!
4. Each year, Americans throw away 18 billion disposable diapers, 1.7 billion pens, 2 billion razors and blades and 220 million tires. Enough aluminum is thrown away to rebuild the entire U. S. commercial airline fleet every three months. Ask your parents to read and think about this with you.
5. Disposal of plastic waste is one of the biggest problems. It doesn't decompose and it takes up valuable landfill space. It also can't be easily recycled. Plus, it is made from oil, a decreasing and very valuable resource.

WATER WIZARD WAYS TO SAVE THE EARTH!

1. Ask your parents to help you start a recycling program at home. Products which are easily recycled are aluminum, glass and cardboard. One recycled can may save enough energy to power your television for three hours. One recycled glass jar will save the energy to burn a light bulb for four hours.
2. Encourage everyone you know to buy recycled products like recycled paper and aluminum cans. These products may be hard to find and a little more expensive, but remember you are saving the earth. When more people buy recycled, the price will go down.
3. Don't judge a toy by its wrapper! Choose the one with less garbage to be thrown away. It's probably cheaper too! Ask you mom to do the same thing.

4. Try to buy and use fewer disposable items. Buy products in recyclable containers and then recycle them.
5. Try to use plastic wisely. It is a very valuable and useful product, but we are literally burying our planet in it. Why not use more paper milk cartons? And returnable soda bottles? Ask your grocery store manager about this!

You did it Water Wizard! You have started doing some things to save the environment. You should feel very proud. Keep up the good work and keep telling others what you have learned. Mother Earth says thank you Water Wizard!!

DO YOU CARE-ENOUGH?

Tell others about the value of the Clinch and Powell and other rivers. They may not realize just how special and important they are. Watch out for the rivers and do your part to take care of them. If you see people dumping garbage or littering, ask them nicely not to and explain why. Each one of us can make a big difference!

GLOSSARY

Aquatic - Growing or living in water.

Bacteria - A large group of one-celled plants which may cause disease.

Condense - To become smaller.

Decompose - To rot or decay.

Drought - Dryness, a bad need of water.

Evaporate - To escape as a vapor.

Evolve - To develop by the use of natural resources.

Filtration - A process where polluted water is poured through filters to clean it.

Infiltration - To pass through or into as in filtering.

Leach - To percolate through something.

Leachate - Fluid which has percolated through something, especially garbage.

Microorganisms - Very small organisms, sometimes hard to see with the naked eye.

Natural Resources - Materials and energy resources not made by man.

Nonrenewable - Not capable of being restored because they are replaced more slowly than they are used.

Oil - A nonrenewable natural resource taken from deep in the earth. Very valuable in making products such as gas and plastics.

Precipitate - To condense vapor and fall as rain or snow.

Recycle - To separate material from waste so it can be used again.

Reduce - To make smaller, as in making smaller amounts of garbage through careful product buying.

Renewable - Capable of being restored and can be replaced.

Reuse - To use again or find another use for.

Transpire - To evaporate from plant cells.

Water Cycle - The recycling process water goes through from the sky to the earth and back to the sky.

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