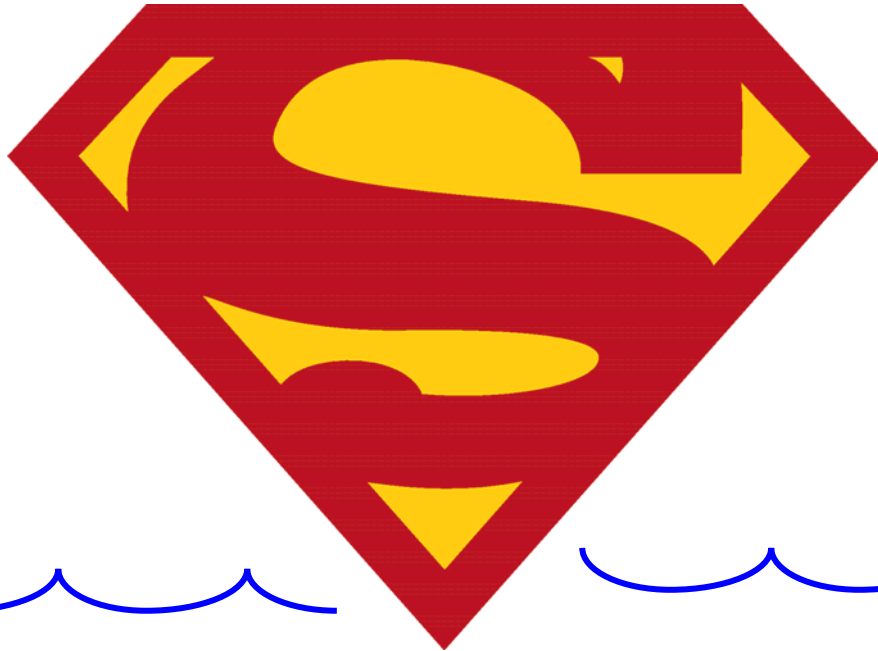


Super Source Water

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For Kids

4th Annual Ohio River Watershed Celebration

July 27, 2005

Pittsburgh, Pennsylvania



Created by Melissa Busler,
Stream Restoration Incorporated

Welcome!!

Welcome to the 4th Annual Ohio River Watershed Celebration! We are so excited you have chosen to join us for a fun and educational riverboat cruise! In this activity book you will find cool information and fun activities related to source water, a main focus of this year's Celebration. We hope you enjoy this booklet, the cruise, and all other activities of the day that make up our special event to celebrate the Ohio Watershed. Thank you for participating, we are so happy to have you as a part of our Celebration!

Source Water

What *is* source water? Why does source water matter to you? Do you have any need for it? Absolutely! Source water is untreated water from streams, rivers, lakes, or underground aquifers which is used to supply private wells and public drinking water (www.epa.gov) So, we ALL use and need source water! It allows us to wash our hands, take a shower, wash the dishes, and so much more!

Do you know where your drinking water comes from? Drinking water typically comes from one of two sources: either it is surface water or it is groundwater. Surface water usually provides the drinking water for cities and larger towns and includes sources of water such as a river, stream, lake, or reservoir. The 3 Rivers we are sailing on today (the Monongahela, Allegheny, and Ohio) provide drinking water for thousands of people in western Pennsylvania. The Ohio River is a source of drinking water for more than three million people in the eastern United States.

The other source, ground water, normally supplies drinking water to smaller communities and private wells. Like the name implies, ground water is water that is pumped from under the ground to the surface by a well. Ground water comes from aquifers, which are natural under ground layers (usually of sand or gravel) that contain water.

Protecting sources of drinking water is important. It involves good management of local watersheds. A watershed is an area of land that drains into a body of water such as a stream, river, lake. Large watersheds contain hundreds of smaller watersheds. Pennsylvania has 5 major watersheds: the Ohio, Susquehanna (the largest one), Erie, Potomac, and Delaware. Their names are clues as to where water and precipitation will drain to (ex: in the Erie drainage basin all of the precipitation and water ends up draining into Lake Erie).

Today you are in the Ohio River Watershed—more than 25 million people, almost 10 percent of the U.S. population, live in this watershed! We hope you have fun learning more about it on the riverboat cruise!

Word Search: Fish of the Three Rivers

Which city is the largest inland port in the U.S. and home to 26,000 registered boats, with hundreds of miles of waterways throughout the region? Pittsburgh! Many individuals outside the area may be surprised to know that Pittsburgh's three major rivers, the Allegheny, Ohio, and Monongahela, are a healthy and thriving fishery with plenty of variety! While catfish and carp (pollution-tolerant species) comprised the normal catch of a fisherman decades ago, over 50 species of fish now call Pittsburgh's rivers home! This even includes several fish on the Pennsylvania list of endangered, threatened, and candidate species! With its problems of river pollution long in the past, Pittsburgh plays host to this year's Bassmaster Classic professional fishing tournament. Below is a list of just some of the species of fish found in the Three Rivers—try to find the names hidden in the puzzle below and circle them all!

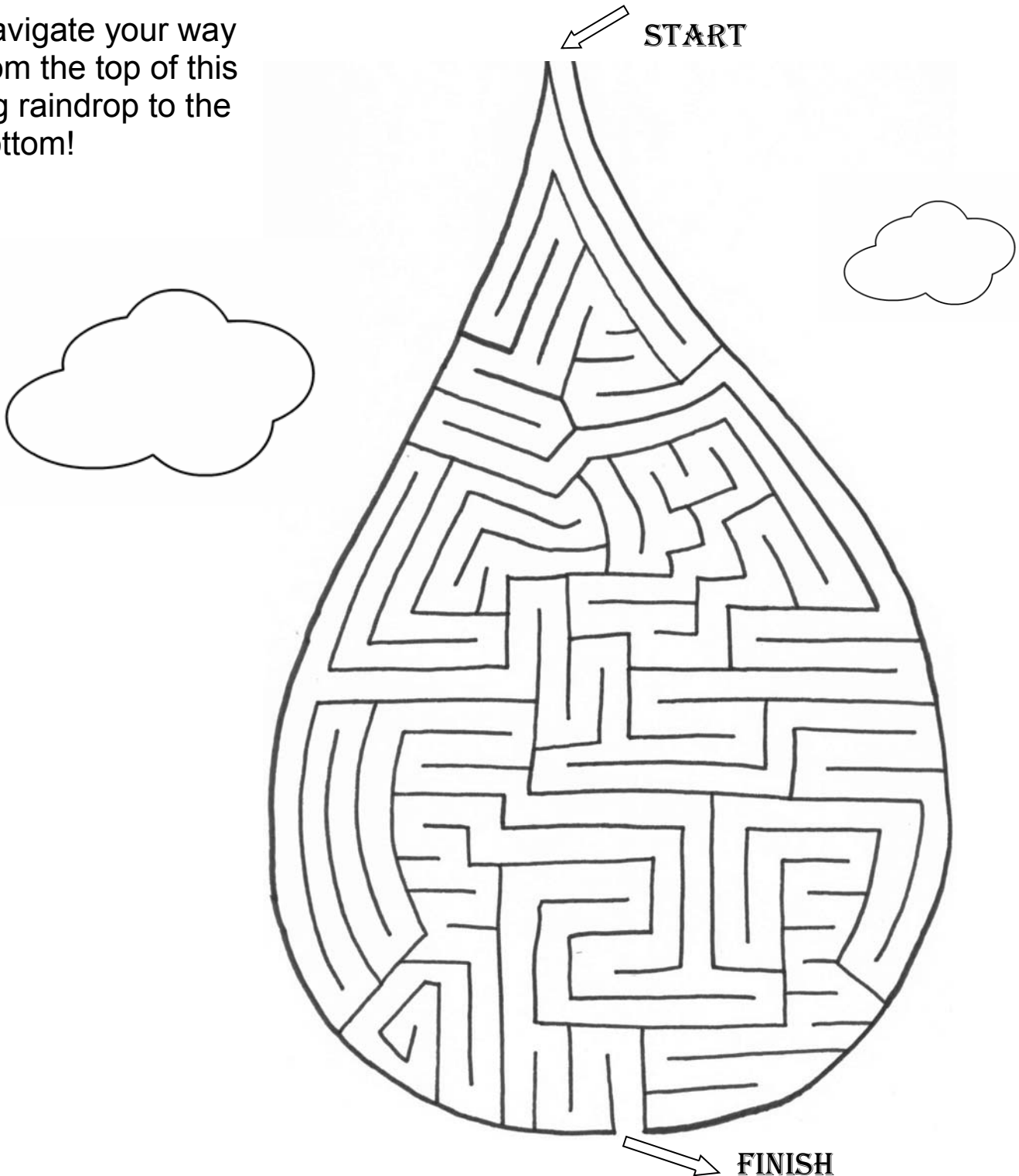
walleye	longnose gar	northern pike	spotted bass
sauger	spotted bass	bluegill	mooneye
channel catfish	golden redhorse	crappie	smallmouth bass
flathead catfish	smallmouth buffalo	gizzard shad	largemouth bass
striped bass	silver chub	muskellunge	black bass

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

Raindrop Maze

Rain is an important part of the Water Cycle. Precipitation takes place when there is so much water in the air it can't hold it anymore—resulting in rain, snow, sleet, or hail. Rain fills up the earth's streams, rivers, lakes, and oceans. This water is also stored underground and can be pumped to use for drinking water. The sun heats the water and causes it to evaporate (turn into vapor or steam). Plants and trees also lose water from the sun's heat (this is known as transpiration). The water vapor changes back into clouds (condensation) when it gets cold in the air. The clouds accumulate more and more water, get heavy, and then the precipitation begins once more!

Navigate your way from the top of this big raindrop to the bottom!



Water Trivia

How much do you know about water? Whether you're a watershed professional or a grade school student, you'll have fun taking this quiz about many aspects of water! Circle your guesses to the questions below and then check for the correct answers on the last page to see how well you did. Good luck!

1. What percent of the earth's surface is covered by water?
A. 15 B. 30 C. 50 D. 70
2. What percent of the earth's water is freshwater?
A. 2 B. 22 C. 40 D. 65
3. The average American uses about _____ gallons of water each day in the home.
A. 20 B. 45 C. 80 D. 140
4. What percent of human brains are water?
A. 5 B. 33 C. 50 D. 75
5. The United States has _____ miles of rivers.
A. 475,000 B. 930,000 C. 1.75 million D. 3.5 million
6. The longest river in the United States is the _____.
A. Missouri B. Mississippi C. Colorado D. Ohio
7. The city in the United States that receives the most rainfall is _____.
A. Seattle, Washington B. New Orleans, Louisiana
C. Hilo, Hawaii D. Eugene, Oregon
8. About _____ of home water use is in the bathroom.
A. 25% B. 50% C. 75% D. 90%
9. The Great Lakes contain _____ of the nation's water supply.
A. 25% B. 45% C. 65% D. 95%
10. The national average for what a person pays for water on a daily basis is:
A. 7 cents B. 15 cents C. 25 cents D. 32 cents
11. How much does a gallon of water weigh?
A. 5.22 pounds B. 8.33 pounds C. 11.44 pounds D. 13.95 pounds
12. How many miles of pipelines and aqueducts are in the US and Canada?
A. 400,000 B. 750,000 C. 1 million D. 2 million

How well did you do?

11-12 correct: Very impressive! Captain of the ship!

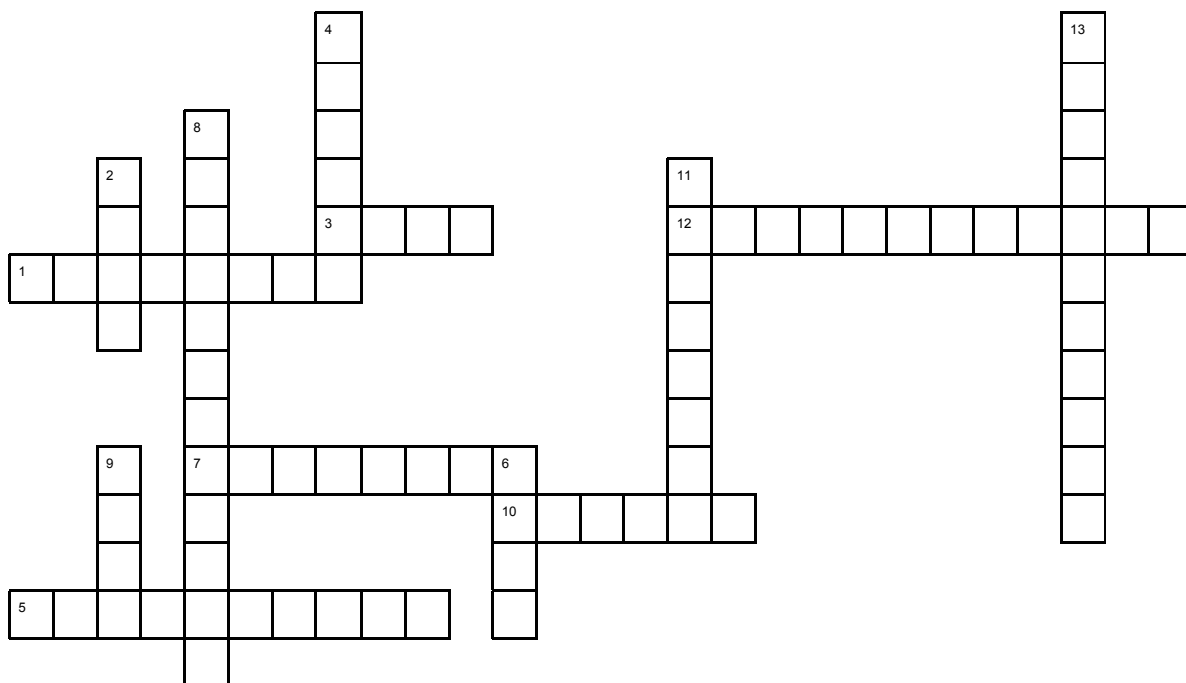
9-10 correct: Good job! First mate on the ship!

7-8 correct: Room to improve—can you swab the decks, mate?

6 or less correct: We'll throw you a life preserver, looks like you're drowning!

Water Pollutants Crossword Puzzle

Nonpoint source (NPS) pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water (www.epa.gov). These pollutants include: excess fertilizers, herbicides, and insecticides from agricultural lands and residential areas; oil, grease, and toxic chemicals from urban runoff and energy production; sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks; salt from irrigation practices; acid drainage from abandoned mines; and bacteria and nutrients from livestock, pet wastes, and faulty septic systems. The crossword puzzle below is all about nonpoint sources of water pollution. See if you can fill in the blanks in the clues; if you need help there are many watershed professionals on the boat who can give you an answer or two! They would be glad to help you if you just ask. Also check out the information on the poster displays. Or if you really need to, the answers are on the last page of this book!



Across

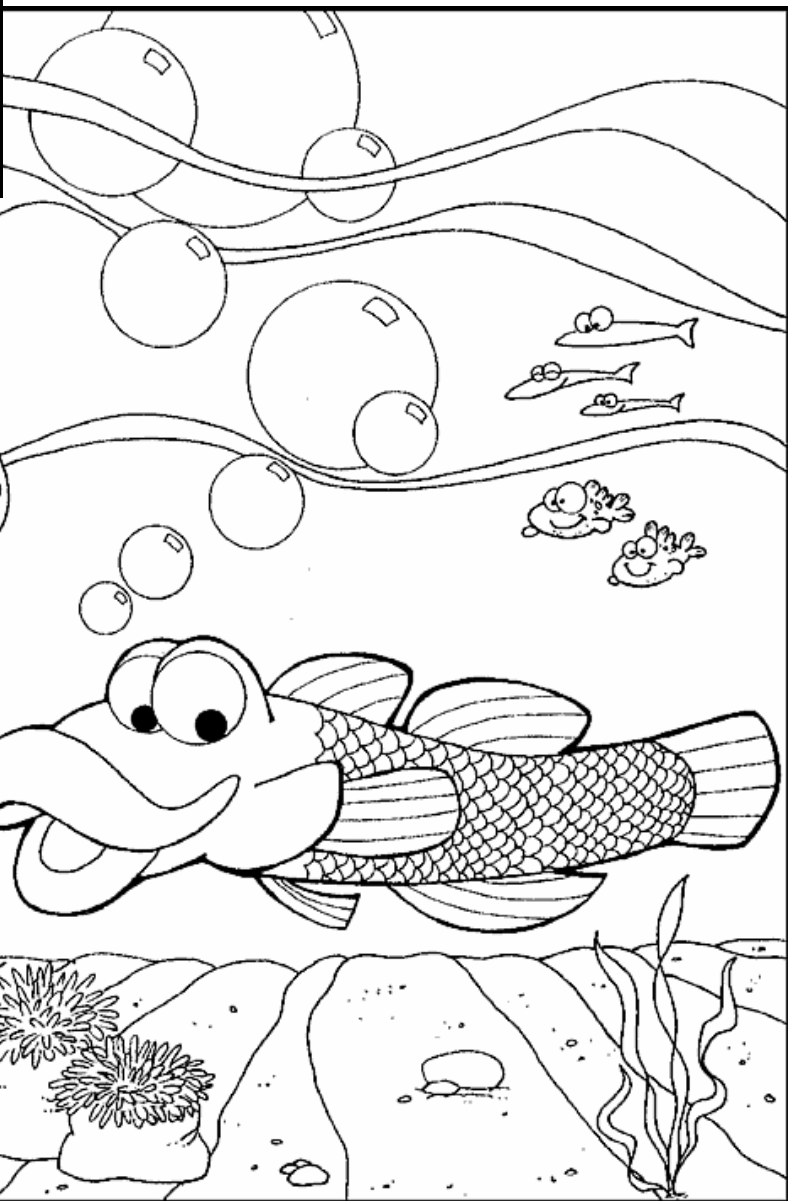
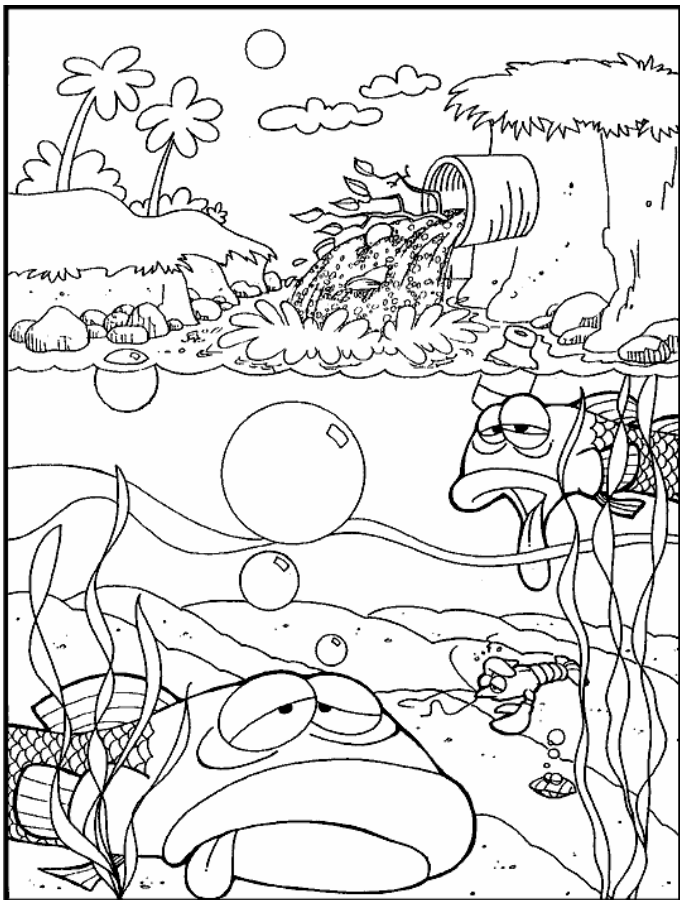
1. The main pollutant of surface water in the mid-Atlantic region of the US is AMD, which stands for acid mine _____. AMD is caused when water flows over sulfur-bearing materials forming solutions of net acidity.
3. Mine drainage is formed when pyrite, also known as Fool's _____, is exposed to and reacts with air and water to form sulfuric acid and dissolved iron.
5. Chemicals applied to crops, plants, and lawns to control weeds, insects, fungus, rodents and other "pests" are called _____ and can contaminate surface and ground water if used improperly.
7. Driving _____ on roads, highways, and bridges can lead to particles of exhaust and oil and other fluids dripping onto the roads and later washing into storm drains and streams.
10. Oil spills from tankers in the _____ have killed or harmed many birds, fish, seals, and other aquatic life.
12. Road _____ not only slows down traffic, but also creates waste like asphalt, paint, brick and block, concrete, and more...

Down

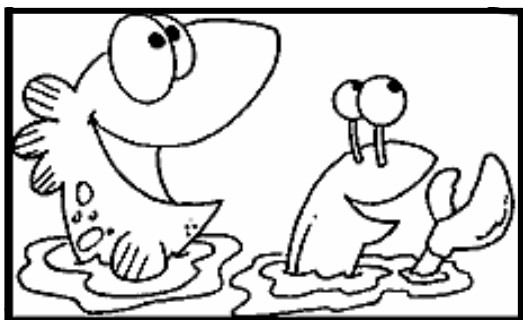
2. AMD comes mainly from abandoned _____ mines and degrades over 2400 miles of streams in Pennsylvania.
4. Streams severely impacted by AMD have an _____ color coating the rocks and stream bed from the iron precipitate.
6. Erosion and sedimentation from farms occur when particles of _____ are washed into nearby streams. This can cause pollution by clouding the water (depleting oxygen) or carrying fertilizer into water bodies.
8. The state of _____ has over 250,000 acres of abandoned mine lands, more than any other state.
9. Waste from _____ (like when you walk your dog) can pollute local streams if not cleaned up.
11. _____ is rain that has mixed with industrial pollutants to become more acidic than normal (all rain is naturally acidic). The worst _____ has destroyed some forests and lakes.
13. _____ applied to lawns and gardens can wash into streams (part of urban runoff) and pollute water.

Color It Clean!

Polluted water makes fish and other aquatic life sick...



Everyone is happy with clean water!



Water Conservation

Word CASBEMLR (SCRAMBLE)

On the average, a person uses 2 gallons of water to brush his or her teeth each day. A 10-minute shower uses about 55 gallons of water. Typically 4 to 6 gallons of water are used for every toilet flush. A leaking faucet can waste 100 gallons of water a day. Almost all of us are guilty of wasting water at least some of the time. But water is a precious resource we shouldn't take for granted. Everyone should do their part to try to conserve water in as many ways as possible. Read the water conservation tips below, and try to unscramble the mixed-up words in this Water Conservation word scramble puzzle.

1. The largest percent of water use (and waste) happens in this room of the house:
OMOTABRH _____
2. You should only run this when it is fully loaded (with your plates, cups, silverware, etc.)
WIASRSHDHE _____
3. A heavy rain eliminates the need to water your _____ for 2 weeks.
WNLA
4. Use a _____ instead of a hose to clean your sidewalk and driveway.
ROMOB
5. Use a low-flush _____ ; these use only 1 to 2 gallons of water per flush instead of the average 5 to 6 gallons used by the high flush kind.
OEITTL
6. Keep a pitcher of water in the _____ instead of running the faucet for drinks of cold water.
EERROIFGRART
7. Use _____ around plants to reduce water loss from evaporation.
MHLCU
8. Wash your car at a commercial car wash that _____ the water.
CSEYERLC
9. When you're in a hotel (and also at home) re-use your _____ for as long as possible.
OWSLTE
10. Plant _____ plants because these need less water once established and can usually survive periods of drought.
VNEATI

5 Water Conservation Tips

1. Don't pour water down the drain when there is another use for it (such as watering a plant or cleaning).
2. Repair dripping faucets, which can waste thousands of gallons of water per year.
3. Take short showers instead of baths
4. Don't flush the toilet unnecessarily ("If it's yellow let it mellow; if it's brown flush it down!")
5. Don't let the water run while brushing your teeth, washing your face, or shaving.

Thank you to the PA League of Women Voters!!!

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Designed by Melissa Busler

Stream Restoration Inc. (non-profit)
3016 Unionville Road
Cranberry Twp., PA 16066
sri@streamrestorationinc.org
www.streamrestorationinc.org
Phone: 724-776-0161
Fax: 724-776-0166

Other youth-oriented publications available from Stream Restoration Inc. include:

Slippery Rock Watershed Coalition, 2002, The ABCs of Our Watershed.
A coloring book, 52 p.

Slippery Rock Watershed Coalition, 2003, Accepting the Challenge. A primer on
the history, causes, and solutions to abandoned mine drainage, 79 p.

Stream Restoration Inc., 2004, 3rd Annual Ohio River Watershed Activity Books. Educa-
tional word games and puzzles with a watershed theme, one book for ages 7 to 12, the
other for ages 13 to 18.

These publications are available to the public for **free** by contacting Stream Restoration
Inc. (see contact information above). Donations are appreciated to cover costs!

Selected Answers

Water Trivia (page 3) 1. D 2. A 3. C 4. D 5. D 6. A 7. C 8. C 9. D 10. C 11. B 12. C

Water Pollution Crossword Puzzle (page 4) Across: 1. drainage 3. gold 5. pesticides 7. vehicles 10.
oceans 12. construction Down: 2. coal 4. orange 6. soil 8. Pennsylvania 9. pets 11. acid rain 13. fertil-
izers

Water Conservation Word Scramble (page 6) 1. bathroom 2. dishwasher 3. lawn 4. broom 5. toilet
6. refrigerator 7. mulch 8. recycles 9. towels 10. native

Name That River (page 7) 1. O 2. M 3. A 4. M 5. M 6. O 7. O 8. A