



THE NORTH RIVER WATERSHED

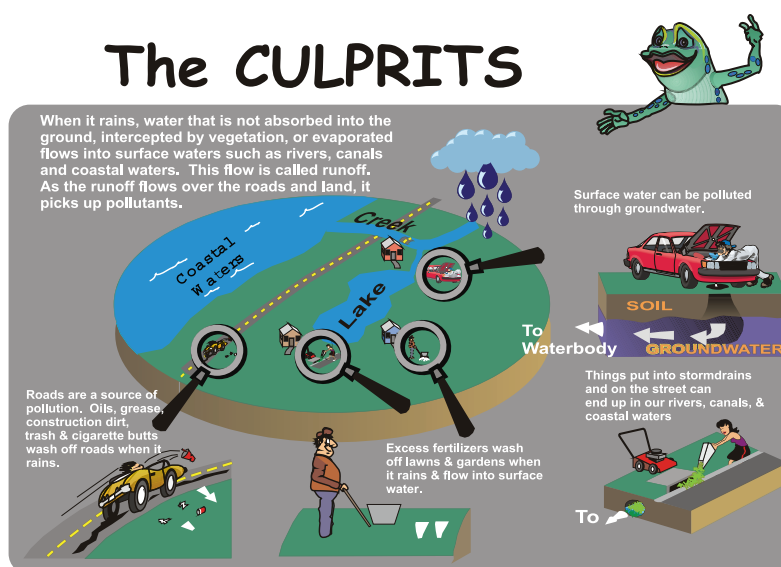


EVERYONE LIVES IN A WATERSHED,...

...Though many of us never realize it. Each time it rains, water has to go somewhere. Simply put, a **watershed** includes all of the land that drains, "or sheds", into a body of water. As rainwater flows to the closest body of water, it comes in contact with anything we pour or place onto the ground. This body of water could be your favorite creek or pond where you skip rocks, the river where you and your family fish, the drinking water source for your town, or the ocean you enjoy visiting during family vacations.

The North River Watershed is made up of 428 square miles that encompass parts of Fayette and Tuscaloosa counties in west-central Alabama. The North River drains into Lake Tuscaloosa and then into the Black Warrior River where it completes its journey to Mobile Bay and the Gulf of Mexico via the Tombigbee and Mobile Rivers.

The CULPRITS



Compliments of "Watershed Weekly," a publication produced by the Hernando County (FL) National Pollutant Discharge Elimination System Storm Water Program

Longear Sunfish



THE NORTH RIVER WATERSHED

OUR NORTH RIVER WATERSHED

HOME TO 211,897 RESIDENTS

OF FAYETTE AND TUSCALOOSA COUNTIES (AL)

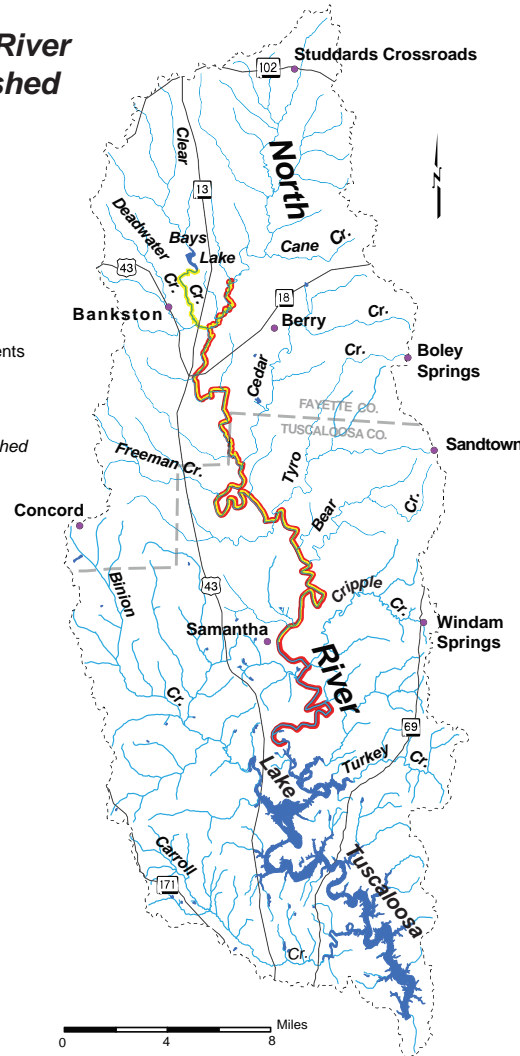


Source: 2010 Data from the U. S. Census Bureau

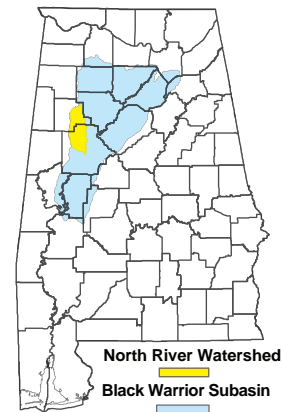
North River Watershed

Explanation

- Towns
- Rivers / creeks
- Major roads
- County line
- 303(d) listed segments
- Critical habitat
- Waterbodies
- North River Watershed boundary



Alabama counties



WHERE DOES ALL THE WATER COME FROM?

NORTH RIVER WATERSHED TRIBUTARIES

- | | |
|---------------|-----------------|
| Turkey Creek | Binion Creek |
| Tyro Creek | Deadwater Creek |
| Cripple Creek | Clear Creek |
| Bear Creek | Carroll Creek |
| Cedar Creek | Freeman Creek |

TRIBUTARIES

plural of **tributary** (Noun)

A river or stream flowing into a larger river or lake.

Source: CK Sound

The North River Watershed contains two water supply reservoirs, Lake Tuscaloosa and Bays Lake. Lake Tuscaloosa is a 5,886-acre water supply reservoir with 177 miles of shoreline. Bays Lake is an 80-acre water supply reservoir with 2.13 miles of shoreline. Serving as a water supply reservoir simply means that these reservoirs were constructed to capture and provide water. These lakes, however, have become more than a source of water for homes and businesses. They are very popular recreation spots for local residents and visitors, while also serving as a home for fish and wildlife.

Map Courtesy of Geological Survey of Alabama



THE NORTH RIVER: OUR LOCAL WATER SOURCE



OUR DRINKING WATER

Bays Lake serves the City of Berry and surrounding unincorporated areas of Fayette County. Lake Tuscaloosa provides water to residents of Tuscaloosa and the following water service providers: Carroll's Creek, Citizens, Coker, Englewood-Hulls, Fosters, Mitchell, Northport, Peterson, Sand Springs, and Tuscaloosa.

REPORTING PROBLEMS

If you see or suspect a sewage discharge on the ground or into a stream, contact your local health department immediately.

Fayette County Health Department: (205) 932-5260

Tuscaloosa County Health Department: (205) 554-4540

WHAT ELSE CAN I DO TO HELP?

- ✓ Report environmental concerns to the Alabama Department of Environmental Management (www.adem.state.al.us).
- ✓ Volunteer and become more involved by contacting the Alabama Clean Water Partnership (www.cleanwaterpartnership.org)
- ✓ Interested in more biological data? Contact the U. S. Fish and Wildlife Service (www.fws.gov), the Geological Survey of Alabama (www.gsa.state.al.us), the Alabama Department of Conservation and Natural Resources (www.outdooralabama.com), or the Alabama Department of Environmental Management (www.adem.state.al.us).



HELPFUL HINT:

Think twice about how to apply and dispose of chemicals before you use them. Remember...EVERYTHING that goes down the drain, onto our lawns and agricultural fields, or into the environment by any means can eventually end up in the water we drink. Keeping our water clean and healthy will help keep you and your family healthy and water treatment costs low.



Redeye Bass

THE NORTH RIVER: OUR LOCAL WATER SOURCE

SOURCES OF WATER POLLUTION



HOW CAN MY SOURCE OF DRINKING WATER BECOME POLLUTED?

- ✓ Human waste from septic systems that are **not** properly maintained.
- ✓ Animal waste.
- ✓ Motor oil from our vehicles.
- ✓ The use of storm water inlets for trash and waste disposal.
- ✓ Loose soil.
- ✓ Improper application of fertilizer and pesticides around homes and farms.
- ✓ Household waste, medications, and chemicals that have been disposed of improperly.

IMPAIRED WATERBODY

A body of water (such as a stream or lake) suffering from serious or repeated violations of the approved water quality standards.

Although treated water from Bays Lake and Lake Tuscaloosa is safe to drink, the North River has been listed as an **impaired waterbody** since 1998. Once a body of water is listed as impaired, water quality testing continues and a plan is developed to identify and address the primary sources of pollution.

If your water is filtered in a water treatment plant (typically operated by the City or County), pollutants are removed before it reaches our kitchen sinks. However, the more polluted the water source is...the more it costs to treat the water so that it is safe for public use. These higher costs are shared by everyone in the community.

The North River Watershed Management Plan, developed by the Black Warrior Clean Water Partnership and a host of other collaborative partners, was created to identify water quality problems, issues, and concerns...it is also expected to present sensible strategies to protect, maintain, or improve surface water quality; protect drinking water; benefit human health and quality of life; protect fish and wildlife, and enhance environmental awareness for citizens who live, visit, and recreate in the North River watershed.

DOES YOUR FAMILY USE OR DRINK WATER FROM A PRIVATE WATER WELL IN YOUR BACKYARD?

If so, your water is not treated or filtered like the water that is supplied by a water treatment facility. According to a study by the U. S. Geological Survey, more than 20% of water wells used by private citizens contain at least one contaminant at levels high enough to cause potential health problems. For example, chemical fertilizer is a common source of nitrates found in untreated water. Excessive levels of nitrates have even been linked to life-threatening illnesses in babies. To have your well water tested contact your local health department.



HELPFUL HINT:

If the water in your home comes from an untreated source, you should take extra steps to have your water tested. Water testing kits can be purchased from many local hardware stores or larger home improvement stores.

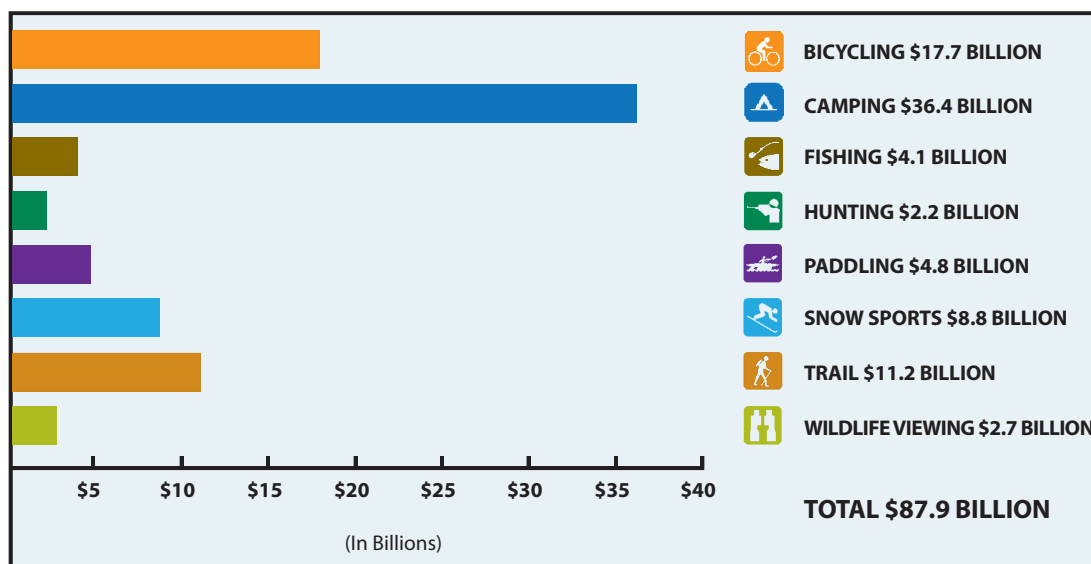


FUN IN THE SUN IN THE NORTH RIVER WATERSHED



RECREATION & TOURISM

Recreation and tourism are a billion-dollar industry in the United States. In a 2003 study, the Outdoor Industry Foundation found that outdoor recreation contributed \$730 billion annually to the U. S. economy, supported 6.5 million jobs and generated \$88 billion in state and federal tax revenue.



www.epa.gov/healthywatersheds

Here in Alabama, we are able to offer numerous outdoor activities directly linked to travel and tourism dollars. Just within the North River Watershed, visitors to our area can enjoy fishing, canoeing, water skiing, boating and more. Lake Tuscaloosa has even served as home to the B.A.S.S. Federation Qualifying Tournament, which pumps millions of dollars into local restaurants, hotels, and shops.

According to the Alabama Travel Industry, over \$679 million in state and local tax dollars were generated by travel and tourism (Alabama Travel Industry, 2009 Economic Impact Report). Without this income, each household in Alabama would have to pay \$373 in additional taxes to maintain the current level of public services.

Black Crappie



FUN IN THE SUN IN THE NORTH RIVER WATERSHED

HEALTHY WATER HELPS LOCAL DOLLARS AT HOME



ONE MAJOR ECONOMIC BENEFIT OF A HEALTHY WATERSHED

Because trees help filter water, researchers have found that every 10% increase in **forest cover** in a watershed decreases chemicals and the cost to treat water by 20%!

The Alabama Forestry Commission outlines Forestry Best Management Practices to help protect Alabama's natural resources, which includes our forests and water supply.



FOREST COVER

The amount of land within a specific area that is covered by trees.

PERCENT OF WATERSHED FOREST COVER	AVERAGE ANNUAL WATER TREATMENT COSTS
10%	\$923,450
20%	\$746,790
30%	\$586,190
40%	\$465,740
50%	\$369,380
60%	\$297,110

Source: Ernst, C., Gullick, R., & Nixon, K. (2004). *Protecting the Source: Conserving Forests to Protect Water*. *Opflow*, 30(5)

PROPERTY VALUE PREMIUMS

Article Excerpt from "The Economic Benefits of Protecting Healthy Watersheds"

April 2012 Edition

www.epa.gov/healthywatersheds

People value living near healthy, clean water. Studies from Maine and Minnesota show that home values declined by tens of thousands of dollars with declines in water quality. The aggregate [collective] effect of an **increase in property values** attributed to good water quality on a single lake equates to millions of dollars per lake in these areas. Further, recent studies around the country (e.g., Colorado, Pennsylvania, Oregon, Maryland, Ohio, and Virginia) have shown **increased property values and tax revenues** from properties near open space, green space, walking/biking trails, or **riparian** areas. Even in tight economic times, a relatively higher premium is placed on properties with access to nature. For example, a current study of five counties in southeastern Pennsylvania shows that open space is attributed with adding \$16.3 billion to the regional housing stock value. Clean and healthy waterfronts **boost property values and revenues** for adjacent retail and commercial businesses, too. Waterfront business properties are attractive to customers and have greater property value premiums when they are near clean waters. Preserving healthy watersheds and protecting open space while providing access to people has the potential to **boost local revenues while providing attractive amenities**.



RIPARIAN:

adj . relating to or living or located on the bank of a natural watercourse (as a river) or sometimes of a lake or a tidewater



NORTH RIVER WATERSHED: GET TO KNOW YOUR H₂O

NORTH RIVER WATERSHED: HOME TO MANY TYPES OF FISH AND WILDLIFE



Speckled Darter



Redspot Darter



Speckled Darter



Mussels

DARTERS

- ✓ Darters are small fish measuring between one and three inches in length and are found in streams across the state.
- ✓ In order to attract a mate, male darters "dress up for the ladies" during breeding season.
- ✓ The **Speckled Darter** (*Etheostoma stigmaeum*) and **Redspot Darter** (*Etheostoma artesiae*), pictured above, can both be found throughout streams in the North River Watershed.

MUSSELS

- ✓ Fifteen species of mussels have been identified in the North River Watershed.
- ✓ Mussels are filter feeders, feeding upon plankton and decayed organic matter in a stream. Water is syphoned into the shell and filtered over the mussel's gills, where food particles are trapped and eventually digested.
- ✓ Mussel larvae (*glochidia*) are parasitic (like a flea or tick on a dog), needing to attach to the gills or fins of a certain host fish to mature – different mussels require different fish for hosts and most times, only one type of fish will do! In order to increase the probability that glochidia will come in contact with the fish host, female mussels display large mantle flaps outside of their shells that serve as a "lure." The "lure" of the Southern Pocketbook (*Lampsilis ornata*) mussel, pictured above, is cream-colored with a distinct eyespot and dark stripe that is wiggled around to attract fish. Recent studies have determined that the primary host fish for the Southern Pocketbook is the Largemouth Bass (*Micropterus salmoides*). Larvae transform into juvenile mussels while on the fish and then drop from the host to find a suitable substrate, often the sand or gravel bottom of a river or creek, with the fish never knowing it played host! The transformation process on the host fish is the primary way that mussels expand their range in a watershed. Without hitch-hiking a ride on a fish, a mussel species may not ever move more than a few meters in the stream.

Source: <http://www.outdooralabama.com>

Photographs Compliments of: Emily Y. Horton (<http://emilyhortonphotography.zenfolio.com>)

Photograph Compliments of: Mark Bailey, Conservation Southeast, Inc.

To Continue Exploring Visit: U. S. Fish and Wildlife Service: Website: www.fws.gov

Conservation Fisheries: Website: <http://conservationfisheries.org/index.php/gallery/photos/>

Blacktail Redhorse



NORTH RIVER WATERSHED: HOME TO MANY TYPES OF FISH AND WILDLIFE

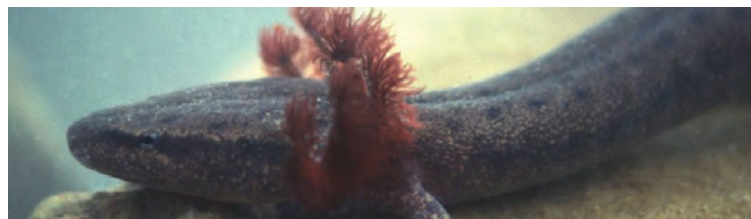
NORTH RIVER WATERSHED: GET TO KNOW YOUR H₂O



NORTH RIVER WATERSHED: HOME TO MANY TYPES OF FISH AND WILDLIFE



Flattened Musk Turtle
Photograph Compliments of: Mark Bailey, Conservation Southeast, Inc.



Black Warrior Water Dog (*Necturus alabamensis*)
Photograph Compliments of: Mark Bailey, Conservation Southeast, Inc.

TURTLES

- ✓ Turtles are reptiles. The earliest known species has been dated from 215 million years ago, making turtles one of the oldest reptile groups and a more ancient group than lizards, snakes, and crocodiles.
- ✓ Turtles are cold-blooded. They breathe air and do not lay eggs underwater, although many species live in or around water.
- ✓ Listed as threatened by the U.S. Fish And Wildlife Service in 1987, the Flattened Musk Turtle (*Sternotherus depressus*), pictured above, can ONLY be found in the Black Warrior River Basin in Alabama and can live up to 40 years. A shy and secretive bottom dweller, the Flattened Musk Turtle eats snails, clams, aquatic insects, and crayfish.

BLACK WARRIOR WATER DOG

- ✓ Also known as the Mudpuppy or Alabama Water Dog (*Necturus alabamensis*), these large, gilled, aquatic salamanders can reach lengths of almost ten inches and are found ONLY in the Black Warrior River Basin in Alabama.
- ✓ It is thought that these night-dwelling creatures feed on small fishes, fish eggs, tadpoles, crayfish, and aquatic insect larvae.
- ✓ Presently a candidate for federal listing as threatened or endangered, the Black Warrior Water Dog is sensitive to large amounts of nutrients and sediment in streams.



HOW CAN AN ACTIVITY AS SIMPLE AS MOVING OR EXPOSING SOIL/DIRT IN MY OWN BACKYARD GARDEN CAUSE PROBLEMS FOR OUR WATER SUPPLY?

If too much sediment or soil gets into the stream, fish gills can become clogged, forcing fish to move elsewhere. Also, as sediment settles on the bottom of the stream, both fish eggs and the bugs that fish eat can become covered and suffocate, therefore decreasing the fish population in your favorite fishing hole.

Pollution Solutions: Although your impact may be small, sediment from all sources entering streams can be overwhelming to the wildlife in that stream. The key is to minimize the amount of soil washing away. Adding mulch to gardens and flower beds helps keep the soil from washing into nearby storm drains and ultimately into our water supply. Mulch also keeps the fertilizer and nutrients for your plants from washing away and helps maintain moisture in the soil, reducing the need to water.



WHY IS IT UNDESIRABLE FOR EXCESSIVE AMOUNTS OF FERTILIZERS TO GET INTO OUR WATER SUPPLY?

Fertilizers and additional nutrients encourage the growth of weeds and algae. When weeds and algae die the microbes that decompose the plant material takes oxygen away from fish. These microbes release carbon dioxide and other harmful gases. The occurrence of both of these events can cause fish to die, which is extremely harmful to recreational fishing.

Pollution Solutions: Individuals can help by following the manufacturer's directions when applying fertilizers to lawns or gardens. Applying additional fertilizer does not cause plants or garden vegetables to grow bigger or faster. Plants will only use as much as they need. Once their needs are met, the excess fertilizer is washed away instead of being absorbed.

Source: <http://www.outdooralabama.com>

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To Continue Exploring Visit: U. S. Fish and Wildlife Service : Website: www.fws.gov

Conservation Fisheries: Website: <http://conservationfisheries.org/index.php/gallery/photos/>



SIMPLE WAYS TO PROTECT YOUR NORTH RIVER WATERSHED



SIMPLE WAYS TO PROTECT YOUR NORTH RIVER WATERSHED

POLLUTION SOLUTIONS

AT HOME SOLUTIONS



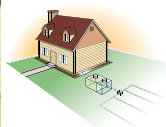
Lawn Care: Improper use of fertilizers and pesticides applied to lawns and gardens can pollute streams.

- ✓ Avoid overwatering your lawn.
- ✓ Consider using organic or slow release fertilizers.
- ✓ Always follow the manufacturer's instructions on the bag or container.
- ✓ Compost or mulch yard waste and clippings. **NEVER** sweep yard waste into storm drains or streams.
- ✓ Get a soil test before applying fertilizer.



Auto Care: Dumping automotive fluids and car washing run-off into storm drains has the same result as dumping them directly into a waterbody.

- ✓ Use a commercial car wash that treats or recycles its wastewater, or wash your car on the grass so the water absorbs into the ground.
- ✓ NEVER pour motor oil on the ground or in storm drains.
- ✓ Repair leaks and properly dispose of used auto fluids and batteries at drop-off or recycling locations.



Septic System: Leaking and poorly maintained septic systems release bacteria and pollutants that can be picked up by storm water and carried directly to our storm drains and streams, which causes public health problems and environmental concerns.

- ✓ Have your septic system inspected every three (3) years and pump as needed.
- ✓ **USE YOUR TRASH CAN!!** Don't dispose of grease and household waste in sinks, garbage disposals, or toilets.



Pet Waste: Waste from our pets is just as dangerous as a poorly maintained septic system. Pet waste can release bacteria and pollutants that can be picked up by storm water and carried directly to our storm drains and streams just like septic systems.

- ✓ When walking your pet remember to pick up its waste and dispose of it properly.
- ✓ Placing pet waste in the trash is the best disposal method.

SIMPLE WAYS TO PROTECT YOUR NORTH RIVER WATERSHED



FORESTRY & AGRICULTURE POLLUTION SOLUTIONS



Forestry:

- ✓ Plan and design access roads to minimize stream crossings. Contact the Alabama Forestry Commission for assistance. (www.forestry.state.al.us)
- ✓ Leave trees along stream banks to help hold the soil in place and provide shade. When water temperatures are kept low, more oxygen is available for fish.
- ✓ When stream crossings are needed, construct them so that they minimize erosion and physical changes to streams.
- ✓ Quickly add more trees once areas are cleared and avoid cutting near streams and waterways since trees act as a filter for toxins and debris.
- ✓ Minimize soil disruption by using the best logging practices and recommended equipment.
- ✓ Implement best management practices established by your industry.



Agriculture:

- ✓ Keep livestock away from stream banks and provide an off-stream water source. Contact your Soil and Water Conservation District. Call (334) 242-2620. (<http://swcc.alabama.gov>)
- ✓ Rotate animal grazing pastures to minimize erosion. Grass and shrubs along stream banks serve as a filter for toxins.
- ✓ Properly apply fertilizer and pesticides.

HELPFUL HINT:

The Alabama Cooperative Extension System provides soil testing kits along with a set of easy instructions. For more information on soil testing, contact your local county extension office.

Website: <http://www.aces.edu/anr/soillab/>
 Fayette County Extension Office: (205) 932-8941
 Tuscaloosa County Extension Office: (205) 349-4630



NEVER PLACE OLD, EXPIRED, OR UNUSED MEDICINE DOWN THE SINK OR TOILET.

Why are prescription and over-the-counter medications a concern? Wastewater treatment facilities are not designed to remove medications from water. When medicines are flushed or poured down the sink, they enter our water supply.

Pollution Solutions: NEVER flush medications down the toilet.

- ✓ Scratch out all of the information on the prescription label to protect your identity and personal health history.
- ✓ Mix medications with coffee grounds, kitty litter, or some other undesirable substance to help prevent illegal use.
- ✓ Place the medicine in a sealed bag or container before placing it into the trash to prevent spills or leaking.