JUNIOR WATERSHED EXPLORER

VLAWMO
Vadnais Lake Area
Water Management Organization

An activity book for all kids of all ages!

Hi everyone! Let's have fun together learning about lakes, streams, and the creatures that live near you!

This workbook belongs to _____

Welcome

We are excited you've decided to become a JUNIOR WATERSHED EXPLORER.

This book is full of fun ways to explore and learn about how to help keep lakes, streams and wetlands healthy for you and your family.

Are you ready to go? Here is what you need to do:

1) Complete the activities in this book
   (you can have an adult help complete these activities).
2) Check your work.
3) Mail or bring the last page to the address below
   for a Junior Watershed Explorer prize
4) Keep Exploring!

Let's go exploring

Recommendation for completing the workbook:

Age	Number of Pages to complete
• Up to 6 years old	4 or more pages
• 7-9 years old	7 or more pages
• 10 or older	9 or more pages

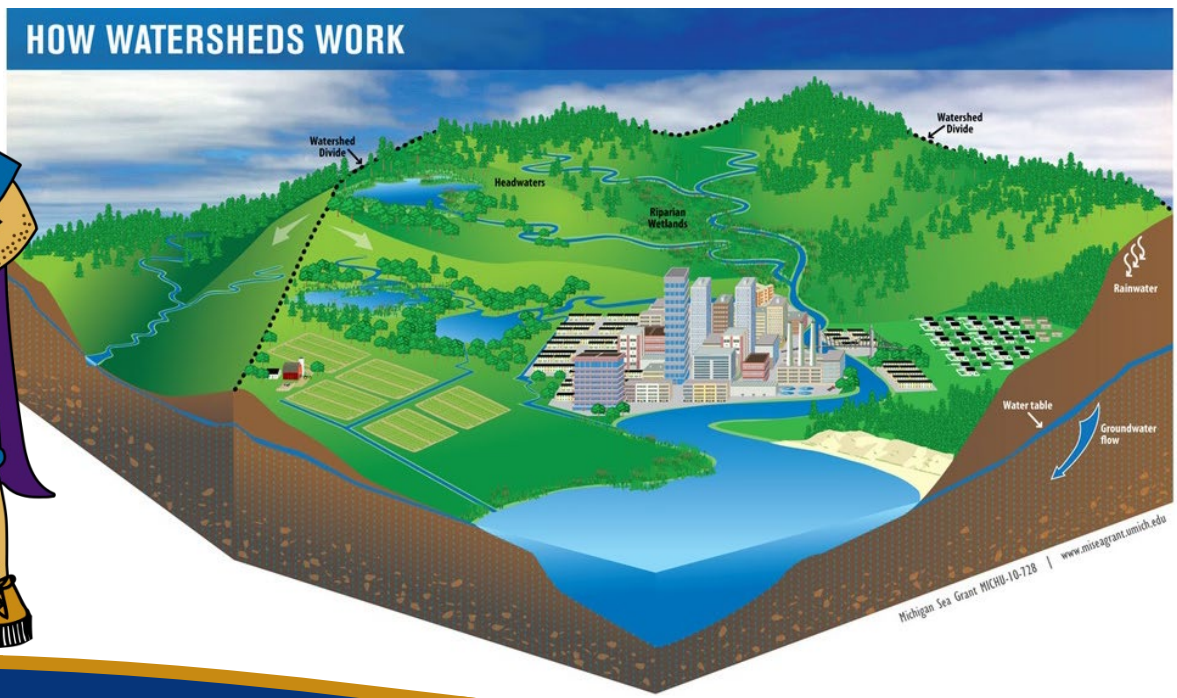
Let's explore our watershed!

What is a watershed?

Water from rain or snow melt follows a path down hills and through storm water pipes to a lake or creek. All of the land that drains to a particular water body is its **watershed**.

What is a watershed district ?

A **watershed district** is a type of government based on watershed boundaries. You live in the Vadnais Lake Area Water Management Organization (VLAMMO). VLAWMO is a team of people who work to protect the lakes, streams and wetlands near you. They help keep the water healthy for you and your family and for all the fish and other wildlife.



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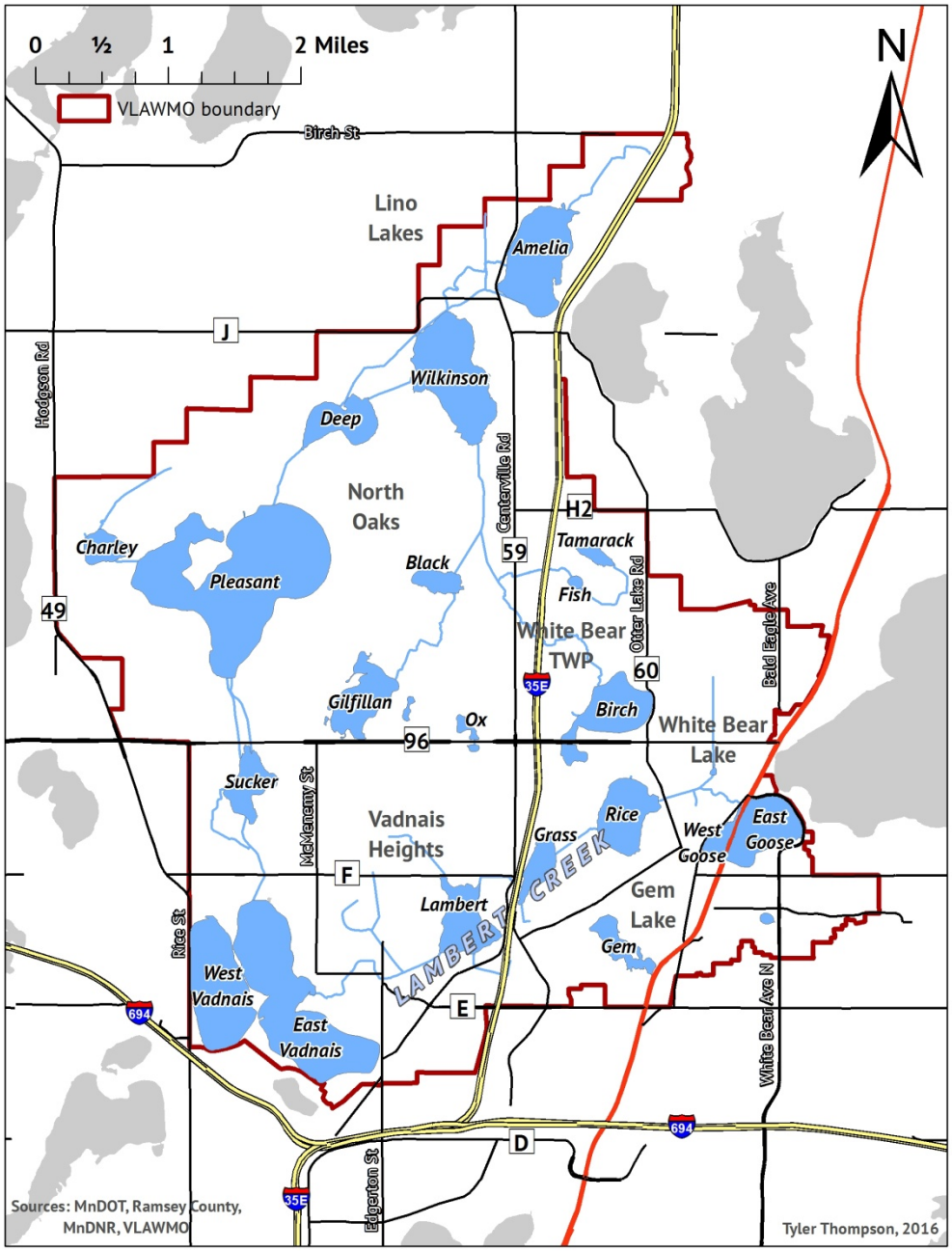
Can you find 12 lakes on the map?



Lakes in VLAMWO watershed:

- ❑ Amelia Lake
- ❑ Birch Lake
- ❑ Black Lake
- ❑ Charley Lake
- ❑ Deep Lake
- ❑ Gem Lake
- ❑ Gilfillan Lake
- ❑ East Goose Lake
- ❑ West Goose Lake
- ❑ Tamarack Lake
- ❑ Vadnais Lake
- ❑ Wilkinson Lake

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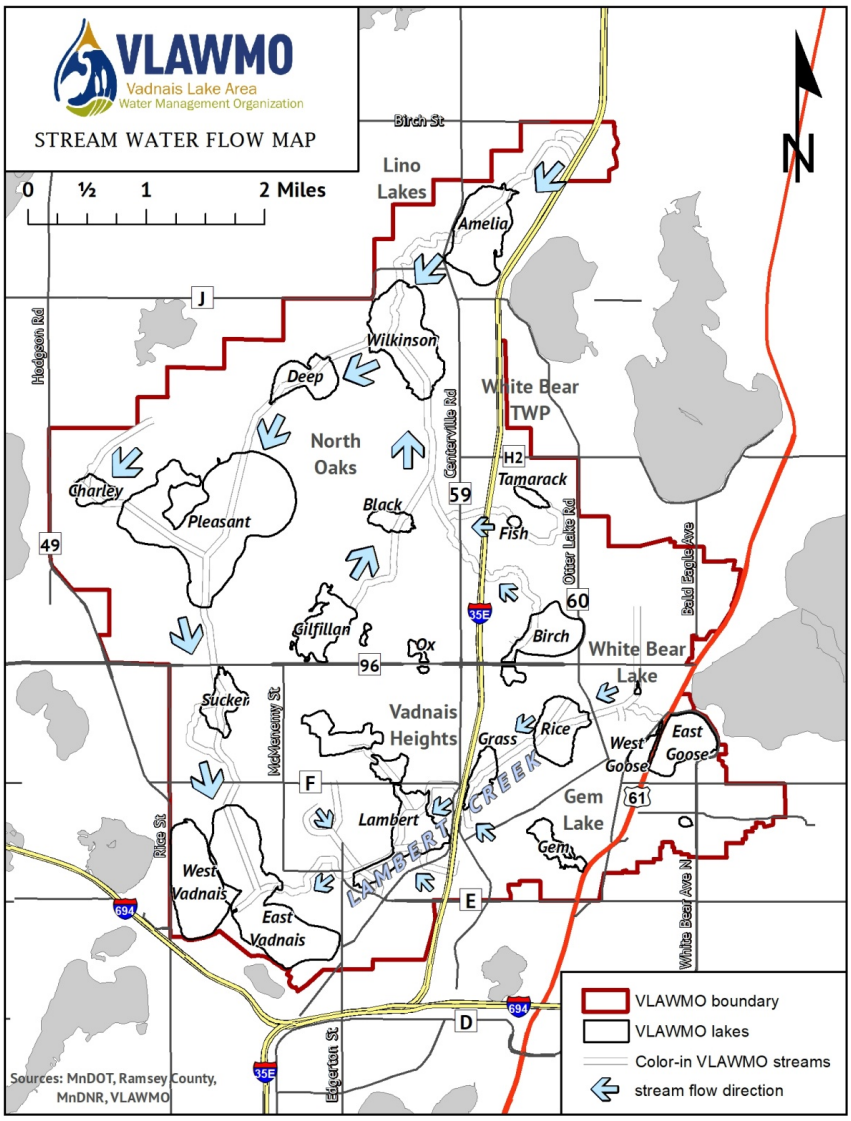
Circle where you live.

Think about the land near your house.

- ✓ **Is there a creek, pond or lake nearby?**
- ✓ **Write the name or circle the lake or stream near you.**

FUN FACT:
Every raindrop that falls inside the red line flows to Vadnais Lake.



Think about where the water from your yard or driveway flows.

Follow the blue arrows on the map with your finger to trace where the water flows. Where does the water go? Which lake or stream? Write your answer below.

Ask an adult for help if you are not sure.

What is a wetland?

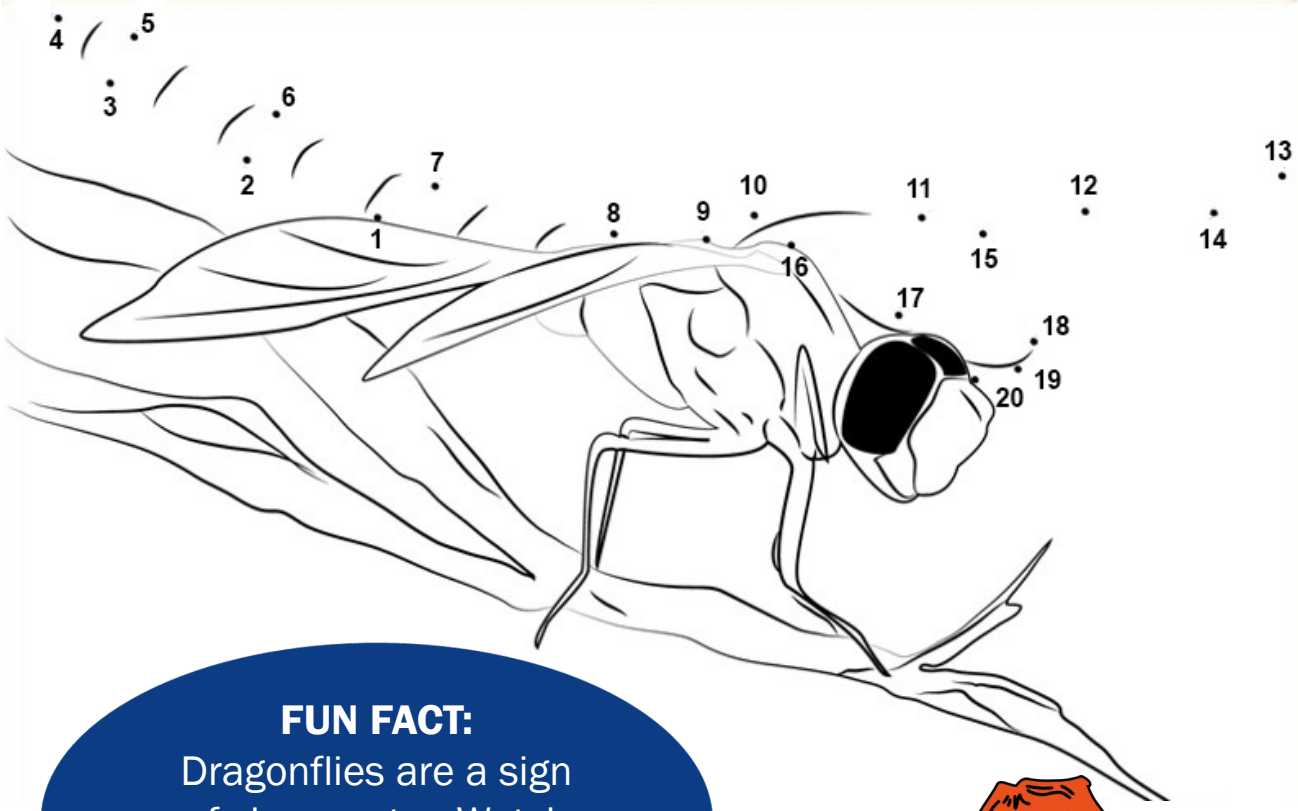
Did you know? Wetlands are a very important part of the watershed. They are like a big sponge that holds water. They provide homes and feeding habitats for many different types of animals. They also help to protect lakes and streams by filtering the water flowing into them. They protect against flooding.

FUN FACT: There are 500 wetlands in the VLAWMO watershed area!

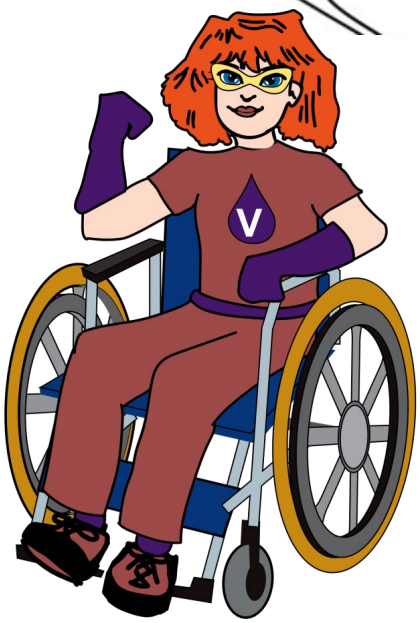
Can you find these animals and plants (circle or point to each one)?:
Bee, Cattails, Dragonfly, Ducks, Fish, Frog, Egret, Loon, Muskrat, Osprey, Red Winged Blackbird, Turtle, Water lilies

Connect the Dots...

...to Find the Dragonfly



FUN FACT:
Dragonflies are a sign of clean water. Watch for them when you are near a lake.



What wildlife lives in VLAWMO?

Put a check by the animals that you have seen. Circle your favorite!

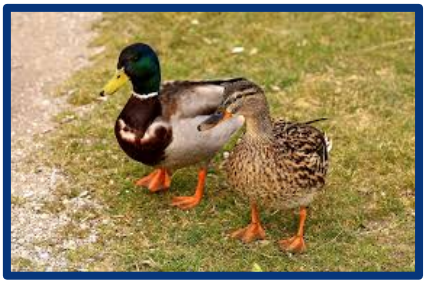
❑ Coyote

❑ Muskrat

❑ Wild turkey

❑ Wood duck

❑ River otter



❑ Mallard duck

❑ Whitetail deer

Go explore and find more!

❑ Northern leopard frog

❑ Monarch butterfly

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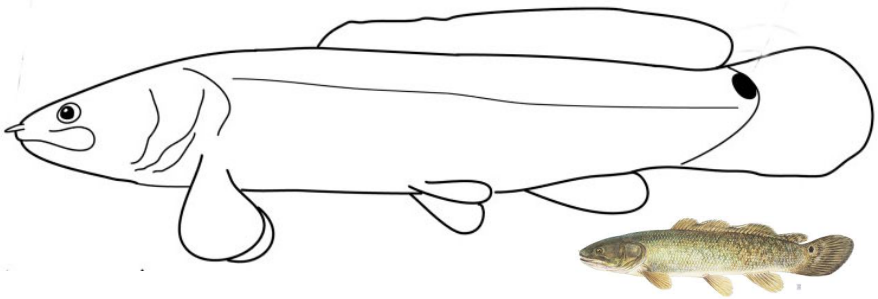
For more information about animals in the watershed, go to http://www.vlawmo.org/resources/story-maps/

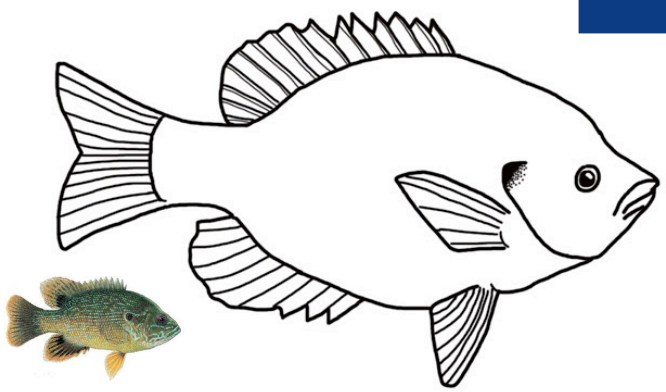
Color in a native fish

Native fish are fish that were originally found in Minnesota. They are very important! These types of fish help our lakes and rivers stay healthy, and provide an important source of food for other animals-- including humans.

Bowfin.
These fish are also called dogfish. They are medium sized, greenish fish found in clear lakes and slow streams. They survive in murky water with little oxygen by rising to the surface and gulping air.

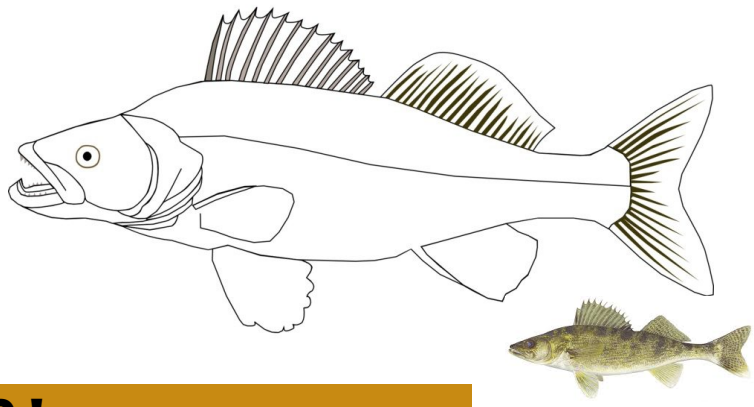


Fun Fact: The bowfin was around when dinosaurs roamed the earth.



Bluegill Sunfish.
The body of these fish is dark green with brown lines running up and down their sides. The belly of the female is yellow and the male's belly is a rusty red color. This fish is usually about 6 inches and weighs less than a pound.

Walleye.
This fish are generally gold and green, with dark bands on their backs. They can grow up to 3 ft in length and are very popular for fishing. The walleye is the state fish of Minnesota!



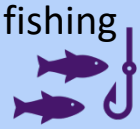
WARNING !

Invasive species are types of animals and plants that are not originally found in Minnesota. They can damage the environment. The common carp is one example of an invasive fish that is harmful! Carp disturb native plants, increase algae and pollution, and make it hard for native fish to survive.

“Let’s Explore!” Bingo

The fish, insects, and animals of the lakes, streams, and wetlands that you learned about in the beginning of this workbook are all part of what makes our watershed so great. Get outside and see it for yourself!

Find and check off 5 squares in a row in any direction to get a **“bingo.”**
Want more of a challenge? See if you can put a check mark on all the squares.

Sucker Channel native plant restoration *	a wetland	an insect 	grass that is taller than you	frogs calling 
a piece of trash in nature	a red winged blackbird 	a bench near a lake or stream	 Cattails in a wetland	a bike trail around a lake
a turtle 	someone walking a dog near a lake	**FREE SPACE** 	Whitaker wetland* (Columbia Park, WBL)	a duck 
a storm drain (Is it clean or dirty?)	a person fishing 	wild animal footprints	bee buzzing 	an interesting cloud
a butterfly on a flower 	sunrise or sunset at a lake	smell a wildflower 	someone teaching a friend about water (it can be you)	Vadnais Heights City Hall raingarden *

* Be sure to ask an adult to help you read the educational signs at these sites.

Wonderful Watery Words

Circle each of the words in the word search below. Do you know what they mean?
Use a dictionary or the internet to search for any words you don't already know.
Or, ask a friend or family member for help!

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

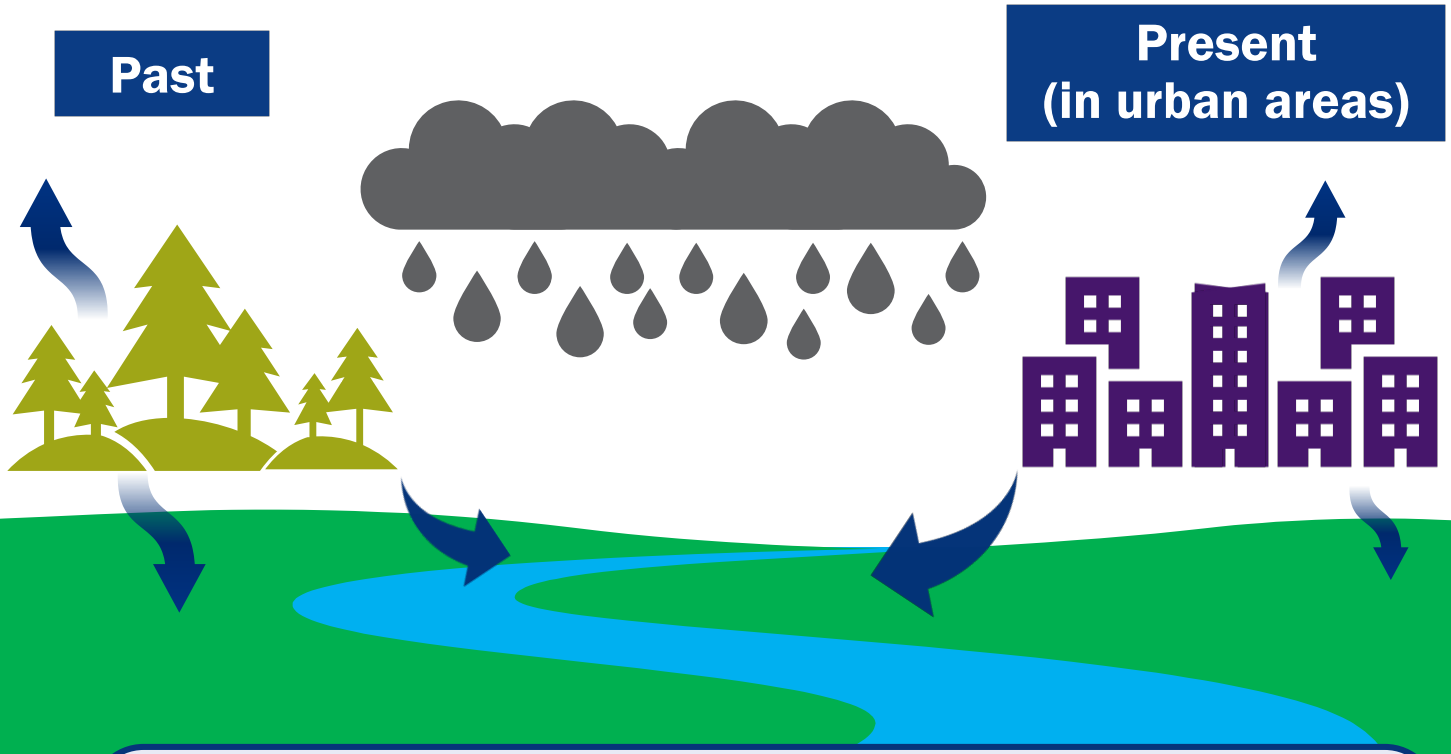
native plants
pollute
stream
storm drain
bowfin
trash
erosion
wetland
salt
raingarden
runoff
lake

A new word I learned today is _____
It means _____

Our Changing Landscapes

In the past, most rain water soaked into the ground or was released into the air.

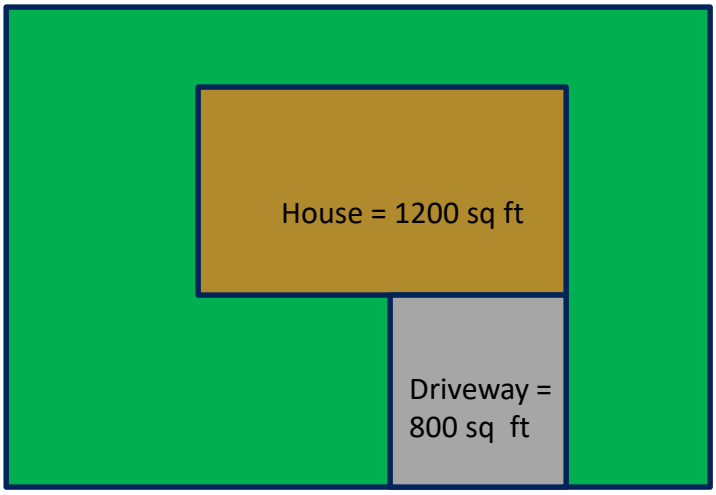
Today, our landscapes are covered with roads, buildings, and parking lots. Since it cannot soak down into these surfaces, more water flows across the land (surface runoff). This means that more water enters streams and lakes, causing erosion and other problems. Surface runoff also carries pollutants (road salt, leaves, grass clippings and fertilizer) from our streets and sidewalks, through storm drains that bring these pollutants into lakes, streams, and wetlands.



Find the storm drain closest to your home. Where does the water go (which stream or wetland)? Write your answer here:

The Storm Water Runoff Challenge

How much rain water runs off your house or apartment building into the storm drains? Let's figure it out.



In this example, the house and driveway totals 2,000 square feet (sq ft): note the calculation for 1 inch (in) precipitation event.

2,000 sq ft x 1 in x 1 ft/ 12 in = 166.67 cubic feet (cf)

[1 cf = 7.5 gallons]

166.67 x 7.5 = 1,250 gallons.

For this example, 1250 gallons would be flowing off the roof and driveway to the street, down the storm drain.
This water carries leaves, grass, dirt, salt, fertilizer and other pollutants into our wetlands, streams and lakes.

Wow!
That's thousands of gallons of water and pollutants that flow from a home into your watershed.

Now try the runoff calculations for the average rainfall in Minnesota.

Hint: Minnesota had 18 to 32 inches of rain per year.

Extra challenge: Now figure out the runoff from your home. Have an adult help figure out the amount of impermeable surfaces (water cannot soak into the surface) around your home (roof and driveway). Next insert these amounts into the formula above.

Protecting the Watershed

Some ways people can help limit the amount of water and pollutants entering the storm drains.

- ✓ Redirect surface runoff into raingardens, rain barrels, or grassy areas
- ✓ Sweep grass clippings, lawn fertilizer, and leaves off the sidewalks and streets
- ✓ Keep storm drains clean

Clean water begins at your curb! Check out: adopt-a-drain org.

Ways to reduce rain runoff from entering the storm drains.

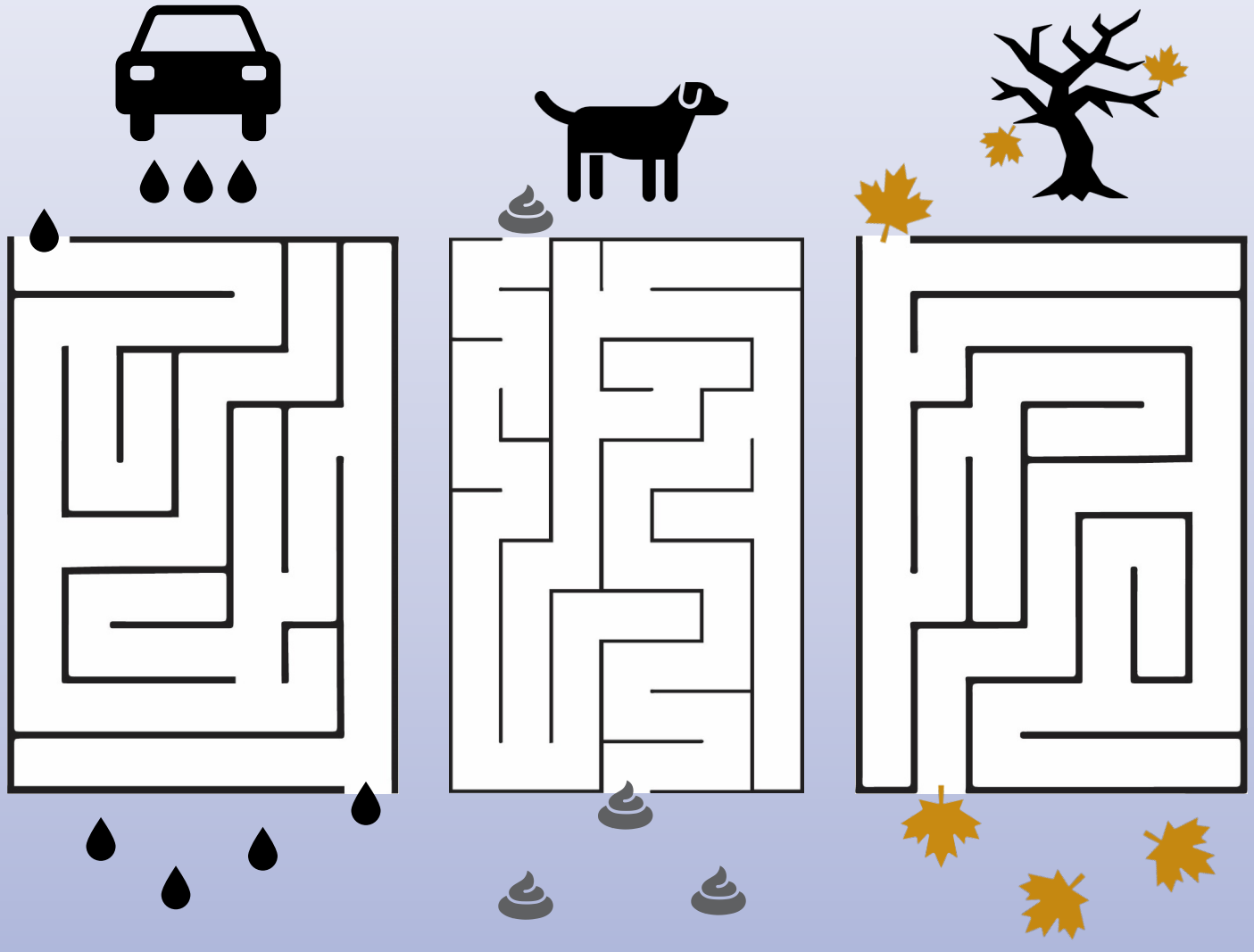
Rain garden

Rain barrel

Trace the Pollution

When it rains, storm water carries pollutants like trash, oil from cars, chemicals, fertilizers and dog poop from our sidewalks, parking lots and roads. The water travels through storm drains and ends up in streams, lakes and wetlands.

Trace the paths of these pollutants as they make their way into a lake.



Protecting the Watershed

What can you do? Using the words below, fill in the blanks to create a list of ways that you can help protect the lakes, streams and wetlands near you.

native plant **dog poop** **rain water** **storm drain**
Pick up **teaching others** **salt**

- ✓ Adopt a _____. Is there one near your home or school? Make sure it stays clean and keep it clear of leaves, sticks, dirt, and other things. Anything in the drain will get carried into lakes and creeks.
- ✓ _____ trash. Trash in our lakes and streams can make the water unhealthy for animals and people to enjoy. Clean it up before it gets into the water! Be sure to protect your hands by wearing gloves.
- ✓ Sweep up extra _____ in the winter, and use only what you need. This is used to help melt ice on roads and sidewalks but be careful how much you use. Just one teaspoon can permanently pollute 5 gallons of water!
- ✓ Always be sure to scoop up _____ from your pet. If this reaches a lake, it can pollute the water and make it unsafe for people and animals. We don't want this in the water that we swim, fish, and boat in!
- ✓ Collect _____. Ask your family to use a rain barrel to collect water from the roof and save it to water a lawn or garden.
- ✓ Plant a _____. These plants have long roots that can help clean the water and soak it into the ground.
- ✓ Tell your friends and family about what you learned! An important part of water conservation is _____ and spreading the word.
- ✓ **Write your own idea here:** _____

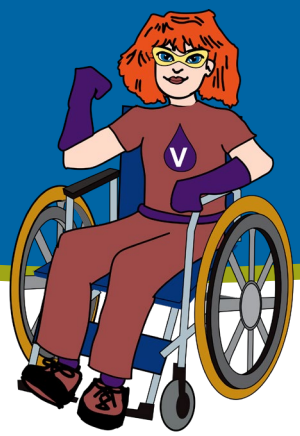
Cut out this page and hang it up to remind you how you can help.

Draw a Picture!

Draw a picture of your favorite lake or creek!
What kinds of animals and plants live there?

What will you do to keep this place clean and healthy?
Write or draw some ideas in the space below.

Congratulations!



This certifies that _____ has completed the activities necessary to be a Junior Watershed Explorer of the Vadnais Lake Area Water Management Organization (VLAWMO).

Junior Watershed Explorer Pledge: As a Junior Watershed Explorer, I pledge to appreciate and protect the lakes, streams, wetlands, and groundwater resources in VLAWMO. I will learn about the natural world around me, do what I can to protect water quality, and encourage others to do the same.

Mail or scan and email the bottom of this page to the address below.

VLAWMO
800 County Road E Vadnais Heights, MN 55127
info@vlawmo.org

I have completed this book to the best of my ability and would like a Junior Watershed Explorer prize.

Your Name: _____ **Age:** _____

Address: _____

City: _____ **State:** _____ **Zip Code:** _____

My child has completed this activity book to the best of his/her ability.

Parent/Guardian Signature: _____

Parent/Guardian email _____

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Special thanks to Maya Swope of Riley-Purgatory Watershed District for sharing her expertise and the content of their Junior Explorer Program, and to Jim and Isa Shapland of INFUSE Design.

Glossary

Here are some important words to know.

Algae – A green plant that grows in lakes. Some types can be harmful.

Erosion – When water and wind wash away or wear away soil or rocks.

Government – A group of people that has power to make laws and rules.

Runoff – The draining away of water from the surface of an area like land or sidewalks.

Pollution – The presence of something that is harmful or poisonous.

Storm drain – A drain built to take away large amounts of water in times of heavy rain.

Raingarden – A garden built to capture runoff from rooftops, driveways, etc.

Native plant – Plants that occur naturally in an area.

Resources

If you would like further books and websites to explore, here are a few suggestions

www.vlawmo.org

www.epa.gov/wetlands/wetlands-education-students-and-teachers

www.epa.org/watersense/watersense-kids

https://water.usgs.gov/edu/watercycle-kids-beg.html

www.neefusa.org/resource/water-quality-backyard-activity-guide

www.epa.gov/sites/production/files/2017-03/documents/ws-kids-test-your-watersense.pdf

www.thewaterpage.com/water-conservation-kids.htmwater

Games for kids and families:

https://wateruseitwisely.com/kids/games