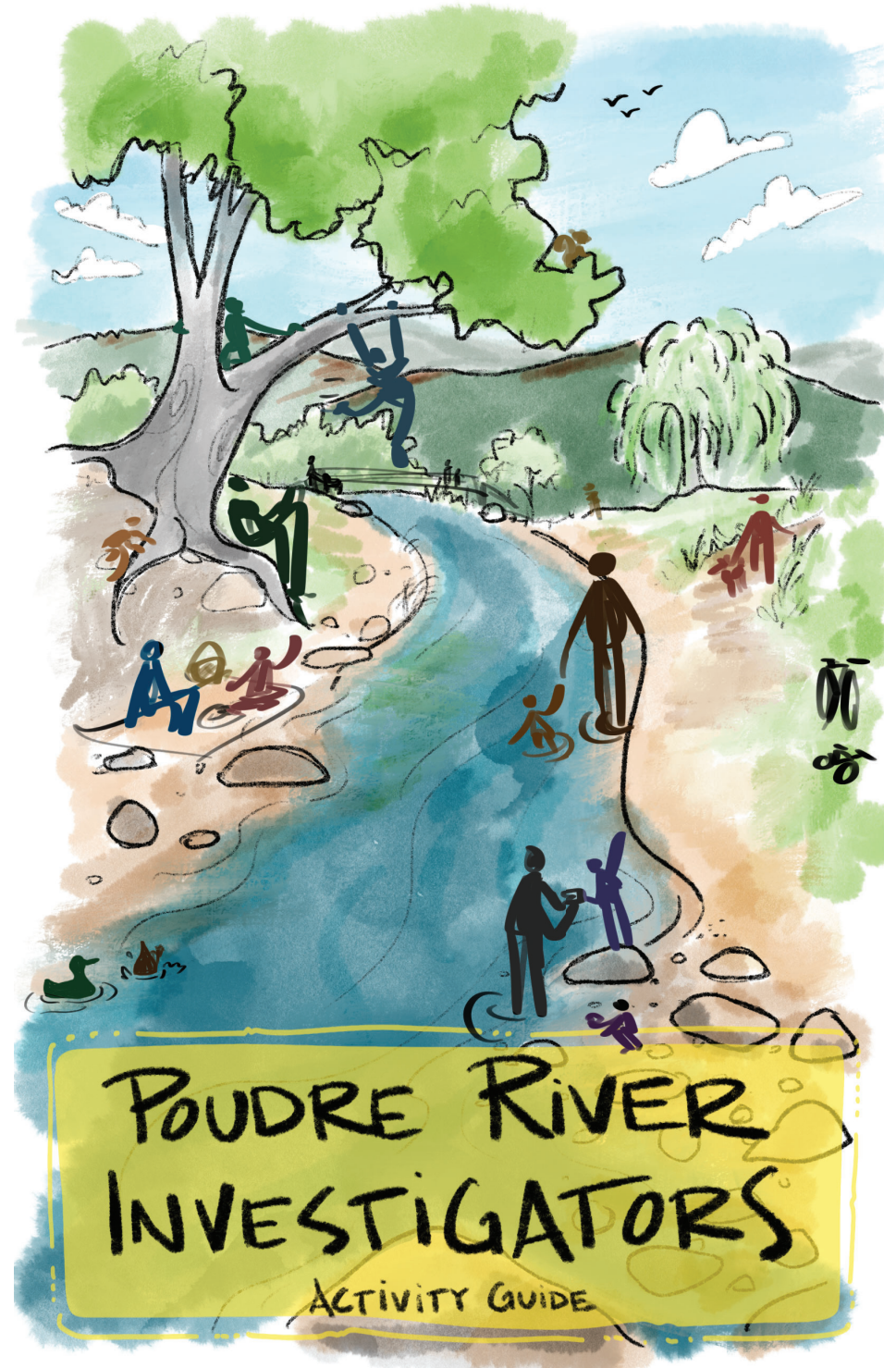


YOUR INVESTIGATING DOESN'T  
HAVE TO END WHEN YOU  
LEAVE THE RIVER!

Visit the website below for more  
resources and ways you can get  
involved:



<https://poudreheritage.org/poudre-river-investigators>



POUDRE RIVER  
INVESTIGATORS  
ACTIVITY GUIDE

PARTNERS:

Cache la Poudre River  
National Heritage Area



ECOSYSTEM SCIENCE  
AND SUSTAINABILITY  
COLORADO STATE UNIVERSITY



NATURAL  
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CIVIL AND ENVIRONMENTAL  
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ILLUSTRATED BY KARINA BRANSON  
CONIVER SKETCH.COM



# HOW TO BECOME A CACHE LA POUFRE RIVER INVESTIGATOR



1. Visit the Cache la Poudre River
2. As you enjoy your time by the river, read through the pages in this guide, learning about the river as you go
3. Look for the **ACTIVITY** on each page. Check the boxes for the activities you complete!




The Cache la Poudre River




Room to move




I spy...




Water in!




Where does the water in the Poudre River come from?



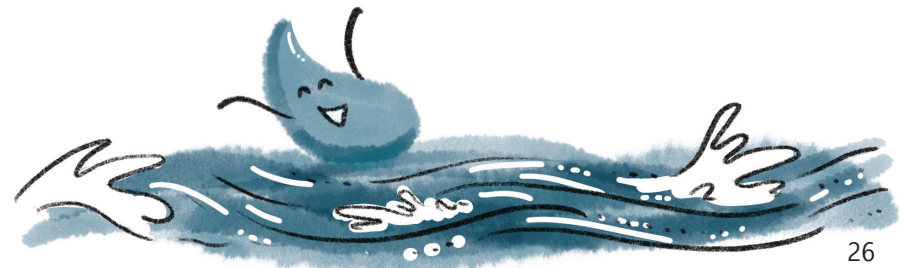

Water out!




Get to know the river flow



Extra activities  
Word search

# FIELD NOTES

*Hi there River Investigator!*

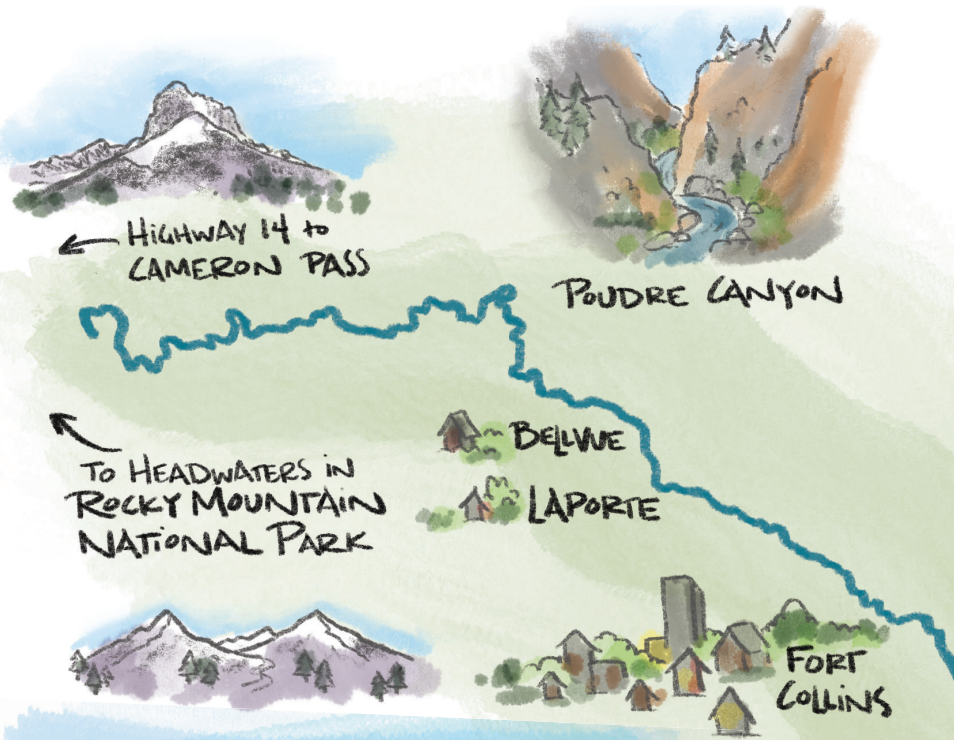
*You know what is most special about the river you are about to discover? You! What you see, observe, create, and discover is unique to you. By learning about the river along the way, you will become a steward of this special place and one of many in the community who take care of our river!*

*Let's get started!*





# THE CACHE LA POUVRE RIVER



**ACTIVITY:** Take a moment to record:

Your name:

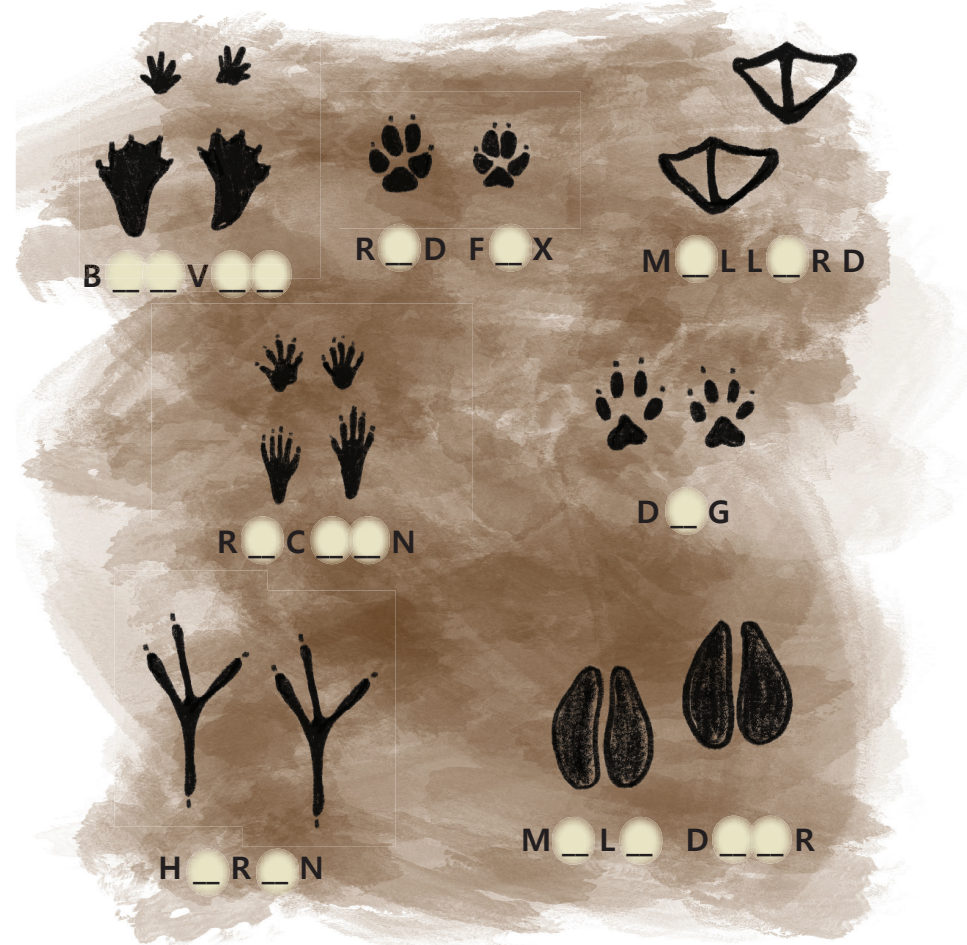
Today's date:

Circle where you are generally on the map

Write *one observation about the river:*

# ANIMAL TRACKS

Can you spot any animal tracks near the river? Fill in the missing letters below to complete the animal track guide:



The importance of special places are preserved through the telling of stories and sharing your memories with others. **Tell someone a story about your day today by the river to preserve what made today special!**



# RIVER SAFETY

The moving water in the river is powerful and can be unpredictable. Learn the A, B, C, D's of river safety to play it safe and have fun at the river! **Draw lines to connect the letters below to their matching picture:**

ALWAYS  
AFLOAT

A

BUDDIES  
ARE BEST

B

CURRENT  
CHOICE

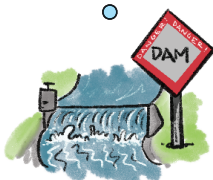
C

DAM  
DANGERS

D



Bring an adult when playing near the water's edge



Dams can create dangerous currents in the flow downstream - best to play in the water elsewhere



Choose to stay back from the river at high flows when the water is fast and cold



Always wear a life jacket if you go in the river



Look for signs at river access points to know where you are and how to Play It Safe on the Poudre!



Hello River Investigator! I'm Rae, the raindrop, here to join you on your adventure!

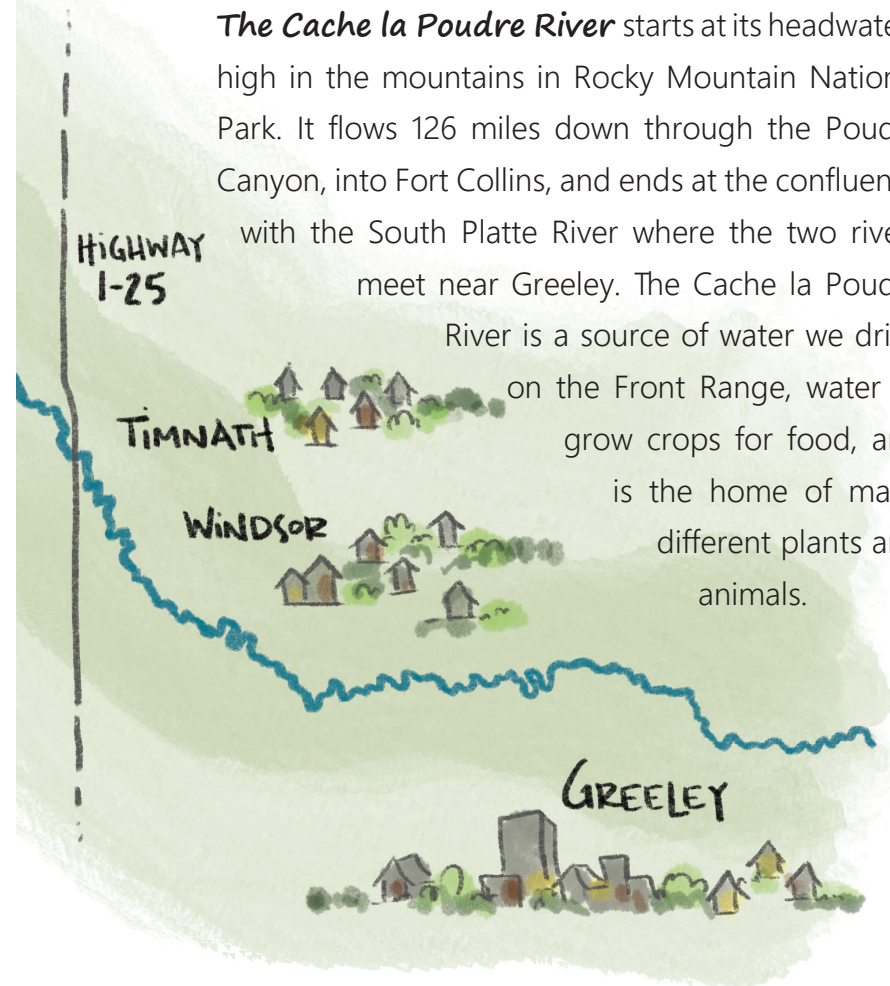
The Cache la Poudre River starts at its headwaters high in the mountains in Rocky Mountain National Park. It flows 126 miles down through the Poudre Canyon, into Fort Collins, and ends at the confluence

with the South Platte River where the two rivers meet near Greeley. The Cache la Poudre

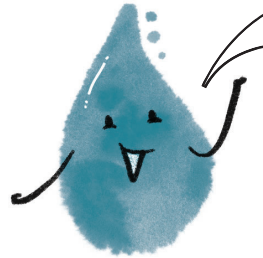
River is a source of water we drink

on the Front Range, water to grow crops for food, and

is the home of many different plants and animals.



# I SPY...



The river is always changing, and no two visits to your favorite spots along the river are the same. Today, as you investigate by the river, look around to see what you find!

**ACTIVITY:** As you spend time by the river today- look for, find, and mark as many of the items below as you can!

## Look far in the distance. Can you spy:

- Mountains
- Mountains with snow?



## Look by the river and along the trail. Can you spy:



A human-made structure constructed from concrete or metal like a bridge, pipe, dam, or ditch



Trash. If the trash is safe to pick up, help out by collecting the trash and throwing it away.



An informational sign or trail guide. Take a moment to read the sign and see what you learn!

**Algae:** green, sometimes slimy-looking plant that may grow on rocks in the river. Lots of algae can mean the river is polluted with fertilizer from lawns and farms.

**Beaver:** large rodents that live mostly in the water and eat tree bark, grasses, and other plants. They cut down trees with their large teeth to build dams and lodges for shelter.

**Cattail:** plant that grows only in wet areas where water is always at or near the surface of the ground. Can grow up to 10 ft tall. Provides nesting sites for birds and food for mammals and birds.

**Channel:** area below ground surface level in which water flows. Channels are the paths that river or stream water takes from upstream to downstream.

**Cottonwood:** deciduous tree that likes to grow by rivers but can also be found in other parts of the city. Its seeds look like cotton, and blow off the trees in early summer, when river flow is high.

**Dam:** structure that slows down or blocks water from flowing down a river. Dams along the Poudre are small diversion dams that raise the water level to allow water to flow into a ditch.

**Ditch:** constructed channel for moving water to a city, farm, or park. Also sometimes called a canal.

**Floodplain:** the areas next to the river that water flows into when there is more water than the river can hold.

**Hydrograph:** graph showing how much water is flowing through a stream or river over time.

**Mayfly:** insect that begins its life in the water, where it lives under rocks or in sediments. When mayflies become adults, they develop wings and leave the water.

**Sediment:** pieces of rock material including clay, sand, silt, gravel, and even larger rocks.

**Storm drain:** pipe that carries water that runs off on buildings and streets during rainstorms or snowmelt; drains move this water into the river.

Water **treatment** is the process of removing pollutants from water so that it is safe to drink. Wastewater, or the water after you use it, is treated so that it can be returned to the river. 22



# WORD SEARCH

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

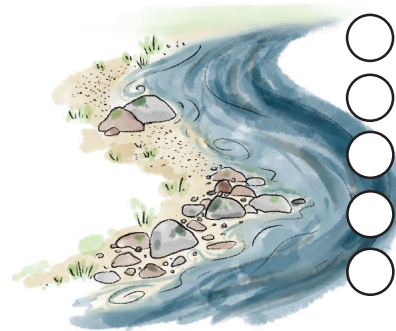
Can you find all 13 words?



words are oriented horizontal → down ↓ or diagonal ↘

ALGAE	FLOODPLAIN
BEAVER	HYDROGRAPH
CATTAIL	COTTONWOOD
MAYFLY	CHANNEL
DAM	SEDIMENT
DITCH	STORM DRAIN
	TREATMENT

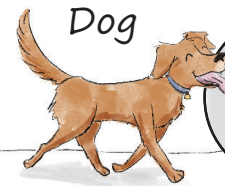
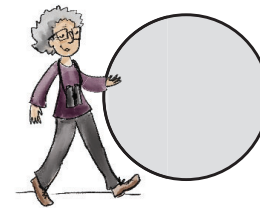
Look at the river. Can you spy:



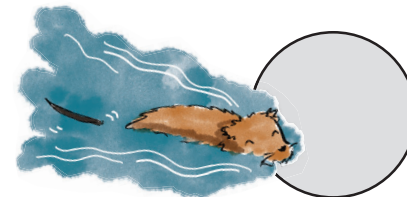
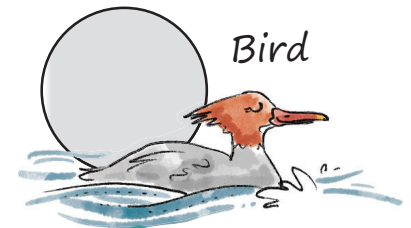
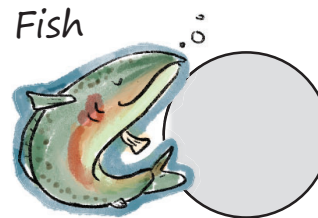
- A part of the river that is flowing fast
- A part of the river that looks deep
- The sandiest spot
- The biggest rock
- Algae on rocks

Keep count! Mark every time you see a:

Person on a walk or run

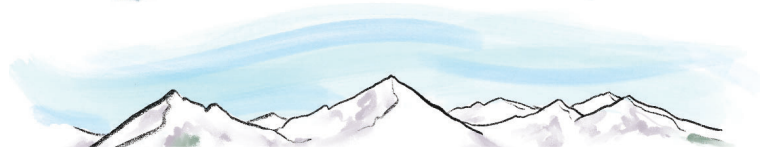
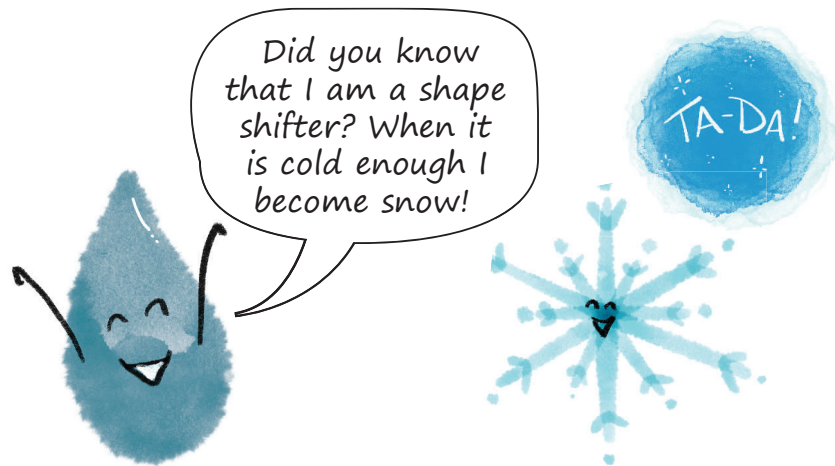


Person on wheels

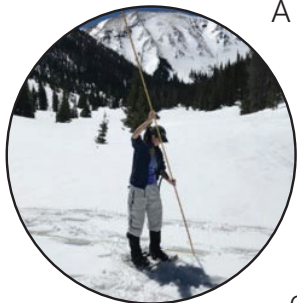


Wild animal

# WHERE DOES THE WATER IN THE POUDRE RIVER COME FROM?



Where the Cache la Poudre River starts high up in the Rocky Mountains, most of the water that falls as precipitation is snow. When this snow melts in the spring, it flows down the mountains, into the river, and all the way to the cities on the plains.



A job of a **snow hydrologist** is to measure the amount of snow every year! It is a group effort to measure the depth of snow throughout the winter and then use that information to predict how much water will be in the river during the spring and summer.

# SOLVE A MYSTERY

Find a place along the river where there is a human-made structure to move water in or out of the river. Try to guess where the structure leads to or where it ends. When you leave the river and find yourself on a sidewalk, look for a storm drain.

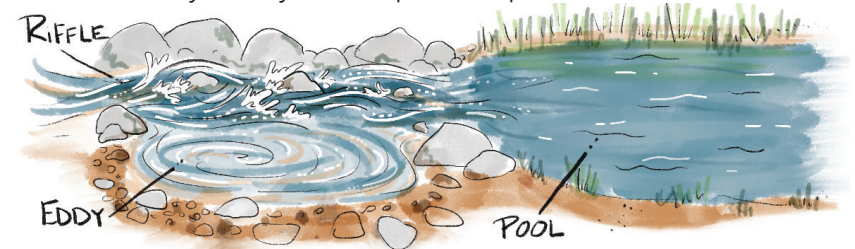
# RIFFLE, POOL, EDDY

A **riffle** is where the water flows fast, often over rocks. A **pool** is when the water becomes deep and slows. An **eddy** is when the water swirls or flows upstream around rocks or at the river's edge. Get ready for a silly race similar to the game Red Light, Green Light! Create a start and finish line with everyone lined up at the start. Have one person call out commands to the rest of the group. The person can shout:

Riffle: everyone runs forward

Pool: everyone moves as slowly as they can

Eddy: everyone stops and spins in a circle



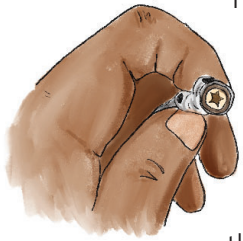
# SETTLE DOWN

Find a clear container (plastic water bottle, clear cup), and fill it with sediment (rocks and sand) from the water's edge. Then fill the rest of the container with river water. Shake or stir the container, and watch the sediment fall to the bottom. What settles at the bottom first? What settles last? What happens if you let your container sit for longer?



## EXTRA ACTIVITIES

### MAKE A WISH



Have you ever snapped a cottonwood twig to see what is inside? Collect 3-5 sticks you can snap with your hands. Find a part of the stick that is lumpy like the knuckle on your finger and break the stick in two pieces. Look at the ends of the pieces- is there a star shape? If so, make a wish!

Find sticks you think are from different types of trees. Do any other sticks show a star when you break them? What other observations can you make to tell different trees apart from their branches, leaves, or seeds?

### OFF TO THE RACES

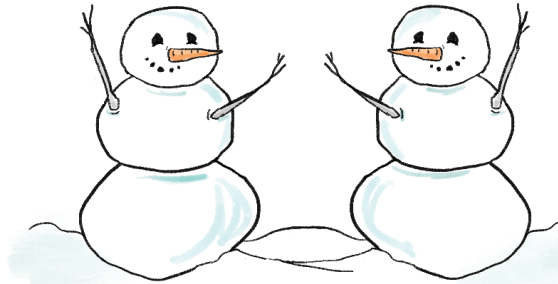
Find or make a watercraft to float down the river. It could be as simple as a stick, or you could build a small boat complete with a leaf sail. Throw or launch your watercraft and see where it goes. To make it more fun, mark a start and a finish line and time, by counting out loud, how long it takes to travel the distance. Repeat your race on the same course. Does your craft take the same route? Does it travel the same speed?

### MY FAVORITE THINGS

Use the field note page at the back of this guide to write a poem or to draw a picture. Sit by the river and use your senses to discover what you can see, hear, smell, or feel while by the river. What makes this river such a special place?

## What kind of snow is best for making a snow sculpture?

Wet, sticky snow contains more water than light, fluffy snow. A snow sculpture made with wet, sticky snow would leave behind more water when it melts than the same snow sculpture made with dry, powdery snow.



**ACTIVITY:** Who says you need snow to build a sculpture?

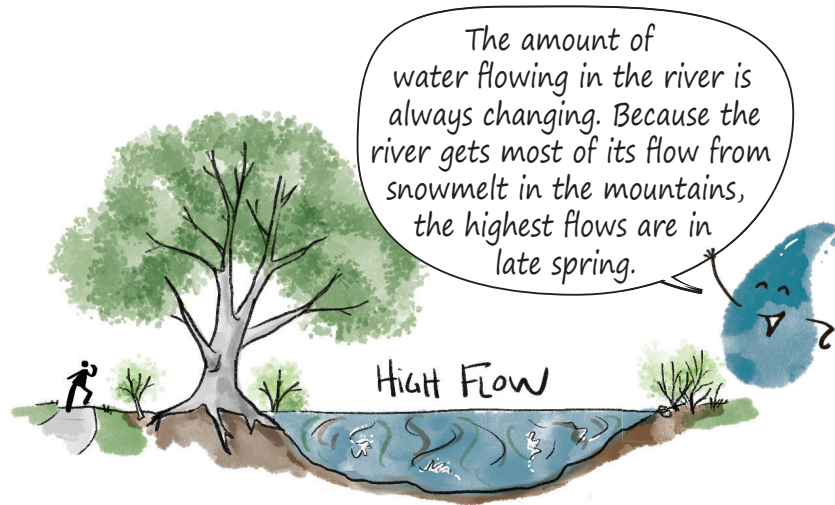
Can you make a sculpture out of materials you can find and gather by the river? Find rocks, leaves, sticks, and other natural treasures to build your sculpture.

## Do you see snow on the ground?

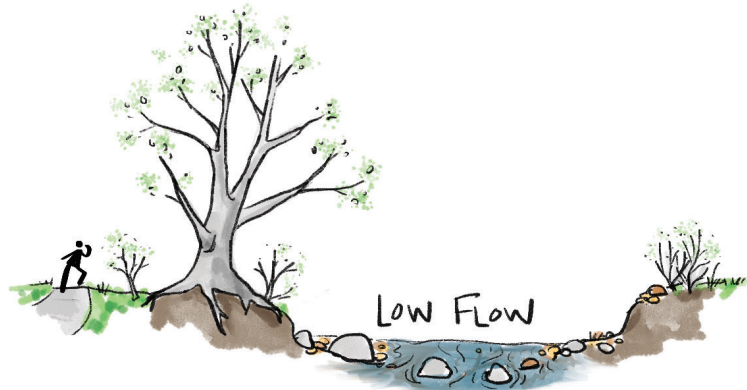


To find out how much water is in the snow, collect a jar full of snow, and let it melt. The remaining water will fill only part of the jar! This is because snow is a mixture of air and ice. Light snow is mostly air, so you won't see much water remaining once it melts.

# GET TO KNOW THE RIVER FLOW



If you are standing in the trees next to the river, and the water is right up near to your feet, then **flow is high**.



If you see lots of dry rocks in the channel, and the water only fills part of the channel, then **flow is low**.

# TREES & SHRUBS



Cottonwood



Willow



Alder

# PLANTS



Broadleaf  
Cattail



Showy  
Milkweed



Western  
Poison Ivy

# FISH



Brown Trout



Rainbow Trout



Common Carp

**ACTIVITY:** Find two objects, like a stick or a leaf, and throw or place them into the flowing river. Race to see which object travels fastest. What obstacles in the river change your objects' paths?

Photo credits: From iNaturalist, some rights reserved (CC-BY-NC): Mule Deer © kshadwell, Mallard © faultyhelix, Common Snapping Turtle © mauebbing, Woodhouse's Toad © bryan-maltais, Plains Garter Snake © j-lucas, Alder © timweinm, Cattail and Showy Milkweed: © Thomas Aubier, Western Poison Ivy © mmwebb  
From Terutaka Funabashi, Colorado Natural Heritage Program: Raccoon, Muskrat, Blue Heron, Belted Kingfisher



# QUICK GUIDE

Here are just a few of the species you might encounter along the river. What else can you find?

## MAMMALS



Mule Deer



Raccoon



Muskrat

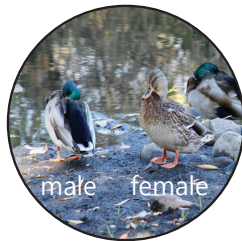
## BIRDS



Great Blue Heron



Belted Kingfisher



Mallard

## REPTILES & AMPHIBIANS



Common Snapping Turtle

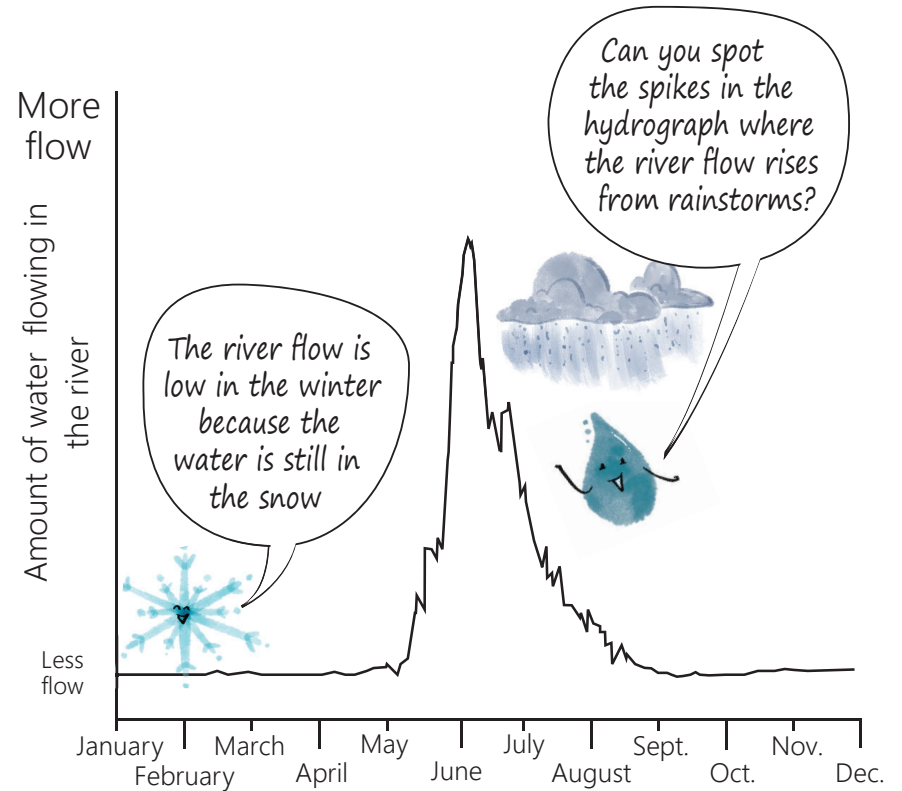


Woodhouse's Toad



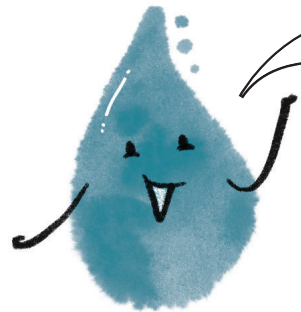
Plains Garter Snake

This is a **hydrograph**. It shows the amount of water flowing in the river throughout the year. What time of year are you visiting the river? Can you find it on the graph?

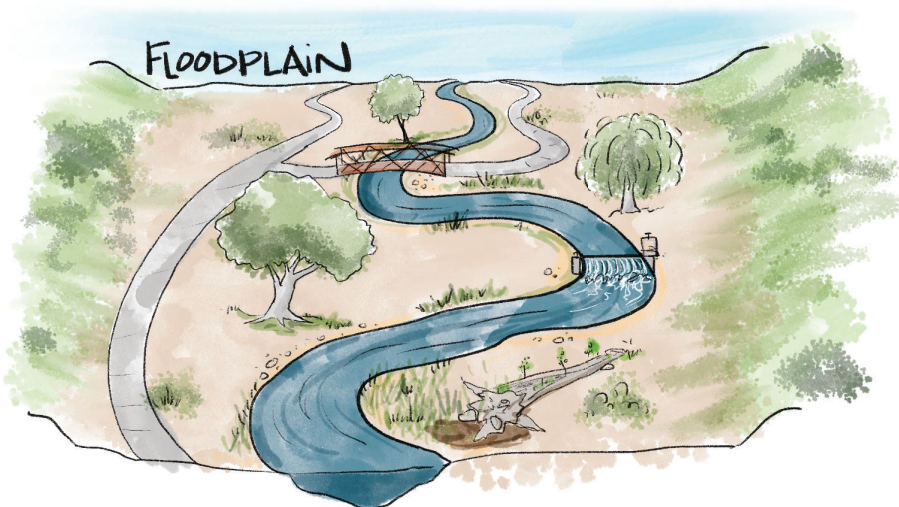


A job of a **hydrologic technician** is to measure streamflow. The amount of water in rivers affects fish and other wildlife that depend on the river. The water you use for drinking, washing your hands, or taking a bath also comes from the Poudre River!

# ROOM TO MOVE

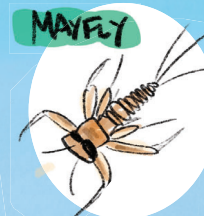
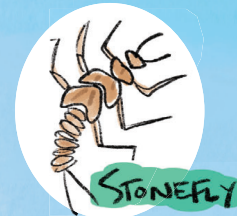


Rivers like to move! The edges of the river bend and curve through town. Sometimes when there is a lot of water in the river, the water flows over the river banks. Can you spy evidence of where water once flowed?



When you stand on the Poudre River trail, you are likely standing in the river's **floodplain**, the flat area that the river can flow into at very high flows. The river will gradually carve into its floodplain and banks. Trees are important for helping the river not move too much over time.

**ACTIVITY:** Pick up a larger rock you can safely reach from the water. Can you see any of these bugs crawling around? Circle the ones you think you recognize.

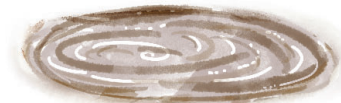
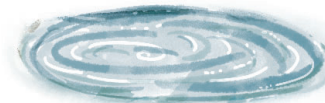


These bugs, known as macroinvertebrates, are a good indicator of how healthy a river is. Macroinvertebrates of different kinds can mean a healthy, diverse population.

## You cannot always tell the quality of the water just by looking at it!

Clear water doesn't always mean the water is clean. Water can contain many things you can't see with your eyes alone.

Water that you can't see through might look 'dirtier', but sometimes the materials that color water aren't unhealthy for people and animals.



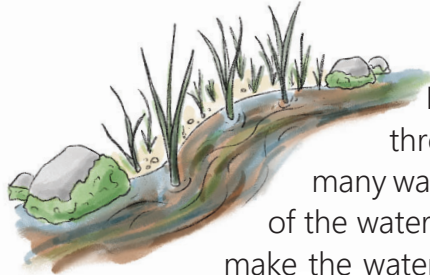
A job of a **water quality technician** is to test the quality of the water in the river to ensure that the water is safe for the community to play and recreate in.



# WATER IN!



When it rains, all the water that falls on our city streets has to go somewhere. Much of the rainwater washes through storm drains straight into the river! Can you spy a storm drain?



From the mountains and down through our communities, there are many ways in which the health and quality of the water can change. These changes can make the water harder to treat and affect the animals and plants that depend upon the river to live.

Sometimes we have little control over how the water quality changes, like after a wildfire, drought, or a large flood.



We CAN help our river by being responsible for what washes through storm drains by keeping fertilizers, trash, and harmful chemicals from washing down to the river when it rains!

## Show off your favorite dance move!



Is it easier to dance in an open space or in a crowded space where you bump into others? Rivers like lots of open space to move! What gets built next to the river can make it harder for the river to move, especially at the highest flows when the water flows out into the floodplain.

**ACTIVITY:** Now you decide! Take a look at what is built by the river. Some places get damaged when the river floods while other places give the flooding water somewhere to safely flow. Read the list below and mark the box next to each word with either a:



if you think that place gives flooding river water somewhere to go -- or --



if you think the place is best built up away from the river and the flooding water

Park

Your school

Grocery store

Office building

Parking lot

Farm field

Natural Area

Ponds

Your home

Wooded area



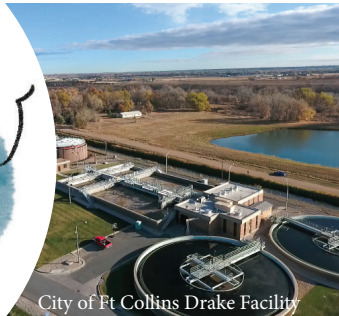
A job of an **urban planner** is to decide what can be built near rivers and how to minimize flood damage. Restoring floodplains can give rivers the room they need to move.

# WATER OUT!

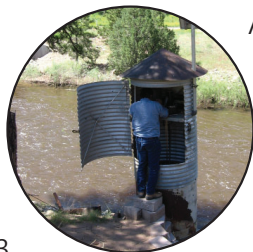


The water in the river has many different uses! Water is taken out of the river and moved in pipes or ditches. Can you spot where water might flow out of the river?

Thirsty? Not so fast! The water you drink and use first makes a stop at a water treatment plant to be treated so it is safe to drink. After you use the water, it is treated again before heading back to the river.



Some river water goes straight to farms where it is moved through channels called ditches out to where farmers use the water to grow their crops.



A job of a **water engineer** is to keep track of how much water everyone gets from year to year to make sure there is enough for everyone's needs. Within city limits, you likely get your water through the city water utility.

**ACTIVITY:** There are two paths out of this maze! Can you find them both? How are the two paths different?

Start at any path in the mountains. Follow paths anywhere water flows



**Water out! Water IN!**

Turn the page to find out what happens when it rains!