TEACHER OVERVIEW

Watersheds

3rd – 5th Grade

Nature Vision Student Packet

The materials contained within this packet for students have been created by Nature Vision, an environmental education nonprofit organization that brings programming to schools and local greenspaces for over 70,000 PreK-12th grade students each year in King and Snohomish Counties. This curriculum is designed to foster an understanding of the importance of water and its integral role in supporting life and shaping our planet. Packets can be completed by students either independently from home, or with the help of an adult caregiver. Materials for each day of the week build on the previous days' learning by offering a variety of activities that involve art, writing, safe field exploration, and kinesthetic activities.

These materials are provided to you by Cascade Water Alliance (Cascade). Cascade wants everyone to understand the importance of conserving and protecting our limited water resources. Cascade supports Nature Vision in the development and delivery of water education programs and we are happy to offer these materials to our friends in the community. Learn more about Cascade at cascadewater.org.

This unit supports NGSS Performance Expectations across various disciplines, as well as supporting K-12 Integrated Environmental and Sustainability Standards. These are listed at the bottom of this page. Teachers will be supplied with PDF formats of materials to be emailed to families, or teachers may print and send to students to complete at home.

Students begin with an introduction to watersheds and the importance of fresh water, followed by an exploration of plants and wildlife. Students then explore their role in helping to create water-efficient gardens and greenspaces in their neighborhoods. The unit finishes with a focus on stewardship and what we can do to conserve and protect our water supply as well as the plants and animals they learned about during the week.

If you have any further questions or concerns regarding this packet, please email our Office Coordinator at info@naturevision.org.

Grades 3-5
Supports NGSS Performance Expectations: 3-LS3-2**,** 3-LS4-4, 4-LS1-1, 4-ESS3-2, 5-LS1-1, 5-LS2-1, 5-ESS2-2, 5-ESS3-1.

Grades 3-5
Day 1 - Watershed Basics
Day 2 - Plants in the Watershed
Day 3 - Animals in the Watershed
Day 4 - How Humans Change the Landscape
Day 5 - Stewardship

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CASCADE WATER ALLIANCE

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PARENT/CAREGIVER OVERVIEW

Watersheds

3rd – 5th Grade

Welcome to Nature Vision's student packet for home use. Nature Vision is an environmental education nonprofit organization that brings programming to schools and local greenspaces for over 70,000 PreK-12th grade students each year in King and Snohomish Counties. We are excited to be offering this version of our programming directly to students at home!

This packet is designed to be completed over the course of one week, with each day focusing on a different aspect of environmental science and stewardship. The majority of these materials can be completed independently, but we thought it would be important to provide background information for any adults who may be helping to complete or answer questions. We've included the basic learning objectives for each day along with some vocabulary.

These materials are provided to you by Cascade Water Alliance (Cascade). Cascade wants everyone to understand the importance of conserving and protecting our limited water resources. Cascade supports Nature Vision in the development and delivery of water education programs and we are happy to offer these materials to our friends in the community. Learn more about Cascade at cascadewater.org.

Another great resource to learn about saving water and how to help our salmon and watersheds is weneedwater.org. Check out the We Need Water webpage or on Instagram @WeNeedH20 to see how you can be part of this campaign! Challenge yourself to use #WeNeedWater to post all the things you are doing with your friends and family to conserve and protect water!

Please contact info@naturevision.org with any questions or concerns
Stay connected with Nature Vision! Follow us for updates @naturevisionorg

NOTE: Students may require support in reading directions and/or completing some tasks.

CASCADE WATER ALLIANCE

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PARENT/CAREGIVER OVERVIEW: DAY 1

Watershed Basics

Background Information: A watershed is all of the land in an area that directs water to a certain place. Any water that falls on the western side of the Cascade Mountains eventually drains into the Salish Sea, otherwise known as the Puget Sound. Therefore, we live in the Puget Sound Watershed. We can think of watersheds being nested inside one another, so inside of the greater Puget Sound Watershed, there are local watersheds, like those where water drains to Lake Washington and then to the Puget Sound. Another local watershed example is a place where water drains to Lake Sammamish, then to Lake Washington, and then to the Puget Sound, and so on. It's important to understand our watersheds, because we share both this space and our freshwater with all of the living things in these regions. The water that we use impacts the available water for other plants and wildlife in our watershed.

Learning Objectives: Students will better understand their watershed, how they fit in it, and what effects humans have in their local watersheds. They will explore the basics of how water moves through the environment

Main Activity: Watershed Mapping

- ***Overview***: Students explore maps to find where they live, go to school, and play within their watershed, while locating the specific rivers and lakes where water flows to and from on its journey to the Puget Sound
- ***Parent/Caregiver Tasks***: Help students locate specific areas on maps

Optional Activity: We Need Water Challenge

- ***Overview***: Students complete a daily task related to a water conservation habit and a challenge to spread awareness on the importance of saving water
- ***Parent/Caregiver Tasks***: If possible, help the student post their #WeNeedWater challenge on social media

Optional Activity: Paper Ball Watershed

- ***Overview***: Students work with a simple three-dimensional model to illustrate the movement of water over areas of land
- ***Parent/Caregiver Tasks***: None

Optional Activity: Water Drop Perspective

- ***Overview***: Students imagine the journey of a drop of water through the watershed on its way from the mountains to the ocean, and the plants, animals, and people that the water drop may come into contact with
- ***Parent/Caregiver Tasks***: None

PARENT/CAREGIVER OVERVIEW: DAY 2

Plants in the Watershed

Background Information: Plants play an important role in a watershed. They provide important habitat and are the basis of the food webs that support animal life, but they also do an important job for people. Native plants and green spaces help provide an opportunity for water to be absorbed into the earth, which reduces flooding and pollution.

Learning Objectives: Students will learn different types of native plants in our watershed. They will also explore the important role that plants play in solving problems like flooding and pollution within the watershed.

Main Activity: Passing Through the Watershed... Board Game

- ***Overview***: Students take on the role of a water drop making its way from the mountains to the ocean, interacting with native plants along the way to see the affects that having different amounts of vegetation has on the quantity and quality of water moving over the landscape
- ***Parent/Caregiver Tasks***: Provide instructional support

Optional Activity: We Need Water Challenge

- ***Overview***: Students complete a daily task related to a water conservation habit and a challenge to spread awareness on the importance of saving water
- ***Parent/Caregiver Tasks***: If possible, help the student post their #WeNeedWater challenge on social media

Optional Activity: Your Watershed

- ***Overview***: Students create a drawing of the plants, animals, and people in their local watershed
- ***Parent/Caregiver Tasks***: None

PARENT/CAREGIVER OVERVIEW: DAY 3

Animals in the Watershed

Background Information: When thinking about our impact on the watershed, it's incredibly important to consider the water that we use. If we are smart about our water use, we can help support the animal life in that area. Fresh water is a limited natural resource on which all life depends.

Learning Objectives: Students will learn about the animals that we share our watershed with and consider ways that they interact with water.

Main Activity: How Do Animals Use Water?

- ***Overview***: Students are asked to create a list of all the different ways that various organisms interact with and rely on water
- ***Parent/Caregiver Tasks***: None

Optional Activity: We Need Water Challenge

- ***Overview***: Students complete a daily task related to a water conservation habit and a challenge to spread awareness on the importance of saving water
- ***Parent/Caregiver Tasks***: If possible, help the student post their #WeNeedWater challenge on social media

Optional Activity: Watershed Food Web

- ***Overview***: Students draw a food web using animals and native plants in their watershed
- ***Parent/Caregiver Tasks***: Help students remember the animals from the previous activities and make food web connections

Optional Activity: Animals in the Watershed Drawing

- ***Overview***: Students draw their own scene that includes as many of these animals using water in the ways that were generated in the previous activity
- ***Parent/Caregiver Tasks***: None

PARENT/CAREGIVER OVERVIEW: DAY 4

How Humans Change the Watershed

Background Information: Humans interact with the watershed in dramatic and impactful ways. Often we think of this as being only in negative ways, but we can also positively impact the environment. One of the ways that we can do this is by creating rain gardens to control and manage water in our environments.

Learning Objectives: Students will design a rain garden and consider ways that we can promote water conservation in our neighborhood environments.

Main Activity: Rain Garden Planning

- ***Overview***: Students learn about rain gardens and begin the planning process for creating a rain garden in their neighborhood or local green space
- ***Parent/Caregiver Tasks***: Support in reading directions for the student

Optional Activity: We Need Water Challenge

- ***Overview***: Students complete a daily task related to a water conservation habit and a challenge to spread awareness on the importance of saving water
- ***Parent/Caregiver Tasks***: If possible, help the student post their #WeNeedWater challenge on social media

Optional Activity: Native Plant Scavenger Hunt

- ***Overview***: Students attempt to locate native plants in their neighborhood
- ***Parent/Caregiver Tasks***: Provide supervision

Optional Activity: Video

- ***Overview***: Students watch a short video on how rain gardens are being implemented in Pierce County
- ***Parent/Caregiver Tasks***: Provide technical support and supervision

PARENT/CAREGIVER OVERVIEW: DAY 5

Stewardship

Background Information: Stewardship is how we care for the natural world. It includes conservation of the natural resources like water that all living things need to survive, thinking and acting carefully about how we interact with the world around us, and doing our best to make sure that we have a positive impact on the environment.

Learning Objectives: Students will explore how much water is used in their homes and in manufacturing everyday items that we use.

Main Activity: Water Use in Everyday Items

- ***Overview***: Students learn about water use from indirect sources, such as how much water it takes to create pet food or plastic bottles
- ***Parent/Caregiver Tasks***: None

Optional Activity: We Need Water Challenge

- ***Overview***: Students complete a daily task related to a water conservation habit and a challenge to spread awareness on the importance of saving water
- ***Parent/Caregiver Tasks***: If possible, help the student post their #WeNeedWater challenge on social media

Optional Activity: What Is Your Water Footprint?

- ***Overview***: Students calculate the amount of water that they use with an online water footprint quiz
- ***Parent/Caregiver Tasks***: Provide technical support and supervision while helping to estimate average amount of water use

PARENT/CAREGIVER OVERVIEW: VOCABULARY

DAY 1
Watershed: all of the land in an area that directs water to a certain place

DAY 2
Ecosystem: A community of organisms and their environment
Filter: A material that water passes through and removes pollution, particles and other non-water material
Native plants: The species that grow naturally in our ecosystem and have been growing here since long before humans introduced other plants from around the world
Pollution: When the environment is dirtied by waste, chemicals or other harmful things

DAY 3
Anadromous: Living in both fresh and salt water
Hydration: Having the right amount of water for survival

DAY 4
Impervious Surfaces: Surfaces that water cannot soak into or pass through
Rain Garden: Collection of native plants designed to absorb water
Swale: A ditch filled with vegetation

DAY 5
Water Footprint: The amount of fresh water used to make all of the goods that you use day to day as well as the other ways that water may be used in your home

DAY 1

Watershed Basics

What is a **watershed**? It might sound like a shed filed with water, but it is not a building at all. You have probably heard about how dogs or cats shed their fur, or how a snake sheds its skin, which is how the fur or skin moves off that animal. Well, a watershed is similar; it is how water moves off the land, in other words, how the land sheds water.

All of the water that enters our environment flows through a watershed from the highest point to the lowest point. Watersheds can be different sizes, but they all fit together. For example, we live in the Puget Sound/Salish Sea Watershed. All of the water that falls on the western side of the Cascade Mountains flows out to the ocean through streams and rivers that enter into Puget Sound. Watersheds can also be much smaller. For example, your home might be part of the Lake Sammamish Watershed, which is also a part of the Puget Sound Watershed! That means that all the water that falls on the ground here enters Lake Sammamish before it flows through other streams and rivers going to Puget Sound. Or you might live in the Green/Duwamish Watershed, where water flows into the Duwamish river and then into Puget Sound. One important thing to remember is that a watershed is all of the land that moves water to a certain place, and that there are bodies of water like lakes, ponds, and rivers inside of the watershed.

Vocabulary
Watershed: all of the land in an area that directs water to a certain place

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Main Activity

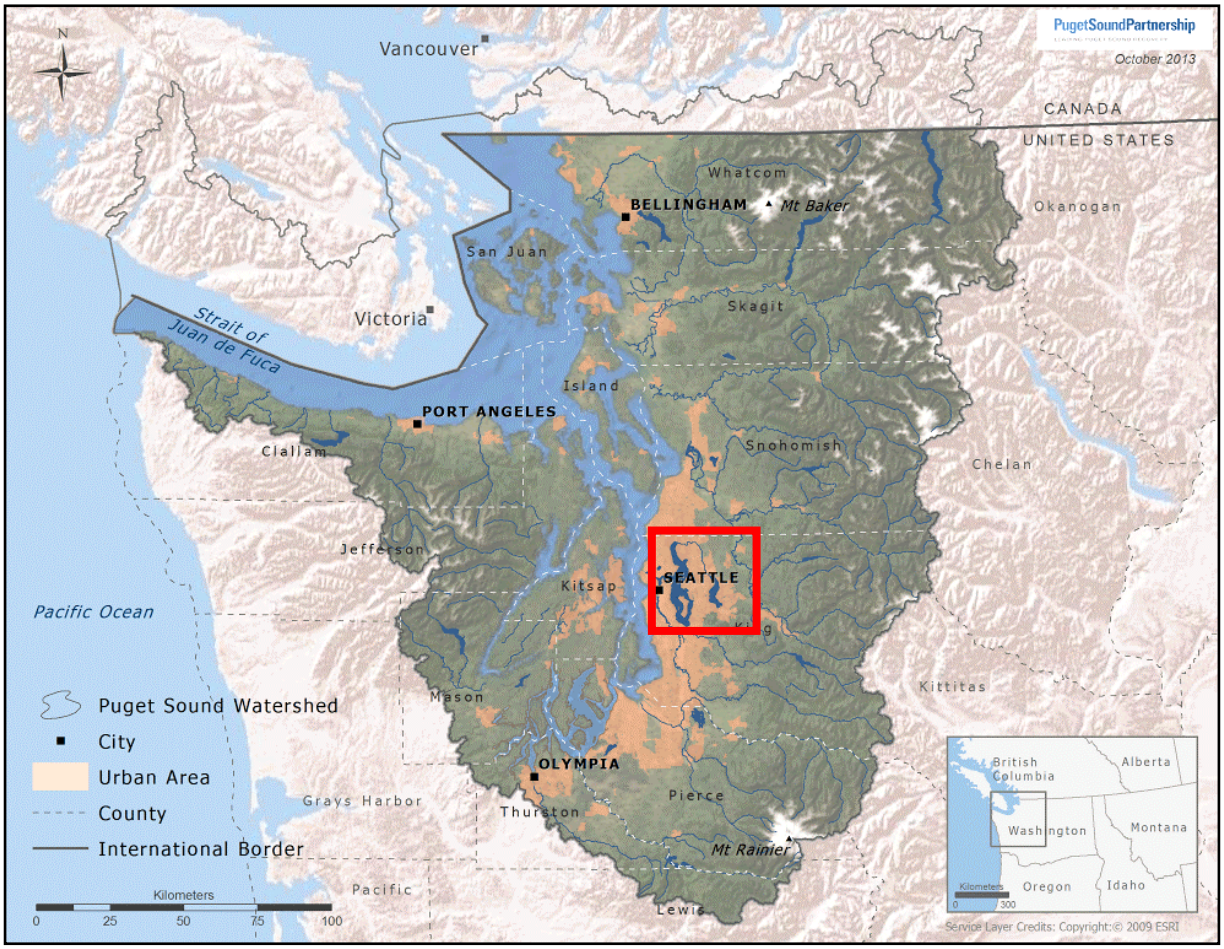
Watershed Mapping

This is a map of our entire watershed, it shows all of the land that drains water into the Puget Sound from the Cascade Mountains. Even if you have never been to some of these cities or other areas on this map, we are all connected by the water that moves through this area and to the ocean.

We'll look more closely at the areas where we live, play, and go to school and try to find the rivers and streams that we impact the most. The area inside of the **red** square shows where we'll be looking at more closely.

Materials: Writing utensil

Figure 1: Puget Sound/Salish Sea Watershed Map from Puget Sound Partnership



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Let's take a look at our watershed on a more local level. In the map below, we see the service area of the Cascade Water Alliance. The Cascade Water Alliance is responsible for bringing drinking water to our homes, schools, and businesses. Their service area is part of the wider Puget Sound watershed as well as being a part of both the Lake Sammamish and Lake Washington Watersheds.

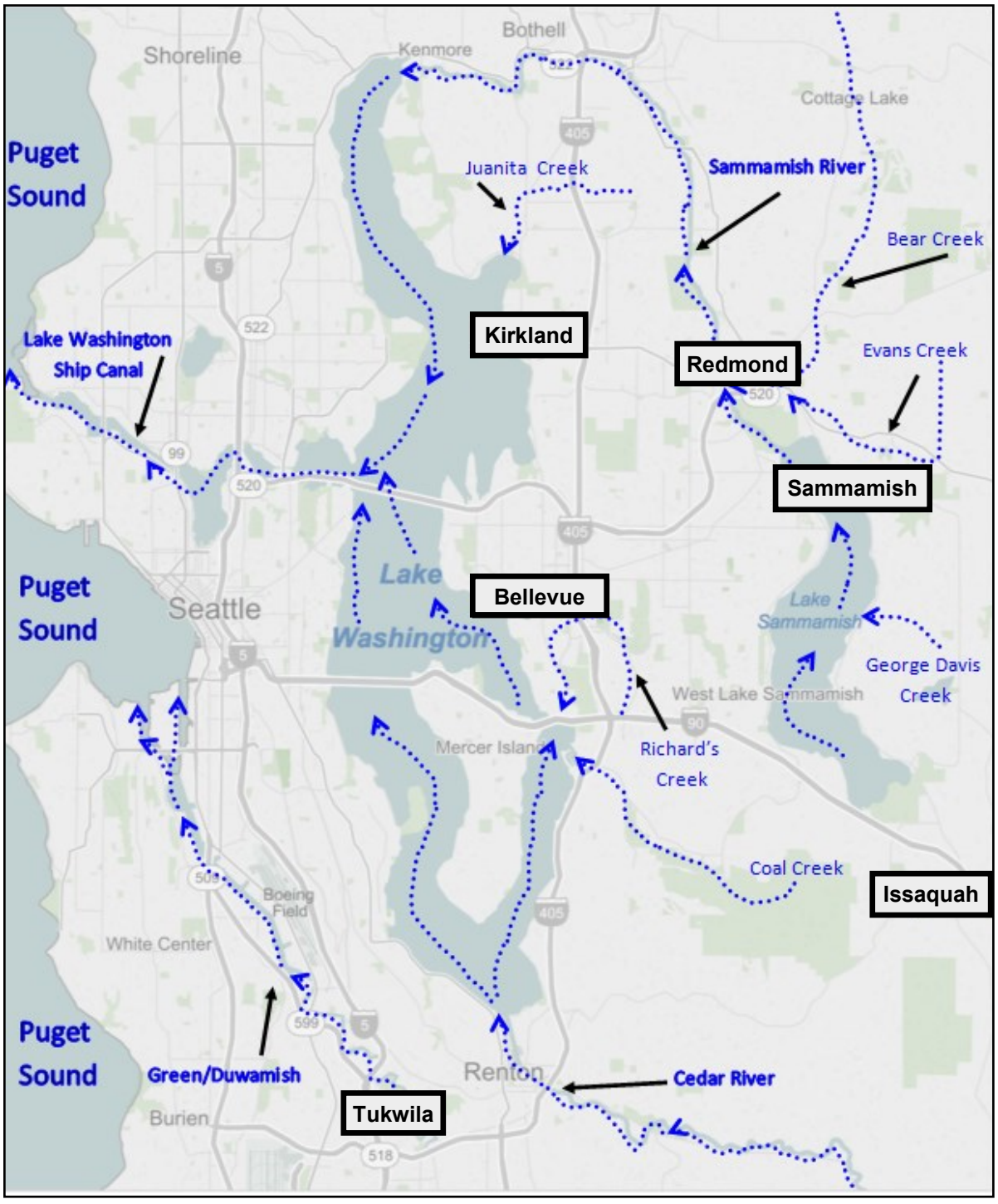
What major bodies of water do you think are most impacted by people who live in these areas?

Figure 2: Cascade Water Alliance Service Map

Now we'll look more closely at the rivers that carry water through our communities. The major cities in the Cascade Water Alliance are outlined in a black box, and the way water moves to the ocean is in blue with arrows showing the direction the water moves.

- What city do you live in, or closest to? What lake or river is closest to where you live?
- Where does the water come from before your community? Where does it go after?

Figure 3: How water flows through our communities Source: Google Maps



Optional Activity

We Need Water Challenge

One of the great things about our watersheds is that they create the bodies of water that we use for food, recreation and exercise. Do you have a favorite stream, pond, lake, or river where you do something fun? Let's draw it!

Materials: Writing utensil, crayons/markers/colored pencils

Draw your favorite place with water, or even imagine a new place that you think would be nice to visit.

Now, draw a picture of how you enjoy the water in your watershed and write a short paragraph (4-5 sentences) about what you do. Maybe you go swimming in the summer, fishing in the fall, or exploring and nature watching in the springtime?

To share your work, post your challenge to Facebook and/or Instagram (with an adult) so other people in your community can learn, too! Don't forget to use the hashtag #WeNeedWater and tag @weneedh20 and @naturevisionorg in your post so we can see your work!

Optional Activity

Paper Ball Watershed

This activity helps you see the way water moves over a watershed. You'll need an adult's permission to try this out, and you'll also need a place where you can spray water without making a mess. With the help of an adult, read the instructions below and choose to either lay down a towel or do this experiment in a place like the sink or bath tub!

Materials: Paper, washable markers, spray bottle, towel (optional)

1. Crumple up a piece of paper into a ball, and then open it up. You should notice some parts of the paper are higher than others, and there are places on the paper that form folds and creases. These represent mountains (the parts of the crumpled paper that are higher than others) and valleys (the folds and creases)!

2. Using a washable marker, draw where you think the water would flow on this paper. *Remember*: In a watershed, water is always moving from the high points to the low points.

3. Using a spray bottle, create your own rainstorm on your paper watershed and see where the water flows! Were you correct? Where does the water flow on this model? Does it collect and move where you thought it would?

4. If you'd like, try this again to see if you can get it right next time you make a rainstorm on your paper watershed!

Optional Activity

Water Drop Perspective

Imagine you are a drop of water that falls to earth in the mountains. How would you flow from there to the ocean? What plants and animals do you think you might meet on the way? Would you soak into the ground or stay on the surface? How would you interact with people? Use this space to write a short story about your journey! Feel free to include pictures of where you go and what you do as a water drop.

Materials: Writing utensil

DAY 2

Plants in the Watershed

In the last Ecosystems packet, we discussed some of the reasons why **native plants** are important to our watershed. Remember, native plants are the species that grow naturally in our ecosystem. They also have been growing here long before humans introduced other plants from around the world.

These plants are essential for the health of our entire watershed because:

- They need less water than other plants
- They hold soil in place even when it rains hard, helping to prevent landslides and keep habitats safe
- They are **filters**, which means they help take pollution out of water that passes through the soil, holding onto it and breaking it down so that it doesn't get into streams further down
- They help control the flow of rain water
- They provide food for wildlife all year, even in the winter
- They provide the best shelter for animals who rely on them for safety
- They filter **pollution** out of our air
- They belong in our **ecosystem** and help to keep it balanced, healthy and strong even during challenging times

Vocabulary
Ecosystem: A community of organisms and their environment
Filter: A material that water passes through and removes pollution, particles and other non-water material
Native plants: The species that grow naturally in our ecosystem and have been growing here since long before humans introduced other plants from around the world
Pollution: When the environment is dirtied by waste, chemicals or other harmful things

Main Activity

Passing Through the Watershed… Board Game

Adapted from Project Wet Curriculum and Activity Guide,
Watercourse/ Project WET and the Council for Environmental Education 2005

This activity will show us how native plants can affect how water moves through the land. In a healthy ecosystem, there is a balance of plants and healthy soil. These hold onto the water that falls, letting any extra run slowly out into the streams where it can travel to other parts of the forest in a controlled way. They also help to keep plants watered and healthy when it is dry because of all of the water stored up year round. This healthy balance helps plants survive disease and fires by keeping them strong. It also allows plants to clean our air and filter out pollution in the water that passes through them.

You will run through the activity four times total. To set up, cut out all of the native plant, rain drop, and road tokens. If you don't have a print version, you can copy the activity on another piece of paper and use that!

Materials: Coloring supplies, scissors, game sheet (the last sheet in this activity)

For each turn:

1. Move your turn counter down one.
2. Move each rain drop down one space.
3. If a token lands on a plant, turn it upside down. Next turn, instead of moving, turn it right side up, then continue as normal during the turns after.
4. If a token lands on a road, skip that square and move one further. If the next square you land on is also a road, skip that one as well until the rain drop arrives at a plant or a blank space.
5. Once all of the raindrops have made it to the Puget Sound, write down how many turns it took for all of the raindrops to arrive there below.

ROUND 1:

For round 1, randomly place 30 native plant tokens on the game space.
The blank squares represent healthy soil and the tokens are a perfect balance of wonderful native plants.

How many turns did it take for all of the rain drops to make it to the Puget Sound? _____

Continue onto the next page...

ROUND 2

For round 2, replace 10 of your native plant tokens with road tokens. Put all of your raindrops at the start and turn your counter back to the beginning. The road tokens represent all of the cars, buildings, roads, and other human made parts of our watershed that replace native plants in our ecosystem.

Repeat the activity (steps 1-5).
Number of turns it took for the raindrops to reach the Puget Sound: _____

ROUND 3

For round 3, reset your raindrops and turn counter to the start. Replace another 10 of your native plant tokens with road tokens. You should now have 20 road tokens and 10 native plant tokens on your game area. This represents the growing impact of development as humans build more human made buildings and things in our ecosystem.

Repeat the activity (steps 1-5).
Number of turns it took for the raindrops to reach the Puget Sound: _____

ROUND 4

For this final round, replace all of the remaining native plant tokens with road tokens. There should be 30 road tokens on your playing area and no native plants left. This represents a city where there are very few or no places left where healthy native plants can grow and do their important work for our ecosystem.

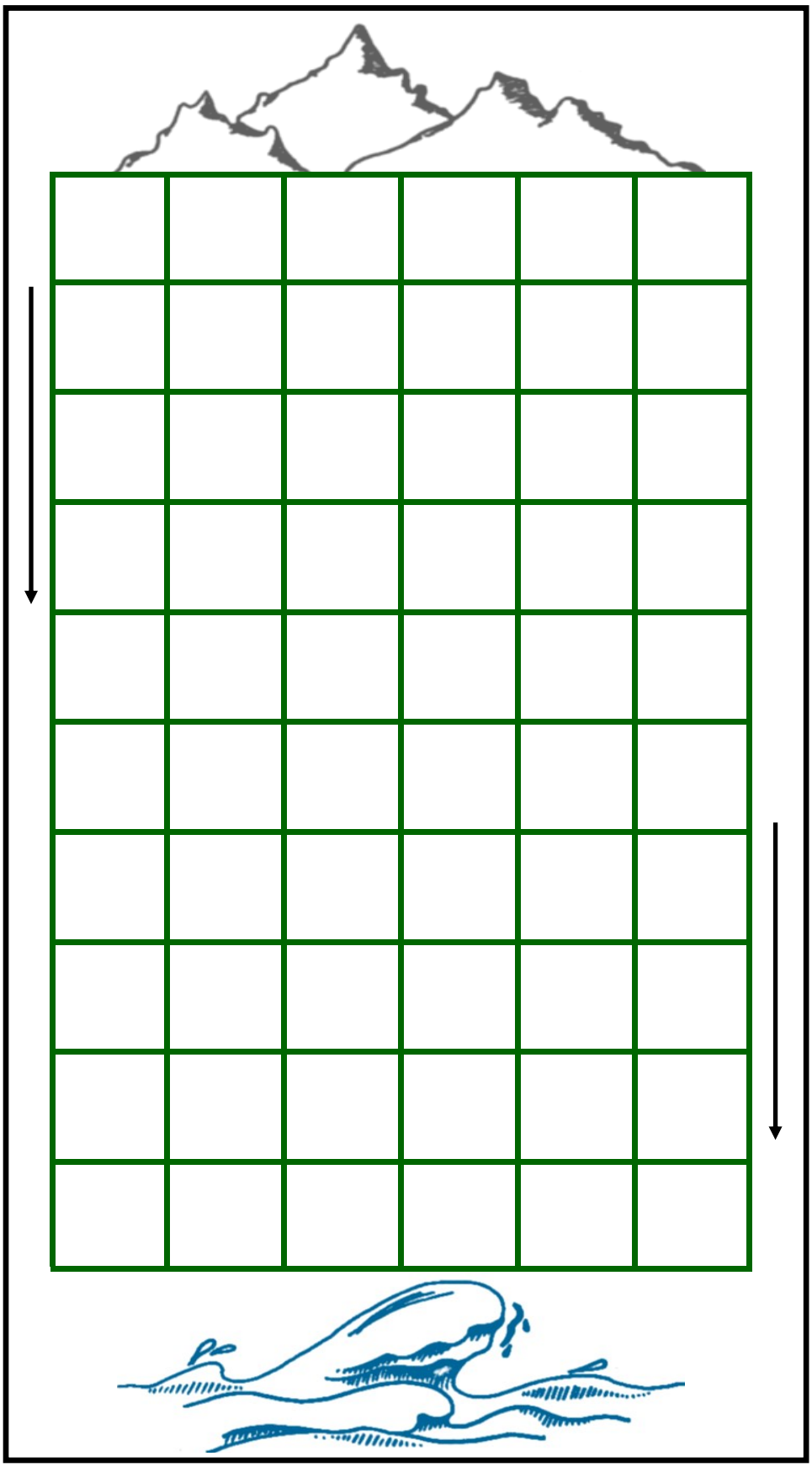
Repeat the activity (steps 1-5).
Number of turns it took for the raindrops to reach the Puget Sound: _____

With what you just learned, please answer these questions:

1. Why does it take longer for the rain drop to reach the Puget Sound when there are lots of plants? Why is this important in real life?

2. Why do the rain drops travel faster when native plants are replaced by human-made objects?

3. What are some of the problems that can happen when water can't soak in and moves too fast through a watershed?



TURN COUNTER

1	11
2	12
3	13
4	14
5	15
6	16
7	17
8	18
9	19
10	20

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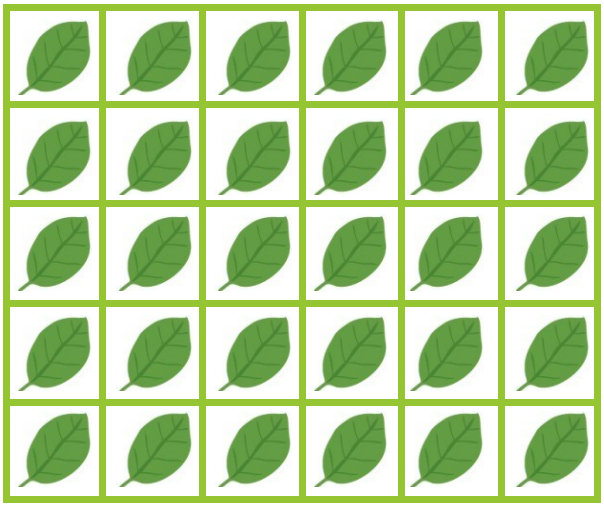
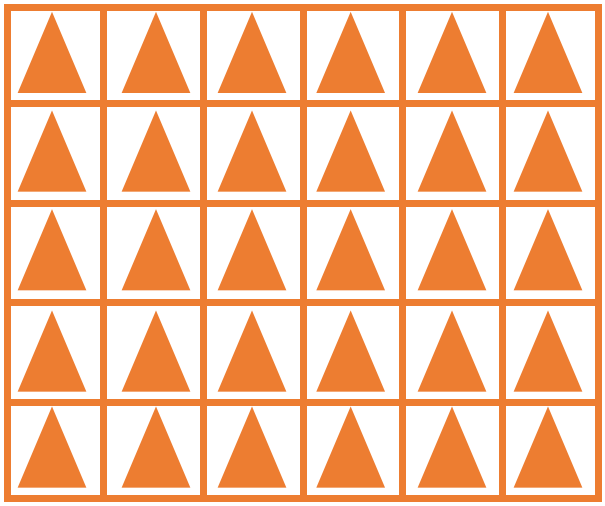
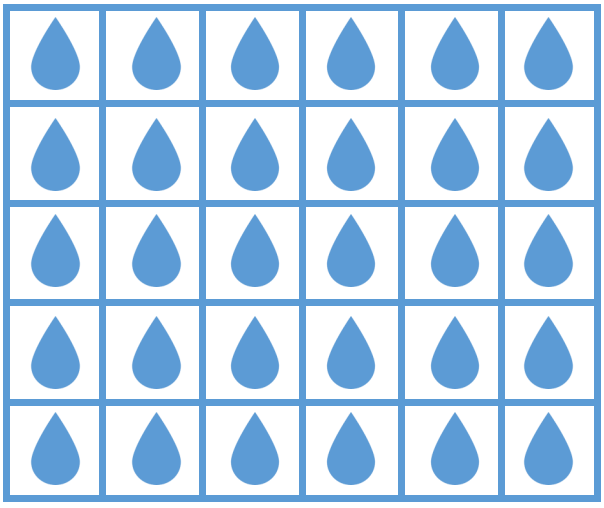
Game Tokens



Native Plant Tokens

Road Tokens





Rain Drop Tokens

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Optional Activity

We Need Water Challenge

Water is always on the move, but sometimes the things we build get in the way. For today's #WeNeedWater challenge, find an example of a man-made thing that affects the way water moves in nature. You can search inside of your home, or you can look outside you window to find something! If you can go for a walk outdoors with an adult to look, please make sure you are safe, responsible, and respectful. When you find something man-made that is changing the way water moves, draw a picture of it below.

Materials: Writing utensil, crayons/markers/colored pencils

To share your work, post your challenge to Facebook and/or Instagram (with an adult) so other people in your community can learn, too! Don't forget to use the hashtag #WeNeedWater and tag @weneedh20 and @naturevisionorg in your post so we can see your work!

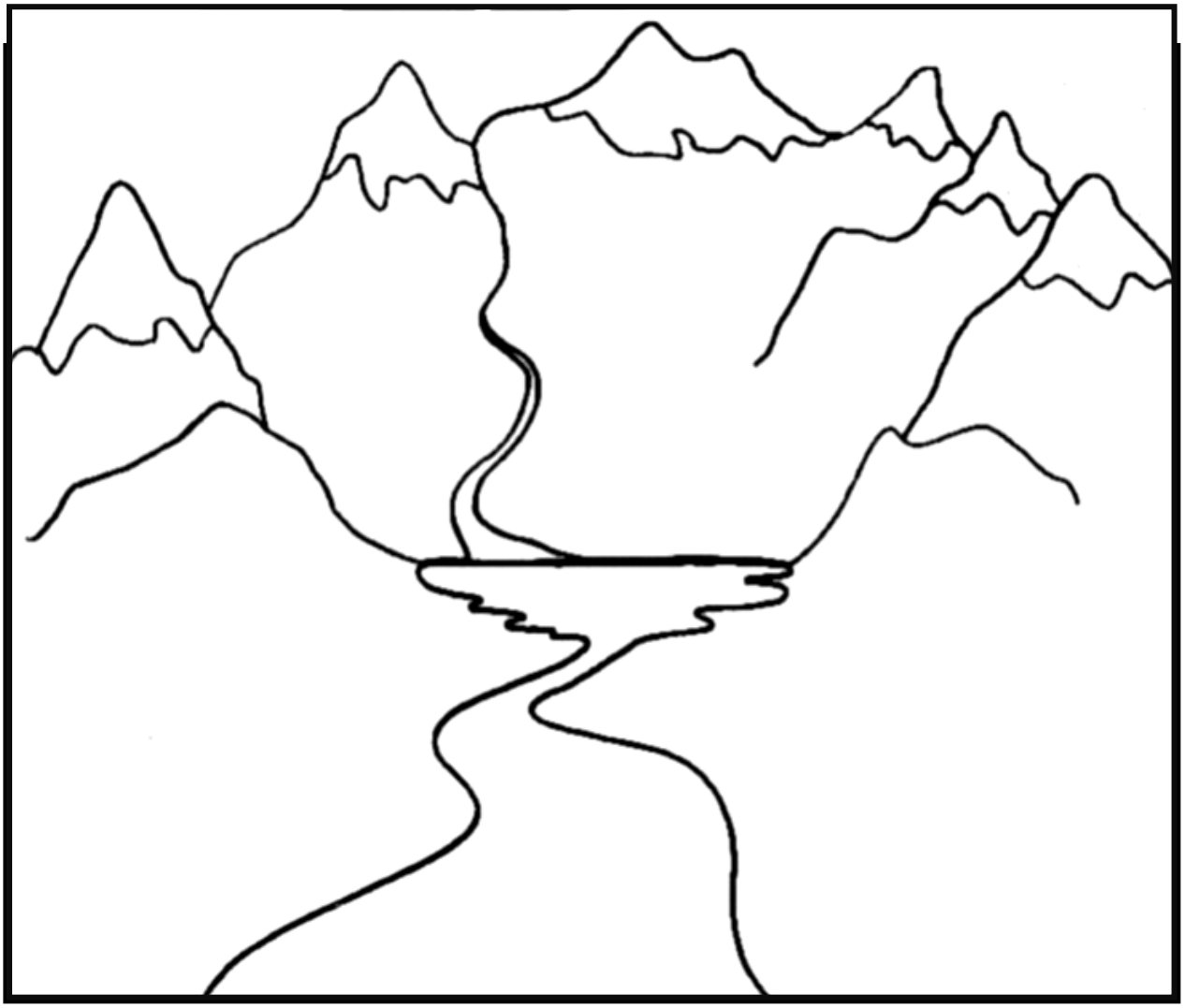
Optional Activity

Your Watershed

Water connects everything in our environment. To better understand your watershed, think about where the water goes when it rains on your home or school. Below is a simple watershed drawing. Every ecosystem is different, so think about what is in yours. Do you live in a city or a forest? Are there lots of animals and green spaces? What about buildings, cars and roads?

Materials: Writing utensil, crayons/markers/colored pencils (optional)

Using the drawing below, add some things that are in your watershed. Try to think of at least two natural and two human made objects to add, but draw as many as you want. Show how each one of them uses or affects the water that is traveling down from the mountains and into the water at the bottom…



DAY 3

Animals in the Watershed

Every watershed has living things that share the water with each other. In Day 2, you learned about the native plants that also share our water supply in our watershed. Today we will focus on some of the most common animals that we find in our watersheds and think about the ways that they use water.

All animals need water for their bodies to work properly. We call this **hydration**, which is vital for bodily functions like keeping cool, getting energy from food, removing wastes, and general health. So, animals need water to drink, just like we do! Animals also rely on water for other reasons, like hunting food, raising young, or as a place to live. For animals that live in the water their entire lives, most can only survive in either fresh or salt water, but rarely both. There are some, like salmon, that are **anadromous**, which means they can live in both fresh and salt water!

All the animals that we share our watershed with need water in some way, and it's important for us to think about how they use water so we can make sure there is enough water available for our needs and theirs, too.

Vocabulary
Anadromous: Living in both fresh and salt water
Hydration: Having the right amount of water for survival

Main Activity

How Do Animals Use Water?

All of the following animals live in Washington and rely on the same fresh water that we do! All of them use water to drink, just like us, but they also use the water in different ways. For example, a deer interacts with water in different way than a beaver, and an eagle uses water in a different way than a frog. Water can be a place for them to get food, make their homes, or raise their babies.

Materials: Writing utensil

In the box next to each animal picture, write as many different ways you can think of that these animals use the water in the environment. How do you think these animals would be affected if there was less water where they live? Descriptions of each animal are available at the end of this activity.

What animals live in our watersheds?

Beavers! These animals are well-adapted for semi-aquatic life, with thick waterproof fur, a flattened tail that acts as a rudder, and closable nostrils and ears, as well as a transparent eye membrane. They are among the largest living rodents in the world. They have thick fur, webbed feet, and flattened tails covered in scales. They create dams that make ponds for them to have a safe place to live in and raise their young.

Salmon! These animals are considered anadromous, which means they live in both fresh and salt water. Habitat changes and losses can affect their ability to return to their native spawning river, which poses a threat to the survival of future salmon generations. They spend the first parts of their lives in the freshwater streams and rivers, and need lots of water for every phase of their life.

Black-tailed deer! These animals are reddish-brown in summer and brownish-gray during winter. Their large ears move independently. Their broad tails are either black or dark brown on top with white underneath. Not only do deer need water to drink, the plants they eat need water to grow!

Bald Eagle! These animals prefer living close to bodies of water, as their favorite prey are fish. They can be found in wetlands, on the coast, near lakes or rivers, and in marshes.

Great Blue Heron! This is a large wading bird that is common near the shores of open water and in wetlands over most of North America. They primarily feed on small fish, but also will eat whatever comes within striking distance. Their long legs, neck, and beak help them catch their food in the water.

River Otter! These animals have a streamlined body, short legs with webbed feet, dense fur that keeps them warm, a tapered tail, small ears, and nostrils that can close underwater. They eat a variety of animals, including fish, crustaceans, amphibians, snakes, water insects, snails, and worms. They live in the forest near the water, traveling to the water for food, unlike sea otters who sometimes spend their whole lives in the ocean.

Western Painted Turtle! These animals are common in North America. They can be found anywhere from southern Canada to northern Mexico! These turtles live in ponds, lakes, marshes, and slow-moving rivers that have soft, muddy bottoms. They feed mainly on plants and small animals, such as fish, crustaceans, and aquatic insects.

Pacific Tree Frog! These animals are small amphibians that have a noticeable dark eye stripe going from the nostrils through the eye as far as the shoulder. These frogs can be found in almost any habitat where there are suitable breeding waters like small ponds. Like all amphibians, they spend part of their live in water and part on land, and can use their skin to breathe by absorbing oxygen from the water.

Optional Activity

We Need Water Challenge

You can save two gallons of water for every minute you don't let your faucet run. Make a small sign to put next to the sink in your home to remind people to turn off the water when they aren't using it.

To share your work, post your challenge to Facebook and/or Instagram (with an adult) so other people in your community can learn, too! Don't forget to use the hashtag #WeNeedWater and tag @weneedh20 and @naturevisionorg in your post so we can see your work!

Materials: Writing utensil, crayons/markers/colored pencils

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Optional Activity

Watershed Food Web

Using the animal pictures from Main Activity for Day 3, can you create a watershed food web? A food web is a connection of how energy moves through the environment, a map of "who eats who". Do some of these animals depend on others for their food? Do some of these animals eat the same thing? Do they compete for food and water in their environment? How do you think they benefit one another and the rest of the environment?

Materials: Writing utensil

Optional Activity

Animals in the Watershed Drawing

Now that you've thought about how all these animals use their water, you can create your own version of our watershed. Can you draw where animals would live, get their food, and raise their babies? Can you include all of these animals in the same drawing?

Materials: Writing utensil

DAY 4

How Humans Change the Watershed

On Day 2, you played a game that helped show you how native plants can help us to catch and clean water, making sure that our watersheds have lots of water for the plants and animals that need it. Today, you'll get to design an area where you could grow your own native plants to help absorb our water, filter out pollution, and help with water conservation.

People have a big impact on our watersheds. We change the environment to fit our needs by building houses, driving cars, and more. We have the ability to fill in bodies of water and remove vegetation like trees, but we can also create areas that help provide habitat for ourselves and various animals which help direct water where we want it to go. One example of this is a **swale**, which is a marsh-like ditch filled with plants and other vegetation that helps with water runoff from roads and other **impervious surfaces**.

When people grow things on purpose in an area, we call it a garden. When we plant native plants to help absorb water we call it a **rain garden**. Having a rain garden ensures that you are doing your part to conserve water by letting it soak into the soil.

Without a rain garden, rain water may flow quickly over pavement into the streets and storm drains. This fast moving water can carry all sorts of pollution from roads, roofs and other places straight into our streams without anything to slow it down or catch the pollution. By planting native rain gardens you help in adding to underground water levels so this water can stay on the land and in the soil where plants and animals can use it to survive. These plants also prevent much of the pollution from reaching our streams!

Vocabulary
Impervious Surfaces: Surfaces that water cannot soak into or pass through
Rain Garden: Collection of native plants designed to absorb water
Swale: A ditch filled with vegetation

Main Activity

Rain Garden Planning

Near the Puget Sound, many different groups of people are coming together to plant 12,000 rain gardens in our watershed (Learn more at: www.12000raingardens.org). One of the most important steps in creating a rain garden is planning what it will look like and where it will be planted. Think about space that you have near your home or in a public area. Do you think you could create a space that helps collect the water in our environment? What would you want it to look like? Do you think any animals would live there? What plants would you like to see there?

Materials: Writing utensil

To help you design your own rain garden, we included some helpful infographics that help explain the benefits of rain gardens and how they work! Read over these and jot down some notes of things you'd like to remember to put in your own rain garden plan.

Figure 4: Beautiful, Hard Working Rain Gardens

Stewardship Partners and Washington State University Extension's "12000 Rain Gardens in Puget Sound" project. www.12000raingardens.org

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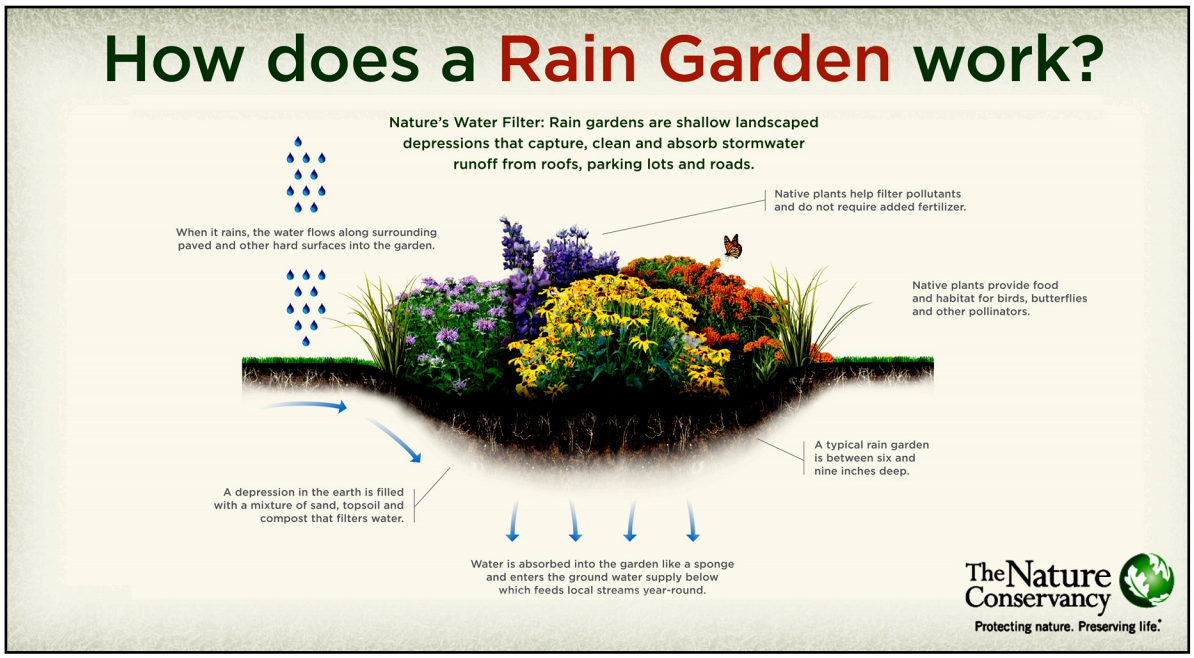
Rain Gardens have trees, bushes, and grasses that provide a habitat for animals, and help us to control water. What kinds of trees, bushes, and grasses would you like to include?

Figure 5: How does a rain garden work?

From the Nature Conservancy www.nature.org



Below is some text from: "Rain Garden Handbook for Western Washington"- Washington State Department of Ecology and Washington State University. What new things does the text below teach you that will be helpful when planning your rain garden?

How Rain Gardens Enhance Our Natural Environment and Quality of Life

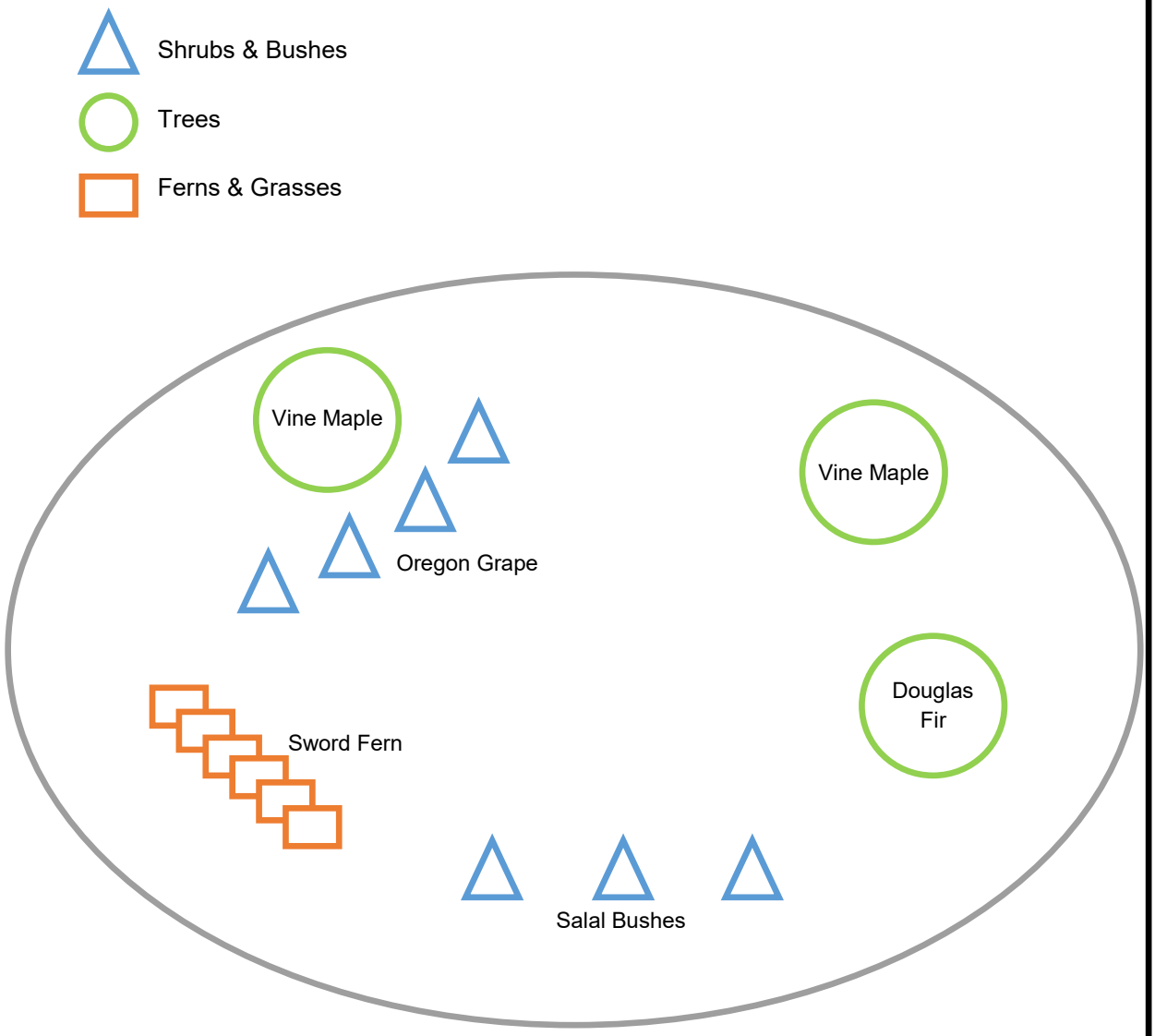
Native soils and forests of western Washington absorb, store, filter, and slowly release cool, clean water to rivers, streams, wetlands, lakes, and coastal waters. The rich diversity of life in marine and fresh water, as well as on land, depends on clean water to thrive.

As the region grows, native forests and soils are replaced with roads, rooftops, and other hard surfaces. When it rains or snows, more water flows from these hard surfaces than undisturbed areas, carrying oil, fertilizers, pesticides, sediments, and other pollutants downstream. In fact, much of the pollution in streams, wetlands, and Puget Sound now comes from stormwater flowing off developed areas. The added water and associated pollutants from developed lands are damaging water resources and harming aquatic life in western Washington.

Rain Garden Design

You can now design your own rain garden! Choose things to include from the following categories: Trees, Shrubs/Bushes, and Ferns & Grasses. You can either plan it using a diagram like the example below, or by drawing more realistic, detailed examples of the plants you choose. A design worksheet is included on the following page. To remind you of some native plants, we included detailed pictures of various plants and trees native to the Puget Sound region on the pages after the design worksheet. Remember, you want to design an area that has these design aspects:

1. Places for water to collect
2. Native plants to help absorb the water
3. Areas for wildlife habitat



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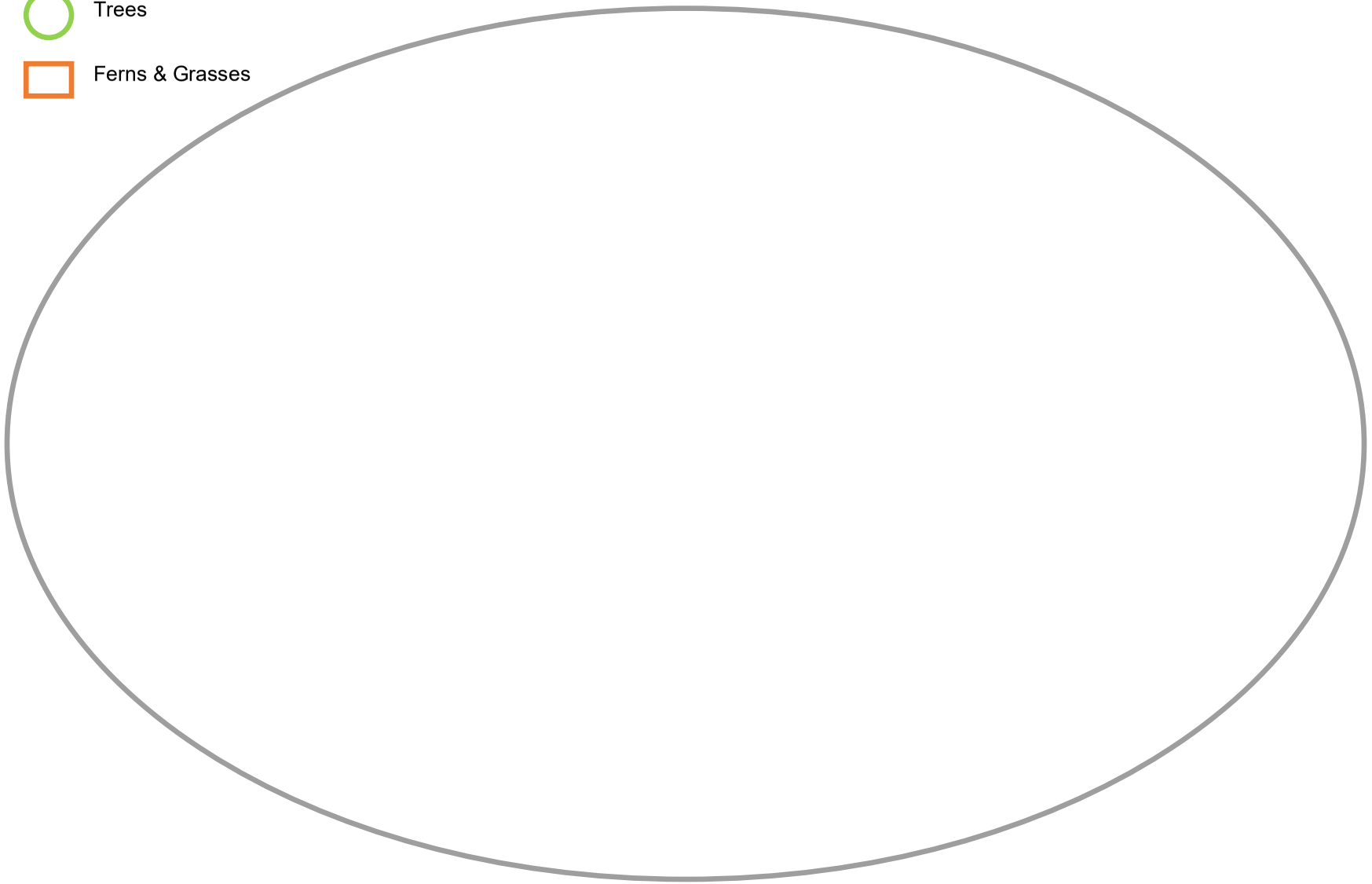
My Rain Garden Design

Shrubs & Bushes

Trees

Ferns & Grasses



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Native Plant Ideas:

Below, you'll find examples of native plants that you could choose to add to the rain garden you are planning. Native plants are good for rain gardens because they grow very well without a lot of help from people. These plants are very good at surviving in our wet winter months AND dry summer months. This helps us to save water because we end up using less water to grow these than if we grew plants that were not from this area, especially in the summer time when we have a lot less water available.

You can find even *more* native plants to choose from by doing an internet search for "King County Native Plant List" or by clicking this link:
https://green2.kingcounty.gov/gonative/Plant.aspx?Act=list
Please be sure to ask for adult permission to search.

Douglas Fir

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Goat's Beard

Western Red Cedar

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Red Alder

Oregon Grape

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Salal

Sword Fern

Cattails

Vine Maple

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Optional Activity

We Need Water Challenge

A wetland is land that is wet. You might call them a pond, swamp, slough, or marsh. Wetlands might be called by different names but they all share three same things: wet soil, water-loving plants, and water! Now, let's explore some wetlands near where you are.

Materials: Writing utensil, crayons/markers/colored pencils

If you can, go with an adult to a pond in your neighborhood or at a nearby park that is walking distance. Together, try and find as many plants or wildlife as you can. Make sure you and your adult watch from the trail and you don't bother plants or wildlife. Remember, a pond is their home. Be safe, responsible, and respectable when outdoors.

If you can't go outside or don't have a pond in your neighborhood, draw a simple model of a wetland. In your model, include a wet soil layer, some plants and their roots growing from the soil, and of course, water! Here are some examples of wetland plants you can use as inspiration for your drawing. Hang it up on your window so your neighbors can see an animal that lives in a pond and their watershed!

Cattails

Skunk Cabbage

Duckweed

To share your work, post your challenge to Facebook and/or Instagram (with an adult) so other people in your community can learn, too! Don't forget to use the hashtag #WeNeedWater and tag @weneedh20 and @naturevisionorg in your post so we can see your work!

Optional Activity

Native Plant Scavenger Hunt

Using the photos of native plants from Main Activity for Day 4, can you find these plants and trees growing near your home or in your neighborhood? The photos of native plants can be used as plant identification cards!

With an adult and permission, take a walk outside to make note of the native plants you see and to answer some questions about them! If you aren't going outside, you can find a place near a window where you can see some plants and trees. Also, you can look up pictures of a nearby park or natural area to complete the activity!

Materials: Native plant ID cards from previous activity, writing materials

Optional Activity

Video

Please ask for an adult's permission to watch this video.

"Clean Solutions to Stormwater Runoff": This short video from Pierce County, Washington shows how people create a rain garden and manage the water in their watershed.

This video can be found by doing a YouTube search for "Pierce County Clean Solutions to Stormwater Runoff" or by using the following link: https://youtu.be/bsNjk0gpir4

Materials: Computer/phone/tablet, internet connection

DAY 5

Stewardship

Stewardship is how we care for the natural world. It includes conservation of the natural resources like water that all living things need to survive, thinking and acting carefully about how we interact with the world around us, and doing our best to make sure that we have a positive impact on the environment. When we talk about stewardship in this packet, we are focusing on what everyone can do to save water and keep it clean for the rest of the environment.

Everything that we use comes from nature in some way. From our clothes to our food to our homes and toys, everything affects our watershed. As we look at these things, it's important to think about how much of the fresh water we need goes into them.

Our **water footprint** is the amount of fresh water used to make all of the goods that you use day to day as well as the other ways that water may be used in your home. When you look at how blue jeans are made, water is used in a lot of ways we don't necessarily think about. Water is used to grow the cotton plants, in processing that cotton into thread, in dying the threads, while assembling the jeans, and when preparing them for the store. On average, this entire process uses 2,000 gallons of water for every pair of jeans! The water that is pulled up from the earth and used for each of these pieces of clothing weighs as much as *four* cars. That's a lot of water!

Look at how much water is used to make these items before they reach your home:

- **A cup of coffee:** 37 gallons
- **A cell phone:** 240 gallons
- **2 pounds of wet pet food:** 3,667 gallons

Even a plastic bottle of water uses more water than it holds. On average, it takes twice as much water to make a liter bottle of drinking water than just drinking out of a reusable bottle. This means for every liter of bottled water, more than one liter was used on top of that to clean and bottle it.

With this in mind, do you think it is good for our ecosystem and water supply for us to use something once and throw it away? Or would it be better to find ways to reuse something over and over? Even if we are careful, some things can only be used once. In this case, one of the best ways to conserve water and reduce litter is to recycle. Recycling helps to reduce the amount of waste sent to landfills and has a much smaller impact on our water supply than taking more materials from nature.

Here are some examples of materials that we can recycle:

- Glass jars and bottles
- Food and soda cans
- Plastic bottles and cups
- Cardboard and paper

Vocabulary

Water Footprint: The amount of fresh water used to make all of the goods that you use day to day as well as the other ways that water may be used in your home

Main Activity

Water Use in Everyday Items

To help you and the people you live with remember what you can recycle, create a poster on the following page that you can hang somewhere that tells everyone what should be recycled instead of thrown away. If you have questions or want help, take a look at the pictures below!

Materials: Writing utensil

Plastic

Glass

Metal

Paper

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Optional Activity

We Need Water Challenge

There are so many ways to save, protect, and care for our water. At the end of every daily lesson, we will be giving a challenge to help you show off what you've learned.

Materials: (Optional) pencil, colors, computer/phone/tablet, internet

Using what you've learned this week, it's time to make your own #WeNeedWater challenge! Think about all of the things we learned this week. What new thing can you do to share what you now know or new ways you've learned to save water?

To share your work, post your challenge to Facebook and/or Instagram (with an adult) so other people in your community can learn, too! Don't forget to use the hashtag #WeNeedWater and tag @weneedh20 and @naturevisionorg in your post so we can see your work!

Optional Activity

What is Your Water Footprint?

Now that we've spent the week talking about watersheds and how conserving our small water supply is important, let's take a look at where we use the most water in our day and some things we can do to make a difference!

Remember, our water footprint is the amount of fresh water used to make all of the goods that you use day to day as well as the other ways that water may be used in your home. This is a way for us to measure how much total water each person uses and how they might be able to conserve some of it.

Materials: Computer/phone/tablet, internet connection, adult assistance

Please ask for an adult's permission to access this website.

Go to https://www.watercalculator.org/ and take the water quiz! It's okay if you don't know all of the answers, just do your best. Once you finish the quiz, look at your results and answer the questions below:

What are the biggest uses of water in your home?

What are some ways that you could conserve more water?

Think about a couple ways that you could save water in your home and draw them on the next page. Post these pictures up in your home to remind people to conserve water and do their part to make sure we have enough to go around!