

# All Things

# Water

ACTIVITY GUIDE

Provided by the High Plains Water District



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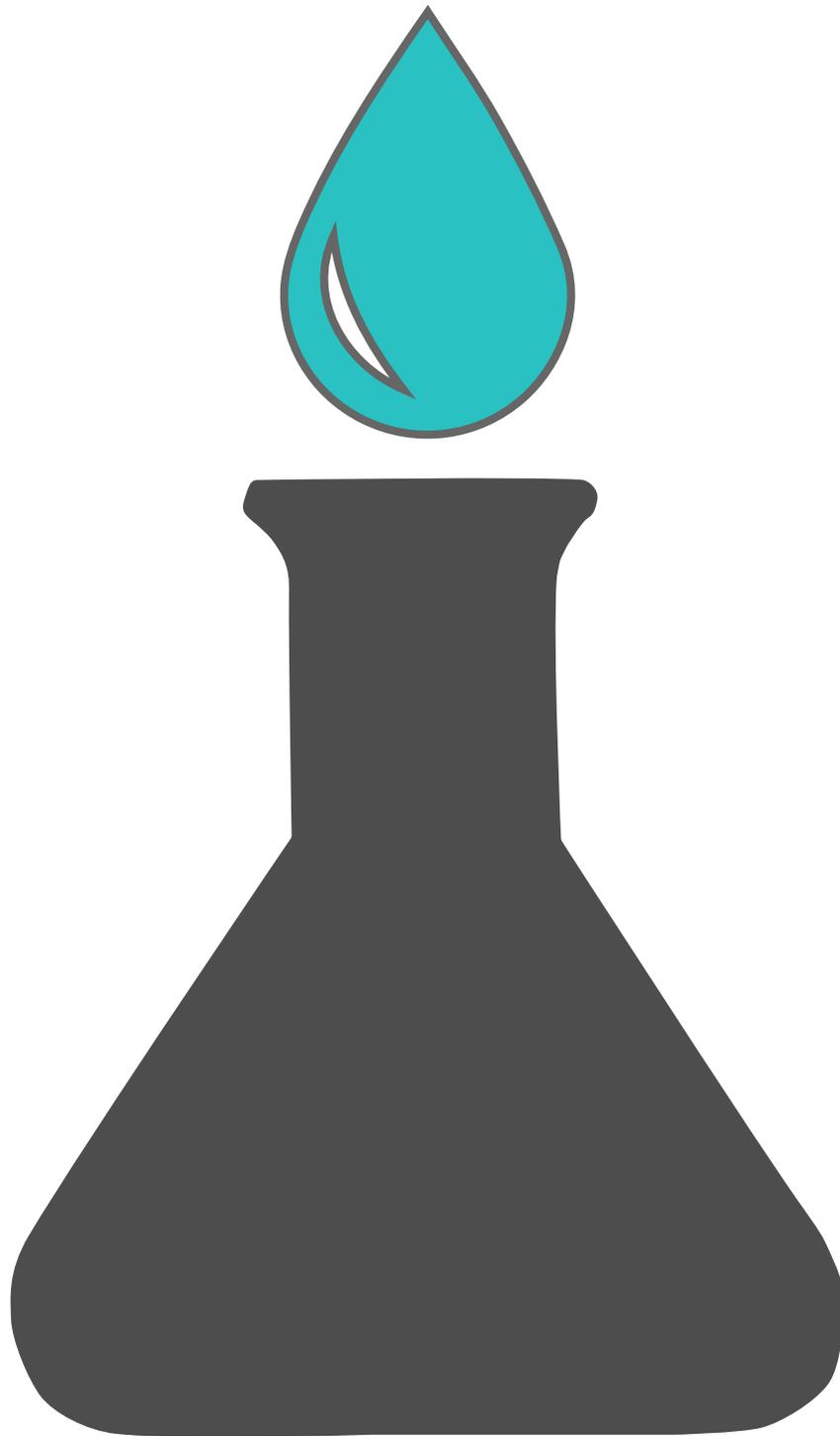
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NOTE: LESSON PLANS WERE COLLECTED AND ADAPTED FROM DIFFERENT SOURCES.

# Water Science



# Ocean in a Bottle

Preschool — 6th Grade

## Background:

Oil and water are known as “immiscible.” Water molecules are polar, meaning they have a positive charge at one end and a negative charge at the opposite end. Oil molecules are non-polar, meaning they have no charge.

Due to their relative charges, water molecules are attracted to water molecules and oil molecules are attracted to oil molecules, making oil insoluble in water.

## Procedure:

1. Use funnel to fill approximately one-third of the bottle with water.
2. Add several drops of food coloring.
3. Still using funnel, fill the remainder of the bottle with oil.
4. Add beads and small sea shells.
5. Place hot glue around opening of bottle.
6. Screw on lid to seal the bottle.
7. Gently turn and shake the bottle to watch the waves of the ocean.

## Discussion:

- Did you notice as the water and oil began to separate?
- How do you think this applies to oceans and other surface water?
- Do you think this could create a problem for ocean wildlife if oil were to seep into their habitat?

## Objective:

To demonstrate the properties of oil and water prohibiting the two substances from mixing.

## Duration:

10 - 20 minutes

## Materials:

- 2 liter bottle
- Water
- Cooking oil
- Blue food coloring
- Funnel
- Hot glue
- Beads, sea shells, etc. (optional)

## Source:

- [happyhooligans.ca/ocean-in-bottle/](http://happyhooligans.ca/ocean-in-bottle/)

# A Book of Clouds

Preschool — 4th Grade

## Objective:

To explain the different types of clouds and their functions in the process of rain and the water cycle.

## Duration:

30 - 45 minutes

## Materials:

- Construction paper
- Cotton balls
- Scissors
- Glue
- Markers, crayons or colored pencils
- Stapler

## Sources:

- <http://www.dragonfliesinfirst.com/2012/04/clouds-lots-and-lots-of-clouds.html>
- <http://eo.ucar.edu/webweather/cumulus.html>

## Background:

There are three types of clouds: cirrus, cumulus and stratus. Each type plays a role in identifying weather patterns and changes.

Cirrus clouds are thin and wispy and generally point in the direction of air movement at their elevation. They are typically found higher than 20,000 feet.

Cumulus clouds are puffy and sometimes look like floating cotton. These clouds can grow upward and develop into clouds that form thunderstorms, called cumulonimbus clouds. They are typically found between 1,000 and 3,000 feet above ground.

Stratus clouds are thick and heavy in appearance. These clouds usually produce drizzle and fog. Nimbostratus clouds are precipitation-heavy. They are typically found below 6,500 feet.

## Procedure:

1. Start with three sheets of construction paper, staggered about an inch apart, folded and stapled. The project will require five tabs.
2. Cut out the “cover blurb” and glue it to the top layer. It can say anything from “Clouds Galore” to “The Amazing World of Clouds.” Use your imagination. The rest of the tabs will be labeled.
3. Label the first tab, “What are clouds?”

Inside the tab, have the student write or glue on, “Clouds form when water vapor cools. Clouds are millions of droplets of water or ice floating in the air.” The student should also draw a picture of water droplets or clouds.

4. Label the second tab, “Cirrus Clouds.” Take a cotton ball and carefully pull it apart into little wisps. Glue the wisps on the top inside the tab. Have the student write or glue on, “Cirrus clouds are white and wispy. They are thin and do not look ‘puffy.’ The sky can be seen through them. They are high in the sky. They mean the weather is going to change.”
5. Label the third tab, “Cumulus Clouds.” Slightly tug a couple of cotton balls apart and glue them to the top inside the tab. Have the student write or glue on, “Cumulus clouds are big and look ‘puffy.’ They are heavy and seem solid. The sky cannot be seen through them. Cumulus clouds often form different shapes. They can be low in the sky. They sometimes make thunderstorms.”
6. Label the fourth tab, “Stratus Clouds.” Stretch a couple of cotton balls apart into thin layers and glue them to the top inside the tab. Have the student write or glue on “Stratus clouds look a little like wide, gray blankets in the sky. They can block out the sunlight. Stratus clouds drop rain and snow.”
7. Label the last tab, “My favorite cloud.” Have the student recreate one of the three clouds and glue it to the top inside the tab. On the bottom half of the tab, have the student write and decorate the name of the cloud.

- <http://weatherou.edu/~smglen n/clouds.html>
- [http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/cld/cldtyp/hgh/crs.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/cld/cldtyp/hgh/crs.rxml)

### Discussion:

- What type of clouds are in the sky today?
- How were they formed? How do clouds affect the water cycle?
- When water evaporates (water vapor) from oceans, rivers, lakes, ponds, streams or other surface water, it condenses and turns into a cloud. After clouds are formed, it rains or snows (precipitation) and surface water is allowed to fill back up so it can evaporate again, keeping the water cycle moving.

Rainwater can be harvested and used to water plants and lawns.

One inch of rain falling on a 1,000 square foot roof can collect about 623 gallons of water.



# Making it Rain

4th Grade — 8th Grade

## Background:

Earth's water is always moving in a continuous cycle. Water evaporates on Earth's surface from oceans, lakes, rivers, streams and other bodies of surface water and condenses into clouds. The clouds then produce precipitation in the form of rain, snow or sleet. The precipitation refills the surface water and evaporation occurs again.

## Procedure:

1. Put about half an inch of water in a flat pan.
2. Give each student a cotton ball and explain that this will act as their cloud.
3. Ask the students to hold cotton balls on water. Water will begin to travel up to the cotton.
4. Ask the students to lift the cotton balls from the water. The water will begin to drip from the cotton balls.

## Discussion:

- How did the cotton ball feel before you held it to the water; was it light and soft or was it heavy?
- Did you notice how the cotton ball changed as the water began to evaporate?
- Did you notice how the water began to fall after the cotton ball became too heavy?
- That is the same process as the water cycle. Water is evaporated from surface water. The evaporated water condenses into clouds and the clouds produce precipitation. Then the process begins again.

## Objective:

To explain the different types of clouds and their functions in the process of rain and the water cycle.

## Duration:

20 - 25 minutes

## Materials:

- Cotton balls
- Flat pans or flat containers
- Water

## Source:

- <http://nothingbutmonkeybusiness.blogspot.com/2013/04/clouds-incredible-weather-april-15-19.html>

# Rain Cloud in a Cup

Preschool — 6th Grade

## Objective:

To demonstrate rain and its process as part of the water cycle.

## Duration:

10 - 20 minutes

## Materials:

- Shaving cream
- Water
- Clear cups or jars
- Blue food coloring
- Pipettes or droppers
- Bowl

## Source:

- <http://www.growingajeweledrose.com/2014/02/rain-clouds-in-jar-experiment.html>

## Background:

Rain is part of a continuous cycle called the hydrologic cycle or water cycle. It falls to Earth's surface and joins the surface water. Surface water evaporates and forms clouds. Once clouds are large enough, they produce precipitation in the form of rain, snow or sleet. This process continues.

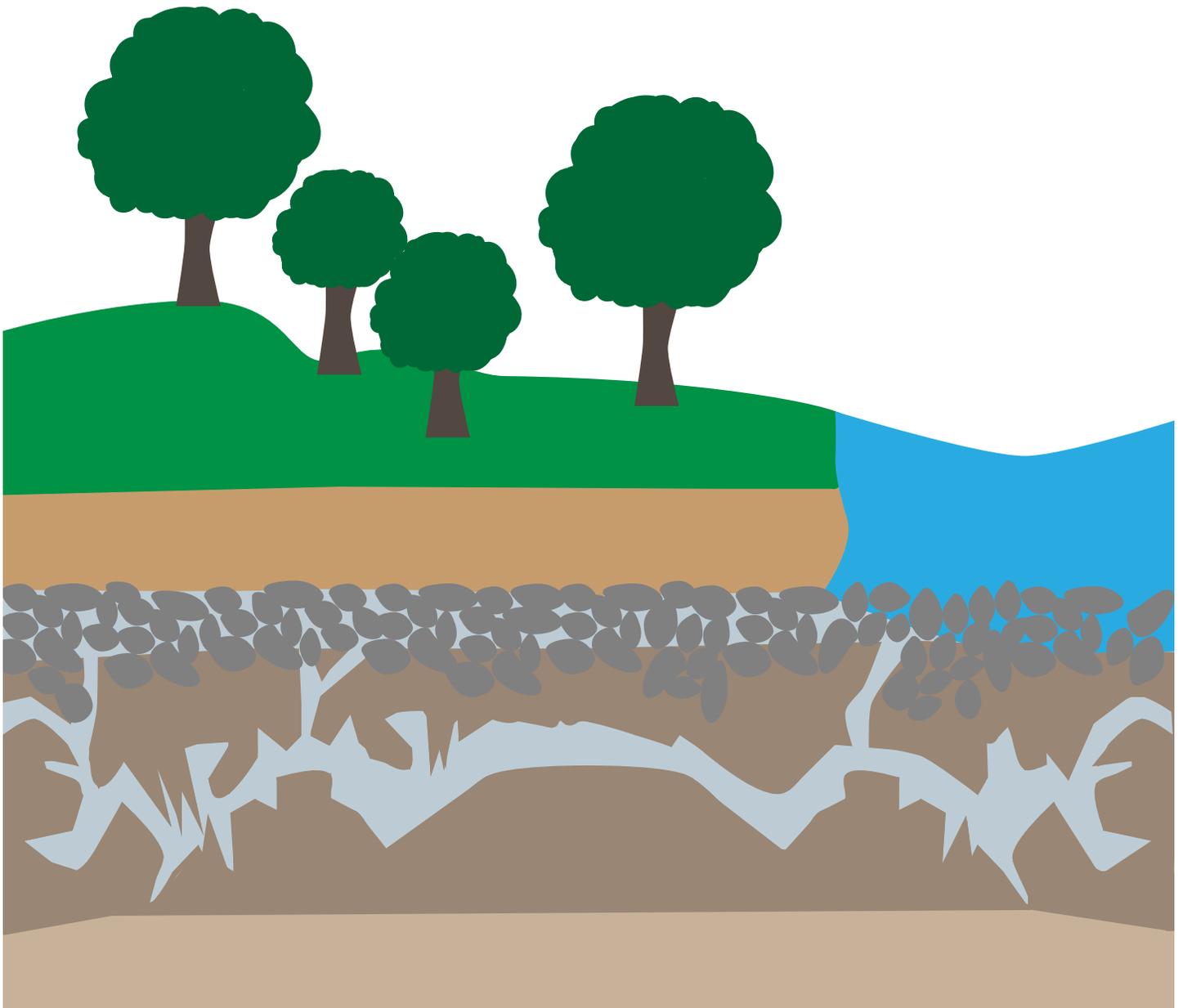
## Procedure:

1. Fill the jars or containers three-fourths of the way with water and then fill with shaving cream. Allow a few minutes for the shaving cream to fully settle on top of the water.
2. In a bowl, mix several drops of blue food coloring with a little bit of water.
3. Have the students fill the pipettes or droppers with the blue water and squeeze it onto the cloud. Inserting the tip of the pipette into the cloud will help the cloud to fill. Have the student squeeze blue water into the cloud. As the cloud fills with water, it will begin to "rain."

## Discussion:

- What did you notice as the blue water began to seep through the cloud?
- Why do you think it rained more as the cloud filled with too much blue water?
- What kind of cloud does this resemble?
- What kind of cloud produces rain?
- Review the types of clouds with students.

# Groundwater



# Aquifer Parfaits

4th Grade — 12th Grade

## Objective:

To illustrate the properties of an aquifer.

## Duration:

25 - 30 minutes

## Materials:

- Blue or red food coloring
- Vanilla ice cream
- Clear soda
- Crushed ice
- Colored decoration sprinkles
- Straws
- Clear plastic cups

## Sources:

- Making a Bigger Splash: A Collection of Water Education and Festival Activities, Page 18
- <http://water.usgs.gov/edu/earth-gwaquifer.html>

## Background:

Aquifers are underground layers of rock that are saturated with water. If the ground is permeable enough to hold water below a certain depth, it is saturated with water. This is the water table. The saturated zone beneath the water table is an aquifer.

Wells can be drilled into an aquifer and water can be pumped out. Precipitation seeps through porous layers of rock and provides recharge. However, the recharge rate may not keep the aquifer from being depleted.

Confining layers are less porous layers of rock that can be both above and below an aquifer. In some cases they create a barrier that prohibits water from reaching the aquifer.

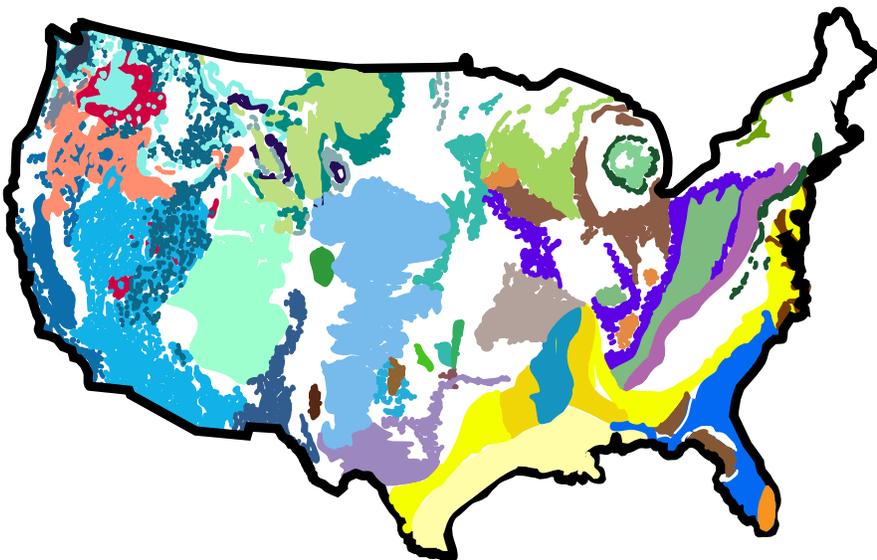
## Procedure:

1. Begin with an explanation of groundwater including aquifers, confining layers, contamination, recharge, the water table and aquifer depletion.
2. Fill a clear plastic cup one-third full with crushed ice. This represents gravel and soil.
3. Add clear soda to cover the ice. This represents groundwater.
4. Add ice cream to serve as the confining layer above the water-filled aquifer.
5. Add another layer of ice above the confining layer.

6. Sprinkle colored decoration sprinkles over the top. They will represent soils and the porous layer.
7. Add blue or red food coloring to the soda and pour over the porous layer. The colored soda represents contamination. Have the students watch as the colored soda infiltrates through the confining layer.
8. Have the students place a straw in their aquifer model to represent a well. Pumping the well demonstrates a decline in the water table.

**Discussion:**

- Did you notice how the confining layer slowed the “water” from reaching the aquifer?
- Did you notice the water table level being depleted?
- Did you notice any contaminants being drawn into the well area and ending up in the groundwater by leaking through the confining layer?



There are 64 principal aquifers in the United States. Of the 37 largest aquifers in the world, five lie within North America.

via USGS and Washington Post

# Clean Water Test

4th Grade — 8th Grade

## Objective:

To explain the process of water purification as it moves through soil and reaches groundwater.

## Duration:

30 - 40 minutes

## Materials:

- Gravel
- Sand
- Blotting paper or coffee filters
- Clean flower pot
- Transparent jug
- Large measuring cup
- Food coloring

## Source:

- [http://www.kindergarten-lessons.com/nature\\_education.html](http://www.kindergarten-lessons.com/nature_education.html)

## Background:

Water falls to Earth in the form of rain, snow or sleet. Once the water reaches Earth, it runs into rivers, lakes, streams, oceans and other bodies of surface water. It also infiltrates through the ground and becomes groundwater. Water that infiltrates the soil is purified by the soil particles and organic matter.

## Procedure:

1. Put blotting paper/three to four coffee filters, sand, and gravel in a clean flower pot.
2. Place the flower pot in a larger transparent container so the filtered water can drip through and the students can observe it.
3. Place dirt, bits of plant matter, water, and food coloring in a large measuring cup. Mix to make “muddy water.”
4. Pour the muddy water into the flower pot.
5. Have the children observe the color of the water dripping out of the bottom of the pot into the transparent container.
6. Try the experiment again rearranging the layers to compare results.

## Discussion:

- What color was the water when we mixed all of the ingredients in the measuring cup?
- What color was the water when it reached the container?
- Why did cleaner water come out?

# Water

# Conservation



# Watering Can

Preschool — 6th Grade

## Objective:

To demonstrate water-holding capacity of soil and prevention of overwatering.

## Duration:

30 minutes

3 hours for paint to dry

## Materials:

- 1 liter plastic bottle
- Paper plates
- Acrylic paint
- Paintbrush
- Nail
- Pliers

## Sources:

- [http://www.messforless.net/2014/04/soda-bottle-watering-can.html#\\_a5y\\_p=1721086](http://www.messforless.net/2014/04/soda-bottle-watering-can.html#_a5y_p=1721086)
- <https://www.provenwinners.com/learn/dirt-dirt-potting-soil>

## Background:

Plants need nutrients from the soil to grow efficiently. Most potting soils provide moisture, nutrients, air and help anchor plant roots.

Overwatering can cause runoff, which eliminates valuable nutrients in the soil. It can also cause plants to have a wilted appearance and creates an environment for fungus and bacteria to grow. Runoff from overwatering wastes valuable water.

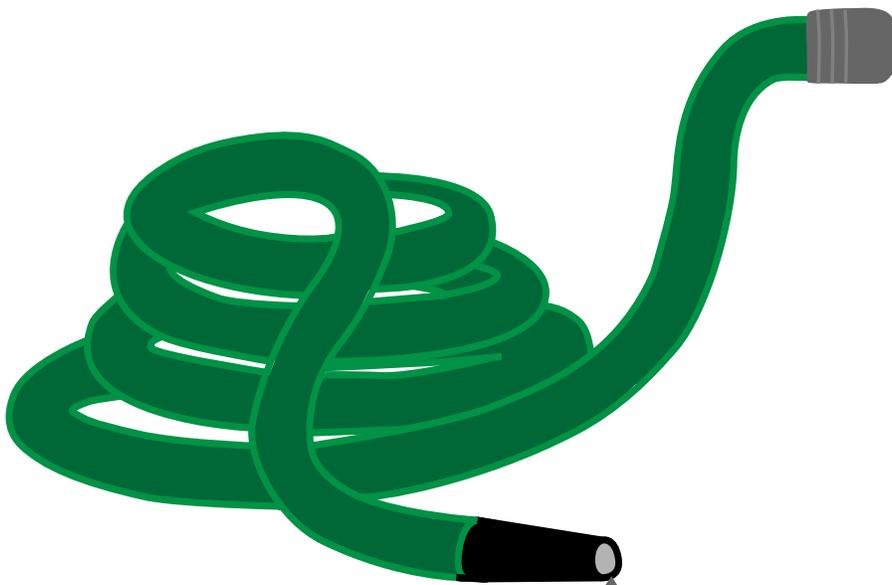
## Procedure:

1. Clean out a one liter soda or water bottle and let dry. This would work with a different size bottle as well. However, a two liter bottle may be too heavy for students to hold when filled with water.
2. Place paint on paper plate and allow student to decorate the bottle with paintbrush.
3. Allow the paint to dry.
4. Once the bottle is dry, make 9 to 10 small holes in the top of the bottle. The nail may need to be heated in order to puncture the bottle. Hold the nail with the pliers and press the hot part of the nail into the bottle. This step is only for adults.
5. Remove cap and fill with water. Replace cap to water plants.

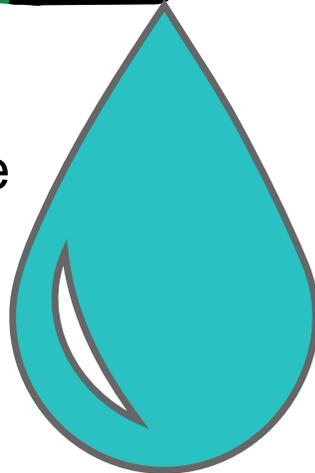
## Discussion:

- Have you ever used a water hose to water plants and noticed you watered something other than the plant like a sidewalk?

- Did you notice how the soil soaked up the water as we poured it?
- How do you think the water bottle method helps eliminate water waste?
- As much as 50 percent of water is wasted due to evaporation, wind or runoff caused by inefficient irrigation methods and systems.



The average family of four in the region uses 204 gallons of water outdoors per day.



Via Region O Initially Prepared Plan 2015-2016

# Bucket Brigade

Preschool — 6th Grade

## Objective:

To show daily water consumption.

## Duration:

20 - 35 minutes

## Materials:

- 1 gallon plastic water or milk jugs
- Markers to define points “A” and “B”
- Starting line

## Sources:

- Making a Bigger Splash: A Collection of Water Education and Festival Activities, Page 1

## Background:

The average family of four in the United States uses 400 gallons of water per day (100 gallons of water per person per day). On average, approximately 70 percent of that water is used indoors.

Inside the home, the bathroom is typically where the most water is used. The toilet accounts for up to 27 percent of the indoor water consumption, especially if it is an old model. Retrofitting appliances and being mindful of water consumption will help cut down on the actual amount being used.

This activity is designed to give students a hands-on way to visualize water usage by moving the amount of water a person uses in a day from one point to another.

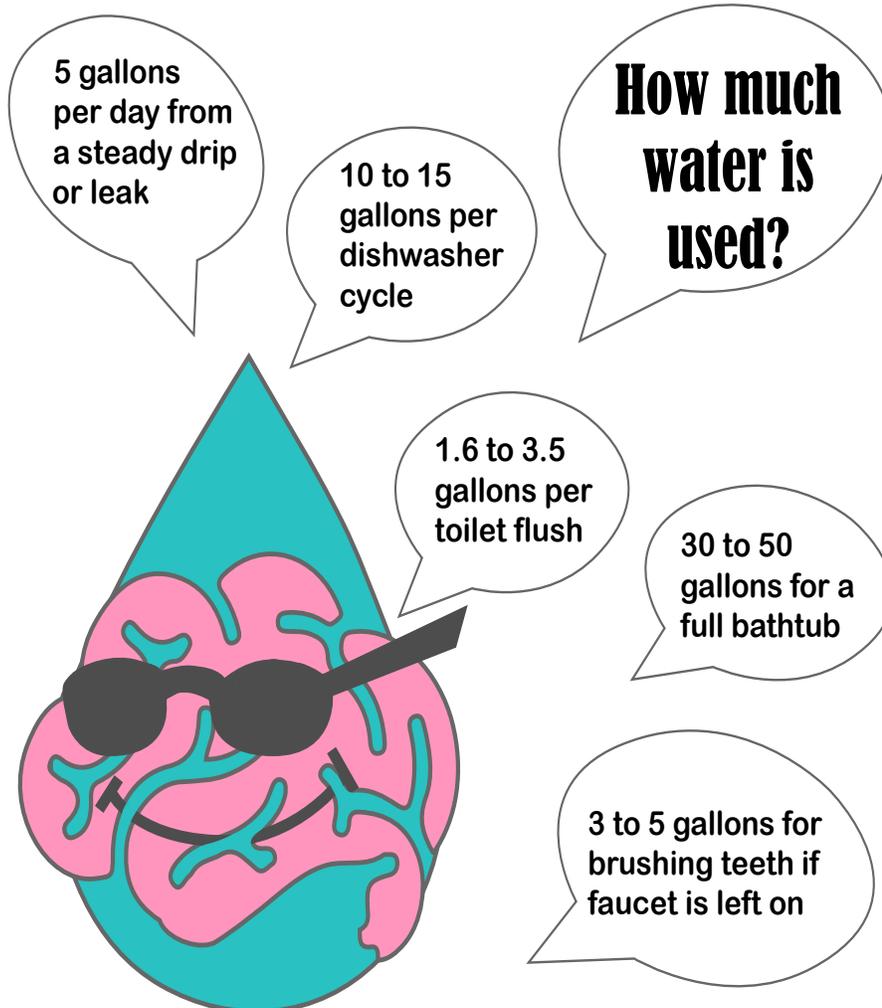
## Procedure:

1. Ask the students what water conservation means to them. Ask the students how much water they believe they use on a daily basis.
2. Break the students into two - four teams, depending on the class size.
3. Each team will need to move 50 gallons of water from point A to point B and back to point A. Fifty gallons of water moved twice will approximate the amount of water used on average by one person in a day.

4. Have the students decide how to move the water through each rotation.
5. Time the groups. The group who moves the water the fastest wins.
6. If you have time, break the students up by family size and have them work together to move 520 gallons of water.

### Discussion:

- How do we use water in and around the home?
- How do you think family size affects the amount of water we use everyday?
- Where do you get your water?
- What would you do if you had to haul water for everyday living?
- Why do you think water conservation is important?



# Water Quality



# Water Obstacles

8th Grade — 12th Grade

## Background:

Pollution is any substance that has a harmful effect on the quality of water. Pollution can be physical, chemical or biological. Pollution is either point source or non-point source.

Point source pollution can be traced back to its origin. Non-point pollution cannot be traced back to its origin and is hard to control.

This activity is designed to teach students about the strategies to control non-point pollution through preventing contamination in stormwater runoff.

## Station materials:

Starting point - Storm drain stencil, fake storm drain, empty spray paint can

Station 1 - plastic dog poop, pooper scooper, bags, glove, small garbage can, stuffed dog on a leash

Station 2 - motor oil container, one gallon empty plastic milk container with lid, funnel, permanent marker, recycling bin

Station 3 - antifreeze container, fake phone, pollution hot-line number sign

Station 4 - pot, potting soil, fake flower, broom, dustpan

Station 5 - one battery storage container, fake cigarettes, batteries

## Objective:

To promote water pollution prevention by demonstrating strategies to keep harmful substances out of water supplies.

## Duration:

10 minutes for setup  
1 hour per 30 students

## Materials:

- Stopwatch
- Rainstick and thunderstick
- Stuffed fish
- Wire flags (course boundary)
- Banner
- +Station materials

## Sources:

- Making a Bigger Splash: A Collection of Water Education and Festival Activities, Page 84
- <http://www.lenntech.com/water-pollution-faq.htm>

## Procedure:

1. Use volunteers to help orchestrate the game. Volunteers make the thunder and rain sounds, keep time, simulate being an irresponsible dog walker, and illegal dumpers of oil and antifreeze. They also reset the course before the next team of two begins. This involves emptying batteries and fake cigarette butts on the ground, taking soil out of the pot, and putting the anti-freeze and oil props back. They also make the fish swim or die depending on the course results. You can interchange roles throughout the presentation time.
2. Briefly discuss what pollutants can be picked up by the rain and carried away as stormwater pollution (pet wastes, illegal dumping of toxic liquids down storm drains, detergent, loose soil, etc.)
3. Break students up into teams of two to begin the obstacle course. The course begins at the sound of thunder. Give the students a time limit to complete the course and warn them that rain will come once time is up. Once time is up, the volunteer will use the rainstick to make the sound of rain. At this point the stuffed fish will either continue to swim if the students have finished the course or float belly up if the students have not finished the course.
4. Students must move from station to station to deal with all of the obstacles before the time is complete. Students complete the game by touching the stuffed fish to stop their time

**Obstacles:**

Station 1: The dog walker has a leash that makes dog sounds, or a stuffed dog on a leash, and there is fake dog waste on the ground. The students must convince the dog walker to use a pooper scooper and place the waste in a nearby garbage can. The students actually hand the volunteer a pooper scooper, bag and glove and give instructions on how to use it.

Station 2: Stop the illegal dumper. The adult volunteer is pretending to dump oil down the storm drain. The students must teach the volunteer how to recycle oil curbside. Use the plastic milk jug, funnel and marker to signify it as oil placed in the container. All activities should be acted out. Students must also teach the volunteer to place the milk jug in the recycling bin.

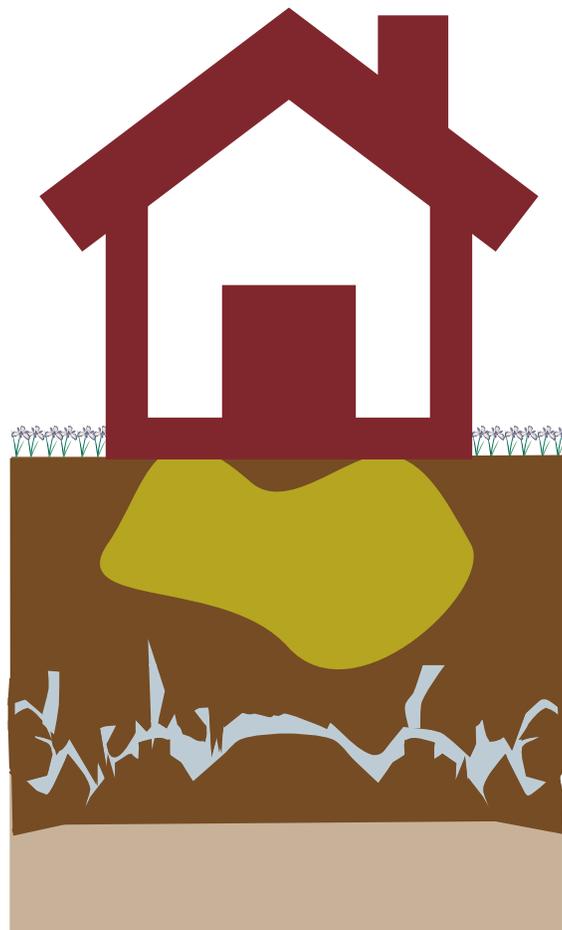
Station 3: Stop the other illegal dumper. The student tries to convince the dumper to take their antifreeze to the hazardous waste disposal center. The dumper absolutely refuses. The student goes to the pretend phone and calls the source control pollution hot-line number to report the abuser.

Station 4: Loose potting soil has been left on the ground near the fake plant and pot. The student must use the broom and dustpan and pick up the soil and re-pot the plant so the soil does not wash down the storm drain.

Station 5: Litter, composed of cigarettes and batteries have been left on the ground. The student must put the batteries in a separate container and then take it to the local hazardous waste disposal center. Before the game begins, explain that in real life one would save up batteries for a year before taking the load in.

## Discussion:

- What challenges did you face as you went through the obstacle course?
- What do you think would happen if the substances you were required to pick up were allowed to make it into water sources?



**What is point  
source pollution?**

Pollution from any single, identifiable source such as a chemical seeping into the soil.

via EPA

# Danger in Town

6th Grade — 12th Grade

## Background:

More than half of Earth's population depends on groundwater as their source for drinking water. Groundwater is easily susceptible to pollutants. Pollutants in groundwater can be in the physical, chemical or biological forms and can be very harmful to anybody who ingests them.

This activity is designed to teach students to identify potentially hazardous wastes to groundwater supplies.

## Procedure:

1. A week or two ahead of time, prepare plastic shoe boxes by filling them with a one inch layer of sand. Put one tablespoon of baking soda on top of the layer of sand. Carefully add another one inch layer of sand.
2. Before students arrive, place four straws, one cup with a small amount of vinegar, a pipette or dropper, a couple of paper towels, little tree clippings and Monopoly™ houses at each station. Spray the sand in the shoe box with a little bit of water to make it easier for the straws to probe the sand.
3. Have a shoe box at each station.
4. Divide students into groups of four.
5. Have students build their model community using the Monopoly™ houses and encourage them to give it a name.
6. Discuss the situation with the students:

## Objective:

To illustrate the dangers of groundwater contamination and explain steps in prevention.

## Duration:

25 minutes

## Materials:

- 8 clear plastic 8X5 shoe boxes
- 130 straws
- 8 plastic cups
- Pipettes
- 1 quart of vinegar
- Baking soda
- Paper towels
- Sand
- Tree clippings
- Monopoly™ game houses and hotels

## Sources:

- Making a Bigger Splash: A Collection of Water Education and Festival Activities, Page 9
- <http://www.groundwater.org/get-informed/groundwater/>

Many people in their community are suffering from some type of illness. The doctor believes that someone contaminated the drinking water.

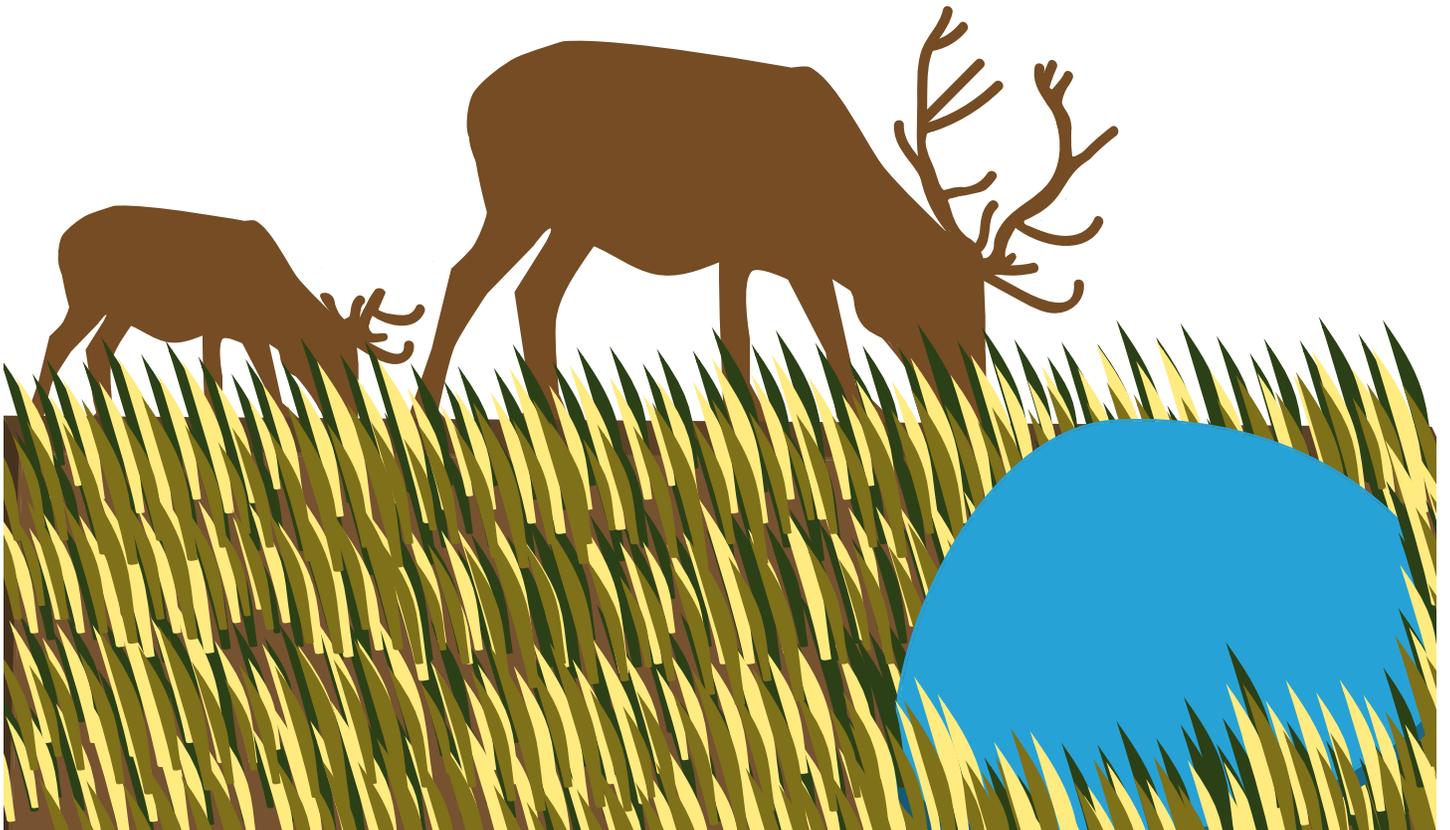
7. Discuss ideas to determine the source of contamination in their communities. (i.e. A grid map, people who have lived in the community for a long time, old newspaper articles.)
8. Allow the students to determine the source of contamination by having them probe the soil with the straw and then add a drop of vinegar to see if the soil fizzes. (Mixing baking soda and vinegar causes a chemical reaction that releases carbon dioxide).

## Discussion:

- What are some hazardous wastes that can be found in your household?
- How could those hazardous wastes enter the water supply?
- What are some ways to prevent hazardous wastes from reaching the water supply?
- What happens when hazardous substances do reach water?
- How do you find contamination sources?
- How is contamination cleaned up?
- Review point and non-point pollution with your students.



# Wildlife and Water



# Freddie the Fish

2nd Grade — 6th Grade

## Objective:

To demonstrate the effects of pollution on fish and other wildlife.

## Duration:

10 - 15 minutes

## Materials:

- Fish bowl or small aquarium
- Rocks
- Small stick
- Plastic fish
- String
- Small cups
- Dirt
- Raisins
- Green liquid
- Pancake syrup
- Sand or limestone
- Pieces of a styrofoam cup
- Paper
- Broken plastic spoon
- Script for Freddie

## Background:

Pollution in water can be physical, chemical or biological and can cause harm to wildlife living in and around the water source.

## Procedure:

1. Use a fish bowl or small aquarium with clean water, a few rocks on the bottom and a stick in the water to represent some vegetation. Using a rod or ruler and string, suspend the fish about mid way down in the water. This is Freddie.
2. Ask for volunteers. Some students will need to read out loud. For large groups, use 12 students, two for each stop along the way with one student playing Freddie and the other student pouring the pollution. Be sure to line the students up in order with their scripts and cups of pollution.
3. Tell the students that they are about to go on an imaginary journey with Freddie the Fish. (*Introduce Freddie*). Let them know that the volunteers will be talking for Freddie. Encourage the rest of the children to react as Freddie would react during the story.

## Freddie Story:

“Imagine that we’re at the beginning of \_\_\_\_\_. (*Name a body of water*). There are trees all along the banks. The water is cool and clean. This is where Freddie the Fish lives. Freddie has lived in this stretch of the river all his life.

But now he is going on a big adventure! He's going to travel downstream!

Part 1: Here he goes! (*Wiggle Freddie*)

As Freddie swims downstream, he comes to a place where people will be building new, big houses. Big bulldozers knocked down trees to make way for building. It begins to rain. There are no tree roots to hold the soil along the river bank and dirt slides down into the water. (*Dump soil into Freddie's aquarium*). Oh, no, Freddie! How is Freddie? ("Yuck!") It's getting sunny and hot. What happened? All the trees are cut down.

Part 2: Freddie swims on down the river. See if you can guess where he is now. Look! There are some big, brown animals with horns coming down to visit me! One of them said, "Moo!" Oh, look - he's leaving me some presents!! (*Pour raisins into aquarium*). Where is Freddie? (*Pasture, ranch or farm*) Are these good presents for Freddie?

Part 3: Freddie Swims farther on down the river. He comes to a new place.

I see a bunch of people hitting a little ball with a stick! Look at that green, green, GREEN grass! Hey, here's a little stream running off of that grass. Oh, no - it's sticky, green stuff! (*Pour in green liquid*). Oh, no, Freddie! Where is Freddie? (*Next to a golf course*). Some golf courses put lots of fertilizer on the grass to keep it green. Extra fertilizer runs off into the river, especially when it rains. This hurts our rivers and streams. How is Freddie?

**Source:**

- <https://tpwd.texas.gov/education/resources/resources/lesson-plans/coastal-ecology/freddie-the-fish>

Part 4: Freddie swims beside a house. Someone is changing the oil in his car. Wait - is he pouring the oil down the storm drain along the street? Oh, no! Oil is coming out of that pipe! The oil is heading right for me! My gills are getting covered in oil!!! (*Pour pancake syrup into Freddie's jar*). How is Freddie? That man doesn't know that storm drains go straight into the river! Anything we pour into the street goes straight into our streams and rivers!

Part 5: Poor, Freddie! Off he swims. Oh, my! All that sand and rock is blowing into the water. What do you think of the water Freddie is in now? How is Freddie? Wow, there are big trucks digging in the dirt over there. What's all that stuff blowing into the water? (*Pour sand or rock dust into the water*).

Part 6: Freddie swims past the city park. Some picnickers didn't throw their trash into the garbage can. The wind is blowing it into the river. Ahh, look. People are having a picnic. Oh, no! What's all this junk in the water?? I can - hardly - get - through - all - this - litter! Yuck! (*Sprinkle parts of a Styrofoam cup, paper, broken plastic spoon, etc. into the water*).

### **Discussion:**

- What do you think about the water Freddie is in now?
- How did it get so dirty? Does this happen in real life?
- How can we keep the water clean for Freddie and other fish that live in our rivers and streams?

# Miniature Habitats

4th Grade — 8th Grade

## Background:

Wildlife must find their own sources of water in order to survive. These sources can be a river, lake, stream or man-made storage mechanism. Besides water, wildlife need food and shelter to survive.

The purpose of this activity is teaching students to understand the function of a wildlife habitat by allowing them to build their own.

## Procedure:

1. Set up some of each material at each station.  
The number of stations will depend on the size of the class. Break the students up into groups and assign them to a station. Groups of three to four will work best.
2. Have the students sketch a drawing for their habitat.
3. After they are done sketching, have the students pour a one inch layer of sand into their boxes.
4. Let the students be creative with their designs. However, it is important that the students include the three key components of a habitat: water, food and shelter. The cotton balls can be dyed with food coloring or markers and used as shrubbery. Bark and tree clippings can be used for brush.
5. Encourage the students to give their habitat a name.

## Objective:

To explain the role of a habitat to wildlife

## Duration:

35 - 40 minutes

## Materials:

- Clear plastic shoe boxes
- Sand
- Gravel
- Water
- Bark or small tree clippings
- Cotton balls
- Small plastic animals
- Paper
- Pencils

## Source:

- [http://www.clemson.edu/extension/natural\\_resources/wildlife/publications/fs14\\_habitat\\_requirements.html](http://www.clemson.edu/extension/natural_resources/wildlife/publications/fs14_habitat_requirements.html)

## Discussion:

- What is a habitat?
- Why are habitats important to wildlife?
- What happens if a habitat is destroyed?
- How can you help prevent habitats from being destroyed?

Biomes are large regions that share similar characteristics such as climate, soil, precipitation and plant and animal species.



via About Education

The aquatic biome is the largest of all the Earth's biomes, making up about 75 percent of the Earth's surface area.

It provides numerous marine and freshwater habitats such as: seas, coral reefs, oceans, lakes, rivers, streams and wetlands.



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**Search “High Plains Water District” on YouTube for ‘How To’ Videos!**