



# The Water Cycle

Subtitle



# Facts About Water

**Water makes of  
80% of Earth's  
Surface.**

**All living things  
need water for  
survival**

**There are two  
categories of  
water**

**Surface Water:  
Water we can see.  
This is separated  
into 5 categories.**

**Ground Water:  
Water inside Earth  
that we can't see**

# Surface Water Categories

Oceans



**Oceans** are large bodies of saltwater that make up 97% of the planet.

There many living organisms or “marine life” that are very important part of the food web which all living things depend on.

Lakes



**Lakes** are large bodies of fresh water they can be either natural or man-made

# Categories Continued

Rivers & Streams



**River and streams**, are a type of freshwater body that begin as springs in mountains. They are important for drinking water, electricity, and home to fish and wildlife.

Estuary



**Estuaries** form where the river and the ocean meet. Most of the estuaries are used for fishing businesses and having fun.

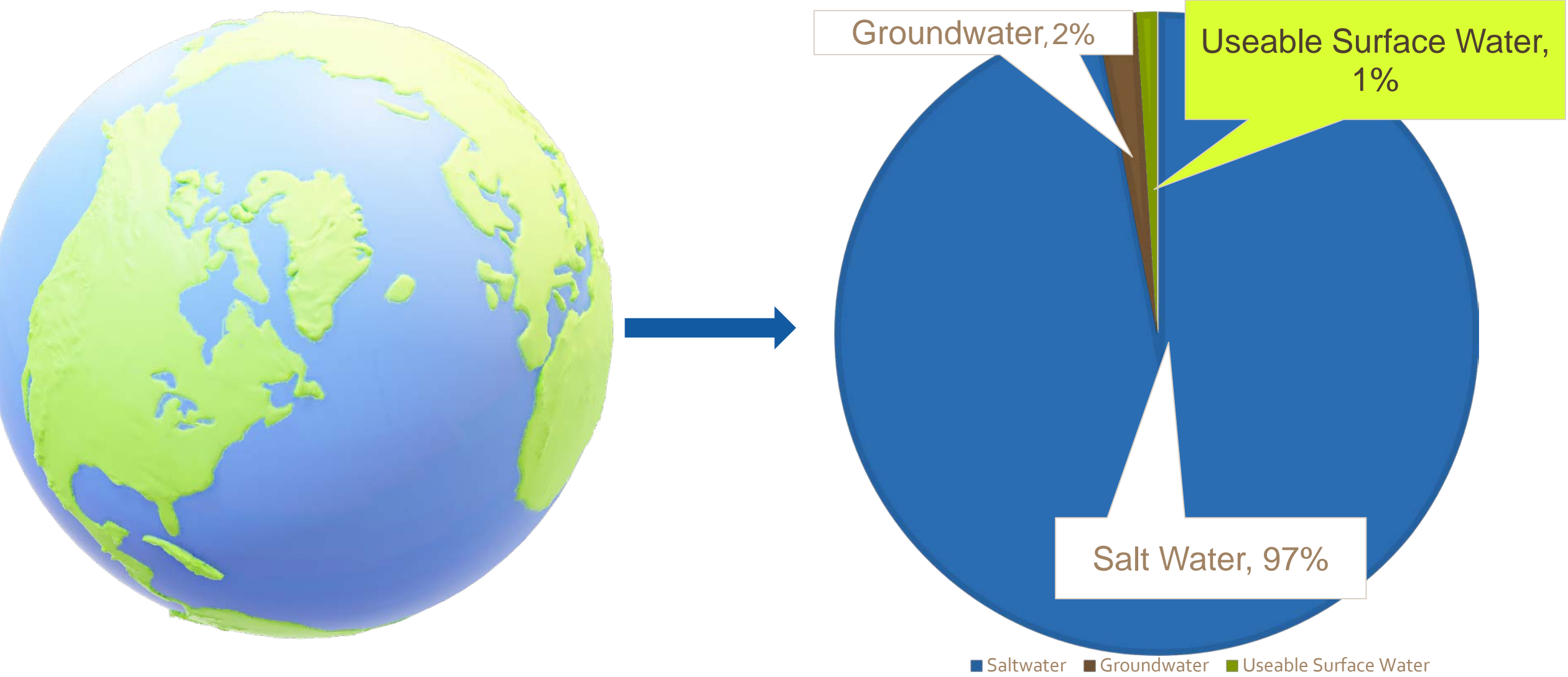
Wetland



**Wetlands** are areas between land and water. They are known as swamps, marshes, bogs, and sloughs. They have many beneficial uses like being the breeding ground for many fish and waterfowl, they help to keep our water clean, recharge our groundwater, and protect us from storms and floods.



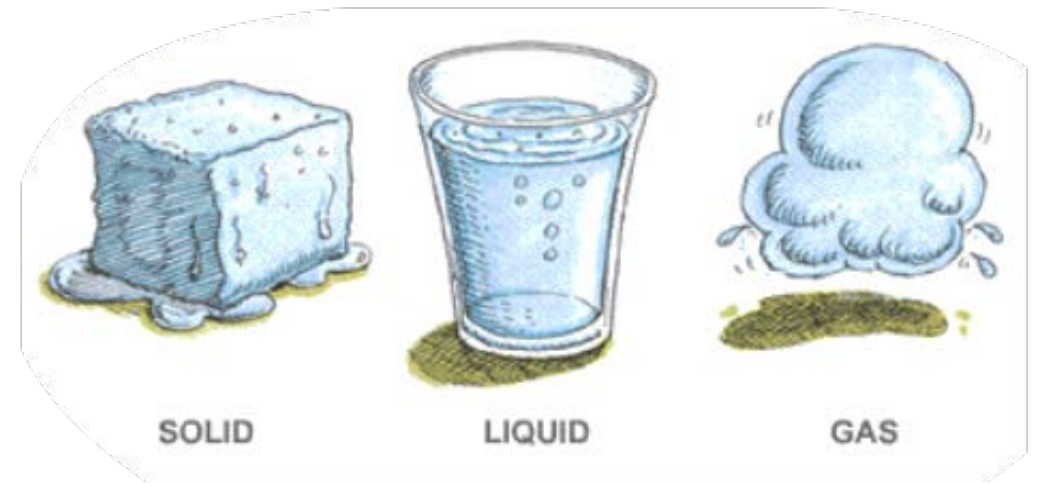
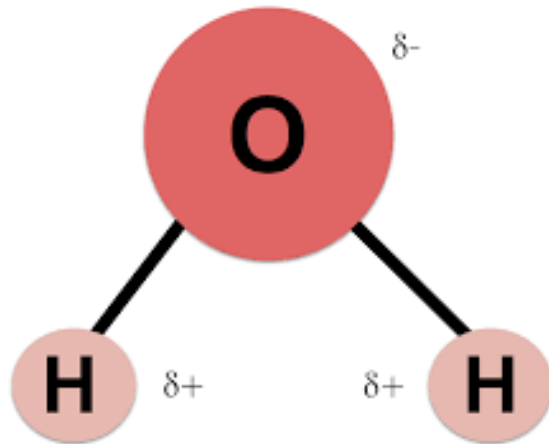
# Amount of Water on Earth



Click on arrow for answer

## More Facts About Water

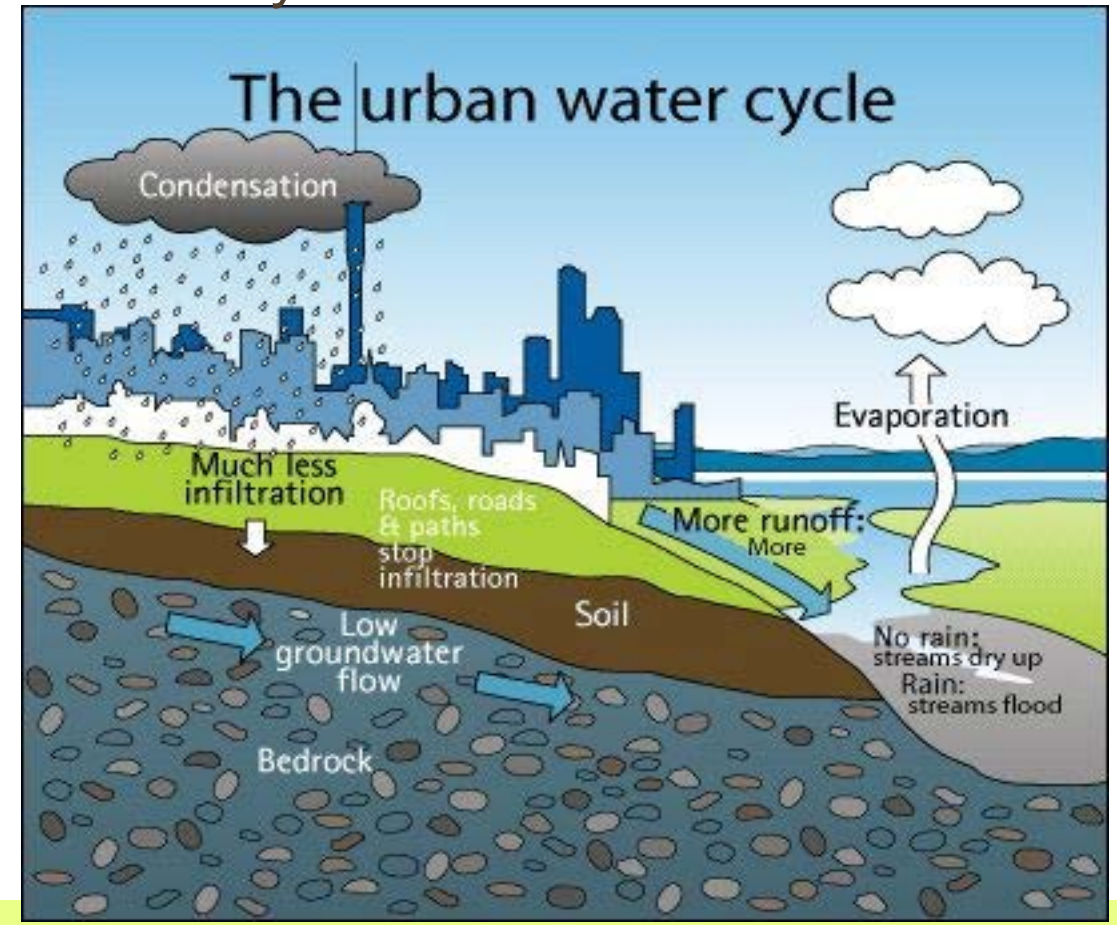
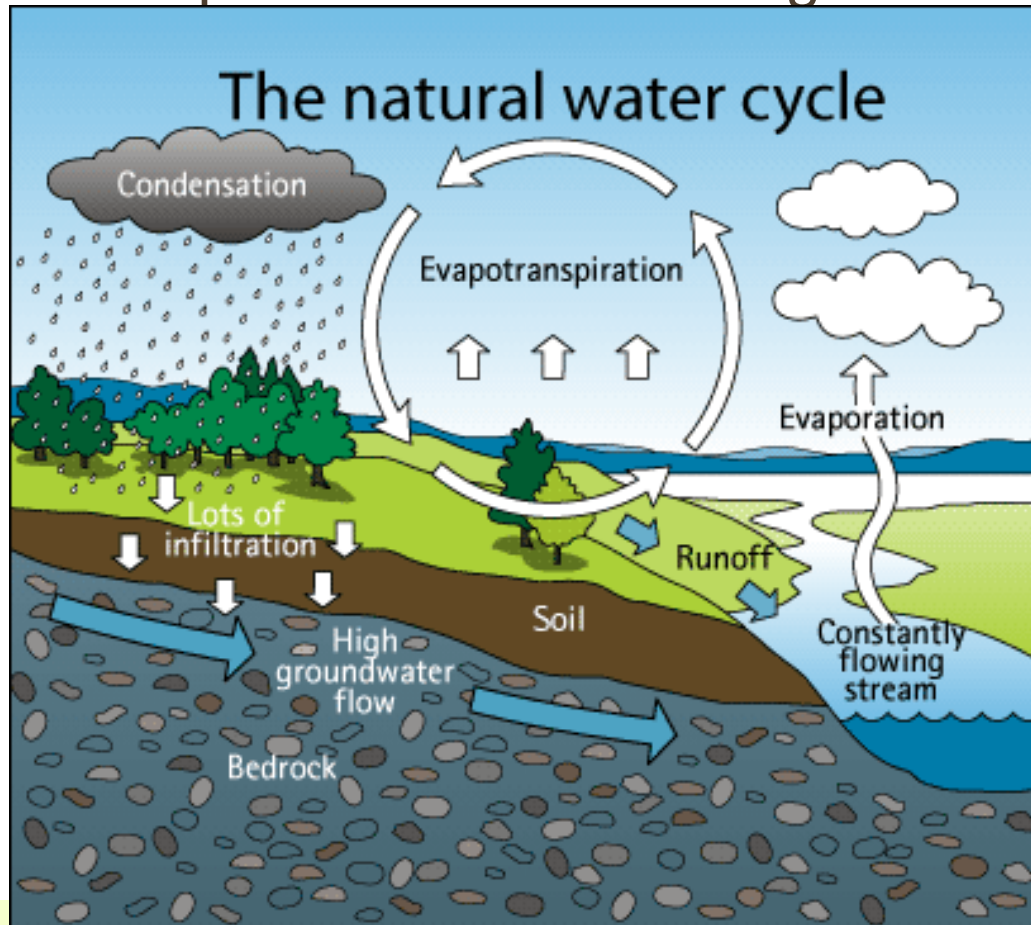
- Water is comprised of 2 Hydrogen atoms (H+H) and 1 oxygen (O)
- It comes in 3 different forms solid, liquid, and gas.



- The water cycle began billions of years ago. This can mean, you may be drinking the same water a dinosaur did!

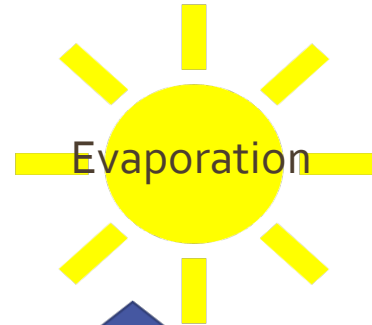
# The Water Cycles

- There are two types of water cycles, the natural water cycle and the urban water cycle.
- These cycles work together to maintain water quality, and the ability to provide clean drinking water for our community.



# The Natural Water Cycle

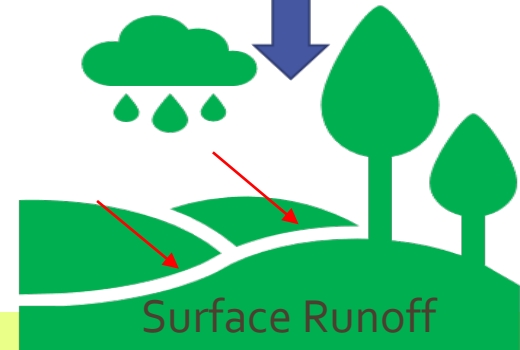
**Evaporation** is when the sun heats surface, water turning it into vapor the rises into the sky.



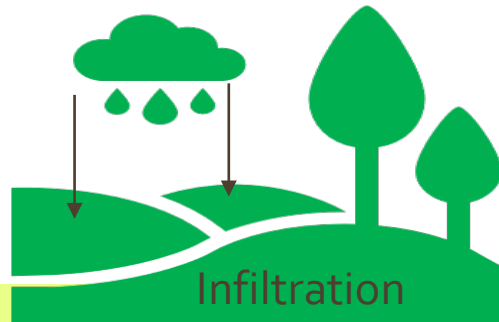
**Condensation** is when gas (water vapor) gathers in clouds, and changes to a liquid.



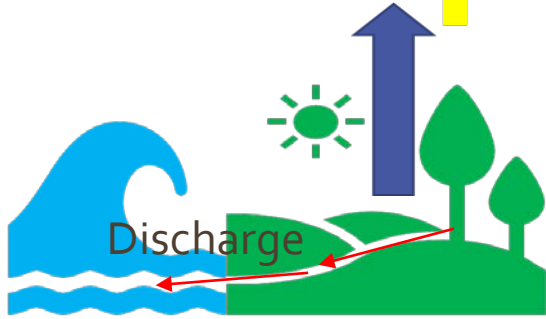
**Precipitation** is when water falls to the earth due to gravity.



**Surface runoff** is when some water run across the land into surface waterbodies, such as lakes, streams, and oceans.



**Infiltration** is when some water soaks into the ground and is stored.



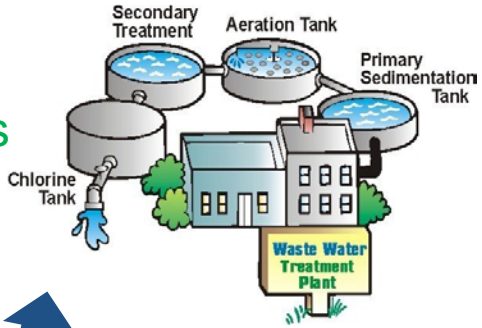
The ground water will become surface water, and **discharge** into a body of water.



# The Urban Water Cycle

When the water is done being used, it travels through sewer systems to undergo **wastewater treatment** at the Water Resources Recovery facility. Then the process starts again!

## Wastewater Treatment



Source

Surface water (Rivers, lakes, reservoirs) is the main **source** of water used for public water supply.

Water is supplied to customers for a many **uses** like business or at home.



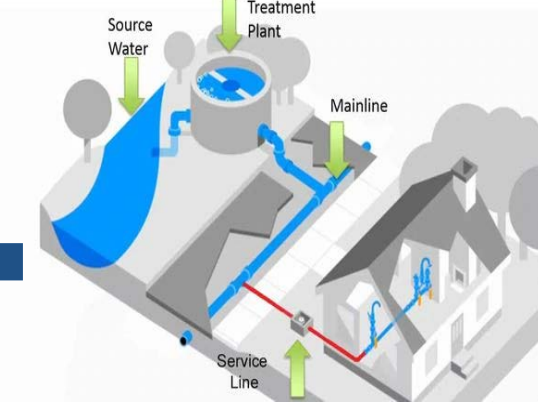
Use

Through a connection of pipes and valves water is **distributed** to its customers

## Water Distribution



## Water Treatment



**Water treatment** is done to make sure that water is clean and healthy for humans to use!

# Why is Clean Water Important?

- Water is an important resource because, all living things need it for survival.
- Our bodies are made up of 60% of water, and we need more than 2 quarts of water a day to digest food, transport waste, keep cells alive, make blood, and control our body temperature.



- **Water Resource Recovery Facilities** help to get rid of many harmful organisms that can be found in wastewater like bacteria and viruses that can make us sick.
- Water treatment helps keep our water clean so we can enjoy it, and so that living things that live in the water can have a healthy environment to live.





# Point Source Pollution

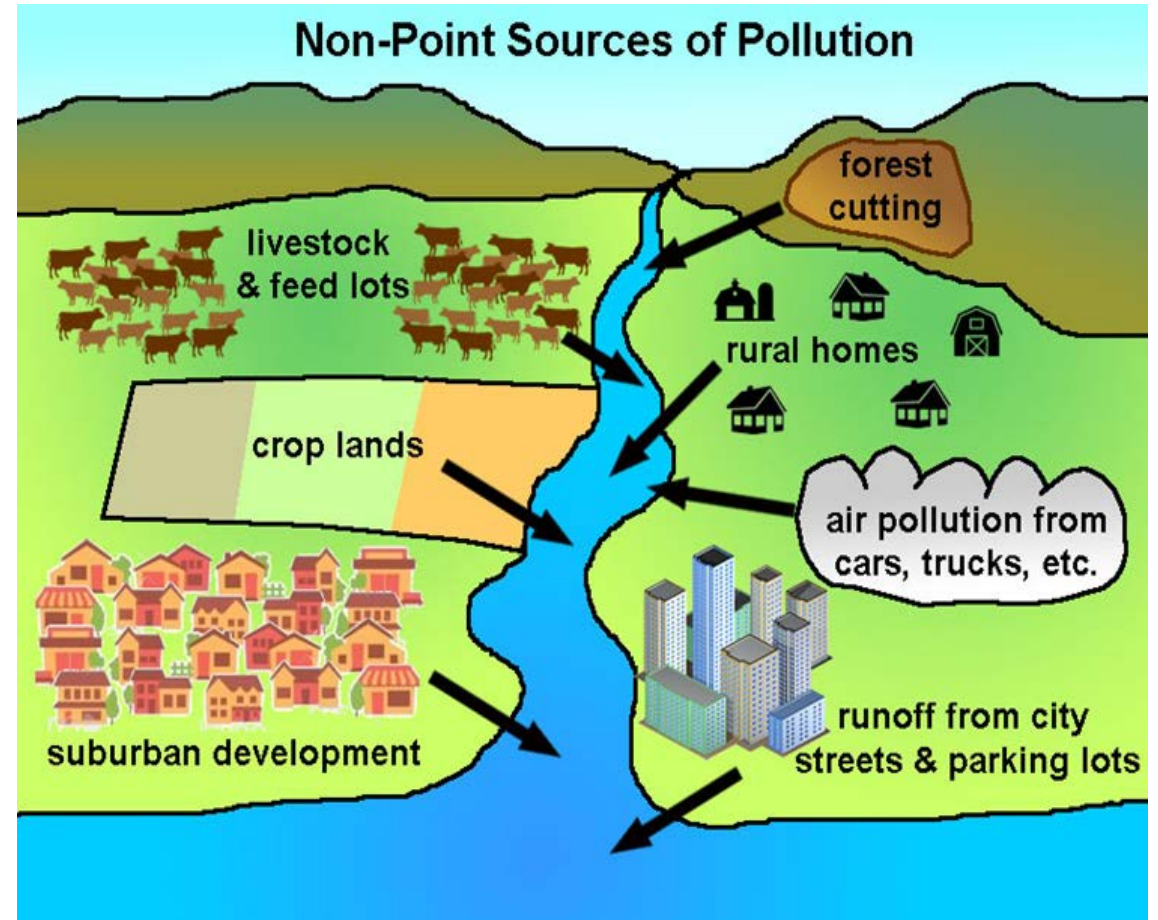
- **Point source pollution** is pollution that comes from one single point, or site and directly into a water body.
- For example, water from a pipe flowing into a river.





# Non-point Source Pollution

- **Nonpoint source pollution** is pollution that does not enter water at any particular spot.
- This is the most common form of water pollution that is created by people and makes up half of the contamination of our surface water.



# Point Source or Non-point Source Pollution? Why?



This is an example of **point source pollution** because, it comes from one single point, and goes directly into a water body. Some possible pollutants are human waste, pet waste, and chemicals.

## Point Source or Non-point Source Pollution? Why?



This is an example of **non-point source pollution** because, does not enter water at any particular spot, and it being caused by humans. Some pollutants are fertilizers, herbicides, pesticides, and other chemicals that enter our waterways through runoff.

# Point Source or Non-point Source Pollution? Why?

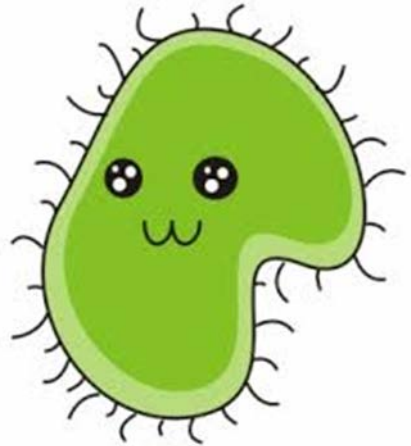


This is an example of **non-point source pollution** because it does not enter water at any particular spot, and it being caused by humans. Some pollutants are the improperly disposed of trash.

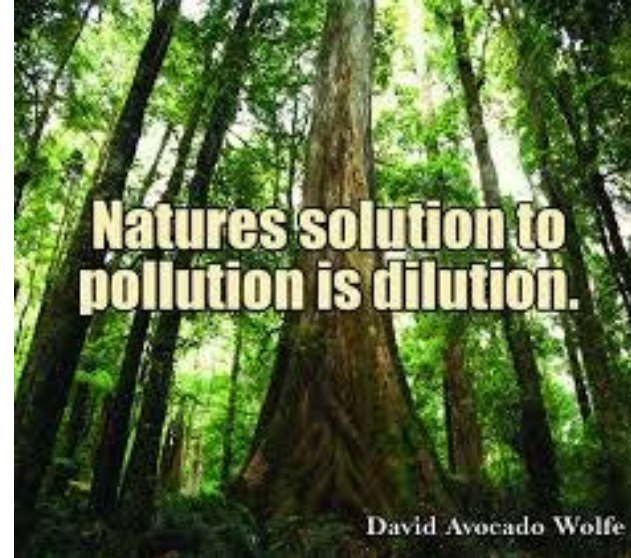


# How Does Nature Combat Water Pollution?

- Pollution can be natural or manmade, so humans and nature control pollution in many ways.



One-way nature controls pollution is through **biological break down**. Bacteria that lives in the water break down pollutants into materials, that can be easily used by aquatic animals and plants.



Another way nature handles pollution is by **dilution**. Dilution means to make something weaker.

For example, if acid enters a stream, that acid is made weaker (diluted) and spread throughout the stream by natural movement.



Finally, another way nature handles pollution is through **deposition**. Deposition is a process that occurs naturally when water in a stream or river flows over rocks. Large pollutants like dirt, silt, clay is caught by the rocks and then deposited to the bottom of the river. This is caused by gravity, and the reduction of the water's velocity due to the rocks.

# How Do We Combat Water Pollution?



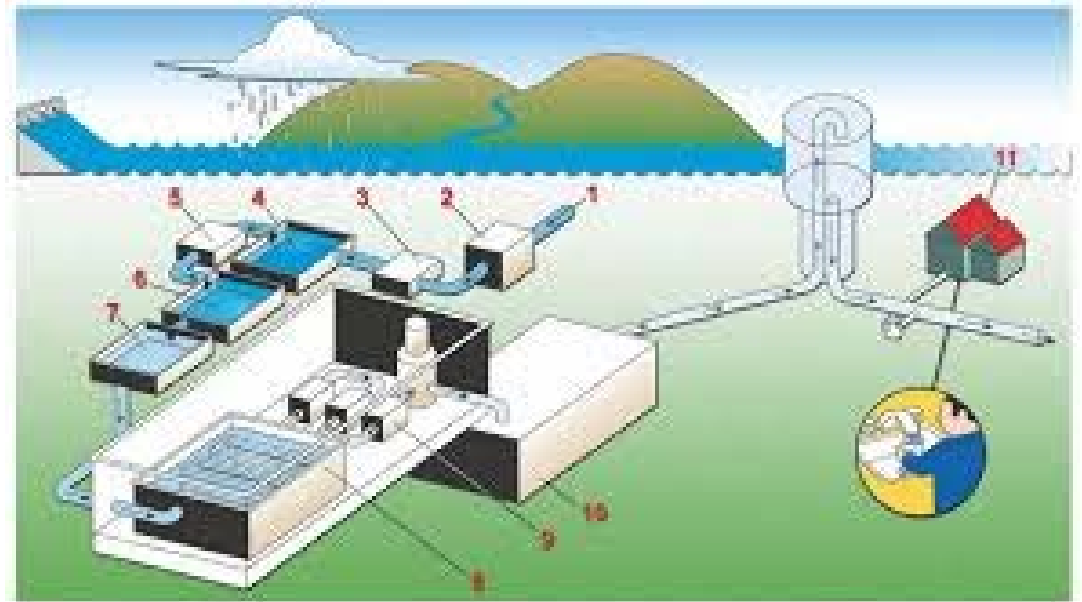
Since the pollution we create cause more harm to the environment, water treatment facilities are used to help clean and treat water that will be reused.



Treatment plants mimic the way nature responds to pollution, and is completed through different physical, biological and chemical processes.



Next, we will learn the process water goes through at a Water Resource Recovery Facility after, and why water treatment at water resources recovery facilities is important.



# Activity Time

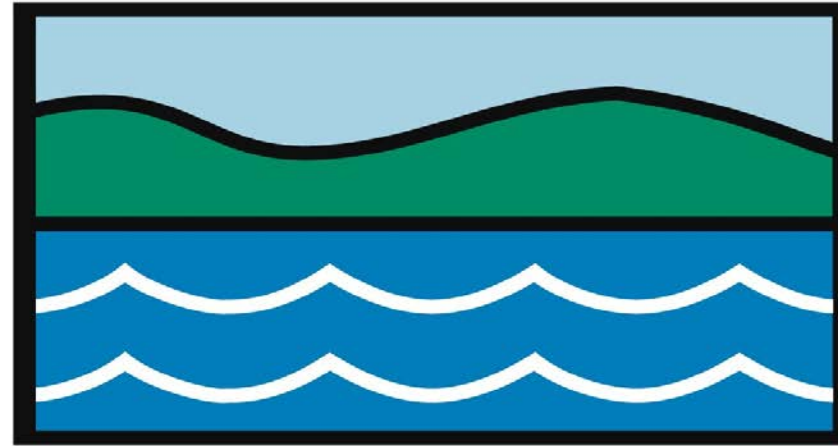
## The Returning Raindrop Design

- In groups of 2-3 ,work together to build a Terrarium that will showcase how the water cycle works.
- **What you will need:**
  - 1 precut 2-liter bottle
  - Tape
  - Small plants/moss
  - Potting Soil
  - Gravel

## What's Wrong With This Picture Worksheet

- There are **at least** 17 sources of water in diagram, circle them and label each one.

Thank you, we hope you now know more about water as a natural resource.



**NYWEA**

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Address: 525 Plum St , Syracuse, NY 13204

Phone Number: (315) 422-7811

Website: <http://www.nywea.org/SitePages/Front.aspx>