

Water Web Quests

Mr. Oliphant – AP Environmental Science



Directions: Go to each of the following sites and watch/read the entire section... then answer the questions.

1. NOAA: Water Cycle <http://bit.ly/blyAtX>

- a. What two phenomenon help to power/aid the water cycle?
- b. What is a reservoir?
- c. Break down the water on Earth into where it is located.
- d. How long could a water molecule possibly stick around in the ocean for?
- e. Why is evaporation of ocean water essential? (what does it do?)
- f. How to living things such as plants return water into the atmosphere?
- g. Where does most ground water go?
- h. Why isn't the water cycle a "closed system?"

2. Water Resources <http://bit.ly/9GnqLr>

- a. Draw a simple illustration of an aquifer. Label the layers of rock necessary.
- b. What do we call the area that feeds a river with its runoff?

3. **Aquifer Depletion** <http://bit.ly/9FfxQZ>

- a. How does an aquifer become depleted?

- b. What is a possible consequence of severe/total depletion of an aquifer?

4. **Groundwater Use and Overuse** <http://bit.ly/av4V4z>
(Watch and read – don't need to record anything)

5. **Lake Eutrophication**..... <http://bit.ly/9rhUUe>

- a. List two types of plant nutrients that often concentrate themselves in lakes.

- b. What is Eutrophication?

- c. How does eutrophication lead to the death of fish and aquatic plants?

6. **Wastewater Treatment**..... <http://bit.ly/bKkAUQ>

- a. What is the goal of a wastewater treatment plant?



7. **How Does Water Move Through The Ground?** <http://bit.ly/aLRZsv>

- a. What characteristic(s) of a rock layer would allow it to hold water?

- b. How long does it take for each of the following types of rock to allow one liter to pass into the well?

Type of Rock	Time Needed for 1 Liter (round to nearest whole year/hour)	Flow Rate (how many liters per year?)
Shale	4350 years	$\frac{1L}{4350 \text{ yrs}} = \underline{\hspace{2cm}} \text{ L/yr}$
Limestone	43 years	$\frac{1L}{43 \text{ yrs}} = \underline{\hspace{2cm}} \text{ L/yr}$
Sandstone	3 h 46 min	$\frac{1L}{0.004 \text{ yrs}} = \underline{\hspace{2cm}} \text{ L/yr}$

- c. What differences do you see in the material of each rock layer? Draw and describe the shapes and sizes of the particles, and also describe the general shapes and sizes of the pores/spaces in each type of rock.

Shale	Limestone	Sandstone

- d. Why did the sandstone have the highest flow rate of water?

- e. Why was the flow rate of water through shale the slowest (by far)?

8. **Wonderville Drinking Water Treatment (very cheesy)**..... <http://bit.ly/93cyPz>
(Watch and read – don't need to record anything)

9. **Sewage Treatment Virtual Tour** <http://bit.ly/9Xq1sI>
(Watch and read – don't need to record anything)