

Your Drinking Water From the Source to Your Tap Video High School Worksheet

Instructions: Watch the video to help you answer the below questions. Questions will cover concepts from the video as well as from class.

Question 1: Approximately how many people does Raleigh Water provide water to?

- 1,000 people
- 600,000 people
- 3 million people

Question 2: How is it possible for streams to have water in them even if it has not rained recently?

Answer: The groundwater table is high enough to keep water in the streams.

Question 3: Raleigh Water receives its water from the Neuse River basin. Within this river basin, which watersheds does Raleigh Water use for its source water supply?

Answer: Falls Lake watershed and the Swift Creek watershed (Swift Creek watershed is interchangeable with the Lake Benson watershed here)

Question 4: The source of Raleigh Water is considered which of the below:

- Surface water
- Groundwater

Question 5: If rainwater infiltrates the ground and becomes groundwater, what are two ways that this water could become drinking water?

Answer:

1: Through the use of a well.

2: The groundwater could become surface water again. Groundwater baseflow is when groundwater flows into a stream, river, or lake. From here this water could become the source for a water provider/utility.

Question 6: The City of Raleigh has a Watershed Protection Program to contribute funds to conservation easements and conservation projects that protect our drinking water source. These projects conserve land to make sure the land around the streams and creeks stay in a natural condition. These projects occur within our water supply watersheds. How does conserving land improve water quality?

Possible Answers:

- Improves/creates riparian buffers
- Reduces the amount of pollution from runoff entering streams.
- Reduces erosion of streams, as a result of vegetation slowing down runoff
- Creates habitat for aquatic life
- Trees create shade in streams, and help keep temperatures down in the water, thus improving water conditions and conditions for aquatic life

Question 7: Which of the following is **not** an impact from erosion:

- Increased suspended solids in water bodies
- Increased amounts of pollution in the water attached to the sediment
- Increased cost of water treatment at water treatment plants to lower turbidity of the water
- Aquatic life harmed from excessive amounts of sediment on the bottom of streams, rivers, and lakes
- Increased amounts of aquatic life

Question 8: What organization created, owns, and operates Falls Lake?

Answer: The Army Corps of Engineers

Question 9: Which of the following is **not** a reason the reservoir Falls Lake was created?

- | | |
|---|---|
| <input type="checkbox"/> Wildlife habitat | <input checked="" type="checkbox"/> Hydroelectric power plant |
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Water Quality |
| <input type="checkbox"/> Flood control | <input type="checkbox"/> Water Supply |

Question 10: Choose one of above uses of Falls Lake and explain why it is important.

Answer: Open-ended

Question 11: Falls Lake receives approximately 48 inches of precipitation per year. How do you think this quantity of water differs from communities in southwestern United States?

Possible answer: There is a much larger amount of water that is available in Raleigh than in many communities in the southwest. For example, Tucson Arizona receives about 12 inches of precipitation per year.

Question 12: How many gallons of water a day does Raleigh Water provide to the City of Raleigh and surrounding areas?

- 10,000 gallons
- 52 million gallons
- 100 million gallons
- 500 million gallons

Question 13: What are the steps of water treatment that Raleigh Water uses?

- Step 1: Coagulation
- Step 2: Flocculation
- Step 3: Sedimentation
- Step 4: Ozonation
- Step 5: Filtration
- Step 6: Disinfection

Question 14: Why is water treatment necessary?

Possible Answer: To remove suspended solids, viruses, bacteria, algae, minerals, pollutants, and other harmful substances that could be in the water. This ensures that the water is safe to drink.

Question 15: Once the water leaves the water treatment plant, does the water go to elevated storage tanks first, or to residential homes?

Answer: To elevated storage tanks (can also call these water towers).

Question 16: What is something new you learned that you found interesting?

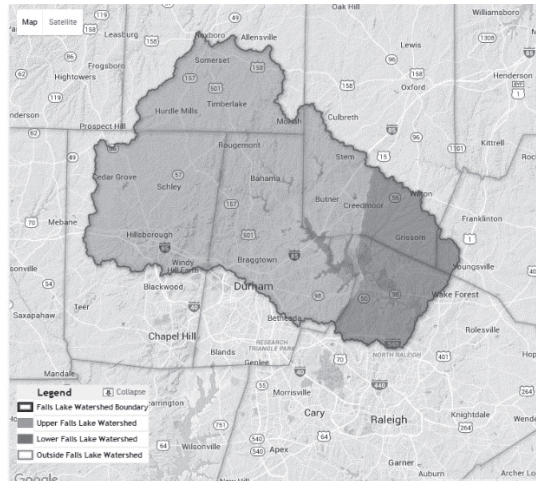
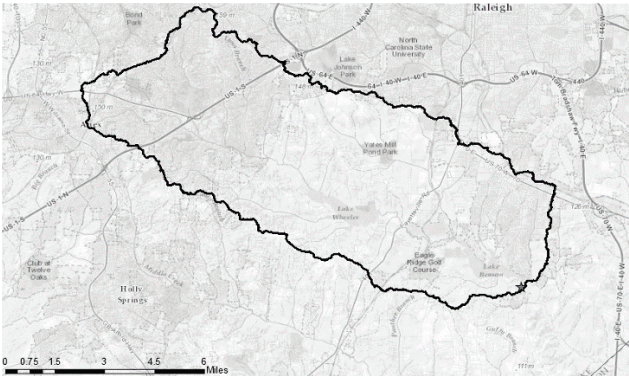
Answer: Open-ended

Bonus Question: How does stormwater runoff impact the shape of streams and rivers?

Answer: Stormwater runoff has a fast velocity which causes excessive erosion of streams and rivers. This alters the shape of streams and rivers. This can cause stream banks to be undercut, which causes the banks to become unstable.

Additional Information

Maps:

<p>Falls Lake Watershed Map: Water within the shaded areas drains to Falls Lake.</p>  <p>Legend</p> <ul style="list-style-type: none">Falls Lake Watershed BoundaryUpper Falls Lake WatershedLower Falls Lake WatershedOutside Falls Lake Watershed <p>Map of Falls Lake Watershed. Digital image. North Carolina Department of Environmental Quality, n.d. Web. <http://portal.ncdenr.org/web/fallslake/map>.</p>	<p>Swift Creek Watershed Map: The Swift Creek Watershed can also be referred to as the Lake Benson Watershed. The area within the bold line drains to Lake Benson.</p>  <p>0 0.75 1.5 3 4.5 6 Miles</p>
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Glossary:

- **Conservation Easement:** Land that is permanently protected from being developed. A land trust or government will hold the conservation easement.
- **Finished water:** Finished water, also known as treated water, is water that has been cleaned at the water treatment plant. This water is ready for customers to drink!
- **Water Distribution System:** Just as the name sounds, a water distribution system is how treated water is distributed to customers. Distribution systems include pipes, storage tanks, fire hydrants, water valves. Through Raleigh Water's distribution system, water is provided to Garner, Raleigh, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon.
- **Watershed:** An area where all the rain or water drains to the same place. The water could drain to a stream, river, lake, or ocean. The watershed is typically named after the water body where the water drains. It is similar to a bowl that collects water. The term watershed is synonymous with the term basin.