

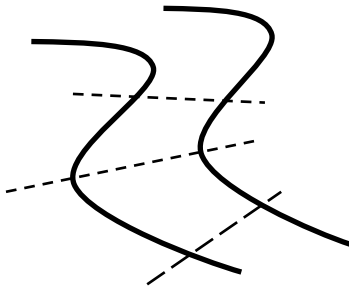
## Lab: River & Stream Systems MAKEUP ASSIGNMENT

**Remember: As per GHHS Policy, you have two days for each day absent to makeup assignments.**  
ap environmental science

**Background:** Precipitation that does not sink into the ground or evaporate is **surface water**. It becomes **runoff** when it flows into streams. The land area that delivers runoff, sediment, and dissolved substances to a stream is called a **watershed** (also called a **river basin** or **drainage basin**). Small streams join to form rivers, and rivers flow downhill to the ocean as part of the **hydrologic cycle**. The downward flow of surface water from mountain highlands to the sea takes place in three different aquatic life zones with different environmental conditions: the **source zone**, **transition zone**, and **floodplain zone**. Within any river or stream, the energy of floodwaters must be dissipated. Depending on the surrounding terrain, this may occur through **downcutting** (downward erosion of the channel) or **meandering** (erosion of the stream banks, leading to looping curves). Downcutting frequently occurs in disturbed areas (ex. Crabtree Creek) and may lead to increased flooding. Meandering is a more natural process, but needs a wide, flat valley called a **flood plain** to dissipate floodwaters. Periodically, meanders loop heavily enough for waters to break through the stream banks, isolating a portion of the stream and creating an **oxbow lake**.

### What We Did in Class:

We went to the wetland and had some fun! Students measured the depth and distance across a stream at several locations to discover trends. Use the data below to answer the questions provided.



location	distance across meander (m)	depth at inside of meander (cm)	depth at middle of meander (cm)	depth at outside of meander (cm)
left of turn	3.6	4	9	12
apex of turn	4.3	6	10	15
right of turn	4.0	6	8	9

### Analysis Questions:

1. What trends, if any, do you see in the distances across the stream?
2. What trends, if any, do you see in the depths as you move from inside to outside of the meander?
3. At the south end of the stream, where water from the wetland enters, there used to be a beaver dam. How would this dam affect the stream and floodplain?
4. How is this small stream similar to larger rivers and estuaries like the Neuse River or Chesapeake Bay? How is it different?
5. How do you think the process of meandering is different in each of the three river zones?
6. What are some abiotic factors that would change as a result of changing conditions in each zone?
7. How do you think the differences in each river zone affect the organisms that live there?

Watch the video <https://www.youtube.com/watch?v=8a3r-cG8Wic> and answer the following

8. Explain the difference in soil between mountain streams and streams in the plains.
9. What two factors are needed for a straight stretch of river to become bendy?
10. What organism in the video causes changes in river flow?
11. Where does erosion occur within the stream? Where does deposition occur?
12. What is the mathematical relationship between the length of one meander and the width of the channel?
13. How does an oxbow lake form?
14. What other planet (shown in the video) has confirmed meanders?
15. What have you learned from this makeup lab?