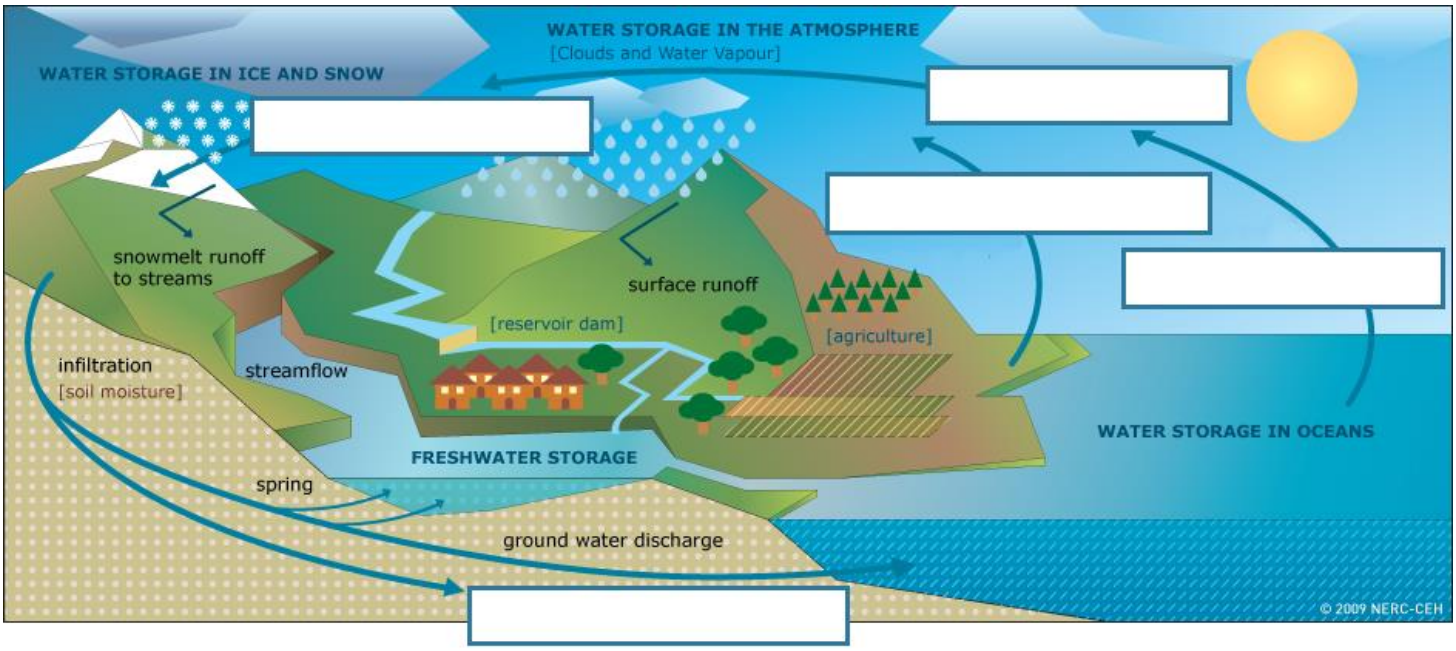
Chapter 13 Notes: Water and Erosion

Name:_____ Period: _____

13.1 The Water Cycle

Based on the definitions provided below, complete the water cycle diagram using the bolded words:

ground water – runoff and precipitation that soaks deeps into the soil and rock underground
evaporation – liquid water changing into water vapor
condensation – the expansion and cooling of water vapor into tiny liquid water droplets, which together are known as clouds
evapotranspiration – the combination of plants giving off water vapor (transpiration) and liquid water changing into water vapor (evaporation)
precipitation – water fall from clouds to earth via rain, snow, sleet, and hail



Globally, this cycle is balanced, but often locally it is not. Differences in temperature, vegetation, wind and rainfall affect this balance.

- What happens when there is too much precipitation?

  _____

- What happens when there is too much evapotranspiration?

  _____

- How do wind and temperature affect evapotranspiration?

  _____

- According to recent estimates, each person in the US uses about _____-_____ gallons of water each day. Here are some other usage estimates:
    - Bath – About _____ gallons
    - Shower – _____ gallons per minute (water saving shower heads = 2 gallons per minute)
    - Washing machine – New machines = _____ gallons per load, Old machines = _____ gallons per load
    - One toilet flush – _____ to _____ gallons
    - Outdoor watering – _____ gallons per minute

- While humans use water for a variety of things, the greatest amount of water is used to _____ _____.

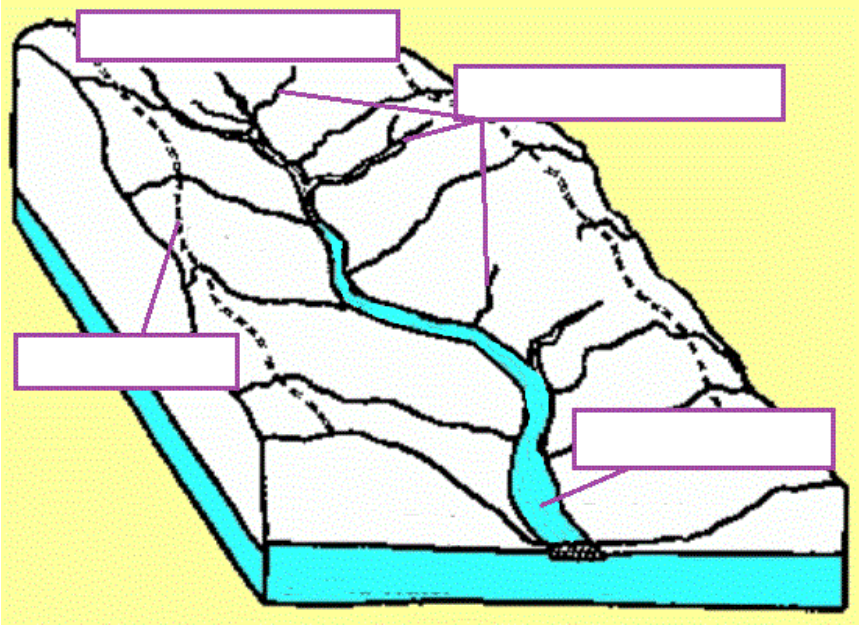
- Where does used city water go?
  _____
  _____

- Two methods to ensure clean, useable water for our future:
    1. Conservation
    2. Finding new sources of fresh water
        - <u>Example:</u> _____ – process of removing salt from ocean water

13.2 River Systems

A river system is made up of a main stream and all the feeder streams, called **tributaries**, which flow into it. The landform which water runs off into these streams is called the drainage basin, or **watershed**, of the river system. The ridges or elevated regions of high ground that separate watersheds are called **divides**. The steep area in which the stream begins is called the **headwaters** and the path that it follows is called its **channel**.

Using the information above, complete the watershed diagram below with the bolded words.



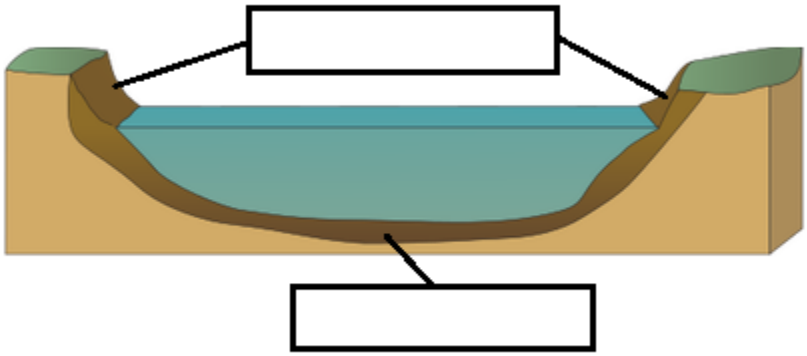
- What causes a stream to form?

  _____

  _____

The edges of a stream channel that are above water level are its **banks**. The part of the stream channel that is below the water level is its **bed**. A stream gradually becomes wider and deeper as it erodes its banks and bed.

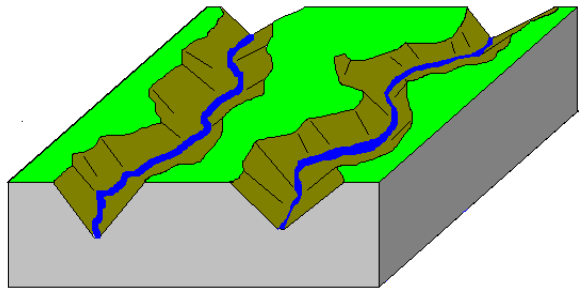
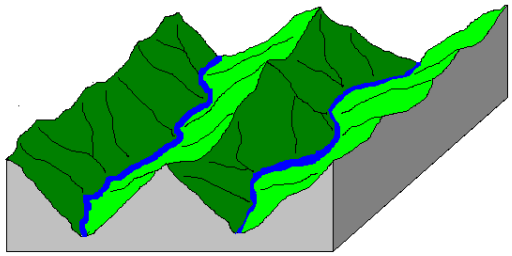
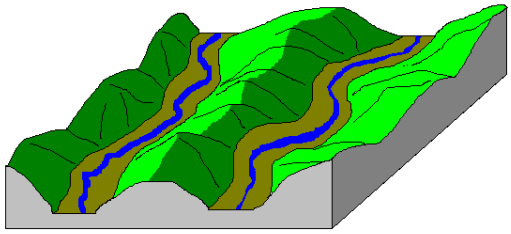
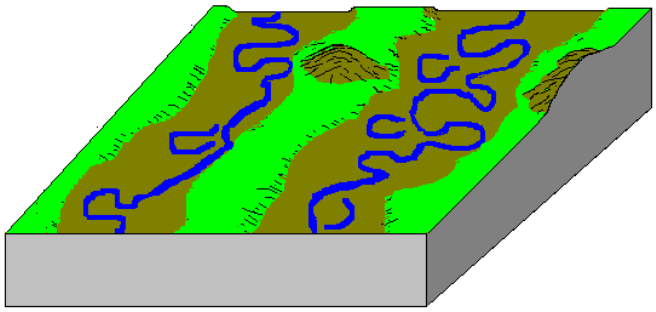
Using the information above, complete the river cross section diagram below using the bolded words.



- The process of lengthening and branching of a stream is called **headward** erosion. Various factors affect the rate at which a stream erodes its channel:

  1. **Stream Loads** – the _____ carried by a stream
     - suspended load – find sand and silt
     - bed load – large, coarse sand, gravel and pebbles
     - dissolved load – dissolved minerals
  2. **Discharge** – the _____ of water moved by a stream
  3. **Gradient** – the _____ of its slope, which directly affects the speed of the water
     - Near the headwaters, or beginning of a stream, the gradient is steep.
  4. **Water gaps –** deep notch left where a stream erodes through a mountain as it's uplifted
  5. **Wind gaps** – water-eroded notch in a mountain through which water no longer flows

Stages of a River System:

	**YOUNG RIVER**
 	**MATURE RIVER**
	**OLD RIVER**

13.3 Stream Deposition

- The slower the stream, the more deposition that occurs.

- Most of the load carried by a stream is deposited when the stream reaches a large body of water. This results in either a
    - **Delta** – fan-shaped deposit at the mouth of a stream

    - **Alluvial fan** – fan-shaped deposit at the base of a slope on land.

How do deltas and alluvial fans differ from one another?

1.

2.

3.

floodplain – part of the valley floor that may be covered with water during a flood

Why does flooding occur?

1._____

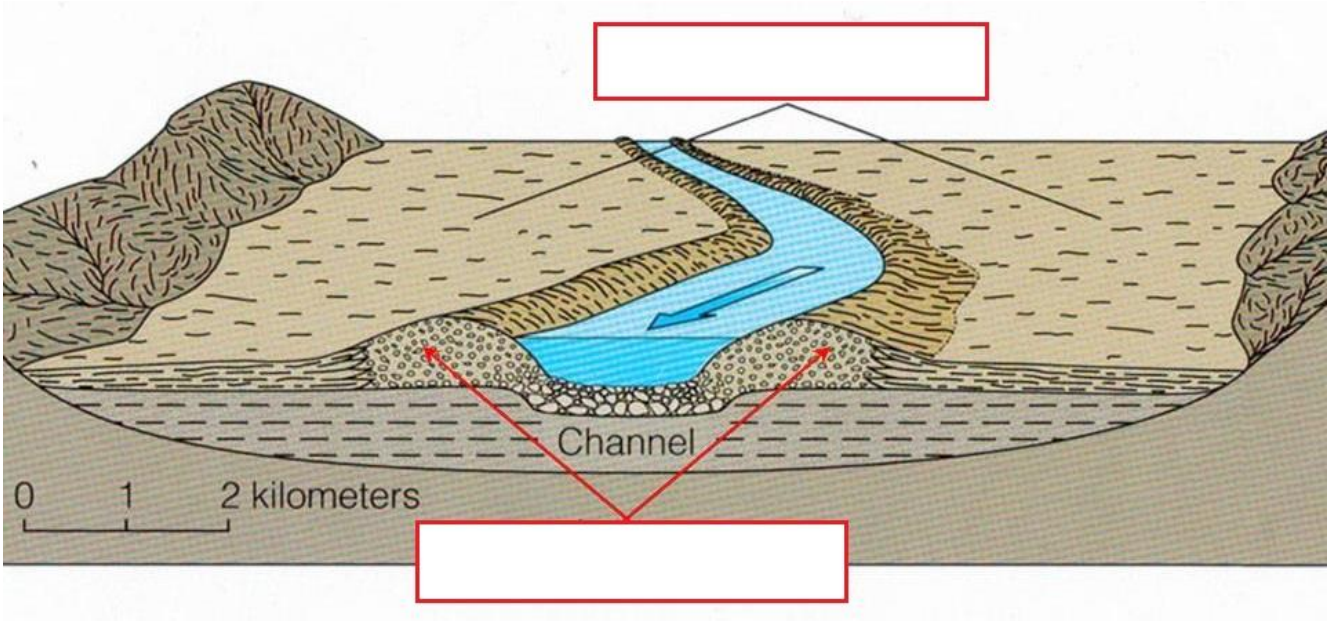
2._____

3._____

4._____

natural levee – raised riverbank that results when a river deposits its load at the river's edge

Using the last two bolded words, complete the diagram below.



Why do people choose to live on floodplains?

_____

_____

Flood Control:

1. Forest and Soil Conservation (to minimize excess runoff)
2. Building a _____ – the artificial lakes that form behind dams act as reservoirs for excess runoff
    - Benefits of these reservoirs include:
        - Fresh water for populated areas
        - Irrigation during dry seasons
        - Recreation
3. Artificial _____ – provide temporary protection
4. Permanent overflow channel or _____, which directs water away from a river