Physical Geology
South Sevier High School
Lecture Notes – Chapter 10

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Name _____
Date _____
Per _____

1. _____ _____ is the most important geologic agent in eroding, transporting and depositing sediment. Nearly every landscape on Earth shows the results of stream erosion or deposition.

2. Define the following components of the Hydrologic Cycle.

   a. Evaporation _____

   b. Precipitation _____

   c. Transpiration _____

   d. Runoff _____

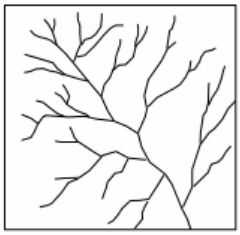
   e. Condensation _____

   f. Infiltration _____

3. Pretend you are a water molecule, and describe or draw your travels through the Hydrologic Cycle. Include in your answer the following water pathways: sun, ocean, clouds, lakes and/or rivers, groundwater, plants, animals, rain and/or snow, evaporation, precipitation, transpiration, runoff, condensation, and infiltration (30 pts).

4. A _____ is a body of running water, confined to a channel, that runs downhill under the influence of gravity.

5. Define the following components of a stream.
    a. Headwaters _____
    b. Mouth _____
    c. Channel _____
    d. Stream banks _____
    e. Streambed _____
    f. Floodplain _____
6. A _____ _____ is the total area drained by a stream and its tributaries.
7. A _____ is a small stream flowing into a larger one.
8. The _____ Divide separates the streams that flow into the Pacific from those that flow into the Atlantic and Gulf of Mexico.
9. Name the following stream drainage patterns and give an example of where you would expect to find each type (8pts).



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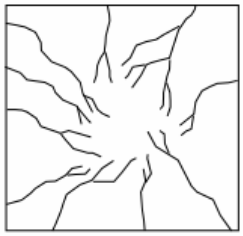

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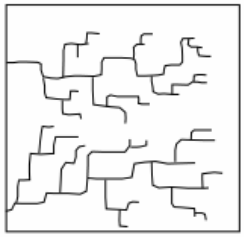

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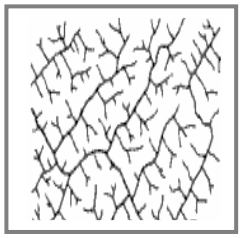

Type: Example:

10. Stream erosion (and deposition) is controlled by flow _____ and _____.
11. Stream velocity is controlled by stream _____ (slope), channel _____, and channel _____.

12. (Higher/Lower) stream velocities promote erosion and transport of courser sediments.

13. Stream _____ is the downhill slope of the streambed and is typically measured in feet per mile. It usually decreases downstream.

14. _____ and deeper channels allow for faster flow.

15. _____ channels allow for faster flow.

16. _____ and shallower channels decrease flow speed.

17. _____ channels decrease flow speed.

18. Stream discharge is the volume of water flowing past a given point in a unit of time and is measured in cubic feet per second (cfs). The equation is:

    Discharge (cfs) = Average stream width (ft) x Average stream depth (ft) x Average stream velocity (ft/sec).

    What is the discharge of a stream that is 100 feet wide, 15 feet deep, and has a velocity of 6 feet per second (show your work) (5pts)?

19. Define the following components of stream erosion and sediment transportation:

    a. Hydraulic action _____

    b. Solution _____

    c. Abrasion _____

    d. Bed load _____

    e. Suspended load _____

    f. Dissolved load _____

20. A _____ is a broad strip of land built up by sedimentation on either side of a stream channel.

21. A _____ is a body of sediment deposited at the mouth of a river when flow velocity decreases.

22. An _____ is a large, fan- or cone-shaped pile of sediment that forms where stream velocity decreases as it emerges from a narrow mountain canyon onto a flat plain, typically in arid regions.

23. Flood data that is collected on various rivers throughout the U.S. can be used to calculate the recurrence intervals of major flood events. The Sevier River has discharge data that has been collected since 1914. The following equation is used to calculate the recurrence interval:

$$\text{Recurrence interval } (R) = \frac{n + 1}{m}$$

    n is the number of years of record (which is 96 years for the Sevier River)
    m is the magnitude rank.

Water Year	Peak Discharge (cfs)	Magnitude Rank (m)	Recurrence Interval
1983	2,500	1	
1941	2,270	2	
1973	1,660	3	
1995	1,650	4	
1914	1,570	5	
1985	1,300	6	
1952	1,240	7	
1984	1,230	8	
1949	1,210	9	
1979	1,200	10	
1942	1,160	11	
1916	1,120	12	
1993	1,030	13	
1980	1,000	14	

Using the table above, calculate the recurrence interval for each year of record discharges.

24. If the largest peak discharge on record occurred in 1983, when can we expect another peak discharge of this magnitude (year)?

25. Name two causes of urban flooding (2pts).

26. Several rivers have been set aside as “wild rivers” on which dams cannot be built. Give two arguments against building dams on rivers, and two arguments for building dams on rivers (4pts).

    Against:

    Against:

    For:

    For:

27. What affect would global warming have on the overall water budget in the Hydrologic Cycle (5pts)?

28. Discuss the similarities and differences between deltas and alluvial fans (5pts).