Earth Revealed: Video Worksheet

**Mass Wasting** (10 points)

1. The geologic process known as Mass Wasting is defined as the….

2. Mass wasting can take many forms and can occur over virtually the entire surface of the Earth. This is due to the fact that _____________ are the most common of Earth’s landforms.

3. The two driving forces behind mass wasting are _____________ _______________, which maintains the slopes through uplift and mountain building, and ________________, which tends to pull the slopes down.

4. A number of factors contribute to mass wasting processes by affecting the stability of a slope. From the video, list three examples of how the stability of a slope can be reduced leading to a mass wasting event.
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5. Types of mass wasting vary according to several factors, such as
   - 
   - 
   - 

6. Which type of mass wasting causes the greatest long-term economic damage?
7. a) In California’s Portuguese Bend area, landslides are a major problem affecting homeowners. What have homeowners done in an effort to save their homes?

b) Geologists have also attempted different solutions for trying to stabilize the Portuguese Bend landslide. Removal of groundwater has helped to stabilize the upper portion of the landslide. Why is the lower portion of the slide more difficult to stabilize?

8. a) In 1941, the town of Wrightwood, California was severely damaged by fast-moving mud and debris flows. The area is still threatened by additional mass wasting events. What role does the San Andreas Fault play in the potential for these mass wasting events?

b) What evidence is cited by the geologist to prove that the landslide scar in Wrightwood is still active and thus has the potential for continued sliding?

9. If mass wasting crosses a property line, is it legal for a developer to mitigate both his property as well as the neighboring property?

10. Rank the following mass wasting events in order of their rate of activity with slowest ranked as “1” and most rapid ranked as “5”:

   Avalanche ______  
   Creep ______  
   Debris flow ______  
   Landslide ______  
   Slump ______
1. Early studies of the hydrologic cycle showed that only about _______ of Earth’s annual precipitation flows in rivers. The remaining water seeps underground (groundwater), is stored as glacial ice on land, or is returned to the atmosphere via evaporation.

2. Rivers are among the most common landforms on Earth and as such all rivers function in the same general manner.
   One of the most important factors influencing the geologic impact of a river is:

3. The geologic impact of a river is determined by its ability to erode, transport, and deposit sediment.
   How does the slope of a river affect this ability?

   How does shape/surface area of the river channel affect this ability?

   How does the texture of the stream bed affect this ability?

4. The quantity of water moving through a river is called its _________________.

5. In a river, the energy of moving water results in the erosion of sediments. Sediment in a river can be eroded by three separate processes:
   • 
   • 
   •
6. Once sediment is picked up, it becomes part of the river’s flow and is transported downstream. Sediment in a river is transported by one of three main pathways:

   •
   •
   •

7. Deposition of sediment typically occurs when the river ________________________________.

8. Flooding (a river flowing over its banks) is a natural part of a river’s behavior. What benefit have flood waters (flood plains) provided to human communities over time?

9. Although flood waters may provide benefits, in most urban areas artificial levees have been built along rivers to protect surrounding developed areas from these flood waters. Explain how these artificial levees may actually prolong flooding.

10. Placement of dams across rivers can create problems both upstream and downstream from the dam site. What two issues are discussed in the video?

11. The Mississippi River not only drains approximately 42% of the United States, it is also one of North America’s most important navigational routes for shipping and regional commerce. A section of the river called “Red Eye Crossing” regularly poses navigational problems due to buildup of sediment. Modeling of river flow at an Army Corps of Engineers facility explored possible solutions to the problem. Was the problem at Red Eye Crossing ultimately resolved? Why or why not?