**Human Impact on the Lithosphere - Guided Notes**

1. The lithosphere is important because it provides \_\_\_\_\_\_\_\_\_\_\_\_\_ on which to live and necessary \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ required for survival like \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Three ways humans impact the lithosphere:

(1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ for energy resources.

(2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

a. Money crops such as \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_.

 b. Food crops such as \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_.

(3) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - cutting down trees and clearing land to build homes.

3. Over the last few hundred years, our land use has changed from mostly \_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_ based and from there to more \_\_\_\_\_\_\_\_\_\_\_\_\_ based.

 4. **Human Impact**: In the past, soil eroded more \_\_\_\_\_\_\_\_\_\_\_\_\_ than is does today because the land was covered by more \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_. Human activities like \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_ that remove vegetation have greatly \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the rate at which erosion occurs.

 5. **Deforestation**: Space is needed for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and timber is used for home construction, which results in more \_\_\_\_\_\_\_\_\_\_\_\_ and rainforests being destroyed. Removing plants \_\_\_\_\_\_\_\_\_\_\_\_\_ the rate of erosion because the plant \_\_\_\_\_\_\_\_\_\_\_\_\_ no longer secure the soil in place.

 6. **Agriculture**: We lose tons of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_each year through agriculture. Topsoil is the \_\_\_\_\_\_\_\_, outermost layer of soil, usually the top \_\_\_\_\_\_\_\_ inches. Topsoil has the highest amount of \_\_\_\_\_\_\_\_\_\_\_matter and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is where plants get most of their nutrients.

7. Traditional \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ techniques, like plowing, remove \_\_\_\_\_\_\_\_\_\_\_\_ and require replanting each year. The US loses almost \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of topsoil per acre per year.

8. **Sustainable Agriculture:** Preserving fertile \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is needed to feed the world’s growing population. Four ways to preserve topsoil are:

 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are located along crop field borders or within the \_\_\_\_\_\_\_\_\_\_\_\_\_. How do windbreaks help reduces topsoil erosion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the building of wide, flat \_\_\_\_\_\_\_\_\_\_\_\_\_ of terraces on mountainsides and hillsides. The terraces look like big \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. How does hillside terracing prevent topsoil erosion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

11. Farmers use a technique called \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ in agricultural areas that are on a slope. Instead of plowing \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_, they plow \_\_\_\_\_\_\_\_\_\_ the slope. How does contour plowing reduce topsoil erosion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. **\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the practice of growing a series of different types of \_\_\_\_\_\_\_\_\_\_ in the same area in back to back seasons. Crop rotation can also improve \_\_\_\_\_\_\_\_\_ fertility by alternating \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ plants.

13. \_\_\_\_\_\_\_\_\_\_\_ constantly change in response to natural forces, like the \_\_\_\_\_\_\_\_\_\_\_\_\_. Storms combines with waves erode beaches at \_\_\_\_\_\_\_\_\_\_\_ rates.

14. **Artificial Stabilization - Shorelines**: Structures can be built to \_\_\_\_\_\_\_\_\_\_\_\_ a coast from erosion or to prevent \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of sand along the beach. There are three types of structures to protect the shore from \_\_\_\_\_\_\_\_\_\_ or prevent \_\_\_\_\_\_\_\_\_\_\_\_\_ of sand:

 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2. ­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are barriers built at right angles to the \_\_\_\_\_\_\_\_\_\_\_\_ to trap \_\_\_\_\_\_\_\_\_\_\_. How do groins reduce erosion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

16. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are built parallel to the shoreline to protect boats from large, breaking \_\_\_\_\_\_\_\_\_\_\_\_\_.

17. \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ projects add large amounts of sand to the \_\_\_\_\_\_\_\_\_\_\_\_\_ to stabilize \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ without building protective features.

18. There are three main disadvantages to beach nourishment:

 1. \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ - waves will eventually erode the replacement sand as well.

 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - costs a lot of money to transport sand to the beach from offshore areas.

 3. \_\_\_\_\_\_\_\_\_\_\_\_ effects on marine life. Dredging sand replaces natural, course sand with softer, muddier sand that increases the \_\_\_\_\_\_\_\_\_\_\_\_\_ of the water and can kill offshore coal reefs.

19. **Artificial Stabilization – Steep Slopes:** \_\_\_\_\_\_\_\_\_ change constantly in response to \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_; in this case, gravity. The transfer of \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_ downslope due to \_\_\_\_\_\_\_\_\_\_ is called mass movements. Examples of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ include:

 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a type of landslide where pieces of rock move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mass movements (>200km/hour).

21. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the downward movement of a block of material along a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ surface. The material in a slump moves very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and not very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

22. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are mass movements of material that contain \_\_\_\_\_\_\_\_\_\_\_\_ amounts of water that move downslope as a thick \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Mudflows move very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Earthflows move relatively \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and may continue for years.

23. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the slowest type of mass movement – only a few mm or cm/year. Cause structures that were once \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to tilt downward.

24. Screen mesh, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ draped over a steep slope keeps rocks loosened by an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from bouncing onto the road. This is a \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ method of protecting the roadway.

25. Road or \_\_\_\_\_\_\_\_\_\_\_\_ construction and natural processes can remove some of the base of a \_\_\_\_\_\_\_\_\_\_\_, making the upper part of the slope less \_\_\_\_\_\_\_\_\_\_. A \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ can support the upper part of a slope, stopping or slowing \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

26. \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ can thin the forest but still leave enough mature trees to \_\_\_\_\_\_\_\_\_\_\_\_\_ the slope and protect \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from rainfall and runoff. Enough large trees remain to anchor and protect the \_\_\_\_\_\_\_\_\_\_\_\_ from severe \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.