

Which Areas Have the Highest Risk of Slope Failure?

THIS GEOLOGICALLY DIVERSE PLACE has features that appear to be related to slope failure. Large, angular blocks occur in several different settings, and some of the hills may not be stable or safe. You will use descriptions and images of these features to determine what hillslope processes are occurring in different areas, and how they affect where people may live safely. The landscape is stylized and exaggerated to highlight potentially hazardous areas.

Goals of This Exercise:

- Observe the landscape to investigate the geologic setting of different areas, and interpret the geologic setting from descriptions of each location.
- Assess the hazards in different areas.
- Construct a map that shows areas that have a high risk for different types of slope failure.
- Identify locations that you think are most safe and moderately safe on which to build.

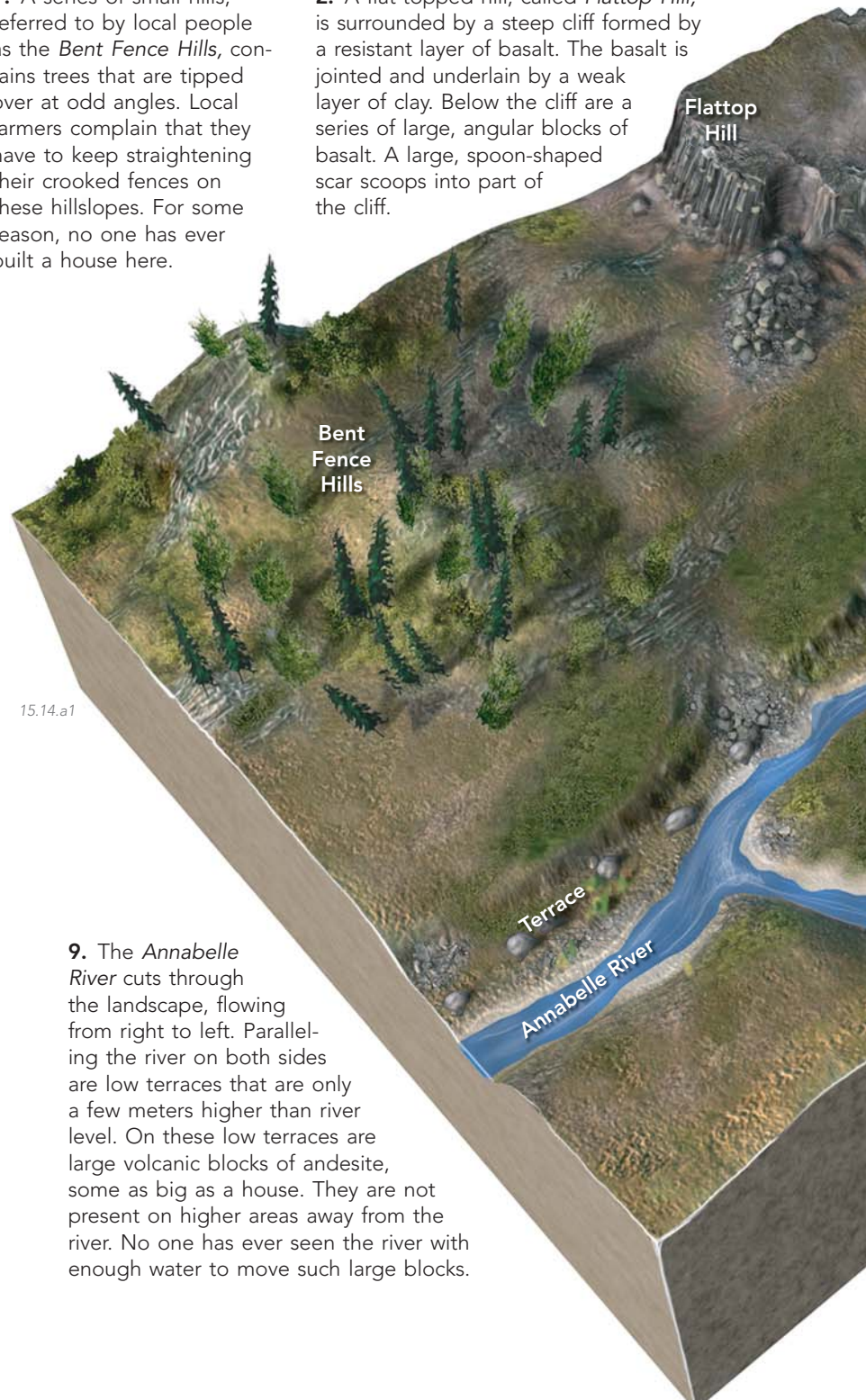
Procedures

Use the available information to complete the following steps, entering your answers in the appropriate places on the worksheet or online.

1. Observe the features shown on this landscape. Read the text boxes associated with each feature and decide what that statement implies about the geologic setting of the area and how the landscape reflects the underlying geology.
2. Think about the description of each area and consider possible types of slope failure that could occur there. Provide a reasonable interpretation of what types of slope processes are occurring and what key observations led you to that conclusion.
3. On the figure in the worksheet, draw approximate boundaries around areas that you interpret as having the highest risk for each type of slope failure. Label each area with a few words to identify the main hazard you interpret to be present.
4. Draw the letters S and M on the map for sites where you think it would be relatively safe to live. Write an (S) for one or more relatively safe places, an (M) for a moderately safe place to live. There is not a single best choice for any of these sites, so be prepared to describe your reasoning and to discuss your choice.

1. A series of small hills, referred to by local people as the *Bent Fence Hills*, contains trees that are tipped over at odd angles. Local farmers complain that they have to keep straightening their crooked fences on these hillslopes. For some reason, no one has ever built a house here.

2. A flat-topped hill, called *Flattop Hill*, is surrounded by a steep cliff formed by a resistant layer of basalt. The basalt is jointed and underlain by a weak layer of clay. Below the cliff are a series of large, angular blocks of basalt. A large, spoon-shaped scar scoops into part of the cliff.



9. The *Annabelle River* cuts through the landscape, flowing from right to left. Parallel to the river on both sides are low terraces that are only a few meters higher than river level. On these low terraces are large volcanic blocks of andesite, some as big as a house. They are not present on higher areas away from the river. No one has ever seen the river with enough water to move such large blocks.

