

To complete this worksheet, see the instructions in the textbook (Chapter 6 Investigation).

**Table 1. Landscape Features and Processes**




**Volcanic Island Observations:** In the white space around the figure below, write five observations about the physical appearance of different parts of the landscape. There is no right answer; just write some of the things you notice.

**Rock Observations:** On Table 2, use the descriptions provided on this worksheet to identify the type of igneous rock represented and determine the hazard potential associated with each rock type. Your instructor may provide you with hand samples.



**Table 2. Observations and Identification of Rocks Types on Island**

Examine the photographs below and read the key characteristics listed for each rock type. From these characteristics, infer what kind of eruption probably formed the rock type.

Rock 1	Rock 2	Rock 3
		
<p>Key characteristics: dark gray, glassy with small vesicles, has bands (flow bands) produced by flow when the rock was molten, felsic composition.</p>	<p>Key characteristics: large, flattened pieces of light-colored pumice, matrix around the pieces contains compacted ash and pumice, and broken crystals of quartz.</p>	<p>Key characteristics: angular pieces of gray volcanic rocks in a matrix of powdery volcanic ash and smaller rock fragments, larger pieces are dark gray, glassy, vesicular, and somewhat banded.</p>
<p>Rock type (circle one): (a) basalt, (b) rhyolite or obsidian, (c) welded tuff, (d) volcanic breccia</p>	<p>Rock type (circle one): (a) basalt, (b) rhyolite or obsidian, (c) welded tuff, (d) volcanic breccia</p>	<p>Rock type (circle one): (a) basalt, (b) rhyolite or obsidian, (c) welded tuff, (d) volcanic breccia</p>
<p>Style of eruption (circle one): (a) eruption of a low-viscosity, basaltic lava flow, (b) eruption of high-viscosity lava in a dome, (c) dome collapse that forms volcanic breccia, (d) eruption of a pyroclastic flow that forms a thick and hot deposit, (e) slow settling of ash from a tall eruption column, forming a nonwelded tuff.</p>	<p>Style of eruption (circle one): (a) eruption of a low-viscosity, basaltic lava flow, (b) eruption of high-viscosity lava in a dome, (c) dome collapse that forms volcanic breccia, (d) eruption of a pyroclastic flow that forms a thick and hot deposit, (e) slow settling of ash from a tall eruption column, forming a nonwelded tuff.</p>	<p>Style of eruption (circle one): (a) eruption of a low-viscosity, basaltic lava flow, (b) eruption of high-viscosity lava in a dome, (c) dome collapse that forms volcanic breccia, (d) eruption of a pyroclastic flow that forms a thick and hot deposit, (e) slow settling of ash from a tall eruption column, forming a nonwelded tuff.</p>

**Table 3. Assessing Volcanic Hazards of the Island**

Read the newspaper account of the eruptive history of this volcano. Propose at least four possible hazards expected from its eruptive history. Describe evidence for the hazard and describe how extensive each hazard might be and whether it can be minimized.

Volcano-Related Hazard	Evidence and Extent of Hazard

**Safe Place to Live:** Draw boundaries around and label those areas that have high, medium, or low hazard potential compared to the rest of the island. Write the word *HERE* in a place that you think is the relatively safest place.

*The following is a newspaper account:*

***Volcano Erupts!***

The *Juanannita volcano* began erupting in early September of 1952, and dozens of small eruptions have occurred since that time. For 10 years before the 1952 eruption, plumes of white steam were observed rising from the summit of the crater. In the summer of 1952, local inhabitants reported an increase in the output of steam and an increased smell of sulfur.

The first eruption was a single explosive burst that lasted about three hours and was accompanied by clouds of ash that rose kilometers into the air. Heavy ash fell around the volcano, and a light dusting of ash was reported on adjacent islands up to 20 kilometers away. The eruption melted snow and ice high on the crater forming a mudflow that moved along stream channels and inundated many areas in valleys downstream from the volcano. After the main eruption, a lava dome started growing in the crater.

All subsequent eruptions have been smaller and of a different style. They have been similar to one another. In each eruption, a cloud of ash and rocks that is mostly restricted to stream channels moves rapidly downhill. After each eruption, geologists noted that one side of the dome in the crater had collapsed into a pile of ash and rocks.