CSI: Ashfall Fossil Beds

You have been hired to solve a mystery. Which supervolcano killed the creatures found in Nebraska's Ashfall Fossil Beds 10 million years ago? Your job: Use clues from the crime scene to hunt down the volcano responsible.

Procedure

1. Use the data in your "Volcanic Identification" handout to classify the type of ash found at the Nebraska site and determine the type of explosion and the volcano most likely to have produced it.
2. Once you have compiled a profile of the volcano likely to have created the ash at the Nebraska site, your teacher will provide you with three "Volcano Suspects" data sets, one at a time, giving you locations, descriptions, and ash compositions for each volcanic suspect.
3. For each data set (location, description, ash composition), answer the questions listed on each sheet. After you have completed each, mark the table below with the volcano or volcanoes you feel is or are the *least* likely suspect(s) based on the data, and rate your confidence level in your answer.
4. Once you have completed the questions for all three data sets, answer the questions below.

Volcano Suspects Table

Data Set	Mount St. Helens	Crater Lake	Lassen Peak	Long Valley	Valles Caldera	La Garita	Bruneau-Jarbridge	Yellowstone	Confidence Level 1 = low 5 = high
Location									1 2 3 4 5
Description									1 2 3 4 5
Ash Composition									1 2 3 4 5

Questions

Write your answers on a separate sheet of paper.

1. Most of the listed "suspect" volcanoes have calderas, which are large depressions formed by the collapse of the summit or flanks of a volcano during a large-scale, highly explosive eruption. Why would a caldera-forming eruption be the most likely source of the ash found in Nebraska?
2. The most explosive volcanoes have magma with a very high silica (SiO_2) content. Based on this information, which of the suspect volcanoes is most likely to have had the most explosive eruption?
3. Which volcano do you think was the most likely source of the eruption that killed the animals in Nebraska? Why?