Project 1 Book Cliffs
Exercise 2 Instructions - Grain Characterization
Ann Holmes, UTC Geology

Due Date:

References required for this exercise:

Boggs, S. Jr., 2001, *Principles of Sedimentology and Stratigraphy*, 3rd edition, Prentice Hall, Upper Saddle River, NJ, 726p.

Raymond, L.A., 2002, *Petrology – The Study of Igneous, Sedimentary & Metamorphic Rocks*, 2nd edition, McGraw-Hill, New York, NY, 720p.

Useful website: http://www.uwgb.edu/dutchs/petrolgy/thinsect.htm

Navigate to and through my website (http//www.utc.edu/Faculty/Ann-Holmes) to Sed 303's Project #1 and locate the 2nd exercise. It is an interactive website. The black arrows to the right are links to 8 thin-section photographs from the adjacent units of the Cretaceous Blackhawk Formation, Spring Canyon Member rocks exposed in Gilson Gulch near Helper, Utah.

Using the 8 thin sections directly or their photographs, complete this exercise. Turn in electronically by emailing your attachment. Remember, a simple *yes* or *no* is not an adequate answer.

Part 1. Classify the rocks.

What sedimentary rocks are represented in these thin sections and hand specimens? (Use Figure 12.1, Raymond.) Are they representative of Group A, S or P?

Sketch the ternary diagram here, and locate the position of these particular rocks on the diagram. (Use information from Table 12.3, Raymond.)

Once you have identified the group of these rocks, move on to the appropriate chapter or section on microscopic analysis of these rocks.

Part 2. Clastic Textures

For each of the 8 thin-sections, characterize the following features. Record data from oldest to youngest sample. Use Chapter 3, Boggs/Chapter 12/Raymond for basic clastic textural terms Into what category of Folk's siliciclastic classification does each of these rocks fall? (Use figures 13.2-13.4 in Raymond, or Figure 5.5 of Boggs.) Identify the textural maturity for each slide (use figure 5.6, Boggs).

Slide # _____

- Sorting
- Grain size (*Wentworth scale in mm fractions*)
- Composition
- Grain shape
- Cement type
- Textural maturity
- Rock type (Folk)

1. Is there evidence of compaction or pressure solution in any of these specimens? For each slide, sketch a representative grain boundary relationship.

2. Is there evidence of grain overgrowths in any of these specimens? Sketch an example of a quartz grain with a quartz overgrowth. Indicate any key characteristics you'd be looking for in these slides.