In their book on the geology of the North Cascades, Tabor and Haugerud call this region of the Cascades a “Mountain Mosaic.” Like most mosaics, we see many different geologic “patterns” in an overall landscape “design”. The geologic history of the North Cascades is a complicated story of plate tectonics, sedimentation, metamorphism, igneous intrusions, and more recent uplift and erosion to expose the rocks that we see along the roads of northern Washington.

If the weather cooperates, today’s field trip will have two parts:

- A hike along Boulder River and
- Several geological stops along the North Cascades Highway (Highway 20)

**Part I: Individual Observations:** As we have done on the first two trips, take time to make individual observations in each of the following area:

From Green River to our exit from Interstate 5, near Arlington:

From Arlington to and including our hiking destination:

From the hiking parking area to Rockport where will have lunch.
From Rockport to the farthest point east along Highway 20 that we reach:

**Part II: Questions for the stops along the way:**

1. What types of rocks do we find as bedrock in the Boulder River area (the area of our hike)? Describe these rocks—are they sedimentary, igneous, or metamorphic rocks? If they are metamorphic, what was a likely parent rock?

2. Along the trail we will come to an exposure of gravel. Are the rock types of the gravel, the same as the rock types we observed earlier in the hike? What is the likely origin of this gravel deposit?

3. We will see one or more waterfalls along the canyon. How did these waterfalls develop?
4. One of your observations from Arlington to the hiking spot may have been that the valley of the Stillaguamish River appears to be very large for the size of the Stillaguamish River. You will receive a map of this area and we will discuss the development of the drainage patterns in this region. Record notes on this topic here:

5. We will have lunch in Rockport and discuss the origin of the rocks in the North Cascades. What is the dividing structure that separates the Western Domain and Metamorphic Core Domain? Describe the rocks on each side of this main structure. Record your notes from this discussion below:

6. Notes of the topics discussed at the stop near Rockport along Highway 20:
7. Notes of the topics discussed at the stop along Highway 20 between Marblemount and Newhalem:

8. Notes of the topics discussed at the stop along Gorge Lake near Diablo—what types of rocks do we see here? What is the general domain at this location? Why is the gorge of the Skagit River so narrow in the area, while the valley of the Skagit west of Marblemount is much wider?

9. Notes of the topics discussed at the stop at Diablo Lake Overlook- Record the types of rocks on display at this view stop. Why does the lake have the unusual bluish-green color?