**Draft and Final Report Instructions**

**General information**

*Length*: 4-5 pages (this includes figures/tables/references). Body text should be single-spaced, with a font size of 10-12. Use section headings and subheadings as appropriate with empty lines or spaces to aid in legibility. See this document structure as an example, although there is more outline structure in this document than there should be in your report.

Your report should consist of 7 sections:

1. Introduction
2. Map and cross-section
3. Preliminary interpretation based on field data
4. Additional Analytical data
5. Discussion
6. Conclusions
7. References

Please format and organize your paper in a meaningful way to convey the data and interpretations. At a minimum, your report should include the above 7 section headings, but you should feel free to use additional subheadings to further aid in the organization. The general pattern in the report is that the first part should reflect YOUR mapping and cross-section construction effort in Part I followed by incorporation of the analytical dataset along with any new insight that that brings. Another general pattern that you always want to adhere to when writing about new science is to first describe your observations, and then provide interpretations – always keep those two components clearly separated.

**Details to include in each section**

**Introduction** section

There are many ways to write an introduction for a scientific report or journal article. You are free to approach this however you think is most appropriate, but it should give the reader an idea for why this study was conducted, the methods employed and/or the components of the report, and a general feel for the results. It need not be long for a report of this overall length – one paragraph is probably sufficient.

**Map and Cross-section** section

1. Describe three units (Xbg, Xcq, Xcs). Use the unit names rather than abbreviations in your text. These descriptions should include general mineralogy, and primary structures that are commonly preserved and the evidence for them, and any significant variations in secondary (deformation-related) structures. These can be generalized statements on the structures since more detailed descriptions are below.
2. Describe the different types of outcrop-scale structures encountered (bedding is a primary structure, all others are secondary deformation-related structures including foliations, lineations, folds), including general description of their approximate mean orientation (if they seem to be clustered around an average orientation) and whether that orientation appears to systematically vary across the field area. Use generalizations (e.g. "dip steeply to the northwest") rather than long lists of numbers.
3. Describe any large-scale (map-scale) structures, referring to both your final map and your cross-section as visual aids.
4. For fold geometry descriptions (all scales), use the terminology for fold hinge orientations (based on plunge: 0 = horizontal, 0-30 = gently plunging, 30-60 = moderately plunging, 60-90 = steeply plunging). Use the terminology for axial plane orientations (based on dip: 90 = upright, 60-90 = steeply inclined, 30-60 = moderately inclined, 0-30 = gently inclined, 0 = recumbent). These are standard terms used in structural geology, and more description of them can be found in the sections of the structure textbooks that you were guided to at the beginning of the course (see syllabus).
5. For shear zone descriptions, include observations of shear sense and what type of criteria were observed as evidence, as well as level of confidence in those field interpretations.
6. Throughout the above descriptions, refer to relevant figures included in the report

**Preliminary interpretation based on field data** section

For this section, address the following questions. Organize this section so that it makes sense as paragraphs with topic sentences that flow logically into one another (this is good general advice for the whole report!). Back up all your interpretations by referring to the evidence from the maps, cross-section, and/or descriptions.

1. Relative age of rock units
   1. Which is on top now - Xcs or Xcq? And does that have to be how it always was?
   2. What is the relationship between Xbg (Boulder Creek granodiorite) and the metamorphic rocks (Xcs and Xcq)?
      1. Is it an intrusive contact, meaning Xbg is younger?
      2. Is it an unconformity, meaning Xbg is older?
      3. Do all of those contacts have to be the same or could some be tectonic (e.g., fault-related)?
2. Structural interpretation
   1. Are the minor folds related to the map-scale fold?
   2. Is S2 related to the fold?
   3. What is the shortening (not compression; strain, not stress!) direction? How do you know?
   4. What is going on with the mylonite?

**Additional Analytical data** section

For this section, describe the nature of your chosen analytical dataset, and provide appropriate citations to the source(s).

1. If samples were collected, describe from where and whether they are directly from your map area or just nearby. Include a map figure, if available, showing the location of the samples and the location of your map area.
2. Briefly describe the theoretical basis for the analysis (e.g., U-Pb geochronology, what zircon is or what monazite is, stability fields for alumino-silicate minerals, how stereonets can be used to better understand structures, how optical and quantitative microstructures can be used to better understand structures, etc.).
3. Description of the actual data results, referring to appropriate figures.

**Discussion** section

This is where you synthesize the results from the analytical dataset with your field data. Organize this section so that it makes sense as paragraphs with topic sentences that flow logically into one another.

First, discuss what the analytical data means. Then discuss whether this supports or refutes your initial interpretations from the field data, or whether it adds additional insight. Please address each of the discussion questions from your individual assignments. Feel free to incorporate anything else that you might be aware of from the other datasets that may not have been your main focus (citing appropriately).

**Conclusions** section

Briefly summarize the sequence of events recorded by the rocks in this study area.

**References** section

Don’t forget to cite these references in your body text. This should include the main publication for your analytical dataset (of course) but also any usage of other groups’ datasets and results. You may also find reason to mention Tyson et al. (2002) or Tweto and Sims (1963), to which you have been steered at various points in the course.

**Figures**

At a minimum, you should have 4 figures; your map (with legend), your cross-section, and at least two figures from the additional analytical dataset. These can include photos from the site description datasheets and/or other figures that you generated associated with the analytical datasets or figures from the published papers). You may embed images within the text or include them at the end. For each figure, you should include a caption (usually with a smaller font size or italicized; something to make them stand out from the main text). If you include figures from the published papers, make sure that you cite their source in the captions.

**Grading criteria:**

*Draft report*

Completeness of first two sections (based on Part I mapping) [60]

Organization of remainder [40]

*Final report*

Description (includes “Map and Cross-section” and “Additional analytical data” sections) [40]

Interpretation (all other sections) [35]

Writing

Organization and clarity [10]

Mechanics [5]

Terminology [5]

Critical thinking [5]