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RESPONSE TO EXTERNAL REVIEW

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We thank the External Review Committee for their time and effort in reviewing the Department of Geology's Self Study, visiting our campus, and generating a thoughtful and clear Report for our Utah Board of Regents. Professor Rick Aster, Dept. Head of Colorado State University's Department of Geosciences, served as the Review Committee Chair. Rounding out the committee were Professor Jean Bahr, former Chair of Geosciences at the University of Wisconsin-Madison and the current President of the American Geological Institute, as well as USU's own Peter Wilcock, Professor and Head of Watershed Sciences. These scholars provided broad expertise in geoscience education and research at and above the level of our peer institutions.

In overview, the Committee Report generally recognizes and concurs with the character, strengths and challenges facing our Department of Geology as expressed in our Self Study. The Report confirms that we are a small-to-middle-sized department in terms of students, faculty and staff, with a faculty that is disproportionately-senior in composition. Nevertheless, we have "performed commendably" in research funding, and we have a distinctly strong tradition of field training through a traditional geoscience curriculum that takes advantage of our geographic location. The demographics and enrollment trends in our department match those of national trends in geosciences, but with relatively few representatives of cultural minorities and the positive exception of the comparatively high representation of women in our faculty and graduate students.

The Committee Report reinforces that our facilities are classical and consistent with our long tradition of geoscience programs here at USU, but that the historic Geology building presents challenges in terms of safety and modern research laboratories. The Committee highlights and commends other aspects of our department, including our development of strong research instrumentation and analytical capabilities, our rare teaching peer-review system, advanced utilization of distance education, laudable outreach activity, strong junior faculty, strong leadership, and high morale and engagement of students, faculty, staff and alumni.

In terms of recommendations, the Committee Report, in our perspective, includes four overarching themes, with specific suggestions made in some cases. We summarize these and provide specific responses to them *in italics* here:

Recommendation Theme 1: Streamline your undergraduate degree programs in terms of credit requirements and prerequisites. Specifically, reassess the timing and prerequisites of the Field Methods and Field Camp course sequence so they can be taken by more students earlier in their programs, consider reducing upper-level elective credit requirements and making some required courses into electives, and advise students to take mathematics coursework in consecutive semesters.

The Committee correctly highlights the importance of our majors completing our own sequence of field courses for educational reasons, the sustainability of our field camp, and securing loyal alumni. They summarize that spring Field Methods currently has prerequisites that are challenging for students to complete in their junior year before the field course sequence. Thus, only about half of our students enroll in USU's Field Camp at the end of their senior year. The committee's general recommendation is to revise the curriculum to provide a pathway for students to complete summer Field Camp between their junior and senior years. They point out this would have the added benefit of enabling students to take part in more internships, undergraduate research, and be better poised for graduate school.

*The Committee provides alternative suggestions to meet the goals of more students taking our own field-course sequence and taking it earlier in their degree program. One Committee suggestion involves switching the semesters of 3500 (Minerals and Rocks) and 4500 (Igneous and Metamorphic Petrology) so that time is opened in the freshman year to take both Calc I and Calc II consecutively. They suggest this, along with having 3600 (Geomorphology) concurrent with Field Methods would allow more students to take the field course sequence earlier. **In response, the math sequence is a logical correction to make in our advising plan, and we will try to address this in the next semester.** Yet, it is worth pointing out that Geomorphology is already commonly taken concurrently with Field Methods. More importantly, this recommended 4-year course sequence is actually followed by very few, if any, students, who instead mostly enter the major well after their freshman year and cannot take Calc I their first semester of college. This means the plan's key element of having students complete 3600 (Structural Geology) the Spring of their Sophomore year can rarely happen.*

*A second alternative suggestion is to modifying the content of Field Methods so that it can be taken earlier, with only prerequisites of Physical Geology and Earth Through Time courses. This would be coupled with expanding the field training in the other major's courses. A third alternate suggestion of the Committee is to offer Field Methods in the latter half of spring semester, concurrent with Structural Geology. A fourth suggestion is to eliminate the Field Methods course entirely and distribute the training of those skills into other major's courses. **In response, the outside perspective on this longstanding problem is appreciated and helpful. The potential solutions offered will be discussed in our upcoming (August 2018) faculty retreat, with curricular changes initiated over the upcoming academic year.***

Regarding the overall number of credits in our Geology major, the Committee states that the current 47-49 credits of Geology coursework is more than in some programs, although not

*uncommon. They suggest either converting one or more Geology course requirements into electives, or reducing the number of upper-level Geology electives required below the current 8-9 credits. **In response, the Geology major does require about 10 more departmental credits than do other Science majors at USU, although it is similar to the Biology major at USU. Changing and reducing our Geology-elective requirements will be discussed in our upcoming August faculty retreat, and any curricular changes initiated over the upcoming academic year.***

Recommendation Theme 2: Improve program support and minimize, as possible, the workloads of your research faculty through employment of advising staff, teaching sabbaticals, and team-teaching of graduate courses.

Dean Hagan has a request pending for central support of more professional advising staff in our College. If granted, Geology would be happy to explore the possibility of such staff assistance. However, we recognize that with our relatively small number of students, Geology advising would only be a partial role for an advisor position. Furthermore, advising of students by faculty familiar with the details and purpose of the geology curriculum is essential.

*The committee points out that faculty efficiency may be improved by offering small-enrollment graduate courses less frequently and by team teaching graduate seminars. **In response, most of our graduate courses already have a 2-year recurrence. Therefore, offering them less frequently is not plausible. We will pursue the recommendation of more team teaching, and we already have broad graduate seminar courses in place for delivering such custom, team-taught courses.***

*We follow a teaching expectation for research faculty of 2-and-1 courses per semester, which the Committee recognizes as standard among geoscience departments. However, they encourage us to consider instituting teaching sabbaticals for making innovations to our teaching. **In response, we have provided 1-course reductions in teaching in key semesters before faculty submit for tenure and in cases where our PhD students gain teaching experience in place of their advisors. Also, some of our faculty already have flexible teaching loads that include summer courses and regular-semesters off for field research. Regardless, teaching sabbaticals to foster course innovation is a good idea, but hard to institute because we have few faculty and therefore little flexibility with core classes. In addition, USU has in place excellent programs for teaching innovation, such as those through CIDI, of which our faculty can take advantage.***

Recommendation Theme 3: Try to increase the number of undergraduate majors, reconsider your undersubscribed baccalaureate degree emphases, and plan the future of your young PhD program.

*The Committee recommends that we discuss if there might be effective recruiting strategies targeting regional high schools and introductory geology courses. **In response, although not a pressing issue, we agree that our number of majors is slightly less than most comparable geoscience programs. The Department Head is in the process of instituting informational modules for more systematic recruitment of majors in our many introductory courses as well as concurrent enrollment courses to high schoolers.***

*In terms of our various undergraduate programs, the Geoarchaeology emphasis of our Geology major, in particular, has had consistently low participation over the years. The Earth Science Composite Teaching major and the Hydro-engineering and Applied Environmental emphases have key roles and have had steady but relatively small subscription. **In response, we will discuss and consider deleting the Geoarchaeology emphasis at our upcoming August faculty retreat.***

*The Committee broadly recommends that we strategically consider how we wish the PhD program to grow beyond its small numbers, pointing out that research focus areas are required for the critical mass to support a PhD program in certain subjects. **In response, the department has long recognized this and we advertise critical mass in two primary, interdisciplinary fields—Tectonics and Surface Processes/Geomorphology. Whether this should be broadened or changed will be a primary question addressed in our Strategic Plan to be developed over the upcoming months.***

Recommendation Theme 4: Generally, the department should complete a strategic planning process, especially to consider programmatic issues highlighted above, as well as the future trajectory of faculty composition and research programs.

The committee noted tension between junior and senior faculty on the identity and future of the department and that many other departments have changed their names from the classical “Geology”. They recommend strategic planning that includes the direction of new hires and research programs, considering possible expansion of faculty positions as well as retirement successions. They ask us to reconsider our long-stated goal of a new position in shallow geophysics, while also recognizing it as a good choice. They also suggest including alumni-development efforts as a subject of the Strategic Plan.

In response, this Regents Review is indeed the core of a several-months long strategic planning process. We started it in spring of 2017 with group deliberations to revise our mission statement and the completion of a SWOT analysis by both our faculty and alumni. The Self-Study and Committee Report are core steps and products produced over the past months. We now plan to complete a Strategic Plan document for the department over the rest of this calendar year. A faculty committee has been formed to spearhead and receive input toward the completion of this Strategic Plan to guide the department over the next 7 years. The upcoming August 2018 faculty retreat will be largely dedicated to discussions that the committee will formalize in the Strategic Plan.