

ACTION PLAN (STAGE 1)
ACADEMIC PROGRAM REVIEW
E&PS DEPARTMENT
November 19, 2014

Introduction

We appreciated the opportunity to participate in a decadal program review of the Department of Earth and Planetary Science in Fall of 2013. This departmental response, one year later, focuses on how E&PS can work with the College of A&S, the UNM Provost's office, and our alumni to address the recommendations of the external reviewers. We found this team to be insightful and hard hitting about changes they felt would move E&PS to a higher level of productivity and service to New Mexico and higher national ranking in the geosciences. Recent national reports of the National Research Council (2012) and polls in U.S. News and World Report (2014) ranked E&PS as 49th (top ~40%) of geoscience departments nationally, and the NRC ranks us still higher in several categories (e.g. top 28% in research and top 19% in student support and outcomes). **This 2014 U.S. News numerical rank of 49th for E&PS is the highest ranking of any science department at UNM.** When national sample size (# departments) is taken into account, EPS (top 40%) is very close to UNM Biology (ranked 93th; top 36%), and higher than: Physics (ranked 85th; top 48%), Chemistry (ranked 106th; top 52%), and Mathematics (ranked 95th; top 55%). Both the review team and the department self-study were aware of the high national ranking of E&PS, of the areas that need strengthening, and the achievable opportunity of leveraging existing strengths to allow E&PS to improve substantially.

The E&PS self study was written by the Chair and Associate Chair with substantial input on individual sections by departmental standing committees. All of the faculty had the opportunity to provide ideas and suggestions for effective self-review of the Department. Preparation of the self-study document was a constructive process in terms of allowing the faculty to discuss departmental issues and concerns. Key questions we identified included: departmental salary structure (both internally and relative to other STEM units in A&S, UNM, and our peer institutions), our undergraduate degree programs, our graduate degree program, our long-term hiring plan and vision, alumni relations, and the state of infrastructure in our ageing Northrop Hall.

The self study was completed Nov. 20, 2013, and culminated with an on-site review by a three-person team. The review team was constituted of three top scientists all of whom also had experience in administration of top academic programs in the sciences. Dr. William Carlson is Dean and professor in the Jackson School of Geosciences at the University of Texas at Austin (a UNM-identified peer institution that ranks 8th nationally); Dr. Thure Cerling is a professor and member of the National Academy of Sciences at the University of Utah (a UNM-identified peer institution that ranks 42nd nationally); Dr. Sam Loker is a professor and former Chair of Biology at UNM. This team produced a document acknowledging department strengths and recommendations for a range of innovations and revisions designed to improve E&PS. It is notable that Dr. Carlson initially declined to participate in the self study based on his experience that university administrations often do not provide the needed resources to address identified areas of improvement. However, he became convinced by our more optimistic view that the decadal review itself is useful and that UNM, through strong leadership and cooperation at the departmental, college, and provost levels may be able to forge and phase-in strategic plans to improve one of its top departments over a multi-year time frame.

The E&PS "Action Plan" presented here identifies how the Department intends to move forward, and the help needed from higher levels to design and implement a multi-year action plan. This document and our accompanying planning spreadsheet provide next steps to make progress on the eleven formal recommendations of the External Review Team. Note that we view recommendation # 10 (EPS faculty salary structure) to be, by far, the most urgent issue that needs to be addressed if the department is to maintain excellence and continue to improve its overall performance in teaching and research activities.

Academic Program Review Action Plan

Recommendation 1: EPS should work with A&S Dean's office to establish a mechanism that ensures secure, reliable, and predictable funding of the capstone summer field course

Individual(s) Responsible: Field School Committee, Grant Meyer (319 instructor), Karl Karlstrom (420/520 instructor), Tobias Fischer (instructor of the volcanology field course), Chair, Associate Chair

Resources Needed: The existing courses EPS 319 (required), EPS 420/520 (elective, mainly graduate level), and the volcanology field course are all summer experiential capstone courses (for different groups) that take advantage of the unique geologic laboratory in New Mexico. EPS 319 is a required course for the BS EPS degree; it is self-supporting in that tuition costs more than pay for instructor salaries and student fees more than cover class expenses. EPS 420/520 is a research-based course for graduate and senior undergraduate students that has proven effective for graduate recruitment; it operates slightly in the red but in recent years, it has been run partially by faculty research grant funds. EPS the volcanology field school is unique nationally and internationally and also has been effective for graduate student recruiting; it has not been run for 5-6 year in large part because of insufficient funding.

Based on this background, the resources needed mainly involve recognition and clear multi-year administrative status through A&S and E&PS rather than year-by year consideration as special programs of the summer school. Summer courses in 2014 for the first time were planned and implemented by A&S, with an early commitment to run the courses. If A&S has more direct control over the summer schedule and supports the programmatic need of the summer field camps for the geosciences, we would be able to plan improvements and innovations for self-supporting field programs that have maximum academic benefit for EPS and UNM. A multi-year A&S commitment will also enable us to seek alumni support for the fieldschool.

Action Taken/ Status: The fieldschool committee and the chair will prepare a request to A&S and UNM Summer Programs for formation of an EPS Summer Fieldschool program (and accompanying fund) with permission for multi-year operation of our courses with the current A&S level of support (\$9000 for 319, \$9000 for 420/520, and \$9000 for volcanology). Alternatively, some plan for direct tuition pass-through might be possible. Additionally direct pass-through of fees in a more timely way is needed. The department will also continue to work with the Alumni requests to foster the summer as well as academic year field programs (see below).

Projected Start Date: We anticipate submitting this request in Fall 2015, in time for summer 2015 courses

Target Date for Completion: A meeting between the EPS chair, UNM Alumni Association and A&S Foundation representatives is requested for spring 2015.

Progress Review Date (if needed): We suggest that the status of the Fieldschool program be evaluated every 3 years by the college and EPS, with the Fall of 2018 being the first review date.

Funding Request: *No additional funds are needed at this time.* However, we request a multi-year commitment from A&S to run our EPS summer field programs at the level of \$18,000- \$27,000 per year. This will give the EPS summer fieldschool an ability to demonstrate cost self-sufficiency and academic importance.

Dean's Support:

Recommendation 2: EPS, in coordination with A&S, should strive to improve academic counseling of undergraduates, particularly for ENVS majors

Our BS and BA degrees are healthy and we have just graduated (in 2014) a record number of undergraduates (36 graduates in spring 2014). We plan to improve the ENVS degree by establishing a core curriculum in the next year. For all the Bachelor's degrees, we are working on improving advisement and learning outcomes and assessments. The undergraduate committee has established learning outcomes for BS degrees that have been approved by the A&S assessment committee. The A&S investment of an assigned A&S staff advisor (at present, Brian Vineyard, shared by Math, Physics and E&PS) has greatly improved our communication with majors at the earliest stage. Brian is also working with EPS faculty advisors to improve the web-based advisement information, including an undergraduate handbook. A key goal in these efforts is to move students more efficiently through the requirements, thereby reducing time-to-degree. The College is in the process of identifying an advisor to serve primarily EPS. As changes are underway to place entering freshman directly in A&S, our number of identified majors has already increased substantially. EPS is leading the way in strengthening ties to the Honors College through a joint faculty appointment (Dr. Jason Moore) and the first Honors Fellow (EPS Professor Gary Weissmann). We consistently participate in the Freshmen Learning Communities. We have a very strong undergraduate research program through our BS and Honors thesis programs, with undergraduate research funding available from alumni funds, A&S and Professors' research grants. Students present results of their work each year at the Caswell Silver Undergraduate research symposium as well as at regional and national conferences.

Individual(s) Responsible: Brian Vineyard, Faculty Undergraduate advisors, IT tech, Chair

Resources Needed: Continued A&S support of academic advisement and IT development for website. Refurbishing an office for Brian in EPS for regular hours would be useful. Currently his EPS hours are in the SMLC.

Action Taken/ Status: The undergraduate committee and the Chair are far along in discussions with the entire faculty about implementation of new core courses for the Environmental Science degree. The faculty had a successful retreat over the summer 2014, and several dedicated faculty meetings, and is positioned to submit several forms B and a form C for new courses that constitute the ENVS program. The change will allow a cohort of students to progress through the core material of the program together, and hence will allow both more timely completion of the degree and improved learning outcomes.

Projected Start Date: Submittal of a revised Environmental Science degree with a set of core classes taken by a cohort of majors moving through the program together is planned for Fall 2014, with the new degree program phasing in for Fall 2016.

Progress Review Date (if needed): Our undergraduate programs are reviewed annually by the Undergraduate Committee.

Funding Request: Implementation of **the degree program will have a heavy impact on faculty teaching loads in EPS such that we will need an additional Environmental Science Lecturer position to coordinate the 102 labs to free up faculty for the core courses.**

Dean's Support: We anticipate support for an A&S advisor to establish regular hours in an advising office in Northrop Hall. We also request an additional lecturer position for the new degree program.

Recommendation #3: EPS should implement mechanisms to ensure consistency in administration of qualifying exams for the PhD and MS degrees, and to ensure adequate communication of expectations to all faculty

Action Taken/ Status: We are clarifying procedures in the Graduate handbook, as well as improving web-based access to current policies and procedures. We plan to review expectations in conjunction with our initial faculty meeting each Fall. Re-instituting an annual review of Graduate Students will also help improve program assessment and maintain visibility of exam procedures and expectations. Our Assessment Plans for the MS and PhD were approved in Fall 2014, and we are in the process of reviewing data collected and revising our evaluation forms for graduate exams and theses/dissertation products.

Individual(s) Responsible: Chair of Graduate Committee, Department Chair.

Projected Start Date: Fall 2014

Progress Review Date (if needed): Fall 2015, and annual program review by our Graduate Committee

Funding Request: none.

Dean's Support:

Recommendation #4: EPS should articulate to higher administration the vital importance to its success of the contributions by its research staff

We agree with the review team that it is essential that the higher administration needs to be aware of the key roles and contributions that the EPS research staff play in the success of the department. The department has periodically come under scrutiny for having a significant number of staff paid wholly or in part from I&G support from the College of Arts and Sciences. There have been continued discussions of whether research staff should be funded by I&G, because of the misconception that these individuals are not involved in instruction. However, as we have pointed out in various communications to the College of Arts and Sciences, including the APR, our research staff are critical to the instructional and research mission of the College of Arts and Sciences and the University. Under the previous Dean of A&S, a proposal to reduce I&G support for these positions to zero over a period of years was under

discussion. Such an approach would have essentially destroyed the highly successful analytical facilities that we have built over the past three decades and, as pointed out by the review team, have contributed significantly to the very high research productivity of the department. More broadly, the facilities in EPS represent a major area of excellence that is utilized by the university as a whole for research *and* teaching. The APR team summarized the significance of the research staff to the success of the department eloquently in their statement on page 2 'Excellent Scientific Staff Support'.

Currently the main formal mechanism to convey the activities of the research staff to the upper administration is through the Department's annual report to the College of Arts and Sciences and more informally through the monthly meetings of the Department Chair with the Dean of the College of Arts and Sciences or the Associate Dean for Research. However, a higher profile and more formal approach to highlighting the activities of the research staff, and the analytical laboratories which they support, as well as the faculty members who are responsible for the laboratories, is in order. Such an approach could, take the form of an annual report to the College of Arts and Sciences and the Office for the Vice President for Research which highlights the major activities of each of the laboratories in EPS. Such a report could include the numbers of users trained, research grants supported, publications, instructional use of the laboratories and classes taught by research staff. This document would be compiled under the leadership of the Chair of the EPS Departmental Facilities Committee and the Department Chair, and should be submitted to and reviewed by the Associate Dean for Research in the College of Arts and Sciences as well by a designated representative of the OVPR, such as the Associate VP for Research. A requirement should be that the A&S Associate Dean and the Associate VP for Research meet once a year with the EPS Chair and Departmental Facilities Committee and any other interested individuals, including research staff, to provide feedback on the reports and discuss any issues that arise from it. It would be expected that the Associate Dean for Research in A&S and the representative of the OVPRs office, would represent their findings to the Provost's office. This type of improved dialogue can also further discussions of cross- department and cross-College collaborative initiatives, such as the new Center for Stable Isotopes (CSI) and a role for EPS in the new Interdisciplinary Science Building planning.

Individual(s) Responsible: Chair, Associate Chair, Facilities Committee

Resources Needed: Support for EPS laboratories is currently a lab-by-lab effort and relies in part on FTE support and in part on the entrepreneurship and grantsmanship of the professor in charge of the labs. The recent advent of College support for the Center for Stable Isotopes (CSI) is welcome and perhaps can lead to a successful model for other centers in radiogenic isotopes, microbeam and material sciences, noble gas and volatile analysis, and others. This could pay off well for UNM in terms of increased F&A generation but needs to be done with consideration of the effect of laboratory centers on teaching loads, support for student access to labs, and other departmental considerations. Additional technical support was recently given to the CSI laboratories and this type of sustained support would also help other labs. As examples, faculty directors of EPS labs have requested improved technical support for the stable isotope lab (this has been granted), the noble gas lab (not staffed and not granted), and the X-Ray Diffraction lab (currently staffed by a post-doc). In addition, EPS has lost ground in Information Technology support (currently staffed by a half-time A&S IT person) and a building manager (currently staffed by a work study student).

Action Taken/ Status: The Facilities Committee and the Chair will draft a request for sustained and additional technical support for EPS.

Projected Start Date: An effort to provide additional technician support for EPS labs should be discussed and implemented in the next fiscal cycle, ideally with new personnel to start Fall 2015.

Progress Review Date (if needed): The Chair requests discussions with the Dean during spring 2015

Funding Request: Technical support for one or more labs at the level of 0.5 FTE is requested at the level of \$50,000 (costs shared by lab PI's and user fees).

Recommendation #5: EPS should implement an effective, inclusive, and visionary means of strategic planning, addressing not only short-term goals but also long-term issues including the unfavorable demographic make-up of its faculty and its aging infrastructure

Action Taken/ Status: The Chair re-instituted the Strategic Planning Committee in 2013 as a departmental standing committee. This committee had been active and effective in the 1990s but was inactive since about 2000. This committee is charged with helping develop the long range hiring plan, with alumni relations, and with facilities planning (including space needs). The visiting committee's impression of an "unfavorable" demographic make-up of our faculty is in part due to an unfavorable 'top heavy' distribution. We have a higher percentage of women and minority faculty than most STEM units at UNM and nationally and we have recently hired a female Hispanic woman. We continue to value diversity among faculty and students. It is true that our faculty is "top heavy" with full professors, but in the last 2 years, we have hired 3 Assistant Professors in EPS and an additional Assistant Professor in the Honors College who is an EPS adjunct. We look forward to a next decade of adding top young people to the department to continue to improve our national ranking. Because of anticipated tightening of institutional budgets, hiring strategies will include looking at strategic partnership with programs outside of the College (such as the 'Strategic Water Cluster Hiring Initiative' as well as the Sandia joint hiring program 'National Lab Professors'). In this respect it is critical that EPS needs and potential contributions are articulated to the decision makers who initiate these cross-cutting hiring initiatives. So far, the focus has been on engineering disciplines for the National Lab Professor but our strengths in the energy-environmental-water sector clearly provide some exciting opportunities of UNM-SNL-LANL synergies for the decades to come as resource pressures increase on the world's civilizations. In addition we submitted our hiring request for the College in Spring of 2014 for filling a needed disciplinary gap in Petrology for the EPS program.

Individual(s) Responsible: Strategic planning committee, Chair, and Associate Chair

Resources Needed: *none for strategic planning efforts*

Projected Start Date: This committee meets regularly (a couple of times a semester) and is underway to advise the chair on long term strategic planning.

Progress Review Date (if needed):

Funding Request: Our multi-year plan is to bring EPS back to full faculty strength and to replace retirements in order to maintain and add key missing disciplinary strengths in the faculty.

Recommendation #6: EPS, in partnership with the A&S Dean's Office and the UNM Foundation, should initiate a sustainable and effective alumni relations / development operation

We agree with the Review Team's recommendation on development. The Department of Earth and Planetary Sciences has an exceptional loyal and highly successful group of alumni in a wide range of geosciences-related professions who feel a strong allegiance to the department. However, over the past decade, some of our older alumni have felt alienated from the department and UNM and this has undoubtedly been to our detriment. The Chair and the faculty of the department are not experts in development and have major commitments to teaching, research and service and, in the case of the Chair, to the many administrative needs of the Department. With the significant loss of faculty over recent years, it has been extremely challenging to meet the basic teaching needs of the Department. Therefore any significant development efforts have largely been the responsibility of the Chair, such as the work of past departmental chairs to secure the \$1.4M donation from the Frank and Marie Gorham Foundation for departmental renovations and the establishment of the Gorham Educational Foundation.

Our efforts to improve department - alumni relationships have been reinvigorated recently by the current Chair Professor Laura Crossey. The first step of this effort was to put together annual Departmental newsletters that were circulated to alumni in Fall 2013 and 2014, the first such letters in six years. This effort benefitted from interactions with the A&S Development Officer and staff. In addition, the department hosted our first Alumni & Friends Homecoming weekend of activities in Fall of 2014 during UNM homecoming events. We had a successful series of events including. Dedication of the Frank D. Gorham, Jr. and Marie Kelly Gorham Geosciences Laboratory involved President Frank, Associate Provost Parker and Dean Peceny attending to thank the family representatives Mark and Robert Gorham for the generous (1.4 \$M) contributions of the Frank D. Gorham, Jr. and Marie Kelly Gorham Foundation. We held a symposium "Perspectives in the Geosciences" that featured three alumni speakers: Dr. Kurt Steffen (MS 2001, PhD 2004; presently at ExxonMobil in Houston, TX), Dr. Claudia Mora (BS 1980); presently at Los Alamos National Laboratories, Los Alamos, NM), and Dr. John Shomaker (BS 1963, MS 1965; presently at John Shomaker & Associates, Albuquerque, NM). We made initial steps toward forming an alumni council and have a list of alumni who volunteered to help with that effort. Student posters were also present on the lawn of Northrop Hall. The final event, on Saturday, was a very well-attended field trip to the Puerco Necks in the San Juan basin (Fig. 1) led by alumnus Dr. Larry Crumpler (MS 1977) as well as UNM faculty. We also continue to hold our annual Alumni reception at the Geological Society of America meeting (this year in Vancouver, B.C.) that involves the "Rio Grande Universities" (University of New Mexico, New Mexico Tech, New Mexico State University, New Mexico Geological Society, and University of Texas El Paso).



Figure 1. Alumni attending a faculty and alum-led geology field trip to the San Juan basin in conjunction with the Fall 2014 Homecoming activities.

Continued major initiatives to invigorate a sustainable effort to engage our alumni in the Department are needed and can be successful. This requires focused coordination and planning between the UNM Foundation, the College of Arts and Sciences Development Office and the Department. It will require a significant amount of time and energy and, in our opinion, requires trained development personnel who are dedicated part time or full time to the department's development efforts, as well as faculty who are willing to engage in fundraising activities. We think that the involvement of faculty members is an essential ingredient to the success of any initiative, for example we have re-established an Alumni Relations Committee made up of senior faculty members who are known by a significant number of alumni and can speak with authority about the goals of the department to potential donors.

The possibility of establishing an alumni committee continues to be discussed. Such an effort could be a self-sustaining fund-raising and Departmental support entity. Several Earth Sciences departments around the USA have such boards, some that have been very successful. To establish such a committee requires careful planning and implementation, involving the identification of alumni who are able and willing to join such a committee and spend the necessary time to make it a success. Again such an initiative would require a significant time commitment from faculty and the Department Chair over an extended period of time to be successful. It should also have alumni that come from a broad spectrum of geosciences-related employment fields as well diverse experience and ages. We think that it is essential that new views and ideas represented, that have strong voices from recent graduates who are more in touch with the current status of the department and its strengths and weaknesses.

As a final note, a major impediment to tapping into the philanthropy of our loyal alumni is a deep and ingrained negative impression of the UNM Foundation. On a fairly regular basis we hear from successful alumni who hold the very strong opinion that they will not donate funds to UNM through the UNM

Foundation because they consider it to be a poorly run and inefficient entity. These opinions are deeply held but we have already begun initiatives to dispel them and rebuild the trust of these alumni. For example, attendance by Dean Peceny, the College Alumni liaison (Jeffrey McNutt), and UNM Foundation representatives (Russ Harden) at the annual Caswell-Silver Board meeting (a multi-million \$, three-decade long donor) in Fall 2014 was important in showing the Board that UNM is supporting EPS. Given that many of our alumni are extremely successful in the oil and gas industry, a major imperative of the UNM Foundation and Alumni UNM office is to work with our Department to win the trust of these individuals, so that they feel inclined to donate funds to the Department and/ or University. Personal interaction with faculty members in the Department is likely to be a very important aspect of this effort, but will require a major time investment on the part of all parties.

Individual(s) Responsible: Chair, Associate Chair, and new Alumni Relations Committee

Resources Needed: consultation with the UNM Foundation and the A&S alumni relations persons

Action Taken/ Status: We re-invigorated contact with alumni via an alumni newsletter that was sent out in 2013 and 2014 (the first in 6 years). We conduct a very successful alumni event during Fall 2014 Homecoming that honored the donations of about \$1.4 million by the Gorham Foundation. This event was attended by President Frank, representatives from OVPR, the UNM Foundation and the Dean of A&S. We re-established our Alumni Relations Committee. We initiated discussions of an alumni committee of interested alums to help with further improvement of department-alumni relationships and fund-raising opportunities.

Projected Start Date: The September 2014 homecoming event will be repeated in subsequent years. Further discussion of formation of an EPS Alumni Council will take place in Spring 2015. We had approximately 30 volunteers after our fall event of alums interested in participating in that conversation.

Progress Review Date (if needed): We propose an annual meeting between the UNM Foundation, A&S, and EPS

Funding Request: We will continue to request use of Hodgins Hall for some of our Alumni events and we request the help of the UNM Foundation for planning.

Recommendation #7: EPS should initiate a sustainable program aimed at identifying and expanding employment options for its graduates

Former chair, Adrian Brearley initiated a program to bring in UNM alumni working in different employment sectors (private, state, federal) to give informal seminars about their work and their companies, and provide insights into what it means to be a professional geologist. We have also had speakers who have provided insights into what is needed to be competitive in the job market. This program is now in its third year and has been highly successful and has been very well attended by both undergraduate and graduate students. Many students seize the opportunity to meet with potential employees with great enthusiasm. Seeing and talking with successful UNM alumni who are working in a wide range of fields including major oil and gas and mining companies is inspirational for our students and for some, may be a transformative experience in terms of formulating their career goals.

This effort was initiated because of a serious lack of interaction between potential employers and our students (as pointed out, quite correctly, by the APR team). The current program is currently of limited scope; typically we have had two to three such seminars each semester. We would be delighted to expand this program and have at least one seminar like this during each month of the Fall and Spring semester. We fully agree that the need exists and if we are doing our job right, we should be making significant efforts to provide opportunities for our students to meet potential employees. However, as with many other activities the extent that we can achieve this is limited by resources to pay for the travel expenses of visiting speakers. The present level of activity is supported by funds from the Caswell Silver Foundation as a result of continued discussions between EPS chairs and the Caswell Silver Foundation Board to increase the Chair's Discretionary Budget.

The Board continues to be fully supportive of this activity and encourages continued innovations, but they are unable to increase the Foundation's contribution further to expand the program. Therefore at the recent Caswell-Silver Board meeting, there was discussion of a program of inviting visiting professors in Applied Geoscience with joint funds from A&S and the Board. The 2015 Caswell – Silver budget request will include this initiative, and several models for cost of the position (yearlong visiting professorship at ~60K stipend plus research and travel costs (shared by College of Arts and Sciences); or more limited expense and a sabbatical replacement at ~\$20K stipend and limited travel/research funds.

Individual(s) Responsible: Undergraduate and Graduate committees, Chair and Associate Chair

Resources Needed: Matching funds from A&S (at the level of ~ \$30,000 plus \$7500 fringe in non-recurring funds) will be requested as part of this new initiative to establish a visiting professor program in Applied Geosciences to meet alumni requests. We will also continue to work to create a more complete database on present undergraduate and graduate student progress, to be completed by the respective committees that will also serve for outcomes assessment of our degree programs.

Action Taken/ Status: We have instigated a series of talks from alums in the mineral industry to acquaint students with job opportunities. Also, the graduate students this semester initiated a panel discussion of "paths to the professoriate" that involved a panel of 5 faculty that was quite successful and well attended by graduate and undergraduate students. A discussion of initiating an A&S / Caswell-Silver Foundation visiting professor program in Applied Geosciences is underway.

Projected Start Date: ongoing

Progress Review Date (if needed): none needed

Funding Request: no new funds requested

Recommendation # 8: EPS should partner with all other relevant stakeholders in the University to resolve the status of the Natural Science education program in a way that ensures its continued success.

Individual(s) Responsible: Chair, Deans of A&S and COE, Natural Science Coordinator Mel Strong

Resources Needed: Possible additional lecturer salary funds for Natural Science courses

Action Taken/ Status: We entirely agree with the APR team that a concerted effort to ensure the long term stability of the Natural Sciences Program is essential. The program fits a unique niche in the education of future NM elementary school teachers which is not met by any other programs at UNM. However, the program has suffered progressive erosion, particularly over the last four years. At its peak, in 2009, the program had three full time lecturers, including the director Matt Nyman. Currently the program only has one permanent member of staff, lecturer Dr. Mel Strong who is managing to maintain a viable program. The present situation with the program is untenable and needs a firm institutional commitment to new hires for the program, particularly a replacement for the former director Dr. Matt Nyman, who left in summer 2012. Despite multiple stages of discussion, no clear plan emerged from these meetings as to the status of the program and its future standing in the University. The value of the program continues to be acknowledged by the College of Arts and Sciences, but the program lacks a well-defined status within the College. It is clear, however, that the Department of Earth and Planetary Sciences has been a good home for the Natural Sciences Program and that continued program administration through E&PS is a strong strategy. It can complement additional efforts in K-12 and STEM education within CAS.

The Spring 2013 hiring plan proposed by the A&S Strategic Planning Committee to the Dean of the College of Arts and Sciences, Mark Peceny, included a lecturer position for the Natural Sciences program. However, due to budget limitations, this position was removed from the final hiring plan. The stability and quality of the program has therefore become the responsibility of Dr. Mel Strong. At the recommendation of Chair Laura Crossey, Dean Peceny has named Dr. Strong as acting interim director of the program with appropriate compensation (SAC) in recognition of the excellent work he has been doing maintaining the viability of the program. In Spring 2015, we propose that discussions should recommence to develop a viable and concrete plan for the future of the program. These conversations can expand to include key faculty in the College of Education, in order to give the program higher visibility and increased funding potential across UNM.

Projected Start Date: ongoing

Progress Review Date (if needed):

Funding Request: We request a lecturer position in the Natural Science Program. EPS could participate in a cluster hire initiative in STEM Education with COE and other programs in CAS.

Recommendation # 9: EPS, in partnership with the A&S Dean's office and/or the Graduate Office, should identify means to rapidly increase the TA support available, in terms of both numbers and levels of support

Our MS program is flourishing and has 22 students at present, all with full financial aid packages. The College and OGS have helped with extra funds for recruiting top students and increasing the number of financial aid packages. The next needed improvement is incremental increase in GA salaries to be nationally competitive and hence to attract a higher percentage of our top applicants.

The Ph.D. Program is strong (currently also 22 students), but our goal is to increase the proportion of PhD students (currently at ~50%). This goal can be facilitated by the incremental GA salary increase,

increased alumni support, and external funding requests to support students longer and at a higher level. This is already happening as faculty are recruiting more PhD students, encouraging our top MS students to stay for PhDs, and hiring larger numbers of post-doctoral fellows. We are grateful for recent addition of additional TAs from the college, and OGS recruiting funds and these are an important step towards this goal.

Individual(s) Responsible: Dean, OGS, Chair, Graduate Committee

Resources Needed: We are grateful for recent addition of TAs from the college, and OGS recruiting funds and these are an important step towards this goal.

Action Taken/ Status: Recruiting funds from OGS paid off well with our best recruiting year in the history of the department, highest GPA and GRE qualifications of accepting graduate students, and a high number of PhD students. Increase in number of TAs greatly helped in this recruitment as did travel funds from OGS for student visits. The new policy of having advanced PhD students teach an Introductory course as part of their TA duties has been successful both in providing better continuing funding for our students and in providing important professional development opportunities for propelling PhD students into the professoriate.

Projected Start Date: ongoing

Progress Review Date (if needed):

Funding Request: Our next need is to increase the GA stipend from its current rate of 15,000/ 16,000 (MS/PhD) per 10 months to ~ 17,000/18,000 (MS/PhD) per 10 months. This increase will substantially aid in successful recruiting of top graduate student applicants, including a higher percentage of PhD students.

Recommendation # 10: EPS should work with the higher administration to continue to address salary inequities within the faculty ranks, exploring options beyond the remedies so far employed; and to whatever extent possible, action should be taken to render salaries in EPS competitive with those in competing departments in its peer institutions.

Salary inequity within E&PS and between E&PS and other STEM units at UNM is the single biggest problem faced by the Department. EPS full professors are 20-30% behind Biology, Chemistry, Economics, Engineering, Mathematics, Physics, and Psychology at UNM (Fig. 2). Our data show that among UNM departments, EPS Full Professors are across the board compensated less than all other STEM and many non-STEM units based on current (AY 2014-15) salaries. EPS lecturers are also underpaid relative to other UNM STEM units by 20-30%. These inequities need to be fixed. There is also a 30% salary disparity within the department created by recent retention efforts. The retention situations matched written offers (including from UNM peer institutions) and hence vividly document that our department is underpaid by 20-30% relative to national and international standards. In 2014-15 we will be facing significant rank inversion. The salary disparities continue to drive additional departure of faculty, low morale, faculty discord, and potential lowering of productivity and national ranking of EPS. Our action plan estimates how combined leadership and resources from the Department, College,

and Provost, will be needed to fix this inequity with infusion of about \$80,000 per year in recurring salary funds (~one new position) each year for the next 3 years.

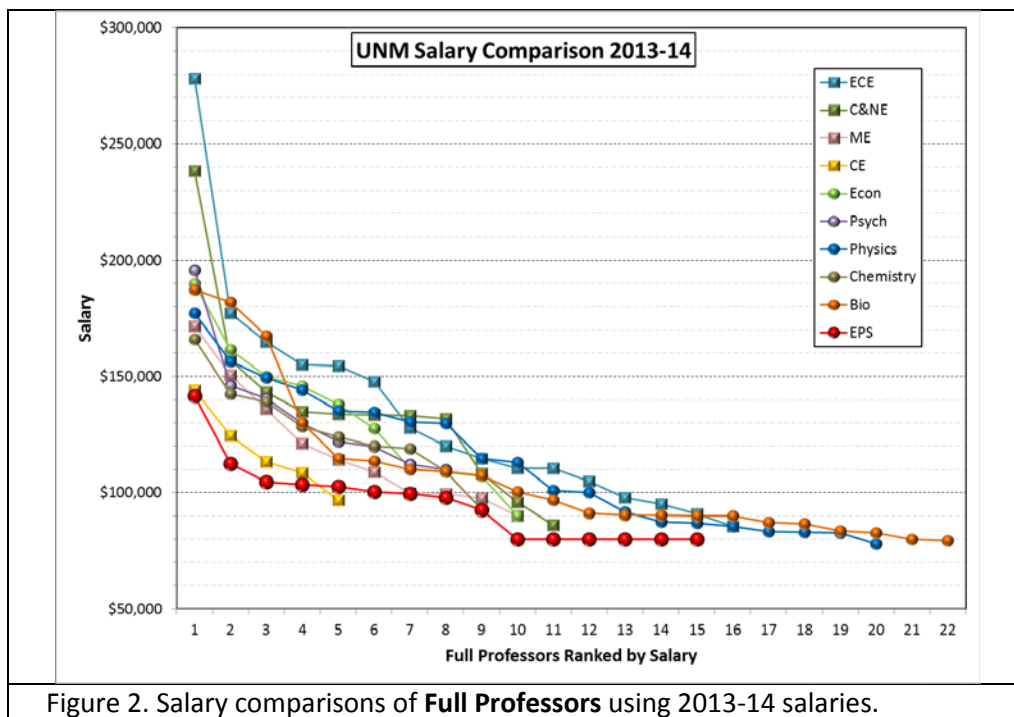


Figure 2. Salary comparisons of **Full Professors** using 2013-14 salaries.

U.S. News and World Report (in 2014) ranked E&PS as 49th (top ~40%) of 123 geoscience departments nationally. Our 2012 ranking in the same poll was 39th (top 32%) and our ranking relative to UNM-identified peer institutions (7th out of 21) remained the same. The 2012 NRC ranking showed bright spots in the areas of research (top 28%) and student support and outcomes (top 19th). We have an achievable opportunity of leveraging existing strengths to allow E&PS to improve substantially. We propose to increase our national ranking by 10-20 percentage points and perhaps move up a notch or two (to 5-6) among our peer institutions. Addressing each of the recommendations, plus additional support for faculty and (especially) graduate student travel to meetings, will lead to increased national stature.

Individual(s) Responsible: UNM Provost, Dean, EPS chair (in order of decreasing resources)

Resources Needed: *We need to infuse \$80,000 per year in recurring salary funds (equivalent to ~one new position) each year for the next 3 years to remedy the acute salary inequity between EPS and other STEM units in A&S and the College of Engineering at UNM and address the acute inequity within EPS created by recent retention actions and other administrative salary actions. A fourth year of funding would be needed to reach parity with UNM-identified peer institutions in the geosciences. This multi-year effort would allow fair consideration of equity cases based on inversion, compression, and years in service while also establishing a merit-based salary structure for this department.*

Action Taken/ Status: The College allocated substantial resources (\$22,000) in Fall 2014 to correct the inversion situation created when two Assistant Professors were hired (at market rates of \$75,000) that were higher than several Full professors. This moved a group of Full professors to \$80,000 as a block without consideration of relative merit. College retention efforts over the past several years have

amounted to salary increases of 20-30 percent for both Full and Associate Professors. These observations demonstrate that our department is underpaid by 20-30% relative to national and international standards, and relative to other, lower ranked UNM units. However, the actions have created discouragement bordering on dysfunction for the Full professors who were bypassed and who face seriously salary compression. It is worth mentioning that these retention offers went to productive faculty, but many equally meritorious faculty were left with the message that the only way to achieve a fair salary is to leave or threaten to leave UNM. Other pathways include litigation, which brings its own set of complex dynamics and strain as the faculty need to work and plan together on many departmental issues and goals. *As mentioned above, salary inequity within E&PS and between E&PS and other STEM units at UNM are the single biggest problems facing the Department.*

Projected Start Date: This program to establish parity, informed by merit, should start in fiscal year 2014-2015 and continue for ~ 3-4 years. Multi-year metrics that show impressive across the board productivity, as well as relative productivity within EPS, are generated as part of an annual Departmental productivity assessment and are available from the EPS Chair.

Progress Review Date (if needed): The Chair requests to meet each summer with the Dean and Provost to report on progress made toward achieving an equitable, merit-based salary structure in EPS.

Funding Request: We need to infuse \$80,000 per year in recurring salary funds (equivalent to ~one new position) each year for the next 4 years to remedy the acute salary inversion, compression, and inequity in EPS and to establish a merit-based salary structure for this department.

Recommendation # 11 :EPS should coordinate with the higher administration to ensure that a well-justified, carefully constructed strategic plan will eventually lead to infrastructural improvements that will ensure the long-term excellence of EPS's extraordinary laboratory facilities.

Northrop Hall was built in the 1952-1953 and the third floor was completed in the early 1970s to provide space for the Institute of Meteoritics (IOM). The building has an antique infrastructure that was not designed for 21st century laboratories or instruction. Our approach to this problem has been and will continue to be incremental renovation rather than a request for a new building. We feel this is the most efficient approach for UNM's older buildings in its central campus. In the last several years, EPS, with alumni funds, has done a 0.5 \$million renovation of the petrology/structure lab, a \$1.4 million renovation of the mineralogy lab and installation of a computer teaching lab. A&S is helping with an ongoing renovation related to the establishment of the center for Stable Isotopes (CSI). Next targets are being discussed by the facilities committee and include: increased and improved space for microbeam facilities, increased and improved space for a noble gas facility, acquisition of major new geophysical equipment by our new geophysics group, improved space to house the new SIMS instrument currently pending as a joint NASA/NSF grant, improved classrooms, and updated computer infrastructure.

Individual(s) Responsible: Chair, Associate Chair, Facilities Committee, Strategic Planning Committee, UNM foundation

Resources Needed: about 1 million per year over the next 5 years shared by alumni and UNM

Action Taken/ Status: UNM's Office of Capital Projects is finishing renovating the larger lecture hall in Northrop. Needed renovation of second and third floor laboratory space can accommodate the planned

expansion of the multidisciplinary Stable Isotope Center (CSI). EPS and A&S need to work together to get a bond initiative to renovate Northrop Hall in the next 5 years, and to interface EPS needs with design of the Interdisciplinary Science Building that is planned to house Physics and Astronomy. Discussions need to be continued to maximize future synergies between Physics and EPS in terms of space planning.

Projected Start Date: In progress

Progress Review Date (if needed): August 2014

Funding Request: ~ 1 million per year of capital improvement funds per year over the next 5 years.