

Academic Program Review

Panel Report

Prepared for the Water Resources Program
University of New Mexico

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Executive Summary

An Academic Review Panel consisting of three external reviewers (R. Kaiser, Texas A & M University; M. Santelmann, Oregon State University; and S. Sorooshian, U.C. Irvine) and one internal reviewer (S. Prasad) met in Albuquerque from October 10-13, 2010 for an on-site review of the Water Resources Program at the University of New Mexico. Panel members received a self study report prepared by the WRP prior to the site visit, and were asked to comment and advise the UNM concerning five specific questions regarding the status and future directions of the program:

- 1) Should the WRP expand its mission to include sustainability, environmental science, or develop a doctoral program?
- 2) What is the proper administrative home for the WRP?
- 3) Should the WRP retain the separate concentrations of Hydrologic Science and Policy and Management?
- 4) Can the externally funded research program of the WRP be increased?
- 5) Can the WRP be modified to accommodate past and future budget cuts?

In addition, the program self-study requested specific guidance to inform concerns such as students who enroll without course pre-requisites, how to manage students who tend to lose connections with the program after the first year and fail to file appropriate forms on time, and the appropriate response from UNM to a proposal from New Mexico State University for new interdisciplinary MS and PhD in Water Resources.

The panel reviewed the mission and current status and trends in the program, resources available in support of research, the nature of the degree program, the level of student support, existing curriculum and involvement of students in various environmentally-relevant professional projects. Based on the information available from the materials provided as well as interviews with faculty, students, alumni and administrators, the panel made the following recommendations:

Expansion of mission

Begin the process of expansion by initiating a thesis-based Master of Science degree before adding a PhD. The program should also maintain the professional track, which is vitally important and attracts students with a different career objective to UNM. Maintain the current focus of the program on water resources since the existing curriculum already contains substantial opportunity for coursework in sustainability and environmental science. Consider adding a certificate program.

Administrative Home

The process of finding an administrative home for interdisciplinary programs such as the WRP is an opportunity for the University of New Mexico to develop a successful model for the administration of all interdisciplinary graduate programs in a purposeful and consistent manner. Investment in such programs is expected to bring a return to the university through increased collaboration and collegiality among faculty, improved efficiency in delivery of courses and use of resources, and enhancement of the stature of the University of New Mexico among its peer institutions. General criteria identified for the new administrative home for the WRP were that it be an academic home perceived as

discipline-, college- and department-neutral. Resources to support the program must accompany its move to any unit, and should not be perceived as depriving other units of resources. The academic home for the WRP should reside above the college level and should have a champion at the level of Dean. Specific recommendations were that the WRP should not remain in the University College or be housed in a single college or department. Of existing units, the Office of Graduate Studies (if developed into a Graduate School that could confer degrees) best fits the general criteria, though other options are possible. Institutional support at the provost level for the unit in charge of interdisciplinary programs will be critical to the success of interdisciplinary programs.

Maintaining two separate tracks

The panel recommends retaining the two separate tracks in hydrologic sciences and policy and management. Separate concentrations are preferred by students and most faculty members, are congruent with what is done at other institutions with similar Water Resources programs, and align well with the job market.

Increasing Externally Funded Research

Panelists observed a strong culture of college- and department-centric research at UNM. In order to increase externally-funded, interdisciplinary research, there is a need to foster collaborative interdisciplinary research. The panel noted that interdisciplinary research initiatives are likely to be more successful if there is a research-oriented track (MS degree in addition to the professional track) within the program, if there is institutional support for interdisciplinary research proposals (assistance with budget preparation, and PI identified needs), and if these initiatives target the unique strengths of UNM (connections between water, energy, and law; the association with and cooperation among UNM and the national labs, the tribes, the Utton Center, and regional LTERs). Such projects could build on the long history of Hispanic and Pueblo water management institutions, and broader impacts would be strengthened by highlighting the diversity of the campus and faculty. Interdisciplinary research initiatives are less likely to be successful if they rely solely on the energy of already overloaded faculty to lead proposal development.

Resources and Budget Concerns

Panelists recognized that there are and will be continued financial constraints to the program. In the opinion of the panel, further budget cuts would compromise the integrity of the program. There may be entrepreneurial or innovative ways to make the best use of existing resources and leverage additional resources, but the first step at the university level is to get rid of the zero sum mentality and begin to look beyond current structures for new sources of revenue. Many specific options exist, but the WRP must make the choices that will influence the direction of future growth in the program.

Summary

The Water Resources Program and other interdisciplinary programs at UNM are the product of faculty innovation and highlight the value of the University to the state, the tribes, and the local and regional community. The Water Resources Program fosters collaboration and collegiality across multiple colleges and departments which is a critically important role during times of adversity.

Review Panel Report

Introduction

The Academic Review Panel met in Albuquerque from October 10-13, 2010 for an on-site review of the Master of Water Resources Program at the University of New Mexico. Panel members received and read a self study report prepared by the WRP prior to the site visit. During the three days on site, the panel met with



the Director and Associate Director of the WRP, a group of 20 students enrolled in the program, 12 alumni, and more than 30 faculty members. In addition, panelists met with Provost Suzanne Ortega, Vice Provosts Wynn Goering and Richard Holder, Deans and Associate Deans of the Colleges of Architecture and Planning, Arts and Sciences, Engineering, School of Law, the Graduate School, Vice President for Research, and the Directors of University College and the Utton Center. Findings were presented at an exit meeting attended by many of these administrators, as well as the Dean of the Office of Graduate Studies, Amy Wohlert, representatives from the Research Office, Distance Education, and Curriculum and Accreditation units, and several faculty members of participating colleges. The review panel was asked to evaluate the program, to address five specific questions posed in the self study, to identify any additional issues of concern, and to provide guidance for the program and University administration for the future of the WRP.

The five questions the panel was asked to address were:

- 1) Should the WRP expand its mission to include sustainability, environmental science, or develop a doctoral program?
- 2) What is the proper administrative home for the WRP?
- 3) Should the WRP retain the separate concentrations of Hydrologic Science and Policy and Management?
- 4) Can the externally funded research program of the WRP be increased?
- 5) Can the WRP be modified to accommodate past and future budget cuts?

In addition, the program requested specific guidance to inform concerns such as:

- 1) How to handle students who enroll in courses without course pre-requisites
- 2) How to manage issues such as student tendency to lose connections with the program after the first year and failure to file appropriate forms on time
- 3) What should be the UNM WRP response to a proposal from New Mexico State University to initiate a new interdisciplinary MS and PhD in Water Resources.

Panel findings are presented and discussed below. The report first outlines the origins, mission, condition of and trends in the program, then presents panel recommendations

organized in reference to the questions and issues of concern presented in the self study. The findings also reflect our observations of issues that emerged during the site visit.

Background: Program origin, mission, condition and status

The Water Resources Program (WRP) at University of New Mexico was developed by faculty in 1991, and brings together faculty members and students from many different disciplinary perspectives and experiences. The mission of the WRP is to be “an interdisciplinary professional degree designed to prepare students for careers in water resources management and related fields.”

The program is directed and delivered by a dedicated, productive set of core faculty who teach and advise students in the program, as well as a set of loosely-affiliated faculty members who teach related courses used by students in their degree programs and occasionally advise students in their professional projects. The students in the program tend to be relatively mature (average age 33), experienced, and to have a passion for water resources management. Many work either full time or part time while they are in the program. Some are supported by their current employer. The program has a relatively high level of diversity, with several Native American students, Hispanic students, and some international resident students.

The panel was impressed at the relatively strong program level of commitment and dedication of the faculty to the WRP and students in the program, especially from the faculty leading the program. However, panelists also noted that greater faculty involvement and shared responsibility (an Associate Director for each track, a curriculum committee, a half-time professional advisor on staff) would strengthen the program. Budget cuts and lack of institutional support for students in the program have left the WRP starved for resources (inadequate space for students, computers, software licenses, equipment for research, and decreased support for instruction). The panel felt that institutional support for and investment in increased faculty involvement must come from the central administration of both the University and the colleges in order to remove perceived barriers to faculty participation. An institutional vision for the role of interdisciplinary programs at UNM is needed to guide program development.

The panel also noted the strong student involvement in applied research, engagement of the program with the community through student research and alumni, commitment to and passion for water resources management in the students and alumni, and the diversity of the students in the program. Recruitment of students into the program seems to be largely by word of mouth and efforts to broaden the avenues for student recruitment should be explored. The web site of both the OGS and the WRP contain broken links, and several pages on the WRP website need to be updated.

The response of the panelists to the specific issues and concerns raise by the WRP in the self-study are addressed in the following sections.

Expansion of mission: Should the WRP expand its mission to include sustainability, environmental science, or develop a doctoral program?

To address this question, the panel reviewed the mission and current status of the program, resources available in support of research, the nature of the degree program, level of student support, existing curriculum and involvement of students in various environmentally-relevant professional projects. Based on this information as well as interviews with faculty, students, alumni and administrators, the panel recommends that the program should not attempt to develop a PhD at this time. The panel also was not convinced of the value of a Doctorate in Water Resources (a new type of graduate degree proposed for development here that would be a professional doctorate similar to other professional doctorates such as a D Ed or D of Pharmacy etc.). Panel members do not see a market for or student demand for such a degree, and some expressed the concern that a professional Doctorate of Water Resources might be perceived as a lowering of academic standards in the program and at UNM in general, which would go counter to the desire of the program to develop interdisciplinary, externally-funded research.

With respect to the future development of a PhD for the WRP, a likely trajectory towards the development of a PhD would include the development of an MS degree with a thesis requirement, increasing research effort in interdisciplinary Water Resources research in order to provide Graduate Assistantships to support these students. To eventually be able to deliver a PhD program and recruit top quality students, there would need to be research assistantships so students could be supported through research generated on interdisciplinary projects. A thesis-based MS degree would attract research-oriented students to the program as a stepping stone to the development of the PhD. Additional course offerings, office space and computer capabilities would be required for research-oriented, full-time students in MS and PhD programs.

A potential opportunity exists to collaborate on delivering a PhD with other universities in future – especially since one of the sister institutions in the state is interested in developing an MS and PhD in Water Resources. Perhaps this is time to begin discussions towards building a consortium of universities to deliver interdisciplinary programs.

The panel also recommends maintaining the current focus of the program on water resource issues. The existing curriculum includes options for courses in sustainability and environmental science. In addition, sustainability and environmental science issues are infused into other courses and the professional project. Panelists did not see a need to formalize a track in Environmental Science and Sustainability or add curricular requirements for such courses.

One area in which there may be potential for immediate expansion is the area of Certificate Programs (12 semester credits of focused coursework with an internship or practicum as a capstone experience). Some students who do not finish the existing program (especially the professional project) might be better served by such a program, which they could complete in a shorter time and might be all they need for their career.

Administrative Home: What is the proper administrative home for the WRP?

The panel emphasized that the process of finding an administrative home for interdisciplinary programs such as the WRP is an opportunity for the University of New Mexico to develop a successful model for the administration of interdisciplinary graduate programs in a purposeful and consistent manner. Investment in such programs was expected to bring a return to the university through increased collaboration and collegiality among faculty, improved efficiency in delivery of courses and use of resources, and enhancement of the stature of the University of New Mexico among its peer institutions.

General criteria identified for the new administrative home for the WRP were that

- it be an academic home that is perceived as discipline-, college- and department-neutral;
- resources to support the program must accompany its move to any unit, and should not be perceived as depriving other units of resources; and
- the academic home for the WRP should reside above the college level and should have a champion at the level of Dean.

Specific recommendations were that the WRP should not remain in University College or be housed in a single college or department. The panel noted that of existing units, the Office of Graduate Studies (if developed into a Graduate School that could confer degrees) best fits the general criteria, although other new units might be possible (such as a School of Interdisciplinary Studies). Institutional support at the provost level for the unit in charge of interdisciplinary programs will be critical to their success.

Panelists agreed that the University College is not the appropriate home for the WRP, and of the other options presented or suggested, the OGS meets the largest number of criteria. If the Office of Graduate Studies can be transformed into a Graduate School that houses interdisciplinary programs and can confer graduate degrees, that might be the best solution. This sentiment was also expressed by the School of Engineering Dean's office. Whatever the final home selected for the WRP, this unit must invest time and effort into establishing metrics for evaluating performance of the interdisciplinary programs in ways that accurately reflect their contribution to the stature of the University and contribution to the State of New Mexico.

The panel viewed the faculty involved with the interdisciplinary programs as innovators who have provided an opportunity for the university to develop a model for how they want to administrate multiple interdisciplinary programs. It is our strong belief that the UNM needs to confront this issue, to consider establishing an administrative structure to handle interdisciplinary programs, particularly programs such as Water Resources that cut across so many disciplinary boundaries (participants from multiple colleges and departments).

Maintaining two separate tracks: Should the WRP retain the separate concentrations of Hydrologic Science and Policy and Management?

The panel recommends retaining the two separate tracks in Hydrologic Sciences and Policy and Management. During the review, panelists noted that separate concentrations were preferred by students. Several faculty members expressed the opinion that the current separation of the tracks is working well, that it helps students enroll in courses where they can succeed, and leads to career self-selection that is responsive to both the job market and cognizant of the skills sets and abilities of the students. Alumni expressed the opinion that in the course selection available to students there is the opportunity to incorporate interdisciplinarity. Separate tracks are congruent with what is done at other institutions with similar Water Resources programs, and align well with the job market.



The panel recommends establishing a curriculum committee for periodic review and updating of curriculum. An external advisory board of professionals could assist in identifying curricular needs and important elements of professional training for students. Departmental course offerings change over

time, and a critical review of the program curriculum from time to time given the resources of program at that time is an important element of a successful program. The committee could also explore and comment on other opportunities such as offering Certificate Programs, online and summer courses.

The panel also recommends enforcement of the prerequisites and other admission requirements. Providing online options for students who need these courses may help ease the transition. In addition, the curriculum committee should examine the tracks to consider whether pre-requisites for the different tracks should be modified.

Increasing Externally Funded Research: Can the externally funded research program of the WRP be increased?

Panelists observed a strong culture for college- and department-centric research at UNM. There is not a culture of support for interdisciplinary research. If the university desires to cultivate interdisciplinary research they need to rethink the reward system for interdisciplinary research, and ways to foster efforts toward development of collaborative interdisciplinary research clusters.

A thesis oriented degree at the Master's level could be a first step toward the development of an interdisciplinary research program and a mechanism for moving towards an eventual doctoral program.

Some of the faculty members mentioned the potential for developing a program-level proposal; a collaborative proposal with a number of participants from the Water Resources community to bring in resources in support of interdisciplinary research in water. The Office of Research and even the Provost's office could foster collaboration and provide institutional support to help leverage opportunities for collaborative projects, large collaborative proposals, and help in seeking out new, perhaps unconventional sources of funds (Private Foundations etc.).

The panel noted that interdisciplinary research initiatives are likely to be more successful if there is a research oriented track (MS degree rather than a professional track alone) within the program, if there is institutional support for interdisciplinary research proposals (assistance with budget preparation, etc. PI identified needs), and if these initiatives target the unique strengths of UNM (connections between water, energy, and law; the association with and cooperation among UNM and the national labs, the tribes, the Utton Center, and regional LTERs). Such projects could build on the long history of Hispanic and Pueblo water management institutions, and broader impacts would be strengthened by a focus on the diversity of the campus and faculty. Interdisciplinary research initiatives are likely to be less successful if they rely solely on the energy of already overloaded faculty to lead proposal development.

Resources and Budget Concerns: Can the WRP be modified to accommodate past and future budget cuts?

Panelists recognized that there are and will be continued financial constraints to the program. In the opinion of the panel, further budget cuts would severely compromise the integrity of the program. There may be entrepreneurial or innovative ways to make the best use of existing resources and leverage additional resources, but the first step at the university level is to get rid of the zero sum mentality and begin to look beyond current structures for new sources of revenue. Some options for increasing the revenue stream into the program or to fund students suggested by panelists include:

1. Certificate programs
2. Distance education
3. Scholarships and fellowships for students
4. Endowed chairs, named professorships
5. Small student grants for computers, equipment
6. Other creative ideas from the UNM faculty and students???

Many specific options exist for academic programs to generate revenue or support for students, but the WRP must make the choices that will influence the direction of their

growth. Assigning the WRP to a specific development staff person is an important first step in this direction.

The program needs to develop a long-range strategic plan that incorporates its own wishes, desires, and mission into specific development needs (endowed chairs, professorships, sponsored scholarships etc.)

In the short term, loss of an instructor in the writing and communication section of the core courses is a severe blow to the curriculum. The budget for this must be restored since writing in the profession is a universally important skill.

To address other strains on the program in the short term, panel members suggest that that the program consider redirecting some existing resources (such as converting the position of full-time administrative assistant to half-time) in order to fund a half time person to assist in professional advising with students and help program director in a more professional advising capacity, identifying potential internships, tracking student progress, and maintaining connections with students in program when not enrolled.

Additional Observations or Issues of Concern

Proposal by NMSU to offer graduate degrees in Water Resources

In the self-study document (p. 10) it was mentioned that NMSU had proposed to initiate an interdisciplinary graduate program offering an MS and PhD in Water Resources, and guidance as to an appropriate response from the UNM WRP was requested. While we have no detailed information about the proposed program, a potential response to NMSU might be that offering an MS and PhD in Water Resources is an issue for the public universities of New Mexico to explore together, and perhaps consider collaborating to deliver a stronger program than any one institution could deliver separately. There are unique elements of strong water programs at all these institutions (NMSU, NM Tech, and UNM), and this may be an opportunity that could benefit all. Panelists encouraged the WRP at UNM to have a conversation with other schools about collaborating to deliver graduate degrees in Water Resources. In addition, it was noted that it would be a big loss for this university not to appreciate and maintain the successful program they already have while their sister institution seems to see an MS and PhD in Water Resources as a priority.

Within-program Administration

Administrative structure within the program needs to be improved. Most of the day to day duties of program administration have largely been shouldered by the current director. Some of these tasks could be shared by other staff or faculty. It might help to have an Associate Director for each track who is familiar with the program requirements and career opportunities most relevant to graduates of that track.

As noted above, panel members suggested that that the program consider redirecting some existing resources (such as converting the position of full-time administrative

assistant to half-time) in order to fund a half time person to assist in professional advising with students and help program director in a professional advising capacity, identifying potential internships, tracking student progress, and maintaining connections with students in program when not enrolled.

Advising and Mentoring

Some alumni felt there was a need for strengthening admission criteria, a clearer definition of various tracks and options, and a more consistent advisement process. This is very much in line with the view of the panelists.

Students expressed a need to become more familiar with the faculty members who participate in the program as advisors. Introducing faculty to students earlier in the program would help relieve some of the advising load of the Director, especially senior faculty in program who would be good potential advisors of professional project. Possible ways to do this include a seminar series, retreats, and guest lectures in the core courses. Students also expressed an interest in seeing more connection to professional mentors (possibilities range from a career day or panel to formal assignment of students to a professional mentor). Students also noted that the program lacks dedicated space for students:

“ We don’t have a home, dedicated space. For our modeling-intensive core course (WRP 572) we have 20 students on only 4 computers crammed into a janitor closet.”



Panel members noted that if faculty members upgrade computers every two years; each student could receive a computer only 2 yrs old if these are transferred to students instead of being sent to surplus.

Value added by interdisciplinary programs

Panelists felt that it was important to identify the additional value that is brought to the University of New Mexico by the interdisciplinary programs such as the WRP. Points that were identified by the panel included the fact that the WRP:

- Highlights an area of strength at UNM
- Provides a pipeline of professionals to address New Mexico’s water management needs
- Brings together faculty to collaborate in teaching and delivering the degree
- Brings students into a graduate program who might not otherwise come to UNM
- Brings in students with energy and passion; faculty find it rewarding to work with these WRP students
- Fosters community engagement

The institution might consider ways in which these and other benefits of the interdisciplinary programs should be measured, since resources and opportunities often follow such metrics of success.

Summary

The Water Resources Program and other interdisciplinary programs at UNM are the product of faculty innovation, and highlight the value of the University to the state, the tribes, and the local and regional community. The Water Resources Program fosters collaboration and collegiality across multiple colleges and departments which is a critically important role during times of adversity and economic hardships. It has the potential to serve as the flagship interdisciplinary graduate program at UNM, with broad national and international appeal.

Specific recommendations of the panel:

- Do not add a PhD program at this time, consider collaborating with other NM institutions to develop a PhD program in Water Resources
- Begin any expansion of degree program and WRP research efforts by adding a thesis-based Master of Science degree
- Maintain the current focus on Water Resources rather than expanding in the areas of environmental science and sustainability.
- The WRP should be housed either in the Graduate School or in a unit that is created for the administration of interdisciplinary degree programs
- Keep the two distinct tracks with the program, and consider revising the pre-requisites by degree program in order to tailor the pre-requisites to the degree program track
- Externally funded research of the WRP can be increased but will require a change in the institutional culture of department-centric and college-centric research, and institutional investment in efforts to foster interdisciplinary research initiatives.
- The current budget is already too lean for maintaining a strong program. Funds to keep the team-taught communication and writing portion of the course sequence should be restored, the program should consider adding a part time professional advisor to guide students in the first year, and might be able to decrease the FTE allotted to the administrative assistant to help find funds for such a person.
- Investigate new sources of revenue for the program and change the “zero-sum” mentality that is an obstacle to program growth