

Final Report

Executive Summary

Vision: The Environmental Resource Management (ERM) program at Penn State University aspires to excellence in training students to become leaders in science-based management of our environment and natural resources; further, the ERM program will be among the top-tier environmental science and resource management undergraduate programs in the nation.

Mission: The ERM program educates students both broadly and deeply in the environmental sciences and resource management, and provides a multidisciplinary undergraduate experience that includes classroom, laboratory, field and experiential learning. Our graduates are prepared to address the environmental issues of today and the future, and can apply their knowledge and skills to issues ranging from local to global in scale.

The committee identified three priority action items that it believes are essential to fulfilling the mission and achieving the vision, along with five goals and underlying strategies to improve the program:

Priority Action Items - These are key to achieving the five goals identified below:

- Create shared space for ERM and the Environment and Natural Resources Institute (ENRI) to maximize student benefits of this important collaboration
- Provide support for an upper level GIS class (geographical information systems) in ERM curriculum
- Increase the pursuit of development opportunities for scholarships, internships, and recruitment

Goal 1. Student Outcomes: *Deliver the program's basic science and advanced environmental science and resource management training so that students graduate prepared for lifelong learning and can address current and future environmental issues.* Senior exit interviews and alumni surveys indicate that students receive adequate training in these areas. However, strategies should ensure that student outcomes such as strong critical thinking, problem solving, and communication skills are incorporated into future curricular changes.

Goal 2. Student Experience: *Enhance the student experience within the major, at Penn State, and globally as part of a larger learning community.* The committee believes strongly that the college administration should work with ENRI and ERM staff to locate ENRI and ERM offices, along with adequate student space, in a centralized location in close proximity to each other to provide a home base and identity for the program. Other strategies include providing students with appropriate information about internships, research, study abroad, and career opportunities. Opportunities for more student-to-student interaction should be created by the program.

Goal 3. Recruitment and Marketing: *Continue to develop recruitment and marketing strategies to improve the visibility and stature of the ERM program.* Strategies include efforts to promote and improve the visibility of the major to prospective high school students, parents, guidance counselors and advisors. The program should also focus on undecided students within the Penn State system at other campuses and University Park, and utilize the resources of the college and ENRI to enhance its marketing and recruitment efforts.



Executive Summary

Goal 4. Faculty and Unit Engagement: *Promote an atmosphere of participation and engagement from faculty and units across the college and university, and ensure the recognition of faculty and units for their contributions to the program.* The ERM program should utilize ENRI and its faculty associates to identify and solicit new teaching contributions to the program. ERM, through ENRI, should work cooperatively with college administration to formally recognize faculty and units contributing to the program.

Goal 5. Responsibilities to Stakeholders and Society: *Foster strong relationships with external stakeholders and society.* The committee recommends that the ERM program and ENRI develop a program to formally recognize the contributions of outstanding alumni to the program and profession. Current students can be connected to alumni through the mentoring program, ERM 151, publicizing job opportunities provided by alumni and friends, and periodic newsletters highlighting student, faculty and alumni achievements. ERM and ENRI should also explore opportunities for enhancing program giving with college development staff.



Introduction

In October 2006, Dean Robert Steele appointed a 10-member faculty committee (Appendix I) to conduct an internal review of the Environmental Resource Management (ERM) program and make recommendations to the dean's office, the Office of Undergraduate Education, and the college's Environment and Natural Resources Institute (ENRI), the new administrative home for the ERM program. The charge to the committee was to:

1. Develop a vision for the ERM program. The vision should be first and foremost concerned with the educational experiences and outcomes we seek for ERM students. It should also address the number and quality of students we would like in the program. Recognizing that educational excellence requires an engaged and dedicated faculty, the vision should also address the formation of a functioning and effective ERM faculty.
2. Evaluate the current program in relation to that vision. This evaluation should consider the number and quality of students in the program, and their educational outcomes. It should examine curriculum, but also activities outside of course work, and facilities that enrich educational experiences and outcomes. And, it should consider the current governance.
3. Identify strategies to achieve the vision. Strategies would include curriculum design, extra-curricular activities, the formation of an ERM faculty, program governance, and marketing. Opportunities to enrich the program through awards, internships, study programs, scholarships that would need donor support should be among the issues considered.

The ERM Review Committee began meeting in November 2006 and, in light of the charge to the group, considered aspects of the program ranging broadly across many topics. The group was provided with curricular, enrollment and other programmatic data from the ERM office, and consulted with or solicited information from internal stakeholders such as CAS academic unit leaders, teaching faculty, current ERM students, college and ENRI personnel, and ERM alumni (Appendix II). In its final report, the committee has developed a vision and mission statement for the program, and has made recommendations on curricular issues, student outcomes and experiences, recruitment and marketing, facilities and faculty for the program, and continued involvement and input by faculty and external stakeholders.

Priority Action Items: The ERM Review Committee has listed three priority action items that are needed to enable the ERM program to provide a cohesive functional program on par with other programs in the college. We believe these priority items are critical to benefit current and future students in the program, promote faculty and unit recognition and participation in the program, and attract strong prospective students into ERM. These items will require action from the dean's group to be implemented and may require reallocation of resources. Because of their overarching importance, these three items are listed separately from, but are also integrated with the five strategic goals and recommendations listed later in this report.

Action Item 1: There is a compelling need for shared space between ERM and ENRI to maximize the student benefits of this collaboration. Located currently in separate buildings, there is no opportunity for ERM and ENRI to share resources or to present any semblance of a home base for current and prospective students. The current face of ERM is simply two doors in a hallway in ASI, with no evidence of any



Introduction

student activity, or welcoming atmosphere. With the current emphasis on making a large university accessible, our “front door” for ERM students is not satisfactory and is not in line with the vision of being student centered.

Shared space for ERM and ENRI would facilitate all of the goals set forth by the charge to our committee by providing a base for student interaction, a critical mass of staff to permit a more welcoming and professional atmosphere, and the opportunity for faculty and staff to work cooperatively.

Action Item 2: The Review committee and current students interviewed were unanimous in identifying the need for an upper level GIS course as a prescribed course within the curriculum. The committee strongly believes that a faculty hire in this area (with at least a partial teaching appointment in ERM) would benefit students in the program and provide recognition for the program. Opportunities for research in this field could then be provided to ERM students and also enhance the ERM curriculum to compete effectively with peer institutions.

Action Item 3: ERM would benefit greatly from a more organized pursuit of development opportunities for the program. The addition of a dedicated staff person responsible for improving contacts with ERM’s considerable base of alumni and friends would permit growth of ERM scholarships and keep the program prominent in the eyes of both our alumni and potential employers for our graduates. This hire could also contribute to the development of additional internships and identification of career opportunities within the major, and significantly enhance the marketing and recruitment efforts for the major.



Background

Description of the Program

The ERM program was established in 1971 to meet the need for people with the scientific and leadership skills needed to address the enormous environmental challenges that had become so apparent in the 1960s. The program was a significant innovation within the college, and it was among the first of many environmental programs initiated at that time.

The faculty and administrators responsible for establishing the ERM program had the foresight to predict a growing market both in the public and private sectors for graduates trained broadly and deeply in the environmental sciences and related disciplines. They also recognized that environmental problems and issues crossed over traditional disciplinary boundaries, and developed the program as an interdepartmental, multidisciplinary major. The program was immediately successful, with the number of graduates increasing from 23 in 1973 to 104 in 1980. While enrollment numbers have always been strong, enrollment peaks occurred in the early '80s and mid '90s (Appendix III). To date, the program has over 2,500 graduates in its 36 year history. The program has maintained its interdepartmental nature since its inception, with faculty teaching and research contributions coming from across the disciplinary units within the college.

Administrative Structure

The administration of the program has evolved substantially since 1971. Initially the major was administered by a three-member faculty group. This structure was replaced in 1977 with an Administrative Committee comprised of unit leaders. Most recently (August 2006), the ERM program was placed under the administrative auspices of ENRI.

The daily operations of the program have been the responsibility of a faculty program coordinator since 1977. Throughout the program's history, the program coordinator has convened a committee of faculty that teach and/or advise within the program to seek input on and changes to curriculum and other programmatic matters. The ERM Program Coordinator currently reports to the director of ENRI, with oversight from the Associate Dean for Undergraduate Education.

Prior Program Reviews

The ERM program has been the subject of several program reviews, both internal and external, in its 36 year history. The first internal review was conducted in 1982 and was followed by an external review in the same year. A second internal review was conducted in 1999 and was followed by an external review in 2000. The current review is the third internal review.

The first two internal and external reviews had similar findings. Both highlighted the relevance of an interdepartmental environmental science and resource management undergraduate major within the college of Agricultural Sciences, and gave high marks to the program for the rigor of its curriculum and quality of its teaching faculty. Both reviews identified and offered recommendations for addressing weaknesses in advising and internship resources, the continuity of faculty and unit leader commitments to the program, the format for administrative leadership for the program, particularly given its interdepartmental structure, and the college's long term commitment to the environmental sciences and related programs.



Background

Context of the Current Review

Like the prior reviews, the current review stems from a commitment to maintaining a high quality program that is responsive and relevant to students, stakeholders, and the ever-changing environmental field. Recent developments within the college have sparked a renewed commitment to and recognition of undergraduate environmental programs and to the fostering of multidisciplinary research, education and outreach initiatives within the college. One related development was the inclusion of environmental/human interactions and ecosystems as a major focus within the college 2005-2008 Strategic Plan. Another recent development was the January 2005 formation of ENRI. Several faculty committees (see 2001 Faculty Working Group in Environmental Sciences Report and 2004 Ad Hoc Environmental Committee Report for details) recommended the formation of ENRI, to “promote the visibility of college programs in environmental and natural resources research, education, and outreach,” and “provide leadership to coordinate and enhance existing environmental educational programs.”

Concomitant with the recommendations of these faculty groups and ultimate formation of ENRI was college-wide concern and emphasis on increasing enrollments across the college’s undergraduate programs. As a first step in implementing goals from the college Strategic Plan, a study committee was charged to investigate and make recommendations regarding enrollment and curricular issues in environmental programs. The Environmental Curriculum Review Committee met over 2005-2006 with their purpose to “assess the college of Agricultural Sciences environmental and related life sciences programs and identify recommended changes that will result in increased enrollment and student success”. One of the major recommendations in the March 2006 final report of the committee was to **“charge the Environment and Natural Resource Institute (ENRI) – working in close collaboration with the CAS Office of Undergraduate Education – to strengthen coordination between and improve visibility of environmentally-oriented undergraduate majors programs in the college. Further, place the Environmental Resource Management undergraduate program... under the administrative oversight of the ENRI.”** After review and comment by college faculty and positive feedback from external stakeholders, including the ERM Affiliate Program Group, Dean Steele formally accepted the above recommendation and announced that beginning July 1, 2006, ERM would be “placed under the auspices of the interdisciplinary ENRI -- Dr. Jim Shortle, Director – for administrative oversight.” Shortly after this administrative change, this committee was formed to conduct an internal review of the ERM program.

The recommendations of this committee are informed by these recent changes in the administrative structure of the ERM program, by recommendations from previous internal and external program reviews, by programmatic information provided by the ERM office (Appendix IV), and by committee meetings held between November 2006 and November 2007. We believe that our recommendations are consistent with the current CAS Strategic Plan (2005-2008), as well as the ENRI Strategic Plan (2005-2008) in recognizing the college’s investment in environmental research, education and outreach, and have the potential to significantly improve the ERM program. We have defined a vision and mission for the ERM program, and have also defined goals, made recommendations and identified strategies in five critical areas that we believe are necessary to fulfill the mission and achieve the vision: Student outcomes, the student experience, marketing and recruitment, faculty and unit engagement, and responsibilities to stakeholders and society.



ERM Vision, Mission, Goals

Vision: The Environmental Resource Management (ERM) program aspires to excellence in training students to become leaders in science-based management of our environment and natural resources; further, the ERM program will be among the top-tier environmental science and resource management undergraduate programs in the nation.

Mission: The Environmental Resource Management program educates students both broadly and deeply in the environmental sciences and resource management, and provides a multidisciplinary undergraduate experience that includes classroom, laboratory, field and experiential learning. Our graduates are prepared to address the environmental issues of today and the future, and can apply their knowledge and skills to issues ranging from local to global in scale.

Goal 1. Student outcomes: *Deliver the program's basic science and advanced environmental science and resource management training so that students graduate prepared for lifelong learning and can address current and future environmental issues.*

Recommendations/Strategies:

- 1) *Develop additional opportunities for practical courses in the theory, use and application of geospatial technologies and geographic information systems.* Currently the curriculum prescribes GEOG 160 (Fundamentals of GIS, cartography, remote sensing, and GPS), but the committee and student panel both believe that a second, more advanced course focusing on environmental applications of GIS should be required of all ERM students. *A faculty hire with at least a partial teaching appointment in ERM is part of this recommendation; thus it is listed as a priority action item.*
- 2) *Maintain a contemporary and dynamic curriculum that promotes objective, critical thinking about complex environmental issues, and develops problem-solving skills to address issues from both a quantitative and qualitative perspective.* Senior exit interviews and alumni surveys indicate that students are receiving adequate training in these areas, but improvements in integrating these core pedagogical approaches into future courses should remain of paramount importance.
- 3) *Ensure that ERM students are prepared to be effective communicators to both lay people and technically-trained audiences.* The committee believes that strong communication skills (e.g. writing, group presentation and oral communication) for environmental graduates are critically important. The current major requirements of CAS 100 and a second communication selection should be explored to find additional ways to incorporate effective communications into existing and future courses. One model worth exploring is to develop a major- or college-specific course to replace ENGL 202C (Technical Writing); several departments and colleges have already developed alternative technical writing courses (e.g. BE 391 & 392, EMS 100S), and the English Department is supportive of the concept.
- 4) *Continue to incorporate field- and lab-based components into existing and future courses.* ERM students interviewed as part of a panel discussion unanimously emphasized the importance of “hands-on” learning as a critical part of their undergraduate experience. Many mentioned that they were first attracted to the major because of the many opportunities for field- and lab-based experiences, and that these opportunities should be publicized more widely to attract students.



ERM Vision, Mission, Goals

5) *Continue to develop and refine assessment tools for evaluating student performance and needs within the program, to ensure that students are prepared for environmental science/ natural resource management positions and graduate or professional schools.* Assessment tools could include in-class exams and projects, senior exit interviews, and alumni and employer surveys to ensure relevancy of the curriculum.

Goal 2. Student experience: *To enhance the student experience within the major, at Penn State, and globally as part of a larger learning community; provide access to facilities, programs, faculty and stakeholders that enhance the student living and learning experience, including study abroad, research and internship experiences.*

Recommendations/Strategies:

1) *The ENRI Director and ERM Program Coordinator should work with college administration and development staff to locate the program and institute offices and student space in close proximity to each other.* The committee felt strongly that the new ERM/ENRI affiliation provides the opportunity to market and promote the “identity” of both programs, and a centralized location for both will significantly aid in establishing more efficient and streamlined operations and communications. This recommendation would include a centralized location for student gathering, similar to many units with undergraduate student study areas/lounges. *Because of its importance and action required by college administration, this recommendation is also listed as a priority action item.*

2) *Provide opportunities early in the curriculum for ERM students to meet other ERM students and faculty.* The interdepartmental nature of the ERM program and lack of significant centralized student facilities has often prevented students from identifying each other and establishing themselves as a cohort until late in the curriculum. The ability of students to establish peer contacts early in their program will help to break down the perception of isolation common to interdepartmental programs. For example, the program could initiate a “welcome back” session early in the fall semester (similar to other units) and establish a spring gathering as well. The development of a freshman seminar specifically for ERM majors would also assist in initiating student-to-student contact early in each student’s academic career. Other recommendations below will also assist in this effort.

3) *The ERM program office should maintain and improve its communications with students regarding career, internship, research, graduate and professional school opportunities, program updates and other curricular matters.* The committee found that students were generally pleased with the level of communication with the ERM program office. However, senior exit and graduate surveys suggest that the program office could provide further assistance with identifying career and internship opportunities.

4) *The ERM program and ENRI should promote and develop research opportunities for ERM students.* Promotion of student research opportunities should not be limited to college and university faculty, but also include opportunities with outside agencies and universities (e.g. NSF’s REU program, national research institutes, etc.), and also include opportunities to present research findings at college, university, national and international venues. Mechanisms for subsidizing research opportunities for ERM students should be explored as well. The committee discussed several options for subsidizing research activities,



ERM Vision, Mission, Goals

from participating in the college's Undergraduate Research Program to establishing a policy of tiered progressive funding to faculty for involving ERM students in their research. A key element to any option is the provision of funds to subsidize the costs of student research, so ERM/ENRI staff, in consultation with college and university development staff, must seek development opportunities for establishing research scholarships and/or increased college funds to finance this initiative. *This recommendation is listed as a priority action item and is discussed below in a separate development recommendation.*

5) *Utilize the resources of ENRI and its associated faculty to promote seminars and research experiences for ERM students.* The formation of ENRI and establishment of a centralized location for exchange of ideas among faculty engaged in environmental research provide the ERM program with logical connections to this research. ERM and ENRI should seek to establish connections between affiliated faculty and ERM students to enhance the research experiences of students. Similarly, an ENRI/ERM seminar series attractive to undergraduate students would serve to inform ERM and other students about current environmental research and issues at Penn State and around the world.

6) *Promote and enhance international experiences designed specifically for ERM students.* Recognizing that exposure to international environmental issues enriches the student experience, ERM and ENRI, in consultation with the college and University International Programs offices, should continue to develop and seek new avenues for providing international experiences with an environment/natural resource component. The recent successful ERM/ERRE spring break study tour to Costa Rica and establishment of ties with EARTH University are good examples of recent efforts, and these types of experiences should be sustained.

7) *Identify and prioritize development opportunities, in consultation with university and college development staff, to increase the number of endowed scholarship funds and unrestricted gift funds in ERM.* The ERM program has not yet established a history of long-term endowed scholarships and gifting common to older programs. However, opportunities exist for increasing targeted scholarships and unrestricted gifts, and should be explored with university and college development staff. The ERM program should consider priorities for need- and merit-based scholarships, as well as funds for student research, study abroad, internships, outstanding student awards, and other student experiences. *The hiring of staff to assist in development activities is listed as a priority action item.*

Goal 3. Recruitment and Marketing: *Continue to develop recruitment and marketing strategies to improve the visibility and stature of the ERM program, both within the college and the university, and to prospective students and external stakeholders.*

Our recommendations for recruitment and marketing are based on a history of fluctuating enrollments in the ERM program since its inception, and declining enrollments from environmental majors since the mid-1990's (Appendix III). Specifically, enrollment in the ERM major, as captured by the college every October, has declined from a peak of 647 students in 1994 to 81 students in 2005. Graduate numbers tracked since the inception of the program indicate two distinct peaks in the mid-'70s to early-'80s (~110-120 graduates/year) and mid-'90s (~150 graduates/year), and two periods of low graduate numbers in the mid-to late-80's and presently. These trends are not specific to environmental programs at Penn State, and have been attributed to many causes such as the perceived job market, U.S. and world politics and economic



ERM Vision, Mission, Goals

climate, and a nationwide proliferation of environmental programs since the 1970s. In Pennsylvania alone, there are currently over 75 schools with at least 108 baccalaureate environmental programs, most of which were formed since the ERM program was initiated in 1971. Penn State also has other environmental programs that have been formed since the ERM program was developed (Appendix IV, section 9).

Thus it appears that Penn State's environmental programs, including ERM, are experiencing a more competitive climate for students than before, and it is probably unrealistic to expect enrollment to rebound to the peak numbers experienced a decade ago. Nevertheless, the college and ERM program have never expended a significant effort in marketing and recruiting environmental programs in a coordinated manner, and we believe that coordinated efforts in ERM marketing and recruitment have the potential to attract additional high-quality students to the major on a consistent basis.

Recommendations/Strategies:

- 1) *Coordinate efforts with college and ENRI staff to promote the major to prospective high school students, parents, and high school counselors and advisors.* College and ERM staff should cooperatively identify venues for attracting students. A wide variety of internal and external opportunities exist for recruiting strong high school students, including the PA Governor's School, PA Envirothon, FFA state competitions, Spend a Summer Day programs, and college open houses.
- 2) *Utilize the resources of the college and ENRI to develop recruitment and marketing materials that are effective, and that are consistent with and leverage college and ENRI marketing initiatives.* The college has recently consulted with University marketing personnel and has hired additional marketing staff with the goal to improve college enrollment across many undergraduate programs and to develop a consistent message across those programs. ERM should continue to be a part of this effort and participate in opportunities to improve ERM brochures, web sites, flyers, videos and other media related to recruitment and marketing.
- 3) *Increase the visibility of the ERM program to both undecided students and students listing ERM as their intended major who begin at Penn State campuses other than University Park.* Approximately one-half of current ERM students and recent graduates discovered the ERM major after beginning at another campus, so the program should develop strategies to communicate with these students and improve communications with other campus advisors. Recent programs at campuses such as Altoona, York, and Berks can be used as examples. In addition, the ERM program staff should coordinate their non-UP campus activities with college staff such as the recently-hired Campus Enrollment and Retention Coordinator to ensure that consistent efforts are sustained at all campuses.
- 4) *Seek opportunities to market and improve the visibility of the program to undecided students already enrolled at Penn State.* ERM, in consultation with the college liaison to DUS, should work cooperatively with DUS to attract strong, science-oriented students interested in environmental issues to the major. One successful avenue for attracting these students has been to invite them to attend ERM 151, the introductory "Careers and Issues in ERM" class. In addition, significant opportunities exist to attract early engineering students to ERM, and the Engineering Advising Center should be informed of opportunities in the ERM major.



ERM Vision, Mission, Goals

- 5) *Continue to participate and play a lead role in the college- and ENRI-sponsored Environmental Marketing Committee.* Recent recognition of the need for developing consistent strategies for marketing all environmental majors within the college has led to the development of this committee, which is comprised of faculty and staff from ERM, Agroecology, ERRE/CED, the School of Forest Resources, ESOILS, Toxicology, ENRI, Extension, and the Office of Undergraduate Education.
- 6) *Investigate linkages with two-year environmental transfer programs at community colleges across the Commonwealth.* ERM has attracted strong students from two-year programs such as the Environmental Associate transfer program at Harrisburg Area Community College. In some cases, the development of articulation agreements with these programs may facilitate the transfer of well-prepared students into the ERM program. Participation in Career Days at these institutions would provide additional publicity for the program.
- 7) *Continue to seek development opportunities with ERM alumni and friends to fund incentive scholarships to attract outstanding high school students into the ERM program.* Several recently endowed scholarships have directly benefited ERM juniors and seniors. However, scholarship opportunities targeted to incoming freshmen have the potential to attract strong students to the program. Consideration should also be given to continuing scholarships beyond the freshman year.
- 8) *Develop and maintain a group of current ERM students to assist in recruitment and marketing events.* The ERM program should encourage ERM student involvement in the Ag Advocate program to serve as ambassadors for the program and college, and consider recruiting and maintaining a core group of student volunteers to represent ERM at various college and university recruitment and marketing events.



ERM Vision, Mission, Goals

Goal 4. Faculty and Unit engagement: *To promote an atmosphere of multi-disciplinary participation and engagement from faculty and units across the college and University, and to ensure the recognition of faculty and units for their contributions to the program.*

Recommendations/Strategies:

- 1) ENRI and ERM should consult regularly with the dean's office and invested college units to ensure that adequate teaching resources are available to meet the demands of the ERM program. Resources should include a sufficient number of faculty to offer a full suite of prescribed ERM courses, teaching assistants to aid instructors in classes with lab or field components, funds for teaching equipment, buses and instrumentation for classroom labs and field exercises.
- 2) ENRI and its network of faculty and staff associates should serve as a centralized location for recruitment and retention of faculty interested in contributing to the ERM program. The committee believes that ENRI provides the logical "clearinghouse" for identifying faculty with expertise to contribute to the program.
- 3) ERM and ENRI, in consultation with the Dean's office, should establish a system for formally recognizing faculty and unit contributions to the program, and communicate with unit leaders of the ERM faculty to highlight their contributions. Historically there has been the perception that most faculty teaching within the ERM program are providing a "service" to the program and are not receiving formal recognition either from the ERM program or from their home unit. This recommendation is supported by the recognition that student credit hours taught in the ERM program are credited within an instructor's home department, but needs to be reinforced by the formal recognition of these contributions by ERM, ENRI and college administration, and communicated to unit leaders within the college.
- 4) The ERM program coordinator and staff should regularly convene faculty contributing to the program to exchange ideas, review the curriculum, and discuss special classroom needs.
- 5) Provide opportunities for faculty/student interactions outside the traditional classroom setting (see Goal 2, #2).

Goal 5. Responsibilities to stakeholders and society: *Educate graduates to become productive, professional contributors to and leaders of an environmentally-conscious community, and train graduates capable of making ethical, scientifically-informed decisions to manage our environmental resource base. Our graduates will uphold high standards of training and seek professional development opportunities.*

Recommendations/Strategies:

- 1) The ERM program should inform students about available courses and training for environmentally-relevant professional certifications (e.g. professional hydrologist, certified professional soil scientist, professional wetland scientist, certified hazardous materials manager, teaching certification, etc.). Professional certifications often have specialized educational and work-related components, as well as periodic testing in core competencies. The program should introduce these certification requirements early in the curriculum before students choose a spe-



ERM Vision, Mission, Goals

cialization area or minor, and publicize the variety of environmental professional certifications on the web site.

2) *ERM and ENRI should establish a program to recognize and highlight alumni accomplishments.* Formal recognition of outstanding alumni through the college's Outstanding Alumni and Outstanding Recent Alumni Awards program is an existing mechanism for providing recognition to alumni.

3) *ERM and ENRI should continue to liaison with ERM alumni to solicit input into the program.* The annual survey of recent ERM graduates is one mechanism for soliciting input into the program. The program office receives a significant number of job solicitations from alumni, and these relationships should be continued and strengthened to connect current students with potential alumni employers.

4) *ERM and ENRI should encourage graduates to join the alumni society and stay connected to the program.* The program should also work with college and university development staff, and with college and university Alumni Society staff, to continue to foster strong relations with alumni. The program should consider the publication of a newsletter to inform alumni and friends about the program and to publicize alumni accomplishments. The ERM web site is one venue that has recently been used to publicize alumni accomplishments, the affiliate program group, and alumni directory. These activities should be maintained and enhanced to connect alumni and friends to the program.

5) *Maintain a formal mechanism for recognizing alumni and friends for contributions to ERM student and program scholarships.* The recent development of the eSteward program will assist in the timely recognition of alumni donors. In addition, the program should work with the college Scholarship Committee and staff to ensure appropriate participation of ERM majors in the college Scholarship program.



Appendix I

Environmental Resource Management Review Committee

Committee Faculty:

Dennis Decoteau, Professor, Horticulture

Herschel Elliott, Professor, Agricultural and Biological Engineering

Paola Ferreri, Associate Professor, School of Forest Resources

Clare Hinrichs, Associate Professor, Agricultural Economics and Rural Sociology

Tracy Hoover, Professor and Department Head, Agricultural and Extension Education

Jason Kaye, Assistant Professor, Crop and Soil Sciences

Judd Michael, Associate Professor, School of Forest Resources

Rob Shannon, Associate Professor, Agricultural and Biological Engineering, Chair

Rich Stedman, Assistant Professor, Agricultural Economics and Rural Sociology

Rick Stehouwer, Associate Professor, Crop and Soil Sciences

Committee Staff:

Tarrah Geszvain, Environmental Resource Management

Anna Marie Nachman, Environment and Natural Resources Institute



Appendix II

Groups consulted during ERM Review Committee Meetings:

Current Environmental Resource Management Student Panel (convened March 6, 2007)

Katherine Doster, Junior
Darryl Dressler, Senior
Rachel Evans, Senior
Andrew McDonald, Junior
Ryan Nelson, Junior
Valerie Profili, Junior
Allison Senycz, Junior
Jeremiah Zimmerman, Freshman

College of Agricultural Sciences Environmental Marketing Team (convened April 10, 2007)

Marianne Fivek, Ph.D., Assistant Professor of Agricultural and Extension Education
Steve Williams, Manager of Communications and Marketing Technology, CoAS

Environmental Resource Management Faculty (convened May 11, 2007)

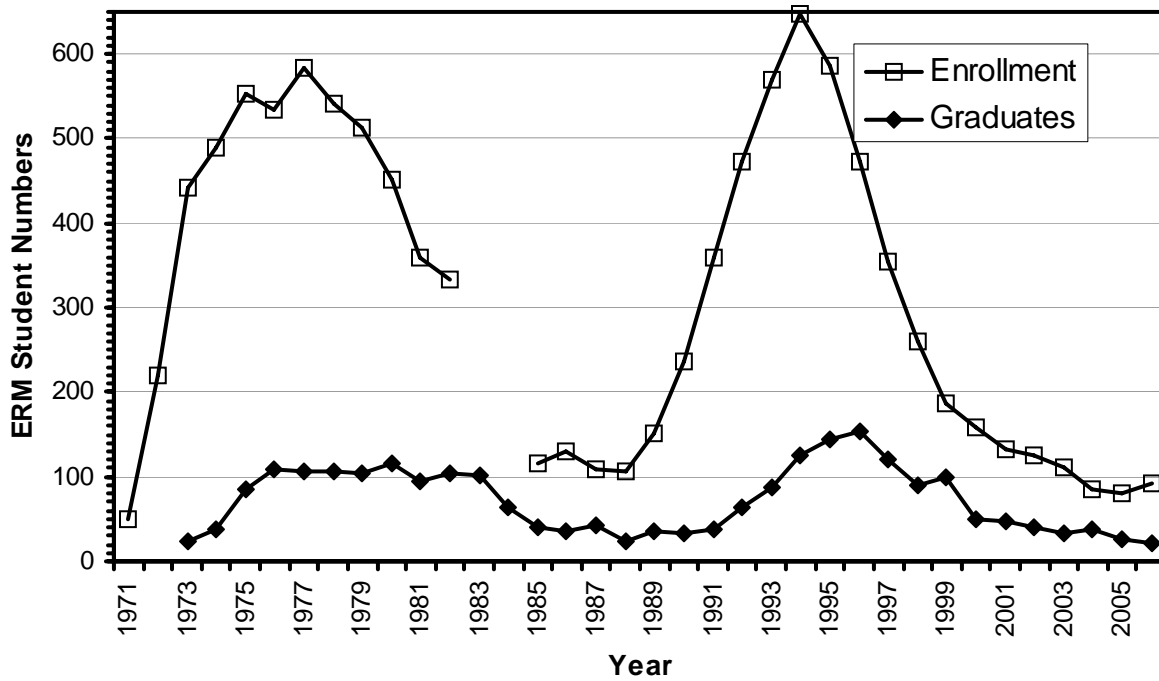
John Becker, J.D., Professor, Agricultural Economics and Rural Sociology
Robin Brandt, Ph.D., P.E., Instructor, Agricultural and Biological Engineering
Hunter Carrick, Ph.D., Assistant Professor, Forest Resources
Dennis Decoteau, Ph. D., Professor, Horticulture
Herschel Elliott, Ph.D., P.E., Professor, Agricultural and Biological Engineering
Albert R. Jarrett, Ph.D., P.E., Professor, Agricultural and Biological Engineering
Robert Shannon, Ph.D., Associate Professor, Agricultural and Biological Engineering

Environmental Resource Management Alumni Survey Results

See Appendix IV, section 2 for summary results from 2005, 2006 and 2007 surveys
Includes graduates from 2002 - 2005; 60 respondents to survey

Appendix III

ERM Enrollment and Graduates by Year





ERM REVIEW COMMITTEE Final Report

Appendix IV

Appendix IV, which includes ERM and other environmental program data, summary alumni survey information, and course syllabi, is available upon request.