

University of Nevada Academy for the Environment Third Year Review

Self Study Report 2004-2007



Prepared for the
UNR Faculty Senate
2 January 2008

Table of Contents

Introduction.....	1
Teaching/Education.....	2
Development of Innovative Courses and Cross-college Connections.....	2
Undergraduate Programs: Development of the Environmental Studies Major.....	3
Student Coordination and Recruitment.....	4
Advisement.....	4
Assessment Plan.....	4
Coordination of Interdisciplinary Environmental Graduate Programs.....	4
Support for DRI Teaching.....	5
Interdisciplinary Education in Climate Change (EPSCoR).....	6
Self Assessment of Teaching/Education.....	6
Interdisciplinary Research.....	7
Expanding Grant-funded Research Opportunities for Faculty.....	7
UNAE-Funded Mini-Grant Program.....	8
Regional Environmental Issues.....	10
Lake Tahoe Basin and Eastern Sierras.....	10
Walker Basin.....	13
Self Assessment of Research.....	15
University “In-Reach”/Community Outreach.....	17
Raise Environmental Awareness on Campus by Promoting University Programs.....	17
Public Outreach/Community Relations.....	20
Self Assessment of Campus “In-Reach” and Community Outreach.....	21
Literature Cited.....	22
Appendices	

Introduction

The 2004 proposal to create the University of Nevada, Reno's Academy for the Environment (UNAE) as an interdisciplinary institute sought to "realize the immense potential of existing faculty resources [and] to develop new strengths in environmental research and teaching" (Appendix 1). Recognizing the increasing need to analyze and address environmental issues from multiple perspectives, the National Science Foundation and other such institutions are strongly encouraging collaborations across the sciences, social sciences and humanities to strengthen connections between scientists, policy-makers, media and the general public. The proposal to establish UNAE was, in part, an attempt to address this need. The motivation to create this interdisciplinary institute also arose from two fundamental assumptions: 1) that the UNR community already contained strong faculty in many different environmental disciplines so that the institute could focus on promoting and enhancing already-existing resources; and 2) that by promoting greater coordination among these programs and individuals, the Academy for the Environment could serve to not only improve teaching and research on campus, but help to inform and educate the general public. In this way, the faculty's proposal to create the Academy sought to bring UNR's land-grant mission to bear on contemporary concerns, namely, that "environmental issues dominate the public consciousness in Nevada and are key to the future of our region." A committee was established by the Faculty Senate to review this proposal (Appendix 2). After subsequent review by the Provost (Appendix 3), the final version of the proposal was submitted to and subsequently approved by the Board of Regents.

The faculty and administrators who designed and supported UNAE believed that a modest investment of state funding to support UNAE faculty and staff could greatly enhance existing programs and stimulate the development of new ones at UNR. UNAE was therefore established as an interdisciplinary institute that reports directly to the Provost. Without the need to manage faculty lines and teaching loads, UNAE is designed to be an agile institution that provides affiliate support to existing colleges and departments, and can act as a bridge between disciplinary boundaries. This structure has proved remarkably efficient in achieving the stated goals of the initial 2004 proposal while being able to actively pursue new opportunities in a very short period of time.

Staffing of the UNAE started with the appointment of a half-time interim director in November 2004; 18 months later, a full-time Executive Director (Dr. Michael W. Collopy; 1.0 FTE) was hired. Two additional part-time, administrative faculty were recruited in subsequent years; an Associate Director for Research (Dr. Wally Miller; 0.45 FTE) in 2006 and an Associate Director for Academics and Outreach (Dr. Jennifer Huntleysmith; 0.75 FTE) in 2007. An Administrative Assistant IV (Amber Gallop; 1.0 FTE) was hired in 2005; a grant-funded, part-time Administrative Assistant II (Erinn Thomas; 0.5 FTE) was hired in 2007. Even though the staffing of the UNAE has been gradual, we believe the UNAE has managed to accomplish significant achievements in the 3 years since it was approved by the Board of Regents. Coordinating several large-scale grant-funded projects that provide research support to dozens of UNR and DRI faculty, designing and initiating a cutting-edge undergraduate Environmental Studies major, and providing community leadership in sustainability and other issues, UNAE has lived up to the vision of providing a greatly-expanded return on investment of state dollars. (see Appendix 4 for a summary of UNAE's state and grant funding).

The Academy for the Environment works with a very broad vision of "environment," one that focuses on the intersections between humans and environment and that recognizes that those intersections occur in countless venues—e.g., agriculture and mining, as well as renewable energy and green building design. UNAE shares with its many partners in the University and

regional community a commitment to support efforts to develop sustainable designs and practices.

Meanwhile, sustainability and related concepts (such as climate change, green building design, community-supported agriculture, community development, and open space) have become hot topics in public discourse, not only across the nation but in our local community as well. The formation of UNAE was well-timed to assist the University assume a leading role in discussions about the clarity of Tahoe's water, greening "up" the Reno-Sparks community, restoring water to Walker Lake, engaging travelers on Interstate 395 in the science heritage of the Eastern Sierra, and many other projects involving environmental awareness in our region. Through these research, educational, and outreach activities, UNAE is well-equipped to support and extend many of the goals articulated by UNR President Milton Glick – by building a sense of community among students on campus, and forging stronger connections between the University and the broader neighborhood and downtown community of which it is a part.

This report was developed for the Faculty Senate as a part of a scheduled third-year review. It is organized around the Mission and Objectives statements of the original UNAE proposal, approved by the Faculty Senate and Board of Regents in 2004. It details the Teaching/Education, Interdisciplinary Research, and University "In-Reach"/Community Outreach activities UNAE has adopted or initiated during the past 2.5 years. It is our expectation that the feedback we receive on this document and through discussions with UNR faculty, staff and students will be used to focus and guide future priorities of the Academy for the Environment.

Teaching/Education

UNR has a long tradition of supporting interdisciplinary graduate education; however, there has not been a concerted effort to develop a strong, interdisciplinary undergraduate program in environmental studies. Recognizing that UNR was trailing behind many similar-sized institutions of higher education by not promoting integrated environmental educational opportunities, UNAE has supported interdisciplinary environmental education through the creation of an undergraduate major, through supporting innovative curriculum development, and by working with the graduate school to support graduate-level interdisciplinary science degree programs.

The educational component of UNAE's mission statement identifies two basic goals:

- To promote *truly* interdisciplinary (humanities and arts as well as science and social science) environmental education
- To coordinate with and among College academic programs, departments, and faculty

The Academy for the Environment is addressing these goals by promoting the development of innovative courses and facilitating cross-college connections, primarily through our mini-grant program's support of curriculum development, through the creation of the interdisciplinary Environmental Studies Degree Program, and through efforts to better coordinate with the existing environmentally-oriented, interdisciplinary graduate programs.

Development of Innovative Courses and Cross-college Connections

UNAE's annual mini-grant program has underwritten the development and teaching of cross-listed interdisciplinary environmental courses, such as "Compliance with the National Environmental Policy Act" (NRES 485/685; GEOG 491/691) and "Interdisciplinary Modeling:

Water-Related Issues” (NRES 701D/ ECI-298). Additional interdisciplinary environmental education projects supported by the UNAE mini-grant program include: support for one-time educational events such as seminars, workshops, and guest speakers. For a full list of mini-grant funded programs, see the “Mini-Grant Program” section.

Undergraduate Programs: Development of the Environmental Studies Major

The formation of UNAE gave UNR faculty a unique opportunity to develop an interdisciplinary Environmental Studies Major rooted in pedagogical philosophy. Recognizing this, UNAE staff undertook a year-long process, directed by a committee representing a wide range of UNR disciplines. Through a series of round-table discussions held in the fall of 2004, faculty, undergraduate and graduate students, and community representatives articulated their hopes and concerns about the proposed major. The resulting curriculum reflects these discussions (Appendix 5).

The interdisciplinary Environmental Studies Major program is a double-major degree, where the ENV curriculum provides disciplinary breadth and balance to complement the focus of the student’s initially-declared, departmental major. With the exception of three courses unique to the major, the curriculum draws on courses taught in existing programs. This structure ensures that students will have a truly interdisciplinary degree while maintaining a high degree of academic rigor, and also ensures that this major neither draws students away from other departments, nor unduly burdens service departments with a large number of students. Our research indicated that many environmental degree programs have collapsed under the weight of rapid student enrollment, so we created a program with high academic rigor to attract a few bright and dedicated students every year.

Despite widespread consensus that environmental challenges require multiple approaches, very few Environmental Studies programs throughout the United States fully integrate humanities, arts, and social sciences into their curriculum—one study suggests that less than 5% of all ENV programs are fully multidisciplinary in this regard (Romero and Jones 2003). We have therefore designed the curriculum for this major so that it capitalizes on existing faculty strengths across the broadest possible disciplinary spectrum, thus putting UNR on the cutting edge of undergraduate Environmental Studies pedagogy. In addition, incorporating practical internships, intensive research programs and international exchange opportunities into the undergraduate interdisciplinary major curriculum provides our graduates with the practical experience to understand environmental issues on global, national, regional, and state levels. We anticipate that ENV majors will constitute a new generation of leaders who understand environmental issues from the perspectives of both specialists with focused, in-depth knowledge of specific science-based issues and generalists who can place those issues in the context of social, historical, and political forces, with effective communication and problem-solving skills (Marston 1994). The first cohort of Environmental Studies majors began their degree programs in the fall of 2007; of these seven students, three are political science majors, one is a wildlife ecology and conservation major, one is majoring in communications, one in geography, and one remains undecided.

UNAE is currently in the process of developing three core courses that serve this new curriculum. The first, UNAE 110: “Multidisciplinary Perspectives in Environmental Studies—Water in Arid Lands”, was offered in the fall of 2007 to the first cohort of ENV majors (Appendix 6). It introduced our students to the concept of truly cross-disciplinary perspectives through the presentations of eight guest faculty from across the UNR community, each of whom is conducting research on the issue of water in arid lands. The other two courses, UNAE 310—a

practicum seminar for 3rd-year majors, and UNAE 410, a senior research seminar—are currently in development.

Student Coordination and Recruitment

The UNAE Associate Director for Academics and Outreach has been actively involved in recruiting students to UNR, not only to become ENV majors, but also to raise the profile of all environmental degree programs on campus for incoming students through advisement and promotional materials (i.e., website, brochures and letters). This is accomplished through various recruitment outreach activities including participation in events such as Target 500 Best and Brightest, working with the Honors program, visiting high school classrooms, and both formal and informal advising sessions.

It is the intention of UNAE to become a conduit to help interested students find their most appropriate major. Currently, there are many environmentally-oriented degree programs at UNR, but they exist in many departments and colleges, and can be difficult for prospective and new students to access or compare. We are currently redesigning our website (<http://environment.unr.edu>) to provide useful information on these programs, using existing materials that have been developed by colleges and departments, so students will be able to readily access information about all of the environmental education opportunities at UNR. Our intent is to capture this information clearly and succinctly, so that we can help to raise the profile of all environmental degree programs at the UNR campus.

Advisement

The AD for Academics and Outreach is responsible for advising Environmental Studies majors in developing their own, individualized program of study. This involves one-on-one meetings at the beginning of each semester to ensure that students are making adequate progress toward their degrees.

Assessment Plan

In the ENV program proposal, UNAE outlined the assessment plan for evaluating degree objectives, student learning outcomes and use of data for program improvement, to be adopted as part of a third-year review of the ENV major and continuing annually thereafter. We anticipate that the three core courses (UNAE 110, UNAE 310, AND UNAE 410) will provide material for assessing student learning during their course of study and that the assessment plan will also include exit interviews and surveys of alumni to determine the long-term success of the program. Student progress, as demonstrated by course performance and the assessment of individual learning gains, will be evaluated against established benchmarks. As the degree program matures, UNAE staff will track and assess the post-graduate careers of ENV major graduates. These data will be incorporated into the formal assessment plan for program evaluation and implementation currently under development by the AD for Academics and Outreach (Spring 2008 anticipated completion date).

Coordination of Interdisciplinary Environmental Graduate Programs

The proposal approved by the Board of Regents envisioned that “[w]ith the formation of the UNAE, the interdisciplinary programs (AS, EECB, ES&H, and HS) would be supervised by the Executive Director but with their budgets transferring intact” (Appendix 1). This document also recommended that UNAE “coordinate the interdisciplinary environmental graduate programs and their needs for new courses, seminars, faculty appointments and cooperative graduate program development.” From the beginning, it was the position of UNAE, however, that no change to the current oversight structure should be made until extensive discussion of the pros and cons of this change were examined by the administration, program directors, and

participating faculty. While no decision about how to proceed has yet been made by the administration, there has been an ongoing series of discussions involving all parties in an effort to develop a consensus-based approach to this issue. A summary of the activities that have taken place over the past two years is presented below.

Shortly after the Interim Director was appointed, he met with the Associate Dean of the Graduate School and the four program directors, both as a group (23 February 2005) and in subsequent one-on-one meetings (during March 2005), to explore the pros and cons of this suggested change in reporting relationships. On 15 March 2005, the UNAE Interim Director also met with the Provost, Dean and Associate Deans of the Graduate School to discuss the pros and cons of this proposal. A draft white paper (dated 3/24/05) was subsequently developed by the Associate Dean of the Graduate School that summarized the keys issues discussed at this meeting (Appendix 7). A follow-up meeting with these same individuals was held on 15 March 2005, to review the white paper and discuss how best to proceed.

Subsequent meetings were scheduled with the program directors to continue the dialog regarding this issue. Because of scheduling conflicts, the UNAE Interim Director and Associate Dean of the Graduate School had to meet with the directors on two different dates (9/18/06-AS, ES&H, HA; 9/25/06-EECB). During these meetings the program directors agreed to work with the UNAE Interim Director to develop a consensus document that everyone could support with their respective faculties. At a subsequent meeting on 8 November 2006, the program directors and UNAE Interim Director identified the key elements that should be captured by this document. The UNAE Interim Director developed the first draft, which was subsequently reviewed and endorsed by all four of the program directors. This final document (Appendix 8), including a list of FAQs-frequently asked questions, was then circulated by the directors to their respective faculties.

Once this consensus document was reviewed by faculty in each of the interdisciplinary environmental graduate programs, the UNAE Interim Director attended faculty meetings of each of the programs to present the proposal and answer any questions -- EECB (3/15/07); ES&H (3/16/07), ATMS (4/12/07), and HS (10/18/07). Following these meetings, the faculty of each program had the opportunity to vote whether or not to endorse the proposal. The ES&H program voted to endorse the proposal; however, EECB, ATMS, and Hydrologic Sciences each expressed some reservations about making changes at this time and did not support the proposal. The Graduate School now has feedback from each of these programs, but has not yet indicated if any administrative changes will be implemented. UNAE is sensitive to the concerns expressed by faculty in EECB, ATMS, and HS; however, we still believe there are programmatic and economic efficiencies to be gained by the interdisciplinary graduate programs if they were to work collaboratively under the administrative umbrella of UNAE. We believe the most significant benefits of this association would be in the areas of student recruitment, programmatic representation within the institution, and development.

Support for DRI Teaching

UNAE's primary contribution to this issue has been its involvement in discussions leading up to the revision and approval of the UNR-DRI MOU for Instructional Support (Appendix 9). The UNAE Executive Director participated in several joint meetings between UNR and DRI administrators and program directors that resulted in the updating and revision of the former agreement, which was approximately 10 years old. This new agreement provides specific guidance regarding the procedures to be followed in planning and paying for teaching by DRI faculty at UNR.

UNAE also joined with the Associate Dean of the Graduate School and Interim Dean of the School of Science in signing a memo requesting that, in the future, UNR consider adding a COLA adjustment to the DRI instructional monies provided through the Provost's Office (Appendix 10). By budgeting for these COLA increases, the erosion of UNR's ability to pay for DRI faculty to teach critically needed courses at UNR could be significantly reduced.

Interdisciplinary Education in Climate Change (EPSCoR)

During the summer and fall of 2007, faculty from UNR, UNLV and DRI worked on a proposal for the next round of EPSCoR funding; the focus of this proposal will be on climate change. The UNAE Executive Director was asked by the NSHE EPSCoR Office to coordinate the development of the education component of this system-wide proposal. Several meetings were facilitated during the summer and fall of 2007 to develop and coordinate the three primary focal areas within the education component of the proposal: K-12 teacher education, undergraduate research, and graduate education. Overall coordination of the education component of the EPSCoR grant is now being led by a faculty member at UNLV; however, the UNAE Executive Director continues to be responsible for the graduate education component of the EPSCoR grant proposal.

If funded by NSF, a Climate Change Fellowship program will be established that competitively allocates 12-19 awards to graduate students annually. These Climate Change Fellows will work on interdisciplinary teams with NSHE faculty. In addition, any graduate students admitted into participating graduate programs will have an opportunity to obtain a certificate in climate change as part of their graduate degree. Once established, this graduate certificate program will include a set of core courses, selected from a list that will include graduate seminars in science, policy, and communication of climate change studies. Graduate students will also have the opportunity to apply, as individuals or teams, for conference and research travel support.

Self Assessment of Teaching/Education

UNAE's objective in teaching and education has been to capitalize on already-existing strengths in the UNR faculty and departments while encouraging the development of cross-disciplinary environmental educational opportunities, both in traditional classroom settings and in campus events.

Accomplishments. The greatest achievement to date has been the creation and initiation of the Environmental Studies undergraduate major program. Although the student cohort for this major is small at the outset, we are confident that the unique, interdisciplinary and academically-rigorous nature of this program gives it the potential to become one of the signature programs of NSHE. Additionally, UNAE has fostered new course development and community events to promote cross-disciplinary environmental studies outside of our own program.

Needs. The greatest barrier to fully realizing the potential for interdisciplinary teaching and education at UNR is the lack of exposure or misunderstandings among faculty and colleges about the intended collaborative approach of UNAE and its programs. Those faculty who know about our programs regularly send students our way for advising, but much misunderstanding remains, despite numerous efforts to communicate with the campus at large. Better understanding on the part of departments, colleges and advising faculty will greatly enhance our ability to effectively promote interdisciplinary environmental teaching on the UNR campus. Additionally, as student recruitment efforts grow, staff needs will as well. Currently, the small numbers of students serviced by the ENV major mean that the part-time (0.75 FTE) Associate Director for Academics and Outreach can manage the tasks of teaching, advisement and recruitment, but as the program grows this will likely become a constraint.

Interdisciplinary Research

UNAE's research goal is to link programs in science/engineering with arts/humanities by promoting and supporting multidisciplinary research projects. Our program efforts facilitate the formation of integrated research teams capable of effectively addressing complex issues that link human and natural systems. During the past three years, the Academy has worked to achieve this goal in a number of ways. Below, we describe our efforts to expand grant-funded research opportunities for faculty; support faculty and students through an annual mini-grant competition; and lead university-wide research efforts at Lake Tahoe and the Walker River Basin.

Expanding Grant-funded Research Opportunities for Faculty

UNAE seeks to develop and support collaborative, interdisciplinary research opportunities for interested UNR faculty. Our focus has been to stimulate interaction among faculty from different disciplines, with the hope that these interactions will create an impetus for the development of interdisciplinary projects. The three interdisciplinary projects described below have successfully provided opportunities for faculty from different academic units at UNR, as well as other academic, agency and non-profit organizations, to work on innovative environmentally-oriented research and education projects.

Roadside Heritage Project

The Roadside Heritage: Informal Science Education in the Eastern Sierra Nevada Byways (RH) project is funded by a 3-year, \$2.5 million grant through NSF's Informal Science Education program (see project website for project details and downloadable audiocasts; <http://roadsideheritage.org>). Linked to the 220-mile Eastern Sierra Scenic Byway (Byway), a solitary highway that traverses a landscape rich in natural resources and opportunities for scientific research, this project explores new approaches for delivering informal science education (ISE) to the traveling public and rural communities. The project is achieving its goals through the development, production, and dissemination of locally developed STEM (Science, Technology, Engineering and Math) audio programs for the traveling public; traveling festival kits; and an interactive website (<http://roadsideheritage.org>). The RH project goals are to: 1) provide the motoring public with a unique access to STEM content, raising awareness of the dramatic natural history of the area; and 2) empower the local community to interpret their scientific heritage via youth enrichment and community docent programs. The Roadside Heritage project is led by the University of Nevada, Reno, Academy for the Environment (UNAE) and its collaborators in UNR's College of Education's Reggio Research Center for STEM Education (RRC), the Eastern Sierra Institute for Collaborative Education (ESICE), and the University of California at Berkeley's Lawrence Hall of Science (LHS).

The RH project is producing audio science "stories" to be disseminated to motorists using a variety of technologies. Local youth and adults are developing the general content of the audiocasts in voluntary out-of-school programs. Program participants research their region's scientific heritage and support audio and ISE professionals in the production of these high-quality audiocasts, festival kits, and website content. The audiocasts direct travelers to regional festivals and events to engage in hands-on festival kits led by local, trained docents. Local residents working on the Advisory Committee, together with STEM professionals, are integrally involved in the selection of STEM content in the project, to ensure local support and enthusiasm for the story topics.

The RH project design has anticipated the emergence of new communications technologies (e.g., podcasting, MP3, GPS, etc.) and is adopting their use as appropriate. A local marketing

group has developed a dissemination plan that is fully integrated with the marketing plans of local tourism organizations, helping to build long-term sustainability.

Tracing Tradition and Mapping Out Change

Led by geographer Kate Berry and environmental historian Jen Huntleysmith, this two-year NSF-funded project (\$33,318 of the total \$xxxx budget is committed to Huntleysmith in UNAE) involves analyzing a series of water law cases during the final years of the Kingdom of Hawai'i and the first years of US territorial reign (Appendix 11). This study is examining how the Commissions of Private Ways and Water Rights, established by the Hawaiian monarchy, invoked traditional Hawaiian as well as Western EuroAmerican assumptions and technological practices about water in their decision-making processes. Additionally, several cases were appealed to the Supreme Court, leaving records of those decision-making processes that we will analyze as well. We are also investigating how the particular practices invoked and decisions made by the Commission and Supreme Court shaped the nature of water practices throughout the Hawaiian Islands. We are approaching this through: 1) an evaluation of legal processes, 2) an analysis of the agency of individuals, 3) tracking alternate uses of water infrastructure and technology, and 4) an interpretation of institutional frameworks. A legal pluralism approach is adopted to address how the law both reflects and prompts change over time in the systems of practice, knowledge, and management attached to water.

Demonstration of Low Impact Development (LID) and Stormwater Retention at UNR's Joe Crowley Student Union

This small stormwater retention project, funded by a grant through the Truckee River Fund (\$34,483), was designed to capture, infiltrate, and process drainage in front of the Joe Crowley Student Union on the UNR campus (see Appendix 12). Specifically, the funds were directed to change impervious foot-traffic areas to pervious paving that would allow increased infiltration. An educational display was developed so the new Student Union could showcase the project and illustrate how these changes can help improve Truckee River water quality. Information will also be placed on the web, possibly as a visual tour of the facility. The program partners included the UNR Academy for the Environment, UNR Environmental Health and Safety, UNR Facilities Management, the Student Union, UNR Cooperative Extension, and the UNR Student Group SEEDS (Students and Educators for Environmental Development and Sustainability). The Stormwater Permit Coordinating Committee of Reno, Sparks and Washoe County also helped with the coordination of this effort.

The intended beneficiary of this installation was the University community as a whole, in that the project provided an opportunity for the people involved in the growth and planning of the university to see and obtain practical experience with a bioretention feature for treatment of stormwater runoff. Both the University's Environmental Policy and the Sustainable Building Policy encourage these types of efforts. The hope is that this demonstration will motivate students, faculty and staff to call for more Low Impact Development (LID) practices on the UNR campus, which will greatly benefit the downstream watershed of the Truckee River, by reducing urban runoff and increasing groundwater recharge. This demonstration project will also help to meet the requirements of the joint Reno/Sparks/Washoe County NPDES Phase I Stormwater permit, and ultimately will assist in meeting Truckee River water quality standards and TMDLs.

UNAE-Funded Mini-Grant Program

UNAE provides support with state funds from its annual budget for interdisciplinary research projects, graduate student travel to interdisciplinary conferences/workshops, departmental/interdisciplinary program seminars, and curriculum development. Applications are awarded on a competitive basis and must be interdisciplinary, environmentally-oriented,

innovative, and involve students (undergraduate and/or graduate). Projects are considered interdisciplinary if they involve two or more academic disciplines (preferably from different departments, colleges, DRI, or other institutions and community organizations) that are in distinctly different fields of study. Multi-organizational applications are encouraged; however, the lead investigator of proposal must be a UNR faculty member, graduate student, or approved student organization.

The Academy currently solicits applications annually. Applications are collected and reviewed by a diverse committee of appointed faculty and support staff. Proposals are evaluated on the basis of environmental focus, technical content, interdisciplinary breadth, student involvement, and advisor support (for student applications). A summary of the funding committed thus far by this program is presented below. A more detailed listing of individual awards can be found in Appendix 13.

Year and Category	Funding Requested	Funding Awarded
Fall 2005		
Mini-Research Projects	\$72,640	\$29,750
Graduate Student Travel	\$15,635	\$7,330
Seminars	\$13,895	\$11,500
Curriculum Development	\$15,750	\$15,750
<i>Total</i>	<i>\$117,920</i>	<i>\$64,330</i>
Spring 2006		
Mini-Research Projects	\$34,487	\$12,207
Graduate Student Travel	\$3,775	\$2,775
Seminars	\$1,000	0
Curriculum Development	0	0
<i>Total</i>	<i>\$39,262</i>	<i>\$14,982</i>
Fall 2006		
Mini-Research Projects	\$38,708	\$18,708
Graduate Student Travel	\$4,340	\$4,340
Seminars	\$3,450	\$2,700
Curriculum Development	\$8,928	\$7,500
<i>Total</i>	<i>\$55,427</i>	<i>\$33,248</i>
Fall 2007		
Mini-Research Projects	\$24,520	\$19,520
Graduate Student Travel	\$6,963	\$6,413
Seminars	\$2,100	\$2,100
Curriculum Development	\$7,430	\$7,430
<i>Total</i>	<i>\$41,013</i>	<i>\$35,463</i>

Awards Summarized by Category (2005-2007)

Mini-Research Projects	\$80,185
Graduate Student Travel	\$20,858
Seminar Development and Hosting	\$16,300
Curriculum Development	<u>\$30,680</u>
Total	\$148,023

Regional Environmental Issues

Lake Tahoe Basin and Eastern Sierras

Lake Tahoe and vicinity have long been recognized as a renowned natural resource of regional, national, and international significance. The protection and enhancement of Tahoe Basin watershed and lake ecosystems has been a priority among researchers for the last 40 years. Dr. Charles R. Goldman of the University of California, Davis, assumed leadership of environmental research in the Basin during the early 1960s. Over the years, he and his colleagues have focused on the adverse ecological response of the lake to accelerated nutrient loading primarily as a result of lakeshore and watershed development. Although the University of Nevada, Reno, began conducting related research in the upper watersheds of the Lake Tahoe Basin and eastern Sierras in the late 1970s /early 1980s under the direction of Dr. Clarence M. Skau, recognition of UNR as a major contributor to environmental research in the Basin has been nominal.

One of the reasons for UNR's lack of visibility as a predominant research institution in the Tahoe Basin has been the lack of continuity in its representation. Although a number of research faculty are well known in the area, each has been seen by the stakeholders to function independently rather than as a coordinated unit associated with the University of Nevada, Reno. Another has been the lack of a physical presence within the Basin itself. In addressing the first issue, the Academy has made a substantive effort to coordinate campus wide Tahoe-based environmental research programs and bring our contributions to the forefront by serving as the point representative on behalf of the University of Nevada, Reno. Second, the Academy was actively involved in the procurement of space in the newly constructed Tahoe Center for Environmental Studies Building located on the Sierra Nevada College campus. As building stakeholders, we now share an office, laboratory, and conference complex with the Desert Research Institute. This facility houses faculty from both of our institutions in close proximity to the well-known University of California, Davis, Tahoe Environmental Research Center (formerly the Tahoe Research Group). The direct participation of Academy personnel (Executive Director and Associate Director of Research) in key programmatic activities during the past three years are highlighted below.

Tahoe Science Consortium. In support of a common desire to preserve, restore, and enhance the unique environmental values of the Tahoe basin, federal, state and local resource management/planning agencies and research institutions entered into a partnership to promote science-based decision making. A workgroup was charged with developing a conceptual model for a Tahoe Science Consortium (completed March 2005). The designated functions of the TSC were directed towards Scientific Advancement, Adaptive Management, and Scientific Consultation (UNAE Executive Director was a workgroup participant).

An research and management agency MOU was signed in August 2005, in support of the development of a Tahoe Science Consortium (TSC), whose primary objective was to provide environmental managers and decision makers with comprehensive and well-synthesized scientific findings drawn from research, monitoring, and modeling (Appendix 14). This MOU was signed by the President of the University of Nevada, Reno. The TSC's Committee of Scientists is comprised of two representatives from each partnership institution, which includes: UNR, DRI, UC Davis, U.S. Geological Survey, and the USFS Pacific Southwest Research Station.

The Tahoe Science Consortium was established with funding from the Southern Nevada Public Lands Management Act, administered by the Region 9 Branch of the Environmental Protection

Agency. Initial oversight and coordination of EPA funding to support the TSC was assumed by the Executive Director of the UNAE at UNR. The TSC funding allocation for FY 05/06 and FY 06/07 was \$240,000 and \$343,339, respectively. The UNAE Executive Director serves as a founding member of the TSC and is PI on the EPA grant that supports TSC operations; both the UNAE's Executive Director and Associate Director for Research currently serve as the UNR representatives on the TSC's Committee of Scientists.

The efforts of the TSC and its collaborators have been widely supported and appreciated. For example, in May 2007, the Nevada Legislature passed Senate Concurrent Resolution No. 3 in support of the Tahoe Science Consortium and its contributions to the conservation and restoration of Lake Tahoe (Appendix 15). For more information about the TSC programs and activities, see <http://www.tahoescience.org>.

Tahoe Basin Science Plan. One of the charges to the TSC was to develop a Comprehensive Science Plan for the Lake Tahoe Basin. Members of the Committee of Scientists and other faculty researchers assumed leadership roles for the development of specific science themes; air quality, soil conservation, water quality, ecology and biodiversity, social sciences, and natural hazards.

The draft Comprehensive Science Plan was completed in March 2007 and submitted to EPA for external review. The Plan is now under revision and scheduled for completion early in 2008 (the final draft can be viewed at <http://www.tahoescience.org/EventImage.aspx?sa=1&id=109>). The Academy's Associate Director for Research assumed leadership of the Soil Conservation Science Theme, which resulted in a symposium presentation (Miller et al. 2007a) and a peer-reviewed publication (Miller et al. 2008). This publication was based in part on an NRES Master of Science Plan B Professional Paper completed by Ms. Holly Tretten, who completed her degree in December 2007.

2007 Federal Event. The Lake Tahoe Federal Event is an annual event that is co-sponsored by Nevada Senators the honorable Harry Reid and the honorable John Ensign. The event acknowledges the 1997 Lake Tahoe Presidential Forum, the partnerships (institutional and agency) created henceforth, and the scientific progress made towards understanding the cause, effects, and prevention of declining lake clarity. This past event (held in August 2007) represented the 10-year anniversary of the Presidential Forum.

To enhance the visibility of UNR as a significant leader in environmental research in the Lake Tahoe Basin, UNAE compiled and distributed a synopsis of approximately 80 research papers (1997-2007) from 6 colleges (Agriculture, Biotechnology, & Natural Resources; Liberal Arts; Science; Engineering; Nevada Cooperative Extension; and Reynolds School of Journalism) at the event (Berger et al. 2007; see Appendix 16). These manuscripts highlighted environmental research on nutrient transport, water quality, and prescribed fires, forest health, air quality, fish and wildlife, seismology, and the humanities. UNAE also coordinated UNR input to scientific posters presented by the TSC at each year's federal event.

Tahoe Symposium - Ecological Society of America Meeting. The 2007 meeting was jointly sponsored by the Ecological Society of America and the Society for Ecological Restoration International. A special session was dedicated to "The Multi-faceted Challenge of Restoring Lake Tahoe Basin's Ecosystems." Several members of TSC/COS were asked to participate.

As a result of the increased visibility of UNR's research programs at the Lake, several faculty and students were invited to participate in this symposium. Several talks were presented

(Chandra and Allen 2007, Ganschow et al. 2007, Manley et al. 2007, Miller et al. 2007b, Murphy 2007) and a special issue of the Journal of Ecological Restoration is planned wherein the science presentations will be published (Miller et al., in review).

Tahoe Related Community Assistance and Outreach

The TSC and its Committee of Scientists are responsible for the initial selection of critical research themes for the solicitation of research proposals under the Southern Nevada Public Lands Management Act (SNPLMA). Prior to each round of solicitations, the TSC/COS identifies key research areas of concern. These are finalized following assessment by the management partners, and the selected themes and sub-themes are then recommended to the granting agency for RFP solicitation.

The TSC also manages the external peer review process for the federally mandated SNPLMA funding. The peer review steering committee consists of institutional representatives from TSC, the University of California, Davis, the University of Nevada, and the Desert Research Institute. The Executive Director of the Academy currently serves on this review team as the University of Nevada, Reno, representative. Proposals in response to the RFP are collected, sent to external reviewers for technical assessment, and reviewed by management agencies for a relevancy rating prior to recommendation for funding.

Under the SNPLMA funding mandate, agencies also prepare proposals for Capital Improvement Projects. Each proposal includes an environmental monitoring component which requires review and comment from the TSC and Committee of Scientists. The written reviews become part of the permanent record associated with the project proposals and are reviewed and approved by the Lake Tahoe Federal Advisory Committee (LTFAC). The UNAE Executive Director is intimately involved in this process, as he currently is serving a 3-year appointment on the LTFAC (appointed by the Secretary of Agriculture) as the research representative.

Constituency recognition of the TSC and the University of Nevada, Reno, as leaders in the development of credible, peer review procedures has increased dramatically in the past three years. For example, the Nevada Department of Conservation and Natural Resources, Division of State Lands (DSL) has recently requested that the Academy facilitate the peer review process associated with their Tahoe License Plate competitive grants program. This commitment covers NDEP's RFP solicitations over the next 3 years, and a grant of \$10,957 was awarded to support the costs associated with administering this process. (UNAE Executive Director is PI on the agreement). A tentative agreement has also been reached to provide a similar service for the Nevada Department of Transportation.

Additional Tahoe-related committees on which UNAE staff serves are listed below:

- Science and Management Integration Team. TSC/COS Science representatives include the UNAE Executive Director and Associate Director for Research.
- Regional Stormwater Monitoring Program Committee. TSC/COS Science representatives include the UNAE Associate Director for Research.
- U.S. Forest Service Lake Tahoe Basin Management Unit Literature Review Committee. Literature review on vegetation management in or relevant to the Tahoe Basin. UNAE Associate Director for Research is the science representative for upper watershed soils, vegetation, and water quality.

During the past three years, we believe that the visibility and reputation of UNR has increased significantly in the Lake Tahoe Basin. Our role as an active environmental research institution focusing on key environmental concerns has been enhanced and is being recognized.

Stakeholder interactions have increased and our assistance on science, management, and educational issues is being solicited. All stakeholders, including UNR, are benefitting from the greater degree of interaction that is now occurring among academic institutions, resource management agencies, and the public.

Walker Basin

The Walker Basin Project consists of two principal components: 1) the acquisition of water and water rights from willing sellers; and 2) collaborative environmental and economic research that investigates the best means by which water transfers to Walker Lake can be accomplished while maintaining healthy ecosystem function and sustainable local and regional economy. Both are administered under the coordination of the Nevada System of Higher Education.

The research component also is multi-faceted and includes the following tasks: 1) preparation of an Environmental Impact Statement; 2) legal review and analysis; and 3) exploring ecologically and economically sound strategies by which water can be delivered to Walker Lake. The Academy for the Environment has responsibility for managing activities associated with the third research component listed above; it is not involved in EIS development, legal review/analysis tasks or water acquisition activities.

Together with a representative from DRI, the UNAE Executive Director is responsible for co-managing the 13 research projects being conducted by UNR and DRI faculty under the auspices of this grant; these studies include developing a watershed and decision support model, evaluating economic impacts of water purchases, demonstrating alternative agriculture opportunities with low-water use drought-resistant crops and restoration of native vegetation, water conservation strategies, in-stream health of the Walker River, and sediment and salt delivery to Walker Lake. More information on these research projects and the Walker Basin Project overall, can be found at our website (<http://www.nevada.edu/walker/>),

Congress authorized this project through Public Law #109-103, Section 208. Funding for this project was awarded to the Nevada System of Higher Education (NSHE) through the U.S. Department of the Interior's Bureau of Reclamation; of the \$70 million awarded, at least \$56 million will be used for water acquisition and up to \$14 million for research (including EIS development and legal review and analysis). To date, \$10,111,500 has been committed in support of the 13 UNR/DRI research projects referred to above. Of this total, \$649,698 were committed to support project activities that UNAE is working on directly (i.e., Project Coordination and Outreach) and \$4,966,035 were allocated directly to colleges/departments in support of UNR faculty-led projects; the remaining \$4,316,337 were subawarded to DRI (through Project 10) to support their contributions to the research effort.

In addition, UNAE received \$1,887,200 that was passed through as subawards to other participants working on different aspects of the overall program (i.e., to support work on EIS development, legal review/analysis, and developing options for water acquisition).

Project titles and budgets are listed below; but for more information on these projects, see Appendix 17.

Walker Basin Research Projects

- Project 1 Development of a Water Rights GIS Database of the Walker River Basin (\$222,538)
- Project 2: Development of a Decision Support Tool in Support of Water Right Acquisitions in the Walker River Basin (\$557,324)

- Project 3: A Policy Analysis of Land and Water Rights Acquisitions in the Walker River Ecosystem (\$162,507)
- Project 4: Alternative Agriculture & Vegetation Management (\$821,345)
- Project 5: Plant, Soil, & Water Interactions (892,910)
- Project 6: Assessing the Importance of Water Acquisitions to Health of the In-stream Environment, Aquatic Ecology, and Lake Health (472,368)
- Project 7: Development of Tools to Quantify Sediment Transport within the Walker River Watershed along with Recommendations to Maximize Water Conveyance and Minimize Degradation of Water Quality in Walker Lake Due to Erosion, Sediment Transport, and Salt Delivery (\$193,014)
- Project 8: Water Conservation Practices for Agricultural Producers (\$347,268)
- Project 9: Formulation and Implementation of Economic Development Strategies to Mitigate Economic and Fiscal Dislocations (\$259,105)
- Project 10: Project Coordination and Outreach (\$4,966,035)
- Project 11: Communication Plan (\$399,304)
- Project 12: Acquisition Review Team (\$463,304)
- Project 13: Wild Horse & Burro Marketing (\$354,478)

While this research project has proven to be very challenging for UNR and DRI to accomplish in the 1.5-2 year time frame allowed, it has also provided many opportunities for faculty from both institutions to work more closely than they have previously. It is important to note that this complex effort involves faculty, students and staff from many units at both UNR and DRI. At UNR, a total of 24 faculty members (plus their students, post docs, technicians, and staff) from six colleges are working on the Walker Basin Project:

- College of Agriculture, Biotechnology, and Natural Resources
 - Natural Resources & Environmental Science
 - Resource Economics
- College Business Administration
 - Nevada Small Business Development Center
 - Bureau of Business & Economic Research
- College of Engineering
 - Civil & Environmental Engineering
 - Electrical Engineering
- College Liberal Arts
 - Political Science
 - Economics
 - School of Social Research & Justice Studies
- College of Science
 - Biology
 - Geological Sciences
- University of Nevada Cooperative Extension

It is hoped that this tightly integrated, interdisciplinary project will not only help to provide the critically needed information this program requires as water rights are acquired from willing sellers in the Walker Basin, but stimulate future interdisciplinary research by researchers from both UNR and DRI in this and other regions of Nevada, for the benefit of the state.

Self Assessment of Research

Although our accomplishments in research have been substantive, we believe even greater opportunities exist. To date, our research efforts have focused on the Lake Tahoe/eastern Sierras and Walker Basin regions, where UNR could provide leadership in interdisciplinary environmental research on sustainability, conservation, and restoration. Opportunities to expand our presence into Great Basin regional initiatives, global climate change, and terminal lake ecosystems elsewhere throughout the state and region are emerging. The continued growth of UNR as a prominent environmental research institution will hinge, in part, on our ability to respond rapidly to emerging opportunities. The current 0.45 FTE assignment for the Associate Director for Research is already limiting some of our response capability, and will likely become more constraining in the future.

Grant-Funded Research

The grant from the Truckee River Fund to conduct a low impact development (LID) demonstration project with permeable pavers at the Joe Crowley Student Union was successfully completed. The other grant-funded projects are ongoing and making satisfactory progress towards completion.

UNAE-Funded Mini-Grant Program

One of our objectives has been to support the development of interdisciplinary undergraduate and graduate degree programs in environmental studies, and to enhance and expand research/scholarship opportunities for environmental faculty and students. We believe the mini-grant program has been quite successful in this respect.

Accomplishments. To date, the Academy has provided approximately \$148,000 in support of faculty and student related research, travel, seminar, and curriculum development. Not only has this enhanced the visibility of our institution on a local, national, and international scale, it has also stimulated student interest and participation in environmental disciplines ranging from the sciences to the humanities.

Needs. At UNR, we believe there is a greater need for support of interdisciplinary projects and activities than our modest resources can support. Therefore, we would like to help create opportunities for more resources to be directed into interdisciplinary teaching and research. Future UNAE development activities will focus on obtaining donations to support undergraduate scholarships, competitively allocated graduate assistantships, and accomplishment awards in the environmental arena.

Tahoe and Eastern Sierra Issues

To the casual observer, Lake Tahoe and vicinity is often used as a model for the resolution of conflicting environmental and economic challenges surrounding a once pristine ecosystem. The transfer and application of scientific information from academic and institutional sources to management agencies has not been without difficulty, however, and contains examples of setbacks as well as notable successes. One of the more recent goals has been the implementation of adaptive management strategies for the restoration and enhancement of Basin resources and the protection of Lake Tahoe water clarity. Pursuance of this goal has dictated the need for new interdisciplinary and inter-organizational links to facilitate the generation of new knowledge and its application to Sierra Nevada ecosystems.

Accomplishments. UNAE, in seeking to develop and support collaborative, interdisciplinary research opportunities for interested UNR faculty, has focused on raising the visibility of our

outstanding faculty and institution in the environmental arena. One area of emphasis has been on Lake Tahoe as a local resource of national and international interest. Although the University of Nevada, Reno, has been actively involved in Tahoe Basin research since the early 1980s, the long term presence of the University of California, Davis, and more recent efforts of the Desert Research Institute have been much more visible at the Lake, while UNR has languished in the background.

As a result of our efforts, UNR has become much more engaged with agencies in the Basin to establish research and monitoring priorities, enhance the science-management interface, and develop and apply adaptive management practices. Not only has UNR's presence been elevated to the status of companion institutions, by virtue of our new partnerships we also have established a physical presence in the new Tahoe Center for Environmental Studies Building, located on the Sierra Nevada Campus, Incline Village, NV.

Needs. As a result of the new facility at Sierra Nevada College, many science and public outreach events that were traditionally scattered throughout the Basin are now held at that location. Even though UNR and DRI now occupy a shared complex on the first floor, the locale continues to be perceived primarily as an SNC/UC Davis facility. We believe it would enhance UNR's stature at the Lake if we also had a "home" location where environmentally-oriented events could be hosted. The University of Nevada Cooperative Extension manages a 4-H Education facility located at Stateline on the south shore of Lake Tahoe that could be expanded to also support environment research, education and outreach activities. We are interested in exploring the possibility of working with UNCE and other colleges to develop a "Tahoe Research and Education Center" that could deliver programs at that location. Such a facility could promote environmental education to the 4-H community as well as to the local constituency. It would also strengthen UNR's physical presence at South Lake Tahoe and provide additional attention to our environmental programs, a topic of significant importance to the local community.

The University of California, Davis, has established the Tahoe Environmental Research Center as their local research and education arm, the Desert Research Institute has established a Center for Watersheds and Environmental Sustainability. UNAE believes the University of Nevada, Reno, would benefit from the formation of a "Tahoe Research and Education Center" as well. It would be difficult to bring such a concept to fruition during our current fiscal constraints; however, we are interested in pursuing this notion with the faculty so that the level of interest and support for future implementation can be accurately gauged.

Walker Basin Issues

This integrated research project seeks to optimize water acquisitions from willing sellers by evaluating the type of water rights purchased, water losses from the river during transport to the lake, interactions between ground and surface water along the Walker River as it flows to Walker Lake, and changes to in-stream and adjacent terrestrial biological communities.

Accomplishments. Thirteen research projects have been initiated, and the gathering of field data is well underway. The first summer season measurements have been collected and interpretive analysis will begin this winter.

Twenty-four faculty from 6 Colleges, 10 Departments, and 1 School are active participants. This project has benefitted the university in many ways, by providing salary support for faculty and students, F&A, and badly needed, modern field and laboratory research equipment. This

project likely represents the most highly integrated and comprehensive interdisciplinary research effort undertaken by the University of Nevada for quite some time.

Needs. The time commitment for oversight and implementation of this project has been significant. Although the benefits to individual faculty, departments, and Colleges has been significant, the immense amount of time required for administration of this project has taken time away from Academy efforts elsewhere.

Stronger acceptance by the general public is essential to the overall success and management of this project. Although regular stakeholder meetings address this issue, a high degree of skepticism remains among the constituency – particularly as it pertains to the potential loss or reduction of the agriculturally based economy. An even greater effort is needed in this regard. We believe that the overall stakeholder involvement could be enhanced through a series of on-site field days. These could take the form of River visits during sampling measurements, Walker Lake excursions to demonstrate aquatic ecology investigations, the demonstration of laboratory equipment, field site inspections of restoration and alternative agriculture applications, and others. As this project continues, these and other opportunities will be explored to the extent possible.

University “In-Reach”/Community Outreach

The University of Nevada, Reno has many outstanding, world-class environmental researchers and educators among its faculty. However, prior to the formation of the Academy for the Environment, there was little recognition of these strengths outside of departments and disciplinary fields. UNR’s image in the surrounding community (as well as among prospective students) also suffered from ignorance of the resources and expertise housed here. Additionally, the University of Reno, Nevada Master Plan of 2004 articulated environmental sustainability and engagement with the City of Reno (and surrounding community) as two major goals for the campus. Therefore, from its inception, UNAE has worked to build a strong outreach component into its mission, with two central goals:

- To foster a sense of community within the university campus, providing networking opportunities across disciplinary and departmental lines for environmental faculty and researchers, in order to promote cross-disciplinary collaboration.
- To build bridges between the University and the broader community, linking faculty and students with nonprofit organizations, state and federal agencies, and businesses.

Raise Environmental Awareness on Campus by Promoting University Programs

UNAE efforts to foster a sense of community among environmental faculty at UNR include a diverse range of activities that coalesce around efforts to raise environmental awareness more generally. Some of these activities are initiated or led by UNAE, but the academy initially has focused on supporting initiatives that arise from faculty and students.

UNAE Website Development

The current UNAE website (<http://environment.unr.edu>) is an initial effort to provide basic information about our research, teaching and outreach programs, some background information, and contact information. During this past year, UNAE has been working with UNR’s Marketing and Communications Department to redesign our website so that it provides more comprehensive information about the environmental programs not only within UNAE, but campus wide. Our goal is to have a fully-functioning website that will offer information and services, such as access to on-line resources, such as Earthportal, interactive communications,

and ongoing news about opportunities and activities within the UNR environmental community. We hope that our redesigned website will function as a more powerful tool for communicating with faculty and students, enhancing student recruitment, and increasing public visibility of UNR's environmental programs throughout our community.

UNAE Faculty Survey

We are currently working with UNR's Center for Research Design to develop a survey of environmental faculty and researchers that will help us assess our strengths and weaknesses and set priorities for the next 5-10 years. This survey is currently being revised and we anticipate that it will be conducted early in the spring semester of 2008.

Green Living Wing in Residence Halls

Several projects have emerged over the past year that directly relate to student activities on the UNR campus, including an initiative from the Residence Halls to develop a "green" living wing in Canada Hall (currently in progress).

Environmental Citizenship Projects as Part of ENV Curriculum

As part of their course requirements, students in UNAE 110 class were charged with developing "environmental citizenship" projects that would address an environmental issue in our community. One group in the class organized an on-campus farmer's market in October 2007, to sell locally-raised pumpkins and raise awareness about the environmental benefits of consuming locally-grown food. The second group focused on the impact of consuming bottled water and distributed reusable water bottles and 1-page flyers in November 2007 to encourage campus community members to drink tap water.

Support of Student Organizations

UNAE has also provided support for projects led by undergraduate and graduate student clubs, including SEEDS (Students and Educators for Environmental Development and Sustainability), SAIWI (Student Association for International Water Issues), the student chapter of the American Meteorological Society, and ASUN (Associated Students of the University of Nevada).

Joe Crowley Student Union

UNAE purchased and donated recycling sorters for the new Joe Crowley Student Union, and successfully competed for a grant from the Truckee River Fund for approximately \$34,000 to purchase permeable pavers for the plaza in front of the new Student Union.

UNR Energy and Environment Committee

For the past three years, the UNAE Executive Director has served on the UNR Energy and Environment Committee (EEC), this past year as the committee chair. During this time, the EEC has developed recommendations for several environmental policies addressing issues related to campus environmental policy, indoor environmental quality, and sustainable buildings.

American Colleges and Universities Presidents' Climate Commitment

During the Spring 2007, President Glick enrolled UNR as one of the charter signatories to the American Colleges and Universities Presidents' Climate Commitment. This coalition is committed to reducing the amount of greenhouse gases created on college campuses and to support more sustainable, climate neutral practices on their respective campuses. More information on this Commitment can be found at <http://www.presidentsclimatecommitment.org/>; however, an excerpt from their website details the basic approach of this coalition:

“The American College & University Presidents Climate Commitment is a high-visibility effort to address global warming by garnering institutional commitments to neutralize greenhouse gas emissions, and to accelerate the research and educational efforts of higher education to equip society to re-stabilize the earth’s climate.

Building on the growing momentum for leadership and action on climate change, the Presidents Climate Commitment provides a framework and support for America’s colleges and universities to go climate neutral. The Commitment recognizes the unique responsibility that institutions of higher education have as role models for their communities and in training the people who will develop the social, economic and technological solutions to reverse global warming. Presidents signing the Commitment are pledging to eliminate their campuses’ greenhouse gas emissions over time. This involves:

- Completing an emissions inventory
- Within two years, setting a target date and interim milestones for becoming climate neutral.
- Taking immediate steps to reduce greenhouse gas emissions by choosing from a list of short-term actions.
- Integrating sustainability into the curriculum and making it part of the educational experience.
- Making the action plan, inventory and progress reports publicly available.

The college and university presidents and chancellors who are joining and leading the Commitment believe that exerting leadership in addressing climate change will stabilize and reduce their long-term energy costs, attract excellent students and faculty, attract new sources of funding, and increase the support of alumni and local communities.”

Since signing on to the Commitment, UNAE, EH&S and Facilities Services have collaborated on the development of a draft UNR Sustainability Master Plan designed to facilitate the implementation of actions outlined in the Commitment. This document is currently in review and, once approved, will form the basis of the strategy UNR will follow in meeting its commitment to reduce emissions and create a more sustainable campus.

Climate Change Discussion

In September, UNAE collaborated with Patagonia and the Nevada Museum of Art to host a lunchtime discussion on the effects of climate change on the Arctic with visiting author Jon Waterman. Waterman was sponsored by Patagonia to give a public lecture at NMA in the evening. At the lunchtime session, Dr. Joe McConnell and graduate researchers from DRI and UNR led a lively discussion about the impact of climate change and atmospheric contaminants in the polar regions. UNAE plans to continue hosting events that will provide opportunities for environmental faculty and students to engage with each other around environmental topics of research and public interest.

Sustainability Budget Initiative

UNAE directors collaborated with the EH&S Environmental Affairs Director to draft a federal earmark proposal in 2006 to work towards building a sustainable campus. Although this effort

was unsuccessful in garnering funds, it does chart a path toward sustainable and closed-loop campus practices, should enthusiasm build for enacting such measures.

Public Outreach/Community Relations

During the past two years, UNAE directors have participated in several community projects consistent with the UNAE philosophy of focusing on sustainability and linking the University with the community around shared interest in environmental matters. UNAE is particularly interested in working with faculty from UNR and other research institutions (i.e., DRI, NRCS), as well as environmental nonprofits with strong community education programs, to disseminate information about environmental issues of concern to the academic community and general public. Some recent collaborations include:

Nevada Wildland Fire Research and Outreach Conference

Together with the University of Nevada Cooperative Extension and the Desert Research Institute, UNAE co-sponsored a one-day conference on May 25, 2006, to highlight Nevada Wildland Fire Awareness Week (May 20-26). This research and outreach conference was designed to promote awareness, understanding and action concerning Nevada's wildland fire issues, through a coordinated, multi-organizational approach.

James Church Centennial Event

Initiated by the US Natural Resources Conservation Service (NRCS), the event held in May 2006 drew national attention to the landmark work of UNR classics professor James Church, who developed the snow survey techniques still in use around the world today to determine the water content of the snowpack in a given year. UNAE staff provided expertise and helped to coordinate the event, which brought several federal, state, and community representatives to the UNR campus and generated national media attention.

greenUP!

Initiated in December 2006, greenUP! is a diverse coalition with representatives from business, local government, nonprofit organizations, the University of Nevada, Reno, and residents that support sustaining the environment in the Truckee Meadows. By strengthening community awareness of organizations, opportunities, initiatives and resources, greenUP! hopes to contribute to building an environmentally sustainable and economically vibrant community. Both the Executive Director and AD for Academics and Outreach are members of the greenUP! organizing committee, and have contributed financial advice and marketing expertise. UNAE also provides financial support to greenUP! Other UNR participants in greenUP! include John Sagebiel from EH&S and Sue Donaldson of Cooperative Extension.

Nevada Museum of Art

The Nevada Museum of Art (NMA) is currently establishing its collection's emphasis on landscape and the environment as central to the Museum's mission; this has provided a great opportunity for collaboration between UNAE and the Museum. For example, Museum staff were among the community members contributing to the creation of the Environmental Studies Major. In addition, UNAE has collaborated with NMA on several different projects, most recently developing the public programming for the exhibit, "Yosemite: Art of an American Icon," which featured a very high percentage of UNR faculty and alumni in the public presentations. Additional collaborations include hosting John Waterman's evening talk (co-sponsored with Patagonia), and guest teaching for the Teaching American History Project with the Washoe County School District.

“Sneak Peek” University Neighborhood Reception

Initiated by President Milton Glick’s staff and the UNR Marketing and Communications department to foster improved relations with the University’s residential neighbors, the “Sneak Peek” was a special reception to the Joe Crowley Student Union for residents to see the facility prior to the grand opening. UNAE AD for Academics and Outreach was a planning committee member and coordinated the selection of historic aerial photographs for display at this event.

Nevada EcoNet

One of the oldest of northern Nevada’s environmental nonprofit organizations, Nevada EcoNet’s (NEN) goal is “to keep people informed, and to encourage informed action, on the important environmental issues impacting our region and quality of life”. UNAE has provided financial support for the important community events conducted by NEN, such as the annual Earth Day festival and the Pine Cone Ball (their awards celebration). In addition, the UNAE Associate Director for Academics and Outreach sits on the NEN Board of Directors.

Nevada Discovery Museum

In 2005, a group of community leaders began developing plans for a Children’s Museum that would bring together science and the arts in an interactive environment that emphasizes connections with the unique qualities of the Great Basin Environment. Since 2005, the UNAE AD for Academics and Outreach has contributed her expertise to the Nevada Discovery Museum (NDM) exhibit committee. The NDM has purchased and begun renovation of a downtown building and is on track with fundraising to open in 2009. The Museum will provide rich opportunities for further collaboration with UNR and DRI researchers, and increase community visibility for UNR.

Smart Living Expo

In addition to the annual local nonprofit environmental events mentioned above, UNAE helped support for two Smart Living Expo events that showcased green living technologies—one in 2005 and one in 2006.

Self Assessment of Campus “In-Reach” and Community Outreach

The UNAE mission to build a sense of community among UNR faculty, students and staff, and to provide a conduit to the general public is the latest of the UNAE mission initiatives to be initiated; however, with the hiring of the Associate Director for Academics and Outreach in May 2007, activities in this program area are accelerating rapidly.

Accomplishments. Despite the fact that the Outreach component of UNAE has only been officially underway for six months, UNAE staff have built strong relations with community organizations and leaders, raising the profile of UNR among the Reno public. Some headway has also been made in creating networking opportunities for faculty as well, with the Waterman talk in September, 2007; and the Yosemite exhibit at the Nevada Museum of Art.

Needs. UNAE would like to increase the visibility of its programs with faculty and students, and play a more prominent role in bringing them together over environmental issues. One option we have discussed is to host regular workshops on relevant environmental topics (such as our recent climate change discussion with John Waterman). Until recently, our main form of communication has been an email list generated by voluntary sign-up sheets; this has proved to be of limited effectiveness in generating faculty response to events that we host. We hope that the new, more interactive website will provide more incentive for faculty to visit our site and increase interest in participating in UNAE-hosted activities. We are also discussing hosting a workshop in Spring 2008, on interdisciplinary team-teaching at UNR.

Literature Cited

Berger, B., W.W. Miller, M.W. Collopy. 2007. Lake Tahoe Federal Event: 10 years of University of Nevada, Reno, Deliverables -- A Synopsis of published research papers. University of Nevada and the Academy for the Environment, Reno, NV.

Chandra, S. and B.C. Allen. 2007. The impact of non-native species and cultural eutrophication on the Lake Tahoe food web. 2007 Joint Meetings of the Ecological Society of America and the Society for Ecological Restoration International, ESA/SER, July 2007, San Jose, CA.

Ganschow, S.L., P.J. Weisberg, D.W. Johnson, W.W. Miller. 2007. Effects of changing disturbance regimes on watershed-scale nutrient cycling: An integrated modeling approach. 2007 Joint Meetings of the Ecological Society of America and the Society for Ecological Restoration International, ESA/SER, July 2007, San Jose, CA.

Manley, P.N., L.A. Campbell, D.D. Murphy, M.D. Schlesinger, M.P. Sanford, S. Merideth, and K.E. Heckmann. 2007. The potential role of remnant forests supporting biological diversity in an urbanizing landscape. 2007 Joint Meetings of the Ecological Society of America and the Society for Ecological Restoration International, ESA/SER, July 2007, San Jose, CA.

Marston, E. 1994. Land-grant universities: Their roots loosen as the West changes beneath them." High Country News, 11/14/94 (http://www.hcn.org/servlets/hcn.Issue?issue_id=23).

Miller, W.W., E.M. Carroll, H. Tretten, D.W. Johnson. 2007a. Tahoe Science Plan - Soil Conservation Science Theme. 2007 Biannual Tahoe Science Symposium, Tahoe Science Consortium /Tahoe Environmental Research Center/Univ. of Nevada Academy for the Environment, Sierra Nevada College, June 2007, Incline Village, NV.

Miller, W.W., D.W. Johnson, R.F. Walker, S.L. Ganschow, P.J. Weisberg. 2007b. Restoring Forest Health: The effects of biomass management on potential nutrient delivery to Lake Tahoe. Joint Meetings of the Ecological Society of America and the Society for Ecological Restoration International. ESA/SER, August 2007, San Jose, CA.

Miller, W.W., E.M. Carroll, H. Tretten, D.W. Johnson. 2008. Comprehensive Science Plan for the Lake Tahoe Basin: Conceptual Framework & Research Strategies – Soil Conservation Science Theme. Tahoe Science Consortium. Incline Village, NV. (Accepted; In Revision)

Miller, W.W., D.W. Johnson, S.L. Ganschow, R.F. Walker, P.J. Weisberg, T.M. Loupe. (in review). Effects of Biomass Management on Potential Nutrient Delivery to Lake Tahoe. J. Restoration Ecology. (Submitted Dec. 2007).

Murphy, D.D. 2007. An historical review: Ingredients of the past create the stew of the present. 2007 Joint Meetings of the Ecological Society of America and the Society for Ecological Restoration International, ESA/SER, July 2007, San Jose, CA.

Romero, A. and C. Jones. 2003. Not All Are Created Equal: An Analysis of the Environmental Programs/Departments in U.S. Academic Institutions Until May 2003. Macalester Environmental Review, 5/29/03 (<http://www.macalester.edu/environmentalstudies/MacEnvReview/equalarticle2003.htm>).