

**BUSINESS PLAN FOR  
THE WATER RESOURCES PROGRAM**

University of Idaho  
Fall 2006

## **The Program**

### **Description of the Water Resources Program**

The University of Idaho proposes a new Water Resources Program under the College of Graduate Studies and College of Law. This Water Resources Program will need approval for new M.S./Ph.D. degrees in Water Resources with emphasis in one of three option areas: Engineering & Science; Science & Management; and Law, Management & Policy; and concurrent M.S./ J.D. and Ph.D./ J.D. degrees in any of the three option areas. The proposed degrees form a coordinated effort to create interdisciplinary study options in water resources. The WR Program has the support of, and will draw participants from, the Colleges of Agriculture and Life Sciences (CALS), Engineering (ENG), Law, (LAW), Letters, Arts, and Social Sciences (CLASS), Natural Resources (CNR), and Science (COS). The WR Program will include collaboration with the Idaho Water Resources Research Institute and faculty at the Boise, Idaho Falls, Coeur d'Alene, and Twin Falls Centers, but the offering at off-campus locations will be phased in during the first three years of operation.

The proposed interdisciplinary Water Resources Program, centered in Moscow with support from campus centers across Idaho, will encompass engineering, natural and social sciences, to advance water resources education, research and outreach throughout Idaho. The term “water resources” is used here in the broadest sense: the study of how water moves through and interacts with natural systems, and the physical, social, and economic aspects of human interaction with the water cycle. The proposed water resources degrees will be integrated by requiring a set of common courses for all students in the program. The proposed Water Resources Program will facilitate research and education that influences both the scientific understanding of the resources and how they are managed, and the decision-making processes that are the means to address competing societal values. The tracks will have rigorous entrance requirements appropriate for each degree, a set of core courses, and a broad range of elective courses.

Additional objectives of the Water Resources Program are:

- To increase efficiency by organizing, coordinating, and integrating existing courses in water resources;
- To align faculty teaching loads, reduce redundancies, and create new courses and seminars;
- To coordinate faculty hires across programs/departments to meet critical programmatic needs;
- To broaden research collaborations among all water resources faculty in Idaho;
- To strengthen collaborations with Federal, State and Local agencies as well as private companies; and
- To enhance effectiveness of outreach programs.
- To educate students to effectively address water resource issues of the 21<sup>st</sup> Century.

### **Program Entry**

Students in the Water Resources Program must meet the general requirements set forth by the College of Graduate Studies for the M.S. or Ph.D. degrees with the following exceptions. The degree of M.S. in Water Resources requires 29 credits of course work and completion of a thesis equivalent to a minimum of 6 credits of research & thesis for a total of 35 credits. (note for transfers: A M.S. student must complete at least 18 of the total 35 required credits at the University of Idaho while matriculated in the College of Graduate Studies). The degree of Ph.D. in Water Resources requires 39 credits of course work beyond a Bachelor's degree and completion of a dissertation equivalent to a minimum of 39 credits of research and dissertation credits for a total of 78 credits. (note for transfers: A Ph.D. student must complete at least 45 of the 78 required credits at the University of Idaho while matriculated in the College of Graduate Studies.) Both M.S. and Ph.D. degrees have higher credit requirements for course work than those of the

College of Graduate Studies to allow for depth in a water resources subject area while accommodating breath in the interdisciplinary subject areas. Students in the Water Resources concurrent J.D. track must meet the general requirements set forth by the College of Graduate Studies and Water Resources Program for the M.S. or Ph.D. degrees and the College of Law for the J.D. The NOI specifies specific requirements for the three option areas as well as the joint M.S./ J.D. and Ph.D./ J.D.

The proposed program is initially funded to focus on five critical elements: (1) development of an integrative problem-solving framework, including a pilot process focused on water resources sustainability in the Palouse basin to facilitate interdisciplinary research, education, and outreach; (2) broadening WR education through activities designed to expose students to other complex regional, national and international WR issues; (3) recruitment of new faculty to expand the law curriculum to make feasible the offering of a concurrent J.D.; (4) hiring a director with support staff to coordinate the program and a grant writer, who will assist participating faculty in obtaining funding for future faculty and student interdisciplinary research; and (5) use of graduate student assistantships to attract diverse, highly qualified students.

The primary long-term goal of this effort is to develop a unique and sustainable Water Resources Graduate Program at the UI. Funding from the UI Strategic Initiative will launch the WR Program in a direction calculated to make UI a leading public university in the West in applying an integrative process to water resources problems incorporating elements of law, policy, management, science, and engineering. Students graduating with a degree in Water Resources will be grounded in a specific WR discipline, will have an advanced understanding of other WR disciplines, will be trained in critical thinking, and will have awareness of the need for integrative approaches to problem solving. The program will solidify a water resources community where faculty and students engage in interdisciplinary teaching and research, while seeking participatory involvement of stakeholders. These goals are aligned with the land grant mission of the UI and identified needs in graduate education reform.

After five years, we expect to have the Idaho WR Graduate Program fully operational on a statewide basis. The College of Law will have hired one additional faculty member in Year 2 and one teaching fellow in Year 5. Curriculum expansion in the College of Law will begin in Year 2 with increasing enrollment from students in the WR Program over the five-year period. The College of Law will have completed fund-raising for the law faculty member as well as continued support for the law teaching fellow. Faculty in the UI water resources community will have developed a new integrative process for water resources problems, applied this process to the Palouse basin, and developed a new integrated water resources course, which they will have delivered at least twice. We anticipate several publications following course development and delivery. The program and citizens in the Palouse area will have access to the state-of-the-art Virtual Experimental Watersheds (ViEWs) to promote critical analysis and informed decisionmaking. Involvement by on- and off-campus faculty in the seminar series and summer field trips will promote familiarity with integrative processes and cross-disciplinary water resource issues elsewhere in Idaho and across the region, and collaboration and interdisciplinary research projects will increase. Guided by the WR Program Director and PIs, the grant writer and faculty in the WR Program will have established a steady source of funding for interdisciplinary research and teaching, funding the grant writer and a diverse group of graduate students. The WR Program will have developed strong ties between the WR Program and stakeholders in Idaho, the Pacific Northwest, and beyond. The Director will provide direction at the national level to professional societies and publishing entities to incorporate interdisciplinary approaches in conferences, workshops, and proceedings.

As the WR Program grows in size and quality, a transformation of WR faculty and students will change their approach to education, research and service. In the long-term, the WR Program will build a reputation as an interdisciplinary program where 1) faculty and students converse, interact, and integrate with those in other disciplines through team-teaching and innovative, cutting-edge approaches to

teaching; 2) faculty continually re-design course content to best reflect the educational, development and training needs of students, and increase course field-applications and reduce redundancy; 3) faculty identify gaps in expertise and work together in the hiring of new faculty; and 4) a productive and stimulating research and applications community develops with a focus on water resources.

**Program History**

Development of the proposed WR program was initiated 6 years ago by a group of faculty at the University of Idaho. This group consisted of Drs. Boll, Fiedler, Link, Humes and Fairley. Initially, this group was focused on organizing water-related programs at the University of Idaho by structuring course offerings and looking to coordinate new faculty hires. Over the course of 6 years, discussions were held with engineers and scientists at governmental agencies and consulting companies to identify the type of graduate students they see needed for the future. Additionally, Dr. John Selker from Oregon State University was invited to share with the campus community experiences from development of a similar interdisciplinary program at his institution. This effort led to a clear understanding that to solve the water resource problems of the future we need to produce graduates with an interdisciplinary background and who are able to communicate across disciplinary boundaries. To put it in the words of an Idaho Department of Water Resources employee: “.. to educate graduates for the real world.”

**Accreditation**

No accrediting agency for water resources academic programs currently exists, but many of the participating departments are fully accredited. Listed in Table 1 are the departments that are accredited and which offer the upper division courses that will be used toward the water resources degrees.

Table 1. UI Departments (Colleges) with Related Accrediting Agencies

<b>Department</b>	<b>Accreditation</b>
Biological and Agricultural Engineering (Engineering, Agriculture)	ABET (Accreditation Board for Engineering and Technology)
Civil Engineering (Engineering)	ABET
Economics (Business and Economics)	AACSB (Association to Advance Collegiate Schools of Business)
Food Science and Toxicology (Agriculture)	IFT (Institute of Food Technologists)
Forest Resources (Natural Resources)	SAF (Society of American Foresters)
Law (Law)	ABA (American Bar Association), AALS (Association of American Law Schools)
Rangeland Ecology & Management (Natural Resources)	SRM (Society for Range Management)

The program quality will be ensured through rigorous and appropriate pre-requisites. Curriculum pre-requisites for the Engineering & Science option area meet certification criteria established by AIH for the Professional Hydrologist certification exam and are consistent with the basic math and science requirements for the Fundamentals of Engineering & Professional Engineer exams. Certification requirements for engineering licensing boards will be made available to students so they can tailor their course work to meet these requirements. Curriculum requirements for the Science & Management area are consistent with certification criteria established by the U. S. Office of Personnel Management for qualification standards for the Hydrology Series (GS-1315). Curriculum requirements for the concurrent J.D. degrees are consistent with the requirements to sit for a state bar exam.

## **Market Analysis for the Program**

### **Target Market – Customer Overview**

Students enrolling in the proposed Water Resources Program will have a variety of backgrounds (engineering, science, and social sciences). They are expected to be attracted from across the U.S. as well as many other countries. The broad inter-disciplinary approach taken in this program should be a major draw for a diverse group of students who would not necessarily have attended the UI.

Those enrolling in the M.S. degree program will have bachelor degrees from a four-year institution, while students enrolling in the Ph.D. degree program will have Master of Engineering or Master of Science degrees. Pre-requisites for enrollment in the program are clearly spelled out and deficiencies can be made up depending on the choice of option areas. As discussed above, most students are expected to be full-time students residing at the location of the major professor. Students from government agencies and consulting companies can enroll as part-time students, but periodically will have to be travel to the Moscow campus to participate in a common integrative course taken by all students. Part-time students will have access to courses offered through Engineering Outreach, the Internet, and via compressed video. Students residing in any of the off-campus locations in Boise, Twin Falls, Idaho Falls, or Coeur d'Alene will travel to the Moscow campus to participate in the common course elements of the program as needed. Concurrent JD students must be on the Moscow campus as required by the College of Law.

Since the announcement of the Water of the West Strategic Initiative in April 2006, student interest in the proposed program has been high. The concurrent degree options appear very much in demand. Initially, a small number of students will shift into the new program from existing programs at the University of Idaho. Given the strong interdisciplinary nature of the program, it is projected that new enrollments will enter the program from outside the UI. As the program matures, it is expected that, on average, each participating faculty member will have one student enrolled in the program.

The program also will promote diversity in the UI student body by actively seeking students from underrepresented groups by targeting students from historically underrepresented communities, and from communities that will benefit from the water-focused educational and training experiences provided by the program. Diversity will be enhanced further by actively seeking applications to the Law faculty position and Law teaching fellow from diverse candidates, including Native American graduates of J.D. programs.

### **Market Trends -- Need and Rationale**

Nowhere is the need for sustainable use of water more evident than in the western United States. Growing demand for water stems from multiple factors, including urban population growth, agricultural needs, tribal water development, energy demand, habitat requirements, recreational use, and aesthetic values. Seven of the ten fastest growing cities in the U.S. are located in the water-limited western states. Idaho has the sixth highest projected population growth rate in the nation, over 50% in the next 25 years. Most of that growth is in urban areas that compete for water resources currently used for irrigated agriculture and industries. Development of tribal water resources in the region has lagged behind that of their neighbors, and only in the past few decades have the proper institutions and funding been made available to begin to reverse that disparity. Habitat needs are highlighted by the fact that freshwater fish are the single-most endangered vertebrate group in the U.S. Furthermore, the Columbia River basin is the primary source of hydroelectric power in the northwest. Its waters serve five states, numerous Native American tribes, and two countries. It is also home to twelve endangered salmonid populations, decimated by blockage to migratory routes, dewatering, poor water quality, loss of habitat, competition from hatchery and exotic fish, and commercial fishing.

Water resources issues are commanding attention in Idaho, nationally, and globally. In southern Idaho, understanding and balancing the physical, biological and legal aspects of the Snake River system are primary challenges. In Moscow, the declining water level in the region's primary aquifer has local and state officials concerned about maintaining a sustainable water supply. Across the state, many water quantity and quality issues are under study and need solutions, including those associated with growth and development, domestic supply, agricultural use, forest harvest, mining, and aquatic habitat. Across the nation and throughout the world, the situation is similar. In a report prepared for the United Nations titled *No Water, No Future*, the case is made that the entire world is in a "water crisis." Global demand and resource degradation is expected to increase, stressing ecosystems and requiring innovative new water-related infrastructure. Moreover, climatic variability is affecting hydrologic regimes from local to global scales, forcing humans to find long-term, innovative, and interdisciplinary solutions to a variety of water resource-related problems. These issues will only become more important in the future: clearly, *the capabilities of the next generation of water resources scientists, engineers, and policy makers are vital to our economy, ecosystems, and human health and well-being.*

These complex water resources issues cannot be resolved through a conventional approach in which science, engineering, law, and policy are compartmentalized in university education, research, and outreach programs. Recent studies indicate that graduate education must expand interaction with stakeholders and more generously engage social and technical challenges. *The UI must take the next critical step in providing engineers, scientists, lawyers, managers, leaders, and citizens with integrated knowledge and problem-solving skills to address water resources problems.* In short, we must educate scientists and engineers to be more politically aware and policymakers to be more scientifically knowledgeable.

The state of Idaho has the sixth highest projected population growth rate in the nation; projected by the U.S. Census Bureau to grow by over 50 percent in the next 25 years. In southern Idaho, understanding and balancing the physical, biological and legal aspects of the Snake River system is a primary challenge. Most of that growth is in urban areas that compete for the same water resources currently relied on for irrigated agriculture. Some municipal water companies, such as United Water Idaho in the Treasure Valley, are considering buying water rights from struggling farmers<sup>1</sup>. The Idaho Department of Water Resources predicts that demand for water will increase significantly in some regions of the state; for example, it projects that demand for water in the Treasure Valley will increase by 74 percent by 2025 for domestic, commercial, municipal and industrial water consumption. In central Idaho, in the region around Moscow, the declining water level in the region's primary aquifer has local and state officials concerned about maintaining a sustainable water supply; similar concerns are being addressed in north Idaho where the Rathdrum Prairie and Spokane Valley share a groundwater basin.

Across the state, many water quantity and quality issues are under study and need solutions, including those associated with growth and development, domestic supply, agricultural use, forest harvest, mining, and aquatic habitat. A January 16, 2005, Idaho Statesman Special Report entitled "Troubled Water" and a subsequent conference with the same title held in Boise April 19-20, 2005, highlight the many water resources issues in the state. During the 2005 session of the Idaho Legislature, settlement of water rights for the Nez Perce Tribe and conjunctive management of surface and ground water in the Eastern Snake River Plain carried the headlines.

The U.S. Department of Labor Bureau of Labor Statistics collects and compiles information on historical and projected employment by occupation and industry. While there is no specific Water Resources category, the Occupational Outlook Handbook 2004-2005 provides demand estimates for the period 2002 to 2012 in several related areas. The demand for Hydrologists is expected to grow 21% in this period. A 51% increase is expected for Civil Engineers in the water area, and a 95% increase for Environmental

Engineers who focus on water issues is projected. The Occupational Outlook Handbook states that more “soil and water quality” experts will be needed as “states develop initiatives to improve water resources.” The demand for Natural Science Managers is expected to grow 11%. In the private sector, the demand for Atmospheric Scientists is expected to grow faster than average. The demand for Lawyers in the water area is projected to increase 52% from 2002 to 2012. Based on these statistics it can be inferred that the demand for Water Resources Professionals in all areas will increase over the next decade.

In the June 2003 issue of the *Journal of Contemporary Water Research and Education*, published by the Universities Council on Water Resources, Dr. L. Douglas James, Director of the Hydrologic Sciences Program at the National Science Foundation, notes that there is a need for people with different backgrounds to be able to work together in solving pressing water resources challenges, and writes: “Education is needed that provides perspectives needed to balance social, economic, and environmental considerations in viewing water and land resources and the nature of risks.”

The University currently offers a broad but disparate array of programs related to various aspects of water resources that are typically discipline-specific, such as those in Forest Resources, Civil Engineering, Geology, Geography, and Biological and Agricultural Engineering. Students currently considering UI as a place to study water are not presented with a unified, interdisciplinary approach to water resources. Creating a new Water Resources Program will ensure that an Idaho institution will help provide the next generation workforce needed to solve current and future water problems.

The proposed program satisfies the Board's Statewide Plan for Higher Education by meeting the following goals and strategies as stated in Directions for Higher Education in Idaho: (1) it encourages expanded curricular response to the technologies; (2) maintains strong graduate education; and (3) continues to avoid unnecessary duplication of effort by utilizing existing course work in current programs. It also develops a broad range of cooperative ventures and encourages maximum use of technology. It promotes Idaho's economic revitalization through technology transfer by supporting basic and applied research that results in the timely application of new knowledge.

The University of Idaho historically has had certain unique functions. Specifically, the university has had the responsibility to serve as (a) the land-grant institution for the State of Idaho, with responsibility for instruction, research and extension, and public service in the fields of agriculture, forestry, mining, and engineering; (b) the graduate and research center and a center for professional education for the State; and, (c) the center for comprehensive graduate programs leading to the degree of Doctor of Philosophy. The proposed program is consistent with the role and mission of the University of Idaho and specifically addresses the university's responsibilities as a land-grant institution.

For example, in September 2004, the University of Idaho published its Vision and Resource Task Force Report that identified seven strategic themes for renewal:

1. Building Human Potential through Innovative Engagement,
2. Creative and Performing Arts,
3. Economic Development through Technology Transfer and New Venture Creation,
4. Evolutionary Biology,
5. Global and Regional Environmental Systems,
6. Natural Resources Protection and Resource Development, and
7. Sustainable Agriculture.

The proposed program is consistent with themes 1, 3, 5, 6, and 7. The VRTF also articulated a vision, which includes the statement “We will maintain strategically selected programs to serve and benefit the people of Idaho, the United States, and the world.” Given the strength and number of existing faculty and

disciplinary programs in the water area, and the importance of water, the proposed program in Water Resources directly addresses this portion of the vision statement. Moreover, the VRTF report identifies seven core values, one of which is the creation of a “barrier-free community.” The cooperative nature of the propose program encourages “productive, unhindered interaction between disciplines” and “interdisciplinary instructional, research, and outreach activities” as stated in the core values.

Additionally, UI President Tim White recently articulated five strategic directions, consistent with the VRTF report:

1. Stewarding the environment,
2. Promoting science and technology,
3. Understanding sustainable design and lifestyle,
4. Advancing liberal arts and sciences,
5. Catalyzing entrepreneurial innovation.

Water resources represent a nexus of natural science, engineering and social science disciplines, and development of a water resources program links to all UI strategic themes at some level. When viewed broadly, water is the single most important economic asset in the state of Idaho. Abundant, high-quality water resources are essential for agriculture, municipal use, and the recreation/tourism industries. Protection and sustainable use of water resources is a critical need in the western U.S. and will likely increase in importance in the future due to growing populations coupled with climatic variability. Effective stewardship of water resources requires the application of innovative, high-quality science to understand and develop technology to support management of ecosystems, engineered systems, and resolution of legal disputes. Many water resource stewardship objectives will be achieved through the development of sustainable natural resources management and shifts towards more sustainable lifestyles. The shift towards more sustainable management of water resources and the natural environment that produces these resources requires successful integration of the natural and social sciences, policy, and law. Many problems concerning water resources will be solved through the development of new tools, technologies, and institutions.

The UI Research Office’s Action Plan encourages “faculties that cross disciplinary boundaries to enhance scholarly activity.” The proposed Water Resources Program will facilitate such collaboration. Finally, but importantly, an important UI Strategic Plan goal is to expand the capacity and delivery of outreach programs and services in keeping with the University of Idaho’s land-grant mission. Since the degree will be offered UI-wide, and will have strong ties to UI water faculty located in Boise, Idaho Falls, and Kimberly, outreach capabilities and technologies will be a key component of successful program delivery. The new program will provide a continuing learning opportunity to the citizens of Idaho and will be implemented in collaboration with other state and regional post-secondary institutions.

The UI and IWRRI currently are conducting a Water Resources Research Needs Assessment across the state of Idaho as part of a multi-state research effort funded by INRA. The results of that effort will be forthcoming in Spring 2007, and will include identification of educational needs for future experts in the area of water resources as identified by current professionals from across the spectrum of water users, managers, planners, policy analysts, and other key stakeholders. As the Water Resources Program develops over the next year, these results will be used to further refine and improve upon the program and its ongoing planning and implementation.

### **Competitive Comparison**

In 1991, the National Research Council issued a report that recommended a plan for both unifying hydrologic science and broadening its interdisciplinary research programs; in it, the Council

recommended cross-cutting hydrologic science programs that advance interdisciplinary research. A truly integrative, interdisciplinary water resources programs currently does not exist in the State of Idaho, and very few exist in the nation.

The University of Idaho now offers graduate degrees related to water resources in a number of different departments, including Biological and Agricultural Engineering, Civil Engineering, Forest Resources, Geography, Geological Sciences, and Plant, Soil, and Entomological Sciences. The Hydrology Program focuses on hydrogeology, and the Environmental Sciences Program offers a degree in the broad area of Environmental Science, with a water science emphasis area. Idaho State University is currently developing an M.S. in Watershed Science within their Geology program. Boise State University has proposed a Hydrologic Sciences program primarily composed of offering from two departments: Civil Engineering and Geosciences. At a joint meeting hosted by the Idaho Water Resources Research Institute on April 20, 2005, faculty from UI, BSU and ISU discussed ways to collaboratively administer water resources graduate education and research programs in the State of Idaho. Attendees at this meeting concluded that a program administered across the state of Idaho might be feasible in five to ten years. The group decided to focus on the near-term, institution-specific efforts immediately, and enter into further discussions to develop an approach to achieve the long-term goal of a statewide program. The group in attendance agreed that the long-term effort should not impede development of each university's emerging graduate programs. Rather, a statewide effort should build on this momentum to help university-level programs develop to the furthest of their abilities. This commitment was reinforced at the Water Resources Symposium panel discussion on November 28, 2006.

Table 2 lists the institutions and departments offering comparable degrees in water resources. Water resources degrees offered through traditional departments (e.g., Civil Engineering, Geological Sciences, etc.) are not listed. Concurrent degree programs in law and environmental science that may allow an emphasis in water are not listed, as these are not as focused or integrated as the proposed program and thus not directly comparable.

For comparison, Oregon State University has a recently developed program that is similar to the one proposed here and is composed of three areas within the Water Resources Graduate Program: Water Resources Engineering (WRE), Water Resources Science (WRS), and Water Resources Policy and Management (WRP). At the end of the first year, OSU had 7 Ph.D. and 10 MS in WRE, 3Ph.D. and 7 M.S. in WRS, and 9 M.S. in WRP. Next year, they are anticipating 29 new students in the program distributed as follows: 2 Ph.D. and 7 MS in WRE, 5 Ph.D. and 9 M.S. in WRS, and 6 M.S. in WRP. A key difference in the Oregon program is that it does not include a Law degree component.

Table 2. Water Resources programs and degrees.

<b>Institution</b>	<b>Degree or Program</b>
Oregon State University	Water Resources Science Water Resources Engineering Water Resources Policy and Management
University of Nevada Reno	Hydrologic Sciences
University of Nevada Las Vegas	Water Resources Management
Texas A&M University	Water Resources Engineering
The University of Arizona	Hydrology and Water Resources
University of Southern California	Water Resources Engineering
The University of Texas at Austin	Environmental and Water Resources Engineering
Villanova University	Water Resources and Environmental Engineering
University of Minnesota	Water Resources Science
University of New Mexico	Water Resources Program (non-thesis Masters only)
University of Wisconsin – Madison	Water Resources Management
Princeton University	Environmental Engineering and Water Resources

## **Competitive Advantages**

As noted above, students enrolling in the proposed Water Resources Program will have a variety of backgrounds and are expected to be attracted from across the U.S., as well as from other countries. The broad inter-disciplinary approach taken in this program should be a major draw for a diversity of students who would not necessarily have attended the UI. Although other institutions have adopted inter-disciplinary approaches, none have the team-based, integrative approach like that of the UI program, and none have law schools, professors, and students that are focused on developing expertise in this area. This advantage, along with the State of Idaho's increasing focus on sustainable resources and resource management, position the UI program to be a unique one that will be highly competitive.

In particular, the program will advance the University of Idaho's land grant mission to promote economic and social development in the state of Idaho. This will be accomplished through novel experiential interdisciplinary education, creation of interdisciplinary research efforts among water resources faculty in numerous Colleges and UI Centers, and focus on urgent regional water resource problems with an approach that will involve and provide information to local communities. Through the program, the UI has the opportunity to take the lead among public universities in the West in providing interdisciplinary education, research, and outreach on water resources at the interface among law, policy, management, science, and engineering.

## **Marketing the Program – Market Share and Promotion Plan**

### **Marketing Strategy**

During the next three years, the Water Resources Program will focus on growing the program along with increasing its revenue streams. Increasing quality of its faculty and facilities, expanding the programs offerings and geographic reach, and continually improving the quality of programs delivered will create significant demand for the program and its services, increase enrollment, recruitment and retention, and generate significant increases in revenue from both students and expanded research activities. The multi-disciplinary and integrative nature of the program will ensure a team of scholars, researchers and educators working collaboratively and becoming increasingly successful in securing research funding and recruiting a growing pool of students.

Key to reaching the projected enrollment in this program is development and implementation of an effective marketing effort. Based on the current enrollment in these types of programs, the increasing importance of this topic, and the uniqueness of the UI program, we would project an enrollment in this program to eventually reach approximately one student per active faculty member.

**Advertising.** Key to any marketing strategy is the promotional efforts used to achieve its goals. A Website and brochure have been developed for the program and are in the process of being refined, as is a display for meeting display rooms. These and other resources will be developed and made available at professional, scholarly, and other meetings. As research projects come on-line, recruitment of additional graduate students and the advertising to accomplish this also will increase awareness of and interest in the program, resulting in a growing enrollment and overall program. Recruitment for the concurrent degree program will be incorporated in the regular recruitment process at the law school which includes visits to undergraduate institutions, mailings, and follow-up.

**Publicity.** Publicity about the program already is resulting from the team's efforts, including articles in local newspapers, presentations to groups such as the Palouse Basin Aquifer Committee and its Citizens Advisory Group, and through its participation in the INRA research initiative and the IWRRI Seminar. Several members also have been active as participants in the planning of a Palouse Water Summit to be

held in October 2006, and the program will be a major presenter at that meeting, creating increased local and statewide awareness. As future expanded research and policy implementation results are achieved, additional publicity will occur, resulting in additional publicity and a growing program. For example, INRA research projects currently being conducted on water issues at the UI, as well as other Idaho institutions, will provide an opportunity for expanded publicity across the western U.S.

### **Ongoing Market Evaluation**

**Assessment.** To assure growth of size and quality of the WR Program during and beyond the 5-year WoW Initiative period, a Program Assessment and Evaluation Plan will be developed in the first year. Assessment is considered to be essential to responsive graduate education, and constructive feedback with information is essential to continually improve performance during formative and subsequent stages (WWNFF, 2005). Assessment is distinguished from evaluation, which confers a judgment of good or bad, or even success or failure. Assessment and evaluation form an integrated means to annually monitor and increase the quality of the WR Program. A core group of faculty will design a Program Assessment System (PAS) following steps outlined in the Program Assessment Handbook developed by Pacific Crest (2005) (see Sec. III for more details). The Assessment and Evaluation Plan will be shared with all program participants and its stakeholders for feedback. Examples of program qualities are: interdisciplinary, rigorous, career-oriented, globally aware, engaged stakeholders, and strong WR community.

Examples of measures used in assessment and evaluation are: faculty interactions across multiple disciplines (# of faculty actively participating in program, # of disciplines represented by participating faculty, # of hours of interaction); innovative teaching (# of new courses, faculty involved in new courses, ratings by students of integrated, innovative teaching materials and techniques); integrated water resources course (# of faculty involved in course design, # of faculty and disciplines represented in course offering, # of students serviced with course, in-depth course evaluation of student learning outcomes); large inter-disciplinary grants (# of grants submitted, # of faculty involved, # of disciplines involved, amount of grant dollars obtained, # of graduate students involved, # of stakeholders involved); course redundancy (# of courses redesigned, amount of courses significantly modified or eliminated); and increased engagement with stakeholders (# of meetings with stakeholders, # of stakeholders contacted and participating, rating of effectiveness of stakeholder engagement, # of projects conducted with stakeholders, # of deliverables provided to stakeholders).

### **Operations Plan and Management of the Program**

#### **Personnel**

**Faculty.** Fifty-two faculty members will participate in the Water Resources Program holding primary appointments or affiliate status in one of 13 departments in 6 colleges at the UI. With funding through the President's Strategic Initiative process, one new faculty and one new teaching fellow will be added in the College of Law with Law providing up the funding of these positions at the end of the five-year Strategic Initiative funding period (FY12). For further information on the Strategic Initiative proposal, see <http://water.uidaho.edu>. Participating faculty in the Water Resources faculty are listed in Table 3.

Faculty involvement will consist of teaching courses in the water resources curriculum, supervising student research as major professors, and serving on graduate committees of students in the program. Due to the interdisciplinary nature of the Water Resources Program, students in existing programs may be instructed in the same courses as listed in the water resources curriculum. A set of three faculty members will be selected on a rotation to form the Core Faculty. A broader Steering Committee will include approximately 10 faculty members.

Table 3. List of Water Resources Program Faculty at the University of Idaho

Name (%FTE) & Dept	Specialty	Degree	Rank
Vladimir Aizen (1%) Geography	Alpine hydrology	Ph.D.	Professor
Rick Allen (5%) Bio & Ag Engr./Civil Engr.	Evapotranspiration and remote sensing	Ph.D./P.E.	Professor
Jan Boll (60%) Bio & Ag Engr.	Surface & subsurface hydrology; water quality	Ph.D./P.E.	Associate Professor
Erik Coats (10%) Civil Engr.	Environmental Engineering	Ph.D./P.E.	Assistant Professor
Dennis Colson (1%) College of Law	Indian Law	J.D.	Professor
Barbara Cosens (20%) College of Law	Water Law	J.D./LL.M./M.S.	Associate Professor
Donna Cosgrove (1%) Bio & Ag Engr	Groundwater hydrology	Ph.D./P.E.	Assistant Research Professor
Maxine Dakins (1%) Environmental Science	Pollution prevention, statistical analysis of environmental data	Ph.D.	Associate Professor
William Elliot (1%) Rocky Mtn. Research Station	Forest Hydrology	Ph.D./P.E.	Affiliate Professor
Jerry Fairley (5%) Geological Sciences	Hydrogeology	Ph.D.	Associate Professor
Fritz Fiedler (20%) Civil Engineering	Computational hydrology, sub-aqueous hydrodynamic exploration	Ph.D./P.E.	Associate Professor
Dale Goble (5%) Law	Public land law, endangered species	J.D.	Professor
Peter Goodwin (5%) Civil Engr./CER	Eco-hydraulics	Ph.D./P.E.	Professor
Chuck Harris (20%) Conservation Social Science	Water planning & policy; Human dimensions of watershed management	Ph.D.	Professor
Thomas Hess (5%) Bio & Ag Engr	Wastewater treatment; bioremediation of waste in soil systems	Ph.D./P.E.	Associate Professor
Steve Hollenhorst (5%) Conservation Social Science	River restoration	Ph.D.	Professor & Chair
Karen Humes (5%) Geography	Land surface hydrology and remote sensing	Ph.D.	Associate Professor
Gary Johnson (10%) Geological Sciences	Groundwater hydrology	Ph.D.	Professor
James "Ding" Johnson (1%) Entomology	Aquatic Entomology	Ph.D.	Professor and Chair
Jodi Johnson-Maynard (5%) Soil and Land Resources	Soil and water management	Ph.D.	Assistant Professor
Klaus Jorde (5%) Civil Engr./CER	Eco-hydraulics	Ph.D./P.E.	Professor
Brian Kennedy (10%) Fish & Wildlife Resources	Fish ecology, limnology	Ph.D.	Assistant Professor
Tim Link (20%) Forest Resources	Watershed science and management, Snow hydrology	Ph.D.	Assistant Professor
Jim Liou (5%) Civil Engr.	Open channel hydraulics, pipe flow, Fluid Mechanics	Ph.D./P.E.	Professor
Robert L. Mahler (5%) Soils	Water & soil quality	Ph.D.	Professor
Colleen Mack Canty (5%) Political Science	Political Science	Ph.D.	Assistant Professor

Table 3 Continued

Paul McDaniel (5%) Soil and Land Resources	Soil Science	Ph.D.	Professor
William McLaughlin (5%) Conservation Social Sciences	Natural Resources	Ph.D.	Professor
Russell Miller (1%) College of Law	International Law	J.D./MFA	Assistant Professor
Gregory Möller (5%) Food Sci. & Toxicology	Biogeochemical cycling	Ph.D.	Assistant Professor & Dir. Of Analytical Res. Lab.
Matt Morra (5%) Soil and Land Resources	Soil Science	Ph.D.	Professor
Mark Morehead (5%) Bio & Ag Engr/CER	Eco-hydraulics	Ph.D./P.E.	Adjunct Assistant Professor
Darek Nalle (5%) Forest Products	Forest resources economics	Ph.D.	Assistant Professor
Howard Neibling (5%) Bio & Ag Engr.	Irrigation	Ph.D./P.E.	Associate Professor
Michael Nelson (5%) Philosophy	Environmental Philosophy	Ph.D.	Assistant Professor
New CNR Faculty Hire (5%) Fish & Wildlife Resources	Limnology	Ph.D.	Assistant Professor
New Law Faculty Hire (10%) Law	Water Law	J.D.	Associate Professor
Jay O'Laughlin (5%) Natural Resources	Natural resource policy	Ph.D.	Professor
James Osiensky (8%) Hydrogeology	Contaminant hydrogeology	Ph.D.	Associate Professor
Pete Robichaud (1%) Rocky Mtn. Research Station	Forest hydrology	Ph.D./P.E.	Affiliate Professor
Richard Seamon (1%) College of Law	Administrative Law	J.D./MFA	Professor
Robert Smith (1%) Bio & Ag Engr.	Subsurface hydrology, Biogeochemistry	Ph.D.	Professor & Interim Dean
Adam Soward History	Environmental History	Ph.D.	Assistant Professor
Daniel Strawn (5%) Soil and Land Resources	Soil and environmental chemistry	Ph.D.	Associate Professor
Garth Taylor (5%) Agr. Econ & Rural Sociology	Water Resources Economics	Ph.D.	Associate Professor
Markus Tuller (5%) Soil and Land Resources	Soil Physics	Ph.D.	Associate Professor
Margrit von Braun (1%) Chem. Engr	Hazardous waste mgt; risk assessment	Ph.D./P.E.	Professor & Dean of College of Graduate Studies
Von Walden (5%) Geography	Climatology	Ph.D.	Associate Professor
Barbara Williams (10%) Bio & Ag Engr.	Subsurface Hydrology	Ph.D./P.E.	Assistant Professor
Patrick Wilson (20%) CSS & Political Science	Natural Resource, Public Lands Policy	Ph.D.	Associate Professor
Scott Wood (5%) Geochemistry	Aqueous geochemistry	Ph.D.	Professor
J.D. Wulfhorst (5%) Ag Econ & Rural Sociology	Rural Sociology	Ph.D.	Associate Professor

**Positions.** Formal positions in the program include the following:

**Director, Staff and Grant Writer:** The Water of the West Initiative provides funds for 4 years to support a director (0.5FTE), an administrative assistant (0.5FTE) and a grant writer (0.5FTE). Dr. Boll will serve as director of the Water Resources Program during the first two years after which WR faculty will decide on an appropriate rotation.

**Graduate assistantships:** The Water of the West Initiative provides funds for 4 years to support 3 full-time graduate student assistantships at annual rate of \$20,000. Additional assistantship funds will be offered based on grant activity.

**Support personnel:** Many faculty members at the University of Idaho have support scientists to aid in their research programs. Graduate students residing with these faculty members will receive equal support from these individuals as students in other programs.

## **Facilities**

**Library:** Current space, personnel, journal subscriptions (including electronic), and books in the University of Idaho library and College of Law library are adequate to support the disciplinary programs supporting the proposed water resources program. The proposed water resources program adds a level of interdisciplinarity that is highly supported at the university level. Library faculty and staff were consulted on library resource needs for interdisciplinary research and education. They indicated that the library has the Student Research Assistance Program (RAP) that can provide support in this area. In the RAP, UI students can schedule appointments with a librarian for assistance in finding relevant information for research papers and projects.

**Equipment and Instruments:** No new facilities, equipment or technology will be required to initiate the proposed Water Resources Program. Because this is a graduate level program that involves faculty already actively involved in research in existing programs at the University of Idaho, research will be carried out in existing laboratory facilities in Moscow, Boise, Twin Falls/Kimberly, and Idaho Falls. Additional facilities are available at the Rocky Mountain Research Lab in Moscow, the USDA-ARS Northwest Watershed Research Center facilities in Boise, the USDA-ARS facilities in Kimberly, and Idaho National Laboratory (INL), and Washington State University in Pullman, WA. Classroom facilities at the University of Idaho are adequate to deliver courses. The Water of the West Initiative funds will be used for the development of a virtual experimental watersheds (ViEWs) system which will use state-of-the-art equipment to telemeter data from watersheds adjacent to the University of Idaho. The new WR Program will initially share office space with Environmental Science Program in Morrill Hall Room 214. No renovation costs are required to occupy this space.

## **Milestones: Progress To-Date & Growth Strategy and Planning**

Key milestones for the future and our ongoing efforts to realize the full potential of this program include:

Summer 2006 – Meetings of WR Steering Committee faculty & initial preparation for integrated course development; securing College of Law position; preparing NOI, SBOE full proposal, and Business Plan for the WR Program; preparation of various external funding proposals.

Fall 2006 – Initiating search process for College of Law position; presentation of NOI/SBOE full proposal to college of Graduate Studies, Law, and supporting college curriculum committees, Provost's Office and submission to UCC and Faculty Council, then to SBOE; participation in Palouse Basin Water Summit, in preparation for case-study development; participation in water resources seminars, Boise Center Open House & IWRRI Water Research Symposium, initiate hiring process for administrative assistant, coordinate with registrar's office for space in Morrill Hall 206, targeting of graduate students for WoW project.

Spring 2007 – Approval by SBOE after external review, hiring of new law professor and administrative assistant completed; continued preparation for integrated course development; preparation of various additional external funding proposals; recruitment of first graduate students, marketing of WR program, establish Virtual Education Watersheds system, initiate hiring process for grant writer.

Summer & Fall 2007 – Final preparation & offering of integrated course; new Law courses are initiated; program begins with enrollment of first graduate students; initiation of new contacts in other basins.

Spring 2008 – Research projects in progress, expanded proposal-writing efforts; new case study under preparation.

Fall 2009 -- WR Program in full operation.

Fall 2011 – Enrollment of 40 students.

## Financial Plan

### PLANNED STUDENT ENROLLMENT

	FY <u>08</u>		FY <u>09</u>		FY <u>10</u>	
	FTE	Headcount*	FTE	Headcount	FTE	Headcount
New enrollments	<u>2.5</u>	<u>5</u>	<u>6</u>	<u>12</u>	<u>12.5</u>	<u>25</u>
Shifting enrollments	<u>2.5</u>	<u>5</u>	<u>1.5</u>	<u>3</u>	<u>0</u>	<u>0</u>

\* Total head count consists of total number of graduate students enrolled in the proposed WR program during that year. Enrollment is expected to increase beyond 20 and reach a steady state head count of 40 after 5 years. Each graduate student is considered equal to 0.5FTE.

### EXPENDITURES

	FY 08		FY09		FY10	
	FTE	Costs	FTE	Costs	FTE	Costs
Personnel Costs						
1. Faculty	1.3	\$90,000	1	\$88,400	1	\$91,936
2. Administrators	0.5	\$37,500	0.5	\$39,000	0.5	\$40,560
3. Graduate/Instructional Asst	1.5	\$62,400	1.5	\$64,896	1.5	\$67,492
4. Support personnel	1	\$50,400	1	\$52,416	1	\$54,513
5. Fringe benefits		\$60,843		\$61,561		\$64,023
<b>Total FTE Personnel and Costs:</b>	<b>4.3</b>	<b>\$301,143</b>	<b>4</b>	<b>\$306,273</b>	<b>4</b>	<b>\$318,524</b>
Operating expenditures						
1. Travel		\$6,000		\$6,000		\$6,000
3. Communications		\$5,000		\$5,000		\$5,000
4. Materials and Supplies		\$3,000		\$3,000		\$3,000
5. Miscellaneous		\$4,000		\$2,000		\$1,000
<b>Total Operating Expenditures:</b>		<b>\$14,000</b>		<b>\$12,000</b>		<b>\$11,000</b>
Capital Outlay						
Physical facilities Construction or Major Renovations		\$0		\$0		\$0
Indirect Costs (overhead)		\$0		\$0		\$0
<b>GRAND TOTAL EXPENDITURES:</b>		<b>\$320,143</b>		<b>\$323,273</b>		<b>\$333,524</b>

Personnel costs include a new faculty in the college of Law, 50% academic salary for director, three graduate student assistantships, two support personnel (administrative assistant and grant writer). Communication costs include funds to enhance off-campus delivery technologies. Fringe benefits follow rates appropriate for each position.

**REVENUES**

	FY 08	FY09	FY10
Source of Funds			
1. Appropriated Funds - Reallocation - MCO	\$0	\$0	\$0
2. Appropriated Funds - New -MCO	\$0	\$0	\$0
3. Federal Funds	\$0	\$0	\$0
4. Other grants	\$0	\$0	\$0
5. Fees	\$0	\$0	\$0
6. Other: One-Time University Expenditure	\$320,143	\$323,273	\$333,524
<b>GRAND TOTAL REVENUES</b>	<b>\$320,143</b>	<b>\$323,273</b>	<b>\$333,524</b>

	FY 08	FY09	FY10
Nature of funds			
1. Recurring*	\$113,050	\$113,051	\$113,052
2. Non-recurring**	\$202,093	\$205,222	\$216,472

\* Recurring is defined as ongoing operating budget for the program which will become part of the base.

\*\* Non-recurring is defined as one-time funding in a fiscal year and not part of the base.

**Faculty and Staff Expenditures**

Table 4 lists participating faculty, their annual salary rate (AY or FY), FTE assignment to WR Program, Program salary dollars, projected student credit hours, and FTE students. Faculty position, rank and affiliation are shown in Table 2. Assignment of FTE to the WR Program was estimated as follows: 0.05 FTE for involvement in development and delivery of common courses and 0.05 FTE for thesis/dissertation supervision as major professor and serving on graduate committees. Note that the proposed Water Resources Program is not funding the FTE contributed by faculty participating in instruction.

Table 4. Faculty expenditures (instructional) for FY08, FY09, and FY10.

Name*	Annual Salary Rate			FTE Assignment to this Program			Projected Student Credit Hours			FTE Students			
	FY08	FY09	FY10	FY08	FY09	FY10	FY08	FY09	FY10	FY08	FY09	FY10	
Vladimir Aizen	78437	81574	84837	0.05	3922	4079	4242	2.3	3.4	5.7	0.09	0.14	0.24
Rick Allen	99029	102990	107110	0.05	4951	5149	5355	2.3	3.4	5.7	0.09	0.14	0.24
Jan Boll	71385	74240	77210	0.05	3569	3712	3861	2.3	3.4	5.7	0.09	0.14	0.24
Erik Coats	64000	66560	69222	0.05	3200	3328	3461	2.3	3.4	5.7	0.09	0.14	0.24
Dennis Colson	124300	129272	134443	0.01	1243	1293	1344	0.5	0.7	1.1	0.02	0.03	0.05
Barbara Cosens	89190	92758	96468	0.1	8919	9276	9647	4.5	6.8	11.4	0.19	0.28	0.47
Maxine Dakins	64646	67232	69922	0.05	3232	3362	3496	2.3	3.4	5.7	0.09	0.14	0.24
Jerry Fairley	52520	54621	56806	0.1	5252	5462	5681	4.5	6.8	11.4	0.19	0.28	0.47
Fritz Fiedler	65042	67643	70349	0.2	13008	13529	14070	9.1	13.6	22.7	0.38	0.57	0.95
Dale Goble	116043	120685	125512	0.05	5802	6034	6276	2.3	3.4	5.7	0.09	0.14	0.24
Peter Goodwin	145056	150858	156893	0.05	7253	7543	7845	2.3	3.4	5.7	0.09	0.14	0.24
Chuck Harris	65083	67687	70394	0.1	6508	6769	7039	4.5	6.8	11.4	0.19	0.28	0.47
Thomas Hess	77251	80341	83555	0.05	3863	4017	4178	2.3	3.4	5.7	0.09	0.14	0.24
Steve Hollenhorst	103979	108138	112464	0.05	5199	5407	5623	2.3	3.4	5.7	0.09	0.14	0.24
Karen Humes	70013	72813	75726	0.05	3501	3641	3786	2.3	3.4	5.7	0.09	0.14	0.24
James Ding Johnson	78312	81444	84702	0.05	3916	4072	4235	2.3	3.4	5.7	0.09	0.14	0.24
Gary Johnson	62795	65307	67919	0.05	3140	3265	3396	2.3	3.4	5.7	0.09	0.14	0.24
Jodi Johnson-Maynard	53290	55421	57638	0.05	2664	2771	2882	2.3	3.4	5.7	0.09	0.14	0.24
Klaus Jorde	89690	93277	97008	0.05	4484	4664	4850	2.3	3.4	5.7	0.09	0.14	0.24
Kathleen Kavanagh	61131	63576	66120	0.05	3057	3179	3306	2.3	3.4	5.7	0.09	0.14	0.24
Brian Kennedy	51875	53950	56108	0.1	5188	5395	5611	4.5	6.8	11.4	0.19	0.28	0.47
Guy Knudsen	67746	70455	73274	0.05	3387	3523	3664	2.3	3.4	5.7	0.09	0.14	0.24
Tim Link	55328	57541	59843	0.1	5533	5754	5984	4.5	6.8	11.4	0.19	0.28	0.47
Jim Liou	83429	86766	90237	0.05	4171	4338	4512	2.3	3.4	5.7	0.09	0.14	0.24
Robert L. Mahler	94286	98058	101980	0.05	4714	4903	5099	2.3	3.4	5.7	0.09	0.14	0.24
John Marshall	75672	78699	81847	0.05	3784	3935	4092	2.3	3.4	5.7	0.09	0.14	0.24
Colleen Mack-Canty	47445	49343	51316	0.05	2372	2467	2566	2.1	3.2	5.3	0.09	0.13	0.22
Paul McDaniel	73674	76621	79685	0.05	3684	3831	3984	2.3	3.4	5.7	0.09	0.14	0.24
William McLaughlin	75234	78243	81373	0.05	3762	3912	4069	2.3	3.4	5.7	0.09	0.14	0.24
Russell Miller	91146	94791	98583	0.01	911	948	986	0.5	0.7	1.1	0.02	0.03	0.05
Gregory Moller	89731	93320	97053	0.05	4487	4666	4853	2.3	3.4	5.7	0.09	0.14	0.24
Matt Morra	81390	84646	88032	0.05	4070	4232	4402	2.3	3.4	5.7	0.09	0.14	0.24
Derek Nalle	60798	63230	65760	0.05	3040	3162	3288	2.3	3.4	5.7	0.09	0.14	0.24
Howard Neibling	66518	69179	71946	0.05	3326	3459	3597	2.3	3.4	5.7	0.09	0.14	0.24
Michael Nelson	47632	49537	51519	0.05	2382	2477	2576	2.1	3.2	5.3	0.09	0.13	0.22

Table 4 Continued

Jay O'Laughlin	97053	100935	104972	0.05	4853	5047	5249	2.3	3.4	5.7	0.09	0.14	0.24
James Osiensky	70699	73527	76468	0.05	3535	3676	3823	2.3	3.4	5.7	0.09	0.14	0.24
Russell Qualls	72530	75431	78448	0.05	3626	3772	3922	2.3	3.4	5.7	0.09	0.14	0.24
Richard Seamon	94349	98123	102048	0.01	943	981	1020	0.5	0.7	1.1	0.02	0.03	0.05
Robert Smith	136490	141949	147627	0.05	6824	7097	7381	2.3	3.4	5.7	0.09	0.14	0.24
Dan Strawn	59654	62041	64522	0.05	2983	3102	3226	2.3	3.4	5.7	0.09	0.14	0.24
Adam Soward	46218	48066	49989	0.05	2311	2403	2499	2.2	3.3	5.5	0.09	0.14	0.24
Garth Taylor	66706	69374	72149	0.05	3335	3469	3607	2.2	3.3	5.5	0.09	0.14	0.23
John Tracy	149614	155599	161823	0.01	1496	1556	1618	0.5	0.7	1.1	0.02	0.03	0.05
Margrit von Braun	120120	124925	129922	0.05	6006	6246	6496	2.3	3.4	5.7	0.09	0.14	0.24
Von Walden	65894	68530	71271	0.05	3295	3427	3564	2.3	3.4	5.7	0.09	0.14	0.24
Barbara Williams	60070	62473	64972	0.05	3004	3124	3249	2.3	3.4	5.7	0.09	0.14	0.24
Patrick Wilson	49837	51830	53903	0.1	4984	5183	5390	4.5	6.8	11.4	0.19	0.28	0.47
Scott Wood	89731	93320	97053	0.05	4487	4666	4853	2.3	3.4	5.7	0.09	0.14	0.24
J.D. Wulfhorst	66893	69569	72351	0.05	3345	3478	3618	2.3	3.4	5.7	0.09	0.14	0.24
Total	3.94M	4.10M	4.26M	2.8	.209M	.218M	.225M	120	180	300	5.0	7.5	12.5

\*Position and rank are listed in Table 3.

Staff support for the proposed WR program includes a part-time (50%) administrative assistant, a part-time (50%) grant writer, and three graduate student assistants (100%). Funds for these positions are provided through the Water of the West Strategic Initiative. See section e for future plans for funding these positions.

Table 5. Staff and other support personnel expenditures for FY08, FY09, and FY10.

Staff Position	Annual Salary Rate			FTE Assignment to this Program			Program Salary Dollars			Percent of Salary Dollars to Program			
	FY08	FY09	FY10	FY08	FY09	FY10	FY08	FY09	FY10	FY08	FY09	FY10	
Administrative Assistant	\$24,400	\$25,376	\$26,391	0.5	\$12,200	\$12,688	\$13,196	50%	50%	50%			
Grant writer	\$26,000	\$27,040	\$28,122	0.5	\$13,000	\$13,520	\$14,061	50%	50%	50%			
Grad assistant 1	\$20,000	\$20,800	\$21,632	0.5	\$10,000	\$10,400	\$10,816	100%	100%	100%			
Grad assistant 2	\$20,000	\$20,800	\$21,632	0.5	\$10,000	\$10,400	\$10,816	100%	100%	100%			
Grad assistant 3	\$20,000	\$20,800	\$21,632	0.5	\$10,000	\$10,400	\$10,816	100%	100%	100%			
	\$110,400	\$114,816	\$119,409	2.5	\$55,200	\$57,408	\$59,704						

### Administrative Expenditures

Table 6 lists faculty included in the administrative structure of the proposed WR Program. Dr. Jan Boll will be the Director of the proposed WR Program. He will oversee all activities within the WR Program, and will interact with respective Deans of the Colleges of Graduate Studies and Law. Core faculty will oversee degree option areas and concurrent J.D.: Dr. Fiedler (ES), Dr. Link (SM), Dr. Wilson (LMP), and Professor Cosens (concurrent J.D. in Law). The director, core faculty and five additional faculty will form a steering committee, which will set guidelines for curriculum issues, program assessment & evaluation, and recruitment/admissions. Participating faculty in each of the UI Centers will coordinate advising of graduate students.

Table 6. Administrative expenditures for FY08, FY09, and FY10.

Name, Position, And Rank *	Annual Salary Rate			FTE Assignment to this Program	Program Salary Dollars			Percent of Salary Dollars to Program		
	FY08	FY09	FY10	FY08	FY09	FY10	FY08	FY09	FY10	
Jan Boll (Director)	\$71,385	\$74,240	\$77,210	0.5	\$35,693	\$37,120	\$38,605	50%	50%	50%
Barbara Cosens (Core faculty)	\$89,190	\$92,758	\$96,468	0.1	\$8,919	\$9,276	\$9,647	10%	10%	10%
Fritz Fiedler (Core faculty)	\$65,042	\$67,643	\$70,349	0.1	\$6,504	\$6,764	\$7,035	10%	10%	10%
Tim Link (Core faculty)	\$55,328	\$57,541	\$59,843	0.1	\$5,533	\$5,754	\$5,984	10%	10%	10%
Patrick Wilson (Core faculty)	\$49,837	\$51,830	\$53,903	0.1	\$4,984	\$5,183	\$5,390	10%	10%	10%
Erik Coats (Steering Committee)	\$64,000	\$66,560	\$69,222	0.05	\$3,200	\$3,328	\$3,461	5%	5%	5%
Chuck Harris (Steering Committee)	\$65,083	\$67,687	\$70,394	0.05	\$3,254	\$3,384	\$3,520	5%	5%	5%
Gary Johnson (Steering Committee)	\$62,795	\$65,307	\$67,919	0.05	\$3,140	\$3,265	\$3,396	5%	5%	5%
Brian Kennedy (Steering Committee)	\$51,875	\$53,950	\$56,108	0.05	\$2,594	\$2,698	\$2,805	5%	5%	5%
Barbara Williams (Steering Committee)	\$60,070	\$62,473	\$64,972	0.05	\$3,004	\$3,124	\$3,249	5%	5%	5%
	\$634,606	\$659,990	\$686,390	1.2	\$76,823	\$79,896	\$83,092			

\*Position and rank are listed in Table 2.

### Operating Expenditures

Operating expenditures include travel, communication, student recruiting, and general office operating funds. Travel includes funds to assist WR faculty at University centers in Idaho Falls, Twin Falls, and Boise in participating in interdisciplinary faculty and student activities (e.g., project preparation, seminars, proposal preparation), as well as funds for the Director and/or grant writer to travel to Washington, D.C. (for meetings with Program Directors of Funding Agencies such as NSF, USDA, EPA), travel to off-campus locations in Idaho, and attendance at scientific and professional conferences to promote the University program. Communication includes funds for delivery of seminars and annual program meetings at centers in Idaho Falls, Twin Falls, Boise, and Coeur d'Alene through compressed video. Student recruiting includes funds for development of program brochures, professional advertisement at professional and scientific meetings, and other advertising activities.

### Capital Outlay

The current library space and personnel resources are adequate for this program (see Facilities above). The holdings of the University of Idaho (including the College of Law library) and Washington State University are adequate for research in the Moscow region. There are well-established library research facilities in Boise and Idaho Falls. The world-wide-web also offers access to various academic materials for students outside the Moscow area.

Existing resources are adequate and available. Research laboratory of individual faculty members in their respective departments are adequate for the proposed program. The Water of the West Initiative has provided funds for computers and office supplies for the director and staff personnel. Specialized equipment such as a computer server, telemetry equipment, and laboratory units for educational purposes also have been provided through funds by the Water of the West Strategic Initiative.

## Revenue Sources

The University of Idaho Strategic Initiative process has provided \$1.6M over 5 years to launch the proposed Water Resources Program. Approximately 1/5 of these funds were used in FY07 to prepare for program implementation, and the remainder will be available to operate the program until the end of FY11. After FY11, the program will become sustainable based on grant activity of participating faculty and program staff. The Director and administrative support staff will be funded from the general fund as is currently done for other interdisciplinary programs on campus. If the general fund cannot fund these positions, then other possibilities for funding the director position and administrative support staff are: 1. All 7 Deans and Provost provide ~\$10-15k/yr (perhaps adjusted by college) to support the program. Deans and the Provost commit to use the next 5 years to coordinate with each other, work with their development staff and political base to secure these funds; 2. WoW faculty will negotiate with the Research Office to provide Indirect Cost Returns (ICRs) on WR grants into a fund to support some portion of the program; 3. Deans allow the program director to transfer 0.5 FTE from their College to the WR Program for a fixed term. Colleges cover the costs needed to provide courses that would be "lost" during the director's tenure; 5. Director and staff position funded by restructuring the Idaho Water Resources Research Institute (IWRRRI) budgets, assuming the required funds will be \$60,000 for the director (0.5 FTE with benefits) and \$30,000 for support staff (0.5 FTE with benefits). After FY11, the Director and support staff could be funded by IWRRRI from redistribution of indirect cost funds captured due to the anticipated increase in research activities as part of the WoW Initiative. The restructured indirect cost redistribution model can include fund pools for continuation of graduate student fellowships, faculty travel, and proposal development activities. IWRRRI works with the PIs to identify the most effective support models to be implemented. By the end of FY11, the operation of the WR Program could be completely supported by a mixture of reallocating existing resources and the generation of new resources from external sources (increased indirect costs); and 5. Numerous interdisciplinary teaching and research proposals are being put forward in the initiative process raising the prospect that a centralized system of administration may be cost effective. The WR Program will actively seek funds for additional interdisciplinary water resources research funding to fund the grant writer and graduate assistantships.

The College of Law (Law) will assume responsibility for funding for the faculty position and the teaching fellow at the end of the funding period. Law is already in the process of obtaining private funding for expansion in the natural resources area; shortfalls will be covered through increases in student professional fees. If Law is unsuccessful in obtaining private funds to cover funding required at the end of this Initiative, a student fee increase of \$650/student/year will be necessary. This increase is within the plan for student fee increases by the end of the next five-year period. The current student body has been briefed on this possible fee increase. A commitment letter from Dean Donald Burnett is attached. Proposed increases must be approved by the University and by the State Board of Education/Board of Regents. The cost of attending Law for one year is currently \$8,908 for residents, and \$17,768 for non-residents. This compares to \$9,113 and \$18,677 for Montana, \$11,289 and \$24,071 for Utah, \$14,816 and \$23,076 for Washington. In the region, only Wyoming, at \$6,519 and \$13,779, is less expensive than Idaho.

The University of Idaho Strategic Plan outlines the institutional commitment towards interdisciplinary programs. Participating faculty in the Water Resources Program will work with university administration towards the goals of the strategic plan, and do so collectively will other interdisciplinary programs currently on the campus such as Environmental Science and Environmental Engineering. Graduate student research activities in Water Resources will be closely integrated with the strategic goals of the Idaho Water Resources Research Institute.

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<sup>i</sup> Barker, R. (2005, Sunday, January 16). Idaho Statesman Special Report: Troubled water, *Idaho Statesman*, p. 12.