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EXECUTIVE SUMMARY

This is the first external review of the Water Management and Hydrological Science (WMHS) program, and this document was prepared specifically for this purpose.

Texas A&M University established in 2005 the interdisciplinary WMHS graduate degree program. Interdisciplinary faculty acting through an executive committee and program chair guide the program. The WMHS program currently comprises 57 faculty in 12 departments in the Colleges of Agriculture and Life Sciences, Architecture, Engineering and Geosciences. Faculty who participate do double duty. Not only do they supervise and fund students in their respective departments, but they also supervise and fund students in the WMHS program.

The WMHS program is structured to provide interdisciplinary breadth and disciplinary depth. Courses offered through the program provide students with an understanding of biophysical and social sciences, engineering, economics, finance and communication principles. The program offers three degrees: a Master of Water Management, a Master of Science and a Ph.D. The Master of Water Management is a non-thesis degree intended to provide professional graduate education emphasizing problem solving and technical skills for students who will manage public water systems and water resources. The Master of Science is a research-based thesis degree designed for students with technical backgrounds to complement their primary discipline by obtaining scientific, technical, or managerial expertise in water. The Ph.D. is a dissertation-based research degree designed to give students a comprehensive knowledge of water science and hydrology and provide training
Enrolment in the program continues to grow. Due to funding limitations, the program admits about 15 students a year. Overall, about 80% of the students have pursued the master’s degree and about 20% the doctorate. Most students are of domestic origin with nearly two-thirds from Texas. The master’s students are predominately U.S. citizens while the doctoral program reflects nearly an equal balance between domestic and international students. The international students that have enrolled in the program are truly diverse, hailing from 15 countries.

The mission of the WMHS program is to educate the next generation of water managers and scientists. To date the program has succeeded. Of the 54 students who have graduated from the program, all but four are employed within the water industry. The master’s degree graduates are working in managerial, technical, educational, or science positions. Doctoral degree graduates are working in academic or research positions.

Faculty who participate in the water program have exceptional publication and external funding records. Collectively, WMHS faculty members have generated approximately $125.4 million in external funding from competitive funding programs since 2005. The funds have supported robust research programs primarily in their respective departments, but they have also contributed greatly to WMHS graduate-student support.

Although the program has been successful in preparing students for careers in the water industry, areas can always be improved. Funding from the Office of Graduate Studies has continued to increase, thus supporting more students. As financial resources from other areas become more limited, however, many departments will strongly encourage their faculty to offer research assistantships only to their students. There does not appear to be an easy solution to this issue, and the ultimate impact on the WMHS program remains uncertain. Another area of concern is the lack of office space for WMHS students. This problem has arisen because of increasing enrollment in the
program. Students in the WMHS program do not have the physical space for studying and research available to graduate students in departments, thus affecting the program’s recruiting efforts.

Despite the financial limitations that all public universities face the WMHS program, through aggressive recruiting, higher visibility both on campus and off, and creative program offerings, should continue to grow and thrive. Issues to face are increasing visibility, private fundraising, and producing successful graduates to ensure that a degree in such a critical resource will become more sought after in succeeding years.
1. **INTRODUCTION**

1.1 **Welcome**

Howdy. On behalf of the Graduate Interdisciplinary Faculty of Water Management and Hydrological Science (WMHS) Program the students and the entire Texas A&M University community, let me welcome you to Texas A&M University.

This external review is a required periodic review of all Texas A&M University academic programs. The document provides an overview of the program, its history, faculty, students, curriculum, and our overall efforts at developing the next generation of water managers and scientists.

We are honored you are serving on this review, and we value the experience you bring to the process. We look forward to your feedback as we strive for excellence. If you have questions prior to your visit to campus in November please let me know.

Ronald Kaiser  
Chair, Graduate Water Program  
Professor of Water Law and Policy  
409 k Agriculture and Life Sciences Building  
Phone: 979.845.5303 Cell: 979.268.1750  
rkaiser@tamu.edu

1.2 **Charge to the Review Team**

Thank you for assisting us with continuous quality improvement of academic programs for the Water Management and Hydrological Science (WMHS) Interdisciplinary Graduate Program at Texas A&M University. The Academic Program Review (APR) to which you are contributing is part of a periodic review of all Texas A&M University academic programs. APR affords opportunity to assess the standards of our programs and to learn from review team members’ experiences with similar programs. In addition to the charge to the committee, this letter provides you with a brief overview of the WMHS graduate programs.

The review team is charged with examining the programs listed in the chart below and making recommendations that we may use to inform continuous quality improvement processes. Resources that you will have for this assessment are a self-study to be completed by the Department, other materials that may be provided by the Department and our office, information you gain through personal interactions while visiting Texas A&M University, and any additional information that you request. Within the broad charge of informing continuous quality improvement are the following specific questions that we would like you to address:

1) While evaluating the program, please consider the resource context within which the program operates (both human and fiscal) and the absolute level of support the department receives from the university. Please comment on the
overall efficiency and effectiveness of the program’s use of these human and fiscal resources in pursuit of its mission.

2) Please address the following questions about assessment of learning outcomes:
   a) Has the program identified specific learning outcomes for its educational programs?
   b) Are these learning outcomes appropriate for this program. Please comment.
   c) Does the curriculum and instruction afford students opportunity to achieve the learning outcomes?
   d) Does the program have a written plan for assessment of its identified learning outcomes? Is that plan of acceptable quality? Are the metrics used for assessment appropriate and of acceptable quality?
   e) To what extent is the program successful in achieving its learning outcomes?
   f) Does the learning outcome assessment process inform continuous quality improvement?

3) Please share with us any strengths, weaknesses, opportunities, and threats related to the current and future quality of each or all of these academic programs.

4) Please comment on the scope, efficacy, and desirability of current and potential collaboration of this department with other departments and groups, both on campus and off.

5) Please provide us your team’s judgment on the national ranking of this program, as a percentile rank. For example, is this program in the top 5% of programs in water management and hydrology science nationally? Top 10%? Top 50%?

6) Please address the program’s contributions to two guiding strategic initiatives developed by Texas A&M University. The first of these is a document developed in 1999, titled Vision 2020: Creating a Culture of Excellence, and identifies 12 specific areas of focus for Texas A&M’s future. The other is the more recent Action 2015: Education First, intended to build on our gains made since the inception of Vision 2020. Both documents may be referenced at http://provost.tamu.edu/strategic-planning-2010. Summaries of both documents will be provided upon your arrival at Texas A&M University.
2. **TEXAS A&M UNIVERSITY SYSTEM**

The Texas A&M University System (TAMUS) is one of the larger systems of higher education in the U.S. The System comprises 11 universities (Fig. 1), seven state agencies, and a health science center. TAMUS educates more than 115,000 students and serves about 15 million Texans each year. With nearly 27,000 faculty and staff, TAMUS has a physical presence in 250 of the state’s 254 counties and a programmatic presence in every Texas county. TAMUS brings in more than $675 million annually in externally funded research helping to drive the state’s economy.

Figure 1. The Texas A&M University System within the State

The Texas A&M University System consists of these components:

**Universities**
- Texas A&M University – College Station (flagship university)
- Texas A&M University at Galveston (branch)
- Texas A&M University at Qatar (branch in the Middle East)
- Prairie View A&M University
- Texas A&M University at Commerce
- Tarleton State University at Stephenville
- West Texas A&M University at Canyon
2.1 Texas A&M University

On October 4, 1876, Texas A&M University started as Texas’ first public institution of higher learning. To date, the university has awarded more than 380,000 degrees. It is one of a select few academic institutions in the nation to hold triple federal designations as a Land-Grant, Sea-Grant and Space-Grant University. It offers more than 120 undergraduate degree programs and 240 master’s and Ph.D degree programs.
Texas A&M University operates two branch campuses that award “Texas A&M University” degrees in Galveston and Qatar. The university also operates centers in Mexico, Costa Rica and Italy to facilitate education, research, and outreach.

The annual research portfolio at the University is estimated to be in excess of $528 million, placing it among the top 20 universities nationwide. More than 80% of the 2,800 faculty members hold doctoral degrees. The faculty includes Nobel Prize, National Medal of Science, and Wolf Prize recipients. There are over two dozen faculty members who are members of the National Academy of Sciences, National Academy of Engineering or the Institute of Medicine.

There are more than 50,000 Aggies currently enrolled on the main campus in College Station of which more than 9,000 are graduate students. Texas A&M University is the country’s sixth largest university in terms of student enrollment. It ranks among the top U.S. universities in attracting international students with more than 4,500 students from 120 countries. It consistently ranks among the country’s top 20 universities in terms of enrollment of National Merit Scholars.

These are the 10 academic colleges at Texas A&M University:

- College of Agriculture and Life Sciences
- College of Architecture
- Bush School of Government and Public Service
- College of Education and Human Development
- College of Geosciences
- College of Liberal Arts
- College of Science
- College of Veterinary Medicine and Biomedical Sciences
- Dwight Look College of Engineering
- Mays Business School

2.2 Graduate Interdisciplinary Degree Programs

At Texas A&M University, graduate degrees are awarded by traditional discipline-based academic departments, as well as by graduate interdisciplinary faculties. Graduate interdisciplinary faculties are relatively new to Texas A&M University with the earliest such faculty being officially recognized only in 1989. The formation of interdisciplinary faculties is primarily a faculty-driven process, created when faculty members and researchers from diverse academic departments who have overlapping programmatic interests come together to capitalize on their collective strengths.

According to the University rules, an Interdisciplinary Degree Program (IDP) involves a group of faculty from more than one discipline representing single or multiple colleges, organized and administered for the purpose of enhancing research and scholarly activities and overseeing
graduate education for a degree program not offered in any existing academic unit.

Approval of interdisciplinary degrees themselves is granted through the Texas Higher Education Coordinating Board. Oversight of IDPs falls under the responsibility of the Council of Participating Deans, which consists of the deans of the colleges having faculty participating in the IDP, together with the Dean of Faculties and Associate Provost and Provost for Graduate Studies. Faculty participation in an IDP may be incorporated into promotion, tenure, and merit raise decisions based upon recommendations of the IDP. In addition, graduate degrees granted by IDPs are also subject to external review as part of the University’s commitment to academic excellence.

Currently, there are 11 Interdisciplinary Degree Programs at the university level that are approved to offer graduate degrees by the Texas Higher Education Coordinating Board. These are as follows:

<table>
<thead>
<tr>
<th>Interdisciplinary Degree Programs</th>
<th>Masters</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agribusiness</td>
<td>MAB</td>
<td></td>
</tr>
<tr>
<td>Biotechnology</td>
<td>MBIOT</td>
<td></td>
</tr>
<tr>
<td>Engineering Systems Management</td>
<td>MS (Online)</td>
<td></td>
</tr>
<tr>
<td>Food Science and Technology</td>
<td>MS</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Genetics</td>
<td>MS</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Materials Science and Engineering</td>
<td>MS, ME</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Molecular and Environmental Plant Sciences</td>
<td>MS</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>MS</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Nutrition</td>
<td>MS</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Toxicology</td>
<td>MS</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Water Management and Hydrological Science</td>
<td>MS, MWM</td>
<td>Ph.D.</td>
</tr>
</tbody>
</table>
3. WMHS PROGRAM STRUCTURE

3.1 Program History

In 2002 faculty in the Colleges of Agriculture, Engineering, and Geosciences formed an ad hoc committee with the goal of establishing a new water degree program. From the onset, the committee was committed to developing a multidisciplinary degree. In 2003, the committee prepared the documentation necessary to offer three graduate degrees: a Ph.D., a Master of Science (thesis option), and a Master of Water Management (non-thesis option). Approval by the Faculty Senate, the Provost, President, Chancellor and Board of Regents was granted in 2004. In March of 2005, the Texas Higher Education Coordinating Board gave it final approval and in September 2005 the first students were admitted to the program.

3.2 University Administration of WMHS Program

Interdisciplinary graduate programs, unlike conventional department-based programs, are a hybrid and rely on academic departments for administrative support staff, accounting, office space, and computer facilities. The level of support varies depending on the program and the department providing support. The current University administrative structure for managing IDPs, including the WMHS Program, requires that each IDP have a home dean who then reports to the Provost (Figure 3.2.). IDPs also report to the Dean of Faculties and Associate Provost for major policy issues.

The WMHS Program is assigned to the College of Geosciences whose dean has overall responsibility of the program. Since its inception the WMHS
program has been “housed” in the Department of Geography. The “home” department provides office space, part-time administrative support, and accounting functions.

3.3 Administrative Structure of the WMHS Program

The Water Management and Hydrological Science (WMHS) Program is a partnership between the Colleges of Agriculture and Life Sciences, Architecture, Engineering and Geoscience. The WMHS Faculty currently includes 57 members representing four colleges and 12 academic departments. The faculty is ultimately responsible for the program.

Briefly, the WMHS faculty, through the Executive Committee, Program Chair, and Program Coordinator administers the program. Governance is by a five-member Executive Committee. The Executive Committee consists of four elected members, one each from the four academic colleges plus one at-large representative. The chair of the Executive Committee serves as the chair of the WMHS program.

The Executive Committee and chair, coordinate the graduate program, review and accept applicants for admission, perform periodic curricula assessments, approve new courses for submission to the appropriate University Committees, make scholarship assignments and ensure a rigorous course of study for M.S. and Ph.D. candidates. Additional responsibilities include assessment of the learning objectives to improve curriculum and instruction, strengthen research and improve the overall effectiveness of graduate training.

Executive Committee members are to serve for three years. However, in order to provide continuity through the formative years the current Executive Committee and Program Chair have remained in place.

Participating Colleges and Departments

College of Agriculture and Life Sciences

- Agricultural Economics
- Biological and Agricultural Engineering
- Ecosystem Science and Management
- Recreation, Park, and Tourism Sciences
- Soil and Crop Sciences
• Wildlife and Fisheries Sciences  
College of Architecture  
• Landscape Architecture and Urban Planning  
College of Engineering  
• Civil Engineering  
College of Geosciences  
• Atmospheric Sciences  
• Geography  
• Geology and Geophysics  
• Oceanography  

3.3.1 Executive Committee  
The current members on the Executive Committee are:

Ronald Kaiser  
Program Chair At Large  
Professor, Recreation, Park and Tourism Sciences  

John (Rick) Giardino  
College of Geosciences  
Department Head and Professor, Geology and Geophysics  

Ming Han Li  
College of Architecture  
Associate Department Head and Associate Professor, Landscape Architecture and Urban Planning  

Patricia Smith  
College of Agriculture and Life Sciences  
Associate Professor, Biological and Agricultural Engineering  

Ralph Wurbs  
College of Engineering  
Professor, Civil Engineering  

Rosario Sanchez Flores  
Program Coordinator
3.3.2 Program Coordinator

Dr. Valeen Silvy was hired in 2005 as the program coordinator and served in this capacity until her death in 2011. Dr. Rosario Sanchez was hired in 2012 as program coordinator. She serves and assists the WMHS chair and the Executive Committee members. She manages day-to-day activities of the program, including, but not limited to advising graduate students, responding to inquiries, responding to emails from faculty and other Texas A&M personnel, drafting memos, letters, and other correspondence, and arranging seminars. She is also responsible for compiling and disseminating graduate applications for review by the faculty, correspondence with applicants, handling general graduate program inquiries, and compiling data for required reports.

3.4 Budget Allocations and Program Expenditures

Funding for the WMHS program is provided by the Provost through the Office of Graduate Studies, by the College of Geosciences and by the Department of Geography. Funding for the last three years and the current year is presented in Table 3.4. Funds are used primarily for the Program Coordinator position and to support graduate students. In FYs 2010 and 2011, Dr. Valeen Silvy was the half-time program coordinator. After her death, the position was converted to a full-time position with the College of Geosciences contributing $16,000 for salary support.

Graduate student support includes research assistantships, scholarships, tuition, and fee payments. Increasing the number of research assistantship has been achieved by offering to pay one half of the assistant’s cost with a participating faculty who will pay the other one-half cost. In addition a number of graduate students are supported by faculty through their research budgets, or through university fellowships, and this support is not included in the table.
Most of our Master of Science students receive some degree of funding support either through scholarship, payment of fees, or research assistantships. Our doctoral students are primarily supported from research funds provided by the chair of their advisory committee. All of our doctoral students receive support.

Table 3.4. WMHS Budget

<table>
<thead>
<tr>
<th>Allocation</th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator Salary</td>
<td>$35,000</td>
<td>$35,000</td>
<td>50,000**</td>
<td>$50,700</td>
</tr>
<tr>
<td>Student support</td>
<td>$39,400*</td>
<td>37,500</td>
<td>59,950</td>
<td>57,430</td>
</tr>
<tr>
<td>Office expense</td>
<td>$3,000</td>
<td>$3,000</td>
<td>$3,000</td>
<td>$3,000</td>
</tr>
<tr>
<td></td>
<td>$77,400</td>
<td>$75,500</td>
<td>$82,950</td>
<td>$113,950</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>Graduate Studies</th>
<th>Geography</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2010</td>
<td>$74,400</td>
<td>$3,000</td>
</tr>
<tr>
<td>FY 2011</td>
<td>$72,520</td>
<td>$3,000</td>
</tr>
<tr>
<td>FY 2012</td>
<td>82,950</td>
<td>$3,000</td>
</tr>
<tr>
<td>FY 2013</td>
<td>$92,130</td>
<td>$3,000</td>
</tr>
</tbody>
</table>

* Student support includes assistantships, tuition and fee payments, scholarships and fellowships.

** Program Coordinator position converted to full time

*** Includes $16,000 for the program coordinator position and $12,000 for fellowships and scholarships.
4. THE WMHS GRADUATE PROGRAM

4.1 Admission Requirements and Procedures

Admission to the WMHS program requires meeting all the Texas A&M University requirements and approval by the WMHS admissions committee. Grades earned during the applicant's entire college career are considered, and a satisfactory grade point average is required. All basic applications are filed electronically and transcripts and letters of reference are submitted to the Texas A&M Office of Admissions. Admission documents need to be submitted by the following dates:

Domestic applicants by June 1 for the fall semester and November 1 for the spring semester.

International applicants by May 1 for the fall semester and October 1 for the spring semester.

**GRE**

TAMU requires all applicants to submit a satisfactory General Record Exam score taken within the previous five years. The standard portions of the exam are required. To allow sufficient time for Texas A&M to receive scores, applicants should take the GRE by May to apply for fall admission and June for spring admission.

**Test of English as a Foreign Language (TOEFL)**

TAMU requires a satisfactory TOEFL score from within the last two years from applicants whose native language is not English. Exception is made for those applicants completing all four years of a baccalaureate degree in the United States or achieving a GRE Verbal score $\geq 400$ (old format) or $\geq 146$.
Official TOEFL scores should be sent to the TAMU Office of Admissions, code 6003.

**Letters of Recommendation**

Three recommendation letters are required and may be submitted electronically through the application system. Recommendations by research advisor(s) or professors are preferred.

**Interviews and Campus Visits**

Applicants may request an informational interview with faculty. Itineraries to meet faculty members and current graduate students can be arranged. Contact the WMHS Office for information.

### 4.2 The Curriculum

The WMHS Program prepares graduates with an understanding of biophysical and social sciences, engineering, and communication through an interdisciplinary program of graduate courses. WMHS students may be associated with the home department of their advisor, but follow the WMHS degree plan, enrolling in classes offered by WMHS and by participating departments. The WMHS degree programs adhere to an interdisciplinary format that crosses traditional departmental boundaries to provide students with technical courses and access to state-of-the-art research facilities where students gain practical, hands-on experience and in-depth knowledge.

Students applying for the master’s degree have until the start of the second semester to select a graduate chair and advisory committee. During the first semester all master’s students should consult with the program chair or program coordinator to identify a graduate chair and committee. The student’s advisory committee for the master’s degree will consist of no fewer than three members, two of whom must be members of the graduate WMHS faculty. At least one or more of the members must be from a department other than the student’s chair but all three may be on the water faculty.

#### 4.2.1 Master of Water Management (non-thesis)

This degree is intended to provide professional graduate education emphasizing problem solving and technical skills for students who will manage public water systems and water resources. The curriculum is structured but flexible enabling students, with the guidance of an advisory committee to design courses of study that are in accord with their career objectives.

**Required Water Courses (8 hours)**

- WMHS 601 Applications and Problems in Hydrological Sciences
- WMHS 602 Contemporary Issues in Water Resources
- WMHS 681 Seminar– 2 credit hours
**Common Body of Knowledge**

**Water Courses (12 hours)**

- RENR 662: Environmental Law and Policy
- AGEC 604: Natural Resource Economics or AGEC 606 Water Resource Economics
- CVEN 664: Water Resources Engineering, Planning Management
- GEOG 626: Fluvial Geomorphology or GEOL 410 Hydrogeology

**Designated Water Courses (12 hours)**

**Free Electives (4 hours)**

No more than 4 credits of 400-level, or graduate courses

36 total hours required for degree

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**4.2.2 Master of Science**

The degree is designed for students with technical backgrounds to complement their primary discipline by obtaining scientific, technical, or managerial expertise in water. In addition to the water courses, students are required to take a research methods class and a statistics class from the designated list.

**Required Water Courses (8 hours)**

- WMHS 601: Applications and Problems in Hydrological Science
- WMHS 602: Contemporary Issues in Water Resources
- WMHS 681: Seminar (2 credit hours)

**Required Statistics and Research Methods Courses (3 hours)**

Courses from Designated Water Courses list

**Designated Water Courses (15 hours)**

**Research Hours (6 hours)**

Up to 6 credit hours for thesis research

32 total hours required for degree
4.2.3 Doctoral Degree

This degree is designed to give students a comprehensive knowledge of water science and hydrology and provide training in methods of research. Students will work with their chairs and the advisory committee to develop a course of study satisfying the curriculum. Students who have not taken graduate courses in statistics and research methods will be required to take one research methods course and two statistics courses from the designated list.

Students applying for the Ph.D. degree program must have identified a graduate committee chair from the WMHS faculty who has agreed to serve in that capacity before they can be admitted to the WMHS program. The students’ advisory committee for the doctoral degree will consist of no fewer than four members, three of which must be members of the WMHS faculty. At least one or more of the members must be from a department other than the student’s chair but all four may be on the water faculty.

**Required Water Courses (9 hours)**

- WMHS 601: Applications and Problems in Hydrological Science
- WMHS 602: Contemporary Issues in Water Resources
- WMHS 681: Seminar

**Required Statistics and Research Methods Courses (9 hours)**

Courses from Designated Water Courses list

**Designated Water Courses (22–25 hours)**

**Free Electives (3–6 hours)**

**Research Hours (21–28 hours)**

64 total hours required for degree, if student enters with a master's degree.

4.3 Designated Water Courses

These courses, listed by subject area, are intended to strengthen a student’s background in one or more areas. Students will take specialized courses drawn from a menu of water-related disciplinary courses. These designated electives give students the opportunity to tailor their specialized coursework in order to meet their career goals.

**Aquatic and Estuary Systems**

- WFSC 611: Estuarine Ecology
- OCEN/WFSC 629: Lower Foodweb Dynamics of Aquatic Ecosystems
- OCEN 649: Estuarine Biogeochemistry
- OCEN/WFSC 650: Aquatic Microbial Ecology

**Climate**

- ATMO 601 Fundamentals of Atmospheric Dynamics
- ATMO 629 Climate Change
- ATMO 631 Climate Modeling
Groundwater Hydrology and Modeling
BAEN 674: Vadose Zone Hydrology
CVEN 674: Groundwater Engineering
GEOL 610: Field Methods in Hydrogeology
GEOL 621: Contaminant Hydrogeology
GEOL 625: Applied Groundwater Modeling
SCSC 605: Pedology
SCSC 650: Mode of Action and Environmental Fate of Herbicides

Management
ACCT 640: Accounting Concepts and Procedures I
CVEN 603: Environmental Engineering Management
FINC 635: Financial Management for Non-Business
MGMT 655: Survey of Management
MRKT 621: Survey of Marketing
POLS 643: Theory and Practice of Public Administration
POLS 645: Politics, Policy, and Administration
PSAA 673: Conflict Resolution in Public Management
Planning

GEOG 619: Human Impact on the Environment
PLAN 616: Analyzing Risk/Hazard and Public Policy
PLAN 620: Dispute Resolution in Planning
PLAN 641: Problems of Environmental Planning Administration
PLAN 647: Disaster Recovery and Hazard Mitigation
PLAN 669: Urban Infrastructure Planning

Statistics and Research Methods

BAEN: 662 Statistical Methods in Biological and Agricultural Engineering
STAT 601: Statistical Analysis
STAT 651: Statistics in Research
STAT 652: Statistics in Research II
STAT 653: Statistics in Research III

Research Methods

AGEC 607: Research Methodology
BUSH 631: Quantitative Methods in Public Management I
CVEN 661: Research Methods for Engineers
GEOG 611: Geographical Research Design
SOCI 623: Measurement of Sociological Parameters
EPSY 636: Techniques of Research
PLAN 604: Planning Methods I
WFSC 609: Wildlife Research Methods

Surface Water Courses

AGRO 611: Introduction to Environmental Biophysics
BAEN 667: Entropy Theory in Water and Environmental Engineering
BAEN 672: Small Watershed Hydrology
BAEN 673: Modeling Small Watersheds
CVEN 627: Engineering Surface Water Hydrology
CVEN 628: Advanced Hydraulic Engineering
CVEN 675: Stochastic Hydrology
CVEN 664: Water Resources Engineering Planning and Management
CVEN 665: Water Resources Systems Engineering
ESSM 623: Ecohydrology
ESSM 636: Range and Forest Watershed Management
GEOG 626: Fluvial Geomorphology
GEOL 633: River Restoration
GEOL 631: Engineering Geomorphology
GEOL 635: Engineering Geology
SCSC 615: Reclamation of Drastically Disturbed Lands
SCSC 658: Watershed and Water Quality Management

Water and Environmental Quality

BAEN 669: Water Quality Engineering
CVEN 604: Environmental Analysis of Treatment Systems
CVEN 605: Environmental Measurement
CVEN 609: Environmental Control of Oil and Hazardous Materials Spills
CVEN 682: Environmental Remediation of Contaminated Sites
GEOL 621: Contaminant Hydrology
GEOL 641: Environmental Geochemistry
SCSC 615: Reclamation of Drastically Disturbed Lands
SCSC 637: Environmental Microbiology
SCSC 650: Mode of Action and Environmental Fate of Herbicides
SCSC 658: Watershed and Water Quality Management
GEOL/WMHS 689: Geochemistry of Natural Waters

Water, Economics, Law, and Policy

AGEC 604: Natural Resource Economics
AGEC 605: Water Resource Economics
AGEC 659: Ecological Economics
CVEN 664: Water Resources Engineering Planning and Management
OCNG 676: Marine Environmental Policy: A Survey
PSAA 606: Environmental Policy and Management
PSAA 622: Public Finance
PSAA 673: Conflict Resolution in Public Management
RENR 660: Environmental Impact Analysis for Renewable Natural Resources
RENR 662: Water and Environmental Law

**Water Informatics and Geographic Information Systems**

BAEN/FRSC 651: Geographic Information Systems
BAEN/FRSC 652: Advanced Topics in Geographic Information Systems
CVEN 658: Civil Engineering Applications of GIS
GEOG 651: Remote Sensing for Geographical Analysis
GEOG 660: Applications in GIS
GEOG 661: Digital Image Processing and Analysis
GEOG 665: GIS-Based Spatial Analysis and Modeling
GEOG 695: Frontiers in Geographic Information Science
PLAN 625: Geographical Information Systems in Landscape and Urban Planning
PLAN 626: Advanced GIS in Landscape Architecture and Urban Planning

**Wetlands**

ESSM 628: Wetland Delineation
ESSM 633: Wetland Plant Taxonomy
ESSM 631: Ecological Restoration of Wetland and Riparian Systems
WFSC/OCEN 629: Lower Food Web Dynamics of Aquatic Ecosystems
OCEN 649: Estuarine Biogeochemistry
WFSC 611: Estuarine Ecology
WFSC 628: Wetland Ecology
WFSC/OCEN 650: Aquatic Microbial Ecology
5. WMHS STUDENTS

5.1 Program Enrollment Trends

Since its 2005 inception total annual enrollment in the program continues to grow (Figure 5.1.). One hundred and twenty-four students have enrolled in the program. Although enrollment varies from year to year (See Table 5.1) an average 15 students join the program each year. Application-to-acceptance ratios average about 3 to 1, and more than two-thirds of the students who are accepted enroll. Many of our applicants apply to more than one school, and those who are accepted but don’t enroll usually do so based on a better financial aid package from another school.

Figure 5.1 Total annual enrollment

![Graph showing total annual enrollment from Fall 2007 to Fall 2011.]

Table 5.1 Number of students entering program by academic year

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
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</table>

Overall student retention has not been a major issue. Of course, we would like to have a 100 percent retention rate, but that is difficult. Of the 90 master’s degree students only eight have not completed the program. Most left for personal, financial, or career change reasons. Four of the 34 doctoral students who enrolled in the program left for similar reasons.
5.2 Student Demographics

Master’s degree students comprise nearly three-quarters of total enrollment with about an equal number selecting either a thesis or non-thesis masters option. This balance between master’s and doctoral students reflects the reality of the job market in the water industry and academia.

Figure 5.2 Enrollment by degrees sought

From a gender perspective about 60 percent of the students are male and 40 percent female. This ratio is fairly consistent in the master’s and doctoral degree programs and in the years of admission (see Figure 5.2.1 and Table 5.2).

Figure 5.2.1. Gender comparisons by year of admission
Table 5.2 Gender comparisons by year of admission and degree

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<td>124</td>
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Most of our students are of domestic origin (Figure 5.2.2). Ninety-one students are U.S. citizens and 33 students are international. Nearly two-thirds of our domestic students are from Texas. Our master’s students are predominately U.S. citizens while our doctoral program reflects nearly an equal balance between domestic and international students. Our international students are truly diverse hailing from some 15 different countries (Figure 5.2.3 and Table 5.2.1).

Figure 5.2.2 Country of origin
5.3 Student Publications and Presentations

The Program has not maintained a cumulative total on the number of WMHS student publications and presentations. However, over the last two years, as part of the student learning objectives listed in Section 7.3 on page 44, we have identified publication and presentation objectives for our
master’s and doctoral students. The master of water management degree has a learning objective that at least 50% of the graduates will have made a presentation or presented a poster at a professional or academic meeting. Over the last two years this objective has been achieved. The master of science objective is that at least 50% of the graduates will have prepared or submitted a research article by the time they graduate. Over the last two years this objective has also been achieved. Ph.D. students are expected to submit or publish one refereed article by the time they graduate. One doctoral student has graduated from the program over the last two years and she published 5 journal articles.

5.4 Program Graduates

Our mission is to “prepare the next generation of water scientists, hydrologists, and managers through teaching and research that improves the reliability and quality of water resources for human well-being and development.” A metric of our success in meeting this mission is how many students we place in the water industry. We are clearly achieving our mission as 50 of 54 graduates (as shown in Table 5.4.1, 5.4.2, 5.4.3) are working in some sector of the water industry.

On average Master of Water Management students graduate in 2 years, Master of Science in 2.5 years and doctoral students graduate in 5 years. The program has accepted 2 Fulbright scholarship students and they have taken 7 years to finish their degrees. As indicated in Table 5.4 the number of students graduating each year is increasing as our enrollment increases. Over the last four years an average of 10 master’s level students have graduated each year. The program averages one doctoral graduate per year.

Table 5.4 WMHS graduates per year

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<td>10</td>
<td>11</td>
<td>11</td>
<td>9</td>
<td>54</td>
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</table>

* Only includes graduates through August 31, 2012

Our Master of Science students are working in research or managerial positions at water agencies or have continued their academic education. The Master of Water Management students are generally found in management and consulting positions at public agencies of the state of Texas and consulting companies. Our doctoral students are concentrated in the academic and research sectors in the United States. This fact offers a solid foundation of the water program degree options considering the job market demand of water managers and water experts as well as updated research and consulting profiles.
Table 5.4.1 Employment of WMHS M.S. students

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<td>Aaron</td>
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<td>Marisa</td>
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<td>Huijuan</td>
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Table 5.4.3 Employment of WMHS Ph.D. students

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<td>F 05</td>
<td>McDonald</td>
<td>Alyson</td>
<td>2010</td>
<td>Assistant Professor</td>
<td>Texas A&amp;M University, Ecosystem Science and Management Department</td>
</tr>
<tr>
<td>F 06</td>
<td>Arora</td>
<td>Bhavna</td>
<td>2012</td>
<td>Post doc at Lawrence Liversmore lab</td>
<td>University of California Berkeley</td>
</tr>
<tr>
<td>F 06</td>
<td>Harvey</td>
<td>Omar</td>
<td>2010</td>
<td>Assistant professor</td>
<td>University of Southern Mississippi</td>
</tr>
<tr>
<td>F 06</td>
<td>Nwaneshiudu</td>
<td>Oke</td>
<td>2007</td>
<td>Executive Director</td>
<td>NWAN Consulting Group</td>
</tr>
<tr>
<td>F 06</td>
<td>Sanchez</td>
<td>Rosario</td>
<td>2009</td>
<td>WMHS Program Coordinator</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td>S 05</td>
<td>Huang</td>
<td>Yun</td>
<td>2006</td>
<td>Research Scientist</td>
<td>Texas Bureau of Economic Geology</td>
</tr>
<tr>
<td>S 06</td>
<td>Zhang</td>
<td>Xuesong</td>
<td>2008</td>
<td>Research Scientist</td>
<td>China</td>
</tr>
</tbody>
</table>
6. **WMHS FACULTY**

Currently, 57 faculty from 12 departments in four colleges are in the WMHS program. For a short biography on current members see Appendix A. Faculty roles and participation in the program vary. Some faculty are involved in chairing or serving on graduate student committees, while others teach a designated water course and chair a student committee. A few faculty have moved to administrative positions but wish to remain on the faculty to serve as advisors.

6.1 **Faculty Teaching in WMHS Program**

A significant percentage of faculty have been involved in teaching in the water program. Fifteen faculty from the Colleges of Agriculture and Life Sciences, Engineering and Geosciences have been involved in teaching, or team teaching, in the two required WMHS courses. Forty-six faculty, or former faculty, have been involved in teaching one or more of the designated water courses.
6.2 Faculty Advising

University rules and those of the Water Program govern the formation of student advisory committees and degree plans. Students in the master’s degree program must select a graduate chair, form an advisory committee, and file their degree plan by the end of the second semester. Prior to forming their committee, the program chair or program coordinator provide all advising. A master’s degree advisory committee consists of no fewer than three members, two of which must be members of the WMHS faculty. The committee chair must be a member of the water faculty.

Since 2010, the program chair serves as the advisory committee chair for all Master of Water Management students. This practice improved advising efficiency.

Doctoral students must have identified a chair from the WMHS faculty who has agreed to serve in that capacity before they can be admitted to the program. However, students have until the end of their third semester to finalize their advisory committee and file their degree plan. Advisory committees for the doctoral degree will consist of no fewer than four members, three of whom must be members of the WMHS faculty.

At least 24 different members of the WMHS faculty have chaired student committees and nearly all members of the faculty have served on a student committee. Table 6.2 is a list of current students and their committee chairs. The list does not include master’s students admitted in the spring or fall of 2012 because they are not required to select a chair until the end of their second semester.

Table 6.2 Current chairs of WMHS students with degree plans

<table>
<thead>
<tr>
<th>Fall 2012</th>
<th>Degree</th>
<th>Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adams</td>
<td>Silas</td>
<td>MWM Ronald Kaiser</td>
</tr>
<tr>
<td>Aurora</td>
<td>Bhvana</td>
<td>Ph.D. Binayak Mohanty</td>
</tr>
<tr>
<td>Baber</td>
<td>Thomas</td>
<td>Ph.D. Ralph Wurbs</td>
</tr>
<tr>
<td>Bowling</td>
<td>Jeremiah</td>
<td>M R. Srinivasan</td>
</tr>
<tr>
<td>Castillo</td>
<td>Cesar</td>
<td>MS Inci Guneralp</td>
</tr>
<tr>
<td>Chavez</td>
<td>Ramiro</td>
<td>Ph.D. Francisco Olivera</td>
</tr>
<tr>
<td>Clary</td>
<td>Calvin</td>
<td>MS Terry Gentry</td>
</tr>
<tr>
<td>Cui</td>
<td>Huijuan</td>
<td>Ph.D. VJ Singh</td>
</tr>
<tr>
<td>Gamache</td>
<td>Kevin</td>
<td>Ph.D. Rick Giardino</td>
</tr>
<tr>
<td>Garcia</td>
<td>Victor</td>
<td>MS Ronald Kaiser</td>
</tr>
<tr>
<td>Gerlich</td>
<td>Ryan</td>
<td>MWM Ronald Kaiser</td>
</tr>
<tr>
<td>Govil</td>
<td>Kritika</td>
<td>MS Jacqui Peterson</td>
</tr>
<tr>
<td>Gregory</td>
<td>Lucas</td>
<td>Ph.D. R. Karthikeyan</td>
</tr>
<tr>
<td>Ha</td>
<td>MiAe</td>
<td>Ph.D. Clyde Munster</td>
</tr>
<tr>
<td>Havlik</td>
<td>Jessica</td>
<td>MWM Ronald Kaiser</td>
</tr>
<tr>
<td>Joshi</td>
<td>Champa</td>
<td>Ph.D. Binayak Mohanty</td>
</tr>
<tr>
<td>Kamps</td>
<td>Ray</td>
<td>Ph.D. James Heilman</td>
</tr>
</tbody>
</table>
6.3 Faculty-Student Ratios

Forty WMHS faculty teach a required or directed elective graduate water course in the program. The remaining 17 either do not teach a water course or because of their current appointment do not teach. Currently 56 students are enrolled in the program, hence the faculty to student ratio is nearly 1 to 1.

6.4 Research Funding for WMHS Program Faculty

Faculty who participate in the water program have exceptional records not only in their publication records but also in receiving water-related external grants. Grants support students in their respective departments as well as students in the WMHS. Collectively, WMHS faculty members have generated approximately $125.4 million in external funding from competitive funding programs since 2005. The funds have supported robust research programs that helped steer the intellectual and scientific direction of the graduate program in addition to providing both financial support and research opportunities for students. The funding record reflects the commitment of Texas A&M University, as a Tier 1 Research Institution, to maintain highly productive research programs that help attract the world’s best faculty and graduate students.

Figure 6.4 below shows the breakdown of funding by general research category. As might be expected, there is considerable overlap within these categories owing to the interdisciplinary nature of hydrologic research in general, and to the multiple disciplines represented by the Water Program faculty in particular. Figure 6.4 is intended to provide a qualitative view of
the faculty research emphasis areas. Many studies, for example, were carried out in coastal or wetland regions but were counted in other categories because their primary focus was not on coastal or wetland processes. Similarly, there were international dimensions of a significant number of research projects and a number of projects were funded by international sources, but relatively few studies were focused entirely on international locales. Also, while nearly every research project was related in some way to general water resources planning and management, we have tried to break them into more distinct categories for the purposes of clarification.

Figure 6.4 Water faculty external funding in millions of dollars (2005-2012)

**Contaminants:** Approximately $38.8 million in external funds have been secured for hydrologic studies that focus primarily on the origin, transport, and fate of contaminants in aquatic environments, including surface water, groundwater, soil water, and water vapor within the vegetative canopy zone. This included research focused on, for example: desalination, water recycling and reuse, development of drinking water treatment systems, biodegradation of contaminants, water quality restoration, microbial contaminants, site-specific monitoring and assessment, non-point source pollution, and the impact of industrial waste products on local and regional water quality. Funding for these programs came from, for example, the U.S. Environmental Protection Agency, the National Science Foundation, the U.S. Department of Energy, state agencies such as the Texas Commission on Environmental Quality, Texas Hazardous Waste Research Center, and individual municipalities.

**Informatics:** Approximately $35.5 million in research funding was generated in the broad area of hydrologic informatics and geographic information system applications in hydrologic research and water resources planning.
and management. Included in this category are, for example: database analysis of hurricane-related issues, support for on-line data analysis, GIS-based modeling of hydrologic processes, mapping analysis tool development, and land-surface process studies. Funding sources include, for example: the Department of Homeland Security, the National Science Foundation, the Department of Defense, U.S. Department of Agriculture, private industries, state agencies such as the Texas Water Development Board and the Texas Department of Transportation, and individual municipalities.

*Climate.* WMHS faculty secured approximately $18.1 million in funding to study climate and climate change processes. The climate category is particularly broad and includes fundamental climate modeling, atmospheric process research, satellite precipitation monitoring, drought prediction and response, flooding and adaptive flood management, climate uncertainty and urban and agricultural water resources planning, impacts of climate change on water availability, mitigation and adaptation to climate change, and extreme climate and hydrologic events. The funding has come from the National Science Foundation, the National Aeronautics and Space Administration, the U.S. Department of Energy, the U.S. Environmental Protection Agency, and the U.S. Department of Agriculture. The high level of funding in this category reflects the relative importance of climate and climate change to water planning in the State of Texas.

*Agriculture.* The importance of agricultural water management in Texas cannot be overstated, and the funded research totaled approximately $9.3 million. The category includes research on, for example: irrigation efficiency, plant water use, plant and soil interactions, aquaculture, water sustainability in agriculture, the economic and societal dimensions of agricultural water planning and management, agricultural water conservation, and hydrologic implications of agricultural production for biofuels biomass. The principal funding agency, as might be expected, is the U.S. Department of Agriculture. Other sources of research funding include, for example, the U.S. Environmental Protection Agency, private industry, international organizations, the Department of Defense, and the Texas State Soil and Water Conservation Board.

*Modeling.* The modeling category includes basic research on fundamental hydrologic processes, hydrologic model development for basins of interest, water and carbon cycle studies, global hydrologic processes, hydrogeochemical processes, watershed hydrology, surface and groundwater processes, soil and water interactions, and plant-soil-water interactions. Funded research totals approximately $8.32 million. The research included in this category spans a full range of scales in space and time as well as scaling processes and multi-scale processes. Funding sources include, for example: the National Science Foundation, the U.S. Department of Agriculture, the U.S. Department of Interior, the National Oceanic and Atmospheric Administration, the National Aeronautics and
Space Administration, the U.S. Department of Energy, and an array of state
and local agencies, private industries, and foundations.

Education: The WMHS faculty have been proactive in seeking funding to
improve water education at all grade levels from kindergarten through
postdoctoral research. Approximately $6.1 million in funds have been
secured to support, for example, undergraduate research experiences,
water education for pre-service and in-service educators in grades K through
12, high-impact educational activities such as international research
experiences, graduate research fellowships, efforts to improve the diversity
of the future water resources workforce, and special fellowships for
interdisciplinary hydrologic study. Texas A&M participates in a nationwide
network of universities funded by the National Science Foundation to
improve teacher preparation in science, technology, engineering, and
mathematics (STEM), including integrating the study of hydrologic
processes into existing STEM curricula. In addition to the National Science
Foundation, funding for these activities has come from the U.S. Department
of Agriculture, the National Action Council for Minorities, private
industries, municipalities, and private foundations.
Ecohydrology: Research on the interactions between water, vegetation, and natural areas is increasingly encompassed in the emerging field of ecohydrology. Faculty in the Water Program have generated approximately $4.2 million in research funding to support groundbreaking work in, for example, hydrology and rangeland processes, water and ecosystem services, environmental water demands, biological processes for stormwater quality improvement, algal blooms, and freshwater inflows to wetlands and coastal areas. The research is funded by, for example, the Texas Commission on Environmental Quality, the U.S. Department of Agriculture, the U.S. Department of Interior, the National Science Foundation, the U.S. Department of Energy, and the Texas Department of Transportation.

Management: Water management and planning is an inherent part of nearly every research program included in this report. For that reason, it could encompass most every research dollar generated by the WMHS faculty. However, studies specific to local and regional water planning and management are included in this category, and total approximately $3.83 million in secured funding. Examples include watershed management for the Trinity, Sabine, and San Antonio rivers, an audit of the San Antonio Water System, water audits and marketing for the City of College Station, planning studies for the City of Bryan, the impact of water trading systems on municipal water planning, municipal water demand in Texas, development of the Water Rights Analysis Package (water availability and allocation modeling tool), and watershed protection plans for specific basins of interest. Sources of funding include the Texas Soil and Water Conservation Board, U.S. Environmental Protection Agency, Texas Commission on Environmental Quality, the National Science Foundation, the Texas Department of Agriculture, and the National Forest Service.

International: Hydrologic research with a specific international focus includes, for example, successful sanitation habits in rural India, and the political ecology of sanitation habits in rural India. Funding, which totaled approximately $789,000, came from the National Science Foundation and the Bill and Melinda Gates Foundation, among others.

Coastal: Projects that were wholly focused on coastal or wetland environments were funded at a level of approximately $571,000. Research included, for example, the assessment and prediction of coastal erosion and morphological changes in the Upper Texas Gulf Coast (funded by the Texas Board of Higher Education), coastal prairie wetland restoration in Sheldon Lake State Park (funded by the Texas Parks and Wildlife Department), coastal resiliency tools for local officials (funded by the Texas Sea Grant College Program), and the assessment of coastal water resources and watershed conditions in and around the Bering Land Bridge National Preserve (funded by the National Park Service).
6.5 Faculty Publications

Collectively, the WMHS faculty have a prolific water publication record. Over the past 5-7 years they have produced more than 700 publications, including books, book chapters and journal articles. This is not a complete record of their career publications as faculty were requested, for purposes of this report, to limit their publication listing to two pages. Many faculty have CVs that are more than 50 pages and one has a 150-page CV. Very brief WMHS faculty CVs are listed in Appendix A.

6.6 Faculty Diversity

Participation as a member of the WMHS program is a voluntary action of each faculty member assigned to an academic home department. The WMHS program does not make faculty hiring decisions and has no control over the Texas A&M University faculty diversity. Thus the WMHS faculty is a reflection of department hiring practices. The WMHS program supports University efforts to increase faculty diversity.

A review of the WMHS faculty indicates: 13 members of international origin, 11 female members and 2 members of Hispanic origin. The WMHS faculty
diverse intellectual teaching, research, and publication backgrounds are indicated in Appendix A and B.
7. VISION, GOALS, AND ASSESSMENT

7.1 Texas A&M University Vision 2020

The Southern Association of Colleges and Schools Commission (SACS) and the Texas Higher Education Coordinating Board (THECB) assess the quality of Texas A&M University as a whole. In 1999, Texas A&M embarked upon a comprehensive evaluation and planning program to meet the SACS and THECB guidelines and with the aim of securing recognition as a consensus “Top 10” public university by the year 2020. The program known as “Vision 2020” (vision2020.tamu.edu) was intended to build upon Texas A&M’s tradition of excellence, while identifying areas requiring improvement and recommending necessary action, without sacrificing the core values upon which the university is solidly founded or its proud and unique heritage.

The report, Vision 2020: Creating a Culture of Excellence, sets forth individual recommendations categorized into 12 “imperatives” relating to all aspects of Texas A&M and its relationships with students, faculty, staff, the community, and the state, nation, and world it proudly serves. In 2012, Vision 2020 was updated through a campus-wide process of internal assessment called the Academic Master Plan and a University strategic plan called Action 2015: Education First. The document identified a number of imperatives that the university will target over the next decade. Of relevance to this review is the commitment to graduate education.

The 12 imperatives are:

1. Elevate the Faculty and their Teaching, Research, and Scholarship
2. Strengthen the Graduate Programs
3. Enhance the Undergraduate Academic Experience
4. Build the Letters, Arts, and Sciences Core
5. Build on the Tradition of Professional Education
6. Diversify and Globalize the Texas A&M Community
7. Increase Access to Knowledge Resources
8. Enrich the Campus Environment
9. Build Community and Metropolitan Connections
10. Demand Enlightened Governance and Leadership
11. Attain Resource Parity with the Best Public Universities
12. Meet the Commitment to Texas

**Imperative 2: Strengthen Graduate Programs**

In any view to the future, the challenges of solving complex problems are certain to require interdisciplinary work. It is critical that the University foster an adaptive culture that embraces and encourages interdisciplinary research while continuing to embrace and encourage individual research. We should encourage and foster individual faculty, teams of scholars and practicing professionals from multiple disciplines to cross structural boundaries and create strategic and operational partnerships. Our priority should be to advance the frontiers of knowledge in meeting increasingly complex societal challenges.

**ALIGNMENT OF WMHS PROGRAM WITH THIS IMPERATIVE:** The interdisciplinary nature of the WMHS Program is congruent with and an outstanding example of Imperative 2.

**Imperative 12: Meet Our Commitment to Texas**

Texas A&M is a public, land-grant institution that prepares educated problem-solvers to lead the state. Texas A&M’s aspiration to be among the best public universities in the country resonates with this historical mandate. The diverse population of Texas should have access to the best public education in America without having to leave the state. To further fulfill our mission, Texas A&M should engage in partnership with communities, industry, non-profit organizations and government entities to help solve the most difficult societal problems while honoring its heritage of enhancing economic and social well-being. Increased focus on excellence while maintaining relevance and access will allow Texas A&M to meet its commitment to Texas.

**ALIGNMENT OF WMHS PROGRAM WITH THIS IMPERATIVE:** Most WMHS program graduates are employed by Texas water agencies and organizations and are working on Texas-specific water issues.

**Action 2015: Education First**

Goal 2: Elevate the impact of our scholarship to effectively advance the state, the nation, and the world in meeting societal challenges and opportunities.

**ALIGNMENT OF WMHS PROGRAM WITH THIS GOAL**

Providing an adequate supply of potable water for a growing Texas, United States and worldwide population is a widely recognized challenge. The research program and publication records of the WMHS faculty contained
7.2 Strategic Plan/Program Assessment

7.2.1 WMHS Program Vision

In line with the Vision 2020, the WMHS program aspires to be among the top 10 public graduate programs in the nation for students pursuing an advanced degree in water management and hydrological sciences, fulfilling its part of TAMU’s mission with scholarship, leadership, and innovation in all aspects of research, teaching, and service.

7.2.2 WMHS Program Mission

The mission of the WMHS Interdisciplinary Graduate Program is:

*To prepare the next generation of water scientists, hydrologists, and managers through teaching and research that improves the reliability and quality of water resources for human well-being and development.*

7.2.3 WMHS Program Goals

In furtherance of its mission, the Water Management and Hydrological Science Program seeks to:

1. Provide quality graduate education that is well-grounded in the fundamental principles of hydrology coupled with the latest technological advances in order
to advance student’s problem solving skills, nurture discovery and innovation, develop life-long learning skills, and prepare students for national and international leadership roles and successful careers in academia, government, and industry.

2. Prepare M.S. and Ph.D. graduates to be exceptional scientists and managers, and future leaders in the water management and hydrological science at the state, national and international levels.

3. Advance the knowledge base of water management and hydrology by fostering multidisciplinary education and research efforts through connections with faculties in various departments and colleges to facilitate collaboration in teaching, research and service.

4. Foster an environment that brings together a number of professions and disciplines for an exchange of knowledge about the unique attributes of managing water.

5. Provide a teaching and research base for an ongoing series of research collaborations, lectures, seminars, and workshops that will improve communication and exchange of knowledge between Texas A&M University students and faculty, as well as other researchers from around the state.

6. Encourage the exchange of ideas and information between faculty and researchers at Texas A&M University and engineers, scientists, and managers in both the industry and government sectors.

7.3 Learning Outcomes

In 2010 the WMHS Program developed a set of learning outcomes for each of its degrees. Student learning outcomes articulate the results the WMHS program expects students to gain during their educational experiences. Broadly, the WMHS program expects its graduates to demonstrate:

1. basic knowledge of the science and management related to water science and hydrology;
2. critical analysis and creative problem solving skills; and
3. effective communication.

Each degree program has a slightly different set of learning outcomes and a set of achievement targets for each outcome. The program uses multiple measures to assess the degree of achievement of the learning outcomes. Each year, the program’s administrators compile student progress measured against these learning outcomes and achievement targets.

7.3.1 Outcomes for the Master of Water Management Degree

This degree provides students with intellectual and technical foundations, including a broad understanding of hydrology, associated ecosystems and the interplay between biophysical and social sciences to solve and manage water resources.

Learning Objectives

1. Understand biophysical and socio-economic principles related to water management.
Achievement Target
(a) Completed the core classes with a 3.0 or better
(b) Final Exam: Mastered the learning objectives with a 80% or better score (See learning assessment outcomes scale, Figure 7.3.1)

2. Effective communication

Achievement Target
(a) Fifty percent of the MWM students will present a paper or poster at a professional meeting
(b) Final Exam: Mastered the learning objectives with a 80% or better score at (See learning assessment form, Figure 7.3.1)

Results
Over the last two years these outcomes were achieved for the MWM students.

Figure 7.3.1 Learning outcomes rating scale for Master of Water Management

1. Is the student knowledgeable about the biophysical and socio-economic principles related to water management?

| Please circle the extent to which the student meets supervisory committee expectations with respect to this learning outcome. |
|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

2. Did student effectively communicate in their final presentation?

| Please circle the extent to which the student meets supervisory committee expectations with respect to this learning outcome. |
|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

3. Has the student prepared effective written materials in your class?

| Please circle the extent to which the student meets supervisory committee expectations with respect to this learning outcome. |
|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

4. Has the student demonstrated a level of knowledge and expertise in order to prepare them for their future careers?

| Please circle the extent to which the student meets supervisory committee expectations with respect to this learning outcome. |
|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
7.3.2 Outcomes for the Master of Science Degree

This degree provides students with intellectual and technical foundations and research methods related to hydrological science to solve and manage water resources.

Learning Objectives

1. Demonstrate knowledge and expertise related to hydrology and water management.

   Achievement Target
   (a) Final Exam: Mastered the learning objectives with a 80% or better score
       (See learning assessment form)

2. Effective communication of research findings

   Achievement Target
   (a) Fifty percent of the MS students will present a paper or poster at a professional meeting by the time they complete the program
   (b) Final Exam: Mastered the learning objectives with a 80% or better score
       (See learning assessment form Figure 7.3.2)

3. Publish a research paper

   Achievement Target
   (a) Fifty percent of the MS students will have prepared or submitted a referred research article by the time they complete the program

Results

Over the last two years these outcomes were achieved for the graduating MS students.

Figure 7.3.2 Learning Outcomes Rating Scale for Master of Science

1. Students graduating from this program will be knowledgeable of, and be able to apply the scientific method to conduct research on water
management and hydrological science issues. Effectively applying the scientific method to conduct research is the ability to: define a problem, develop appropriate measures/methods to examine the problem, analyze data, and discuss the implications of findings.

2. Students graduating from this program should be able to verbally communicate about research conducted on water management and hydrological science. Effective communication is the appropriate and accurate word usage, and the clear and coherent organization and presentation of information related to water management and hydrological science.

3. Students graduating from this program should be able to effectively prepare written materials that address water management and hydrological science issues. Effective writing is the proper use of the English language; appropriate and accurate word usage, and clearly and coherently organized and presented information about water management and hydrological science.

4. Students graduating from this program should be able to demonstrate knowledge and expertise related to the key principles related to water management and hydrological science, in order to prepare them for their future careers.

7.3.3 Outcomes for the Ph.D. Degree

This degree provides students with intellectual and technical foundations and advanced research methods related to hydrological science issues. It is intended to prepare the next generation of scientists for academic, consulting or research careers.

Learning Objectives

1. Demonstrate advanced knowledge and expertise related to hydrology and research methods
Achievement Target
(a) Preliminary Exams: All students must pass preliminary exams.

2. Effective communication of research findings

Achievement Target
(a) All Ph.D. students will present at least one paper or poster at a professional meeting by the time they complete the program

3. Apply the scientific method in research and publication

Achievement Target
(a) Seventy-five percent of Ph.D. students will have submitted or published a referred research article before they complete the program

Results
Over the last two years, graduating Ph.D. students achieved these outcomes.

7.4 Program Facilities

All graduate students at Texas A&M University have full access to computer labs and library resources. For WMHS students, the Geography Department has provided two open rooms that house 5-6 students per room and one office for the program coordinator. All student desks in these offices were acquired from a surplus property warehouse maintained by the University. Computers in the student offices were obtained from the Geography Department Computer Lab that were scheduled to be surplussed. Except for a few WMHS students who may have office space provided to them by their chair, this represents the totality of office facilities, desks and computers provided to WMHS students.
8. STRENGTHS AND WEAKNESSES

The premise of the Water Management and Hydrological Science (WMHS) Graduate Program at Texas A&M University is that the program transcends the traditional options offered under agriculture, engineering, geology, or natural resources degree programs. The need to overcome these constraints by developing interdisciplinary programs in Water Management and Hydrological Science has been articulated in a report published in 1991 by the National Academy of Sciences. This report called for a new educational paradigm based on the concept that hydrologic science and water management was beyond the purview of a single department or discipline. This report called for reformulating water education based on a multidisciplinary model rather than a single discipline approach.

Many land grant universities continue to offer a water degree as a subset of a single department. A unique feature of the Texas A&M University WMHS program is that it is not constrained by the limitations of a single department or college, as it draws on the faculty expertise throughout the University, nor does it require department approval for admission. Rather the WMHS faculty, through the Executive Committee makes admission decisions. Other universities that have taken an interdisciplinary approach include University of California at Davis, University of Florida, University of New Mexico (MS only), University of Nevada (Reno), University of Colorado (Boulder) and Oregon State University. In 2012 New Mexico State
University adopted an interdisciplinary water program based on the Texas A&M University WMHS model. See agecon.nmsu.edu/fward/water/New_Graduate_Program_Approval_Request_edited%207-18-2011.pdf

Established in 1966, the University of Arizona's Department of Hydrology and Water Resources was the first in the nation dedicated solely to the science of water. It has a strong reputation in some specialist areas but it does not have the interdisciplinary breadth of many other programs.

Since 2005, when the program officially started, 54 students have graduated with a WMHS degree from Texas A&M University. In addition to serving the students’ needs, the interdisciplinary faculty of WMHS has served as a catalyst in bringing researchers from diverse academic departments across campus to form successful research collaborations. Many of these collaborations may not have otherwise naturally happened.

8.1 Program Strengths

8.1.1 Faculty Expertise

There is a wide-ranging pool of expertise among members of the WMHS faculty exhibiting the highest quality in terms of scholarship, external research support, and dedication to excellence. Core faculty who teach graduate courses and supervise graduate students are located in each of the four colleges and 12 departments. A review of their two-page CVs located in Appendix A reinforce the accolades that they deserve.

8.1.2 Research Expertise

WMHS faculty research programs have breadth and depth. Two or more faculty members can be found in most research areas. (See Appendix B.) The scientists and scholars involved with WMHS program are committed to conceiving and carrying out research programs that improve public welfare, embrace the highest intellectual standards, and advance the understanding of water use and management.

8.1.3 Curriculum

The WMHS program has a good blend of water related biophysical science, engineering, management, planning, and socio-economic courses. In its current form, the curriculum offers students—regardless of their background—the opportunity to gain a broad perspective of some of the most fundamental concepts in hydrology.

We currently have a wide range of designated elective courses that—in principle—provide students with good theoretical understanding of important disciplines and sub-disciplines within the broader field of hydrology and water management. Many of these courses also provide students with the valuable toolkit essential for their research endeavors.
8.1.4 Quality of Students

The program attracts a number of high-quality applicants with an application to acceptance ratio of approximately 3:1. The quality of incoming graduate students, based on traditional metrics such as average GRE and TOEFL scores, and GPR, is high. Our graduate students compete well at professional meetings in poster and oral competitions that bring recognition to the WMHS program. Graduates of the program have job-ready skills and are found throughout the water industry.

8.1.5 Student Placement

Our graduates are highly employable and have great success in obtaining jobs in the water industry. Of our 54 graduates, all except for two students who we were unable to locate and two students who have left the workforce to raise a family are working with water organizations or pursuing doctoral degrees in water-related areas.

8.1.6 Program Review by Texas Higher Education Coordinating Board

The Texas Higher Education Coordinating Board requires each doctoral program at a public university to provide data on 18 prescribed characteristics. Though of basic informational use, the 18 characteristics fall markedly short of portraying the complete nature of a doctoral program and a complete program review. However, each University is to file an annual updated report. Appendix C contains the most recent report on the WMHS program.
8.2 Program Weaknesses

8.2.1 External Program Visibility

The program’s external visibility can be improved. One of the major reasons for this is not being a department with associated resources for student travel. Moreover, the program is relatively new and our graduate pool is fairly small. The lack of external visibility can hamper student recruiting, particularly among underrepresented groups. One effort to improve the program’s visibility is the water brochure found in the Appendix D. This brochure is distributed at state, national, and international conferences.

8.2.2 Restrictive Funding of WMHS Student by Departments

As financial resources are becoming limited many departments will only fund their own students. Increasingly there are concerns that departments are restricting their faculty from offering research assistantships to WMHS students.

8.2.3 Curriculum Weaknesses

Despite the fact that we have a wide range of Designated Elective Courses, there is a lack of coordination on the part of faculty and host departments on day and time of course scheduling. Faculty and departments have a high degree of discretion for days and times that courses are offered so there are often conflicts with other courses.

8.2.4 Internal Program Identity

Internal university records and student tracking results in WMHS students being assigned to different departments based on the location of their chair. For example, a student whose chair is located in the Department of Soil and Crop Science is for record-keeping purposes assigned to that department. This has created student and program identity problems as they are unsure if they are a student in the Soil and Crop Science Department or in the WMHS program.

8.2.5 Lack of Student Office Space

The Department of Geography has kindly provided office spaces for WMHS students and the Program Coordinator. Two office areas are allocated to students and four to six students share each office. As the WMHS enrollment has increased we are in dire need of space to accommodate up to 12 additional students. The Department of Geography is currently not able to provide additional space for our students. Consequently a number of WMHS graduate students have no place to “call home” to study or work. This makes it difficult to maintain an identity when WMHS graduate students do not have the same study and office resources as students in University departments.
8.2.6 Graduation Confusion

Students in the 11 interdisciplinary graduate programs used to attend University graduation as an interdisciplinary cohort. This practice served to highlight the interdisciplinary degree programs to the thousands of family and friends who attend Texas A&M graduation. It also enhanced the identity of each program. Today, interdisciplinary graduates, including WMHS master students, are required to attend the graduation ceremony based on their advisors’ colleges. This practice has resulted in the diminution of interdisciplinary graduate degree identities and created confusion as to which ceremony students should attend.
9. PLANS FOR THE NEXT 1-3 YEARS

9.1 Establish a WMHS External Advisory Committee

To date the WMHS Program has functioned without an external advisory committee. However, the Program has matured to the point where an external advisory committee can provide several benefits. It is envisioned that the Committee will provide feedback and guidance in terms of

- Providing academic training to the students
- Developing skills to be successful in industry
- Strengthening the curriculum to be responsive to industry needs
- Improving the career opportunities of the graduates
- Increasing program visibility
- Enhancing student recruitment
- Developing internship and placement programs

The Committee would meet once a year on campus for a day-long meeting. During these meetings, the Advisory Council interacts with the students, faculty, and TAMU administrators.

9.2 Seek to Establish Additional WMHS Endowed Scholarships

An endowed WMHS fellowship was established to honor the contributions of Valeen Silvy. Val was the first WMHS program coordinator, and she passed away in 2011. Her fellowship provides a $1,250 annual grant to a deserving WMHS student. Potential donors will be identified and approached to establish scholarships or fellowships for WMHS students.

9.3 Establish On-Going Internships for WMHS students

A number of water agencies, organizations, and students benefit from internships. Internship opportunities are often sporadic varying from year to year based on water organization needs. It is important for the WMHS program and students to provide some institutional continuity to this process. Our goal is to develop 10 on-going internships that will provide valuable work experience for our master’s students and for water agencies and organizations.
10. APPENDICES
APPENDIX A

Short Biographies of Water Faculty
Jacqueline Ann Aitkenhead-Peterson
Assistant Professor
jpeterson@ag.tamu.edu

Current Appointment
Assistant Professor, Department of Soils and Crop Sciences,
Texas A&M University

Education
2000 Ph.D., Natural Resources, University of New Hampshire
1996 M.S., Soil Science, University of Aberdeen
1995 B.S., Environmental Science, University of Stirling

Past Appointments
2006-2012 Assistant Professor, Soil and Crop Sciences, Texas A&M University
2002-2006 Research Assistant Professor Natural Resources, University of New Hampshire
2000-2002 Post-Doctoral Research Associate Natural Resources, University of New Hampshire
1997-2000 Graduate Teaching Assistant Natural Resources, University of New Hampshire
1994-1995 Teaching Assistant, Environmental Science, University of Stirling

Professional Activities/Awards
Urban Field committee 2009-2012

Undergraduate curriculum Review committee 2011-2012

Search committee: Turf Ecologist – 2nd search, Texas A&M University 2011

Selected Grants/Research Funding

Aitkenhead-Peterson J. A. (PI) and Cioce D. M. (Co-PI). Source and Fate of DOC in urban watersheds. Texas A&M University, Office of Graduate Studies, Diversity Award. Award: $57,138; Program $57,138. 8/31/2010-8/30-2012.

Aitkenhead-Peterson J.A. and Steele M.K. Tom Slick Fellowship.Award: $30,412, Program: $30,412. 8/31/2010-8/30/2011

Aitkenhead-Peterson J. A. (PI) and Bilek M. K. (Co-PI). Urban sodicity in a humid subtropical climate: impact on biogeochemical cycling. Texas A&M University, Office of Graduate Studies, Diversity Award. Award: $84,000; Program $84,000. 8/31/2007-8/30-2010.
Selected Water Publications
Books


Book Chapters


Journal Articles


Robin L. Autenrieth
Professor
rautenrieth@civil.tamu.edu

Current Appointment
A.P. and Florence Wiley III Professor
Senior Associate Dean for Academic Affairs Dwight Look
College of Engineering

Professor Department of Civil Engineering at Texas A&M University with a joint appointment in the Department of Environmental and Occupational Health of the Health Science Center’s School of Rural Public Health

Education
1986 Ph.D., Civil and Environmental Engineering, Clarkson University
1981 M.S., Civil and Environmental Engineering, Clarkson College of Technology
1977 B.S., Biological Sciences, University of Maryland

Past Appointments
2000-2012 Joint appointment in the School of Rural Public Health, Department of Environmental and Occupational Health
1983-1985 Instructor, Clarkson College of Technology
1979-1983 Research Assistant, Clarkson College of Technology
1977-1979 Environmental Chemist/Biologist, Hess Oil Virgin Islands Corporation

Professional Activities/Awards
2004 Aldo Leopold Leadership Fellow
2003-2004 Neely ‘52/Dow Chemical Fellow
1991 Zachry Award for Excellence in Teaching

Selected Water Publications
Books


Book Chapters

Journal Articles

Mendoza-Sanchez, I., Autenrieth, R.L., McDonald, J., Cunningham, J.A. 2009. Effect of pore velocity on biodegradation of cis-dichloroethene (DCE) in column experiments, Biodegradation


Sherry I. Bame

Professor
sbame@tamu.edu

Current Appointment
Professor Department of Landscape Architecture and Urban Planning at Texas A&M University

Consultant Texas Information and Referral Network (TIRN) at Texas Department of Health and Human Services Commission (TxDHHSC)

Education
1985 Ph.D., University of Michigan, Dept. of Health Services, Management and Policy
1972 M.S., Boston University, Department of Public Health, School of Nursing
1969 B.S.N., University of Michigan, School of Nursing

Past Appointments
2006-2012 Assistant Professor, Soil and Crop Sciences, Texas A&M University
1984-2012 Professor; Urban Planning: Health and Human Services Planning and Policy, Disaster Planning, Texas A&M University, College Station, TX;
1978-1980 Instructor, Dept. of Health Services, University of Michigan, Ann Arbor, MI.
1972-1974 Assistant Professor, School of Nursing, Dept. of Public Health Nursing, Boston University, Boston, MA.

Professional Activities/Awards
2012 International Association for Research on Nonprofit Organizations and Voluntary Action:

Nomination for Best Paper Presentation: S. Arlikatti, L Dicke, S. Bame
2011 International Alliance for Information and Referral Systems: “Outstanding Contributions for Meritorious Service”
2008 National Association of Professional Women: “Women in the Spotlight”

Selected Grants/Research Funding

2-1-1 Nationwide Disaster Data Management System: Planning Phase to Develop Criteria and Protocols. ($275,000). (Approved; Award date pending Congressional approval of DHS Budget 2010-11). Investigators: Linda Daily and Tino Paz, United Way Worldwide, Arlington, VA.


Bame SI. (2008-2009) United Way Brazos Valley. (College Station, TX) 2-1-1 Analysis of community unmet needs, Brazos Valley TX, 2008. ($7760).


Bame SI. (2007-2008) United Way Brazos Valley. (College Station, TX) 2-1-1 Analysis of community unmet needs, Brazos Valley TX, 2005. ($11,920).


Selected Water Publications

Book Chapters


Journal Articles


Bill Batchelor

Professor
bill-batchelor@tamu.edu

Current Appointment
Professor and Holder of the R.P. Gregory ’32 Chair in Civil Engineering, Zachry Department of Civil Engineering, Texas A&M University

Education
1976 Ph.D., Sanitary Engineering, Cornell University
1974 M.S., Environmental Science and Engineering, Rice University
1971 B.A., Chemical Engineering, Rice University

Past Appointments
2007-2011 Arthur McFarland Professor, College of Engineering, Texas A&M University
1992-1998 Director, Institute for Environmental Engineering, Texas Engineering Exper. Station
1986-2012 Professor, Zachry Department of Civil Engineering, Texas A&M University
1981-1986 Associate Professor, Civil Engineering Department, Texas A&M University
1976-1981 Assistant Professor, Civil Engineering Department, Texas A&M University

Professional Activities/Awards
2011-2012 R.P. Gregory ’32 Chair in Civil Engineering, Zachry Department of Civil Engineering, Texas A&M University
2007-2011 Arthur McFarland Professorship, College of Engineering, Texas A&M University
2007 Truman R. Jones Excellence in Graduate Teaching Award, Zachry Department of Civil Engineering, Texas A&M University
2006-2007 Charles H. Barclay Jr. ’45 Fellow, College of Engineering, Texas A&M University

Selected Water Publications
Journal Articles

Han, D.S., Batchelor, B., Abdel-Wahab, A., 2011. XPS Analysis of Sorption of Selenium (IV) and Selenium (VI) to Mackinawite (FeS), Environmental Progress, accepted and published online


Han, D.S., Batchelor, B., Abdel-Wahab, A. 2012. Sorption of selenium (IV) and selenium (VI) onto synthetic pyrite (FeS2): Spectroscopic and microscopic analyses”, Journal of Colloid and Interface Science”, 368: 496-504


Han, D.S., Abdel-Wahab, A., Batchelor, B., 2010. Surface complexation modeling of arsenic (III) and arsenic (V) adsorption onto nanoporous titania adsorbents (NTAs), Journal of Colloid and Interface Science, 348: 591-599


Jung, B., Batchelor, B., 2008. Dechlorination of Trichloroethylene formed from 1,1,2,2- Tetrachloroethane by Dehydrochlorination in Portland Cement Slurry including Fe(II), Chemosphere, 71(4): 726-734


Jean Ann Bowman
Research Scientist
jbowman@tamu.edu

Current Appointment
Associate Director, Texas Center for Climate Studies, Texas A&M University

Research Scientist, Office of the Vice President for Research, and Department of Geography, Texas A&M University.

Education
1999 Ph.D., Hydrology, Texas A&M University
1983 M.S., Physical Geography, Rutgers University
1979 B.S., Journalism, University of Colorado

Past Appointments
2010–2012 Associate Director, Texas Center for Climate Studies, Texas A&M University
2000–2012 Present Member, Graduate Faculty, Texas A&M University
2000–2012 Present Research Scientist, Department of Geography, Texas A&M University
2000–2002 Research Scientist, Office of Strategic Research Development, Texas Engineering Experiment Station, Texas A&M University
1995–2000 Research Assistant, Texas Agricultural Experiment Station, Texas A&M University

Selected Water Publications

Journal Articles


Samuel David Brody
Professor
sbrody@tamu.edu

Current Appointment
Professor, Department of Marine Sciences at Galveston,
Department of Landscape Architecture and Urban Planning

Education
2002 Ph.D., City and Regional Planning, University of North Carolina,
Chapel Hill, NC.
1996 M.S., Resource Policy and Behavior, University of Michigan, Ann
Arbor, MI.
1994 Graduate Diploma Environmental Studies, University of
Adelaide, Australia.
1992 B.A., Environmental Studies and Anthropology, Bowdoin
College, Brunswick, ME.

Past Appointments
2009-2012 Director, Center for Texas Beaches and Shores, Texas A&M
University, Galveston, TX.
2008-2009 Acting Director, Hazard Reduction and Recovery Center, Texas
A&M University
2006-2012 Associate Professor, Texas A&M University, College Station, TX.
2006-2008 Co-Director, Center for Texas Beaches and Shores, Texas A&M
University, Galveston, TX.
2005-2012 Director, Environmental Planning and Sustainability Research
Unit, Texas A&M University

Professional Activities/Awards
Association.
2007 Award for Outstanding Research, College of Architecture, Texas
A&M University, College Station, TX.

Selected Grants/Research Funding
Principal Investigator (2002-2012) Center for Teaching Excellence, Texas A&M
University, Teaching Incentive Grant, $4,000. Development of Case Studies in
Environmental Dispute Resolution: Integrating teaching, research, and learning. A
grant to publish a book of student-written case studies in dispute resolution to be
used as a teaching aid in dispute resolution/conflict management courses
throughout the University and the United States.

EPA Science to Achieve Results (STAR) (1999-2002) Doctoral Fellowship,
$100,000.

A Model for Ecosystem Management Through Land Use Planning: Implementing
the Principles of Ecosystem Management in Florida.
Rotary Ambassadors Graduate Scholarship (1994) $34,000. Graduate study at the University of Adelaide, Australia.

**Selected Water Publications**

**Books**


**Journal Articles**


Kelly Brumbelow
Associate Professor
kbrumbelow@civil.tamu.edu

Current Appointment
Associate Professor, Water Resources Engineering, Texas A&M University

Education
2001 Ph.D., in Civil Engineering, Georgia Institute of Technology
1994 Bachelor of Civil Engineering, Georgia Institute of Technology
1994 B.S., in International Affairs, Georgia Institute of Technology

Past Appointments
2009-2012 Associate Professor with Tenure, Zachry Dept. of Civil Engineering, Texas A&M University
2002-2009 Assistant Professor Zachry Department of Civil Engineering
2001-2002 Research Engineer II, School of Civil and Environmental Engineering (CEE)
2000-2002 Assistant Director, Georgia Water Resources Institute
1995-2001 Instructor, School of CEE
1994-2001 Graduate Research Assistant, School of CEE

Selected Water Publications
Journal Articles


Anthony T. Cahill
Associate Professor
tcahill@civilmail.tamu.edu

Current Appointment
Associate Professor, Civil and Environmental Engineering, Texas A&M University

Education
1998 Ph.D., Environmental Engineering (specialization in hydrology and water resources engineering), Johns Hopkins University
1993 M.E.S., Major: Hydrology, Yale University.
1990 B.A., Yale University

Professional Activities/Awards
1995-1998 NASA Earth Systems Sciences Fellowship
1994-1996 USDA Training Fellowship
1990 Cum laude distinction, Yale University

Selected Water Publications
Books

Journal Articles

Kung-Hui (Bella) Chu
Associate Professor
kchu@civil.tamu.edu

Current Appointment
Associate Professor, Department of Civil Engineering, Texas A&M University

Education
1998 Ph.D., Civil and Environmental Engineering, University of California at Berkeley
1991 M.S., Agricultural and Biological Engineering, Cornell University
1987 B.S., Environmental Engineering, National Chung-Hsing University (Taiwan)

Past Appointments
2005-2012 Associate Professor, Zachry Department of Civil Engineering, Texas A&M University (Assistant Professor, 2005-2011)
2008-2012 Interdisciplinary Faculty of Toxicology, Faculty of Interdisciplinary Water Program, Texas A&M University
2002-2005 Assistant Professor, Department of Civil and Environmental Engineering, and Faculty of Center for Environmental Biotechnology, University of Tennessee, Knoxville, TN
2001-2002 Environmental Engineer, Bechtel National, Inc and ENVIRON Corp., CA
1999-2001 Postdoctoral Researcher, University of California at Berkeley, CA
1990-1991 Sanitary Engineer, Department of Water Pollution Control, San Jose, CA

Professional Activities/Awards
2010 TEES Select Young Fellow (four recipients form Dwight Look College of Engineering, Texas A&M University)
2007 Research paper on “17-Estradiol-degrading bacteria isolated from activated sludge” was highlighted in Science and Technology Concentrates of Chemical and Engineering News (C and E News), January 8, 2007.

Selected Water Publications

Journal Articles


Li, M.-H., Sung, C.Y., Kim, M.H., Chu, K. H., 2012. Performance of bioretention system in treating urban highway runoff: a comparison study of designs with and without an internal water storage layer. Landscape Architecture, Beijing Forestry University, Beijing, China, ISSN 1673-1530 (in English and Chinese), 140-147


Sam E. Feagley
Professor
sfeagley@ag.tamu.edu

Current Appointment
Professor/Visiting Professor, Soil Environmental Specialist, Texas AgriLife Extension, Texas A&M University

Education
1979 Ph.D., Soil Chemistry, University of Missouri
1976 M.S., Soil Fertility, Texas A&M University
1974 B.S., Chemistry, Texas A&M University

Past Appointments
2006-2012 Assistant Professor, Soil and Crop Sciences, Texas A&M University
2009-2012 Professor and Visiting Professor, Soil and Crop Sciences, Texas AgriLife Extension
2000-2011 Professor and Visiting Professor, Soil and Crop Sciences, Texas AgriLife Extension
1995-2000 Professor, Soil and Crop Sciences, Texas AgriLife Extension Service
1982-1995 Associate Professor, Agronomy, Louisiana State University
1979-1982 Assistant Professor, Agronomy, Louisiana State University

Selected Grants/Research Funding
Monitoring and Educational Programs Focused on Escherichia coli Bacteria and Nutrient Runoff on Dairy Operations in the Leon Watershed. Texas State Soil and Water Conservation Board, 10/07-9/10

Improvement and Standardization of Laboratory Quality Assurance and Quality Control for Mehlich III Soil Test Methodology: Phase 1 and Phase 2, Texas State Soil and Water Conservation Board, 3/07-9/10

Evaluation of the Texas Phosphorus Index in the Poultry Areas of Texas. Texas State Soil and Water Conservation Board. 10/04-09/10

Characterization of nutrient transport from land applied biosolids. K3BMI, 7/03-03/04.

Development of online nutrient management certification course for TSPs and development/deliver of educational program for CAFOs. National Integrated Water Quality Program, USDA, 9/03-8/06

Evaluation of the Texas Phosphorus Index for the Leon and Bosque River watersheds. Texas State Soil and Water Conservation Board. 10/02-03/05.
Evaluation of the Texas Phosphorus Index on the High Plains. Texas Cattle Feeders Association. 12/02-12/04

Reclamation and revegetation of earthen drainage channels. Harris County Flood Control District. ($60,000) 3/97-2/98; ($60,000) 4/98-4/99; ($60,000) 6/99-6/01; ($90,000) 7/01-7/03; ($125,000) 8/03-9/07; ($125,000) 12/08-2/09, 3/09-12/11

Selected Water Publications

Journal Articles


Feagley, Sam, Mark Atwell, and Jacob Eickstead. 2009. Lead in your garden? SCS-2009-16.


Guy Fipps
Professor
g-fipps@tamu.edu

Current Appointment
Director, Irrigation Technology Center, Texas A&M University
Professor and Extension Agricultural Engineer, Department of Biological and Agricultural Engineering, Texas A&M University

Education
1988 Ph.D., Biological and Agricultural Engineering, North Carolina State University, Raleigh
1984 M.S., Biological and Agricultural Engineering, North Carolina State University, Raleigh
1977 B.A., Liberal Arts, University of Texas at Austin
1979 B.S., Agricultural Engineering, Texas A&M University, College Station

Past Appointments
1985-1988 USDA National Needs Fellow, Department of Biological and Agricultural Engineering, North Carolina State University
1981-1982 Engineer, Radian Corporation, Austin, TX. Environmental and Engineering Consulting
1980-1981 Research Associate, Texas Agricultural Experiment Station, Department of Agricultural Engineering, Texas A&M University. Biomass Gasification Project

Professional Activities/Awards
2011 American Society of Agricultural and Biological Engineering Superior Paper Award.

Selected Grants/Research Funding
2008 Rio Grande Initiative: Task 1: $90,000, Irrigation District Assistance, Task 2: $ 73,000, ITC, Task 3: $ 74,000, Institutional (DMS), $10,000 for aquatic weed research, $25,000 for canal automation projects.
2008 Utah State University - Water Management Audit, Burkina Faso for the MCC-$17,000.


Selected Water Publications

Journal Articles


Huang, Y. and G. Fipps. 2009. Developing a Modeling Tool for Flow Profiling in Irrigation Distribution Networks. 2(3) 18


G. Fipps. 2001. Potential Water Savings in Irrigated Agriculture in the Low Rio Grande Basin of Texas. TWRI TR-183, Texas Water Resources Institute, College Station
Delbert M. Gatlin, III

Professor
d-gatlin@tamu.edu

Current Appointment
Professor and Associated Department Head for Research and Graduate Programs, Department of Wildlife and Fisheries Sciences and Intercollegiate Faculty of Nutrition, Texas A&M University

Education
1983 Ph.D. Nutrition/Biochemistry, Minor: Wildlife and Fisheries, Mississippi State University
1980 B.S. Wildlife and Fisheries Sciences, Fisheries Ecology/Aquaculture Option, Texas A&M University

Past Appointments
2003-2012 Associate Senior Scientist, Aquaculture Protein Centre of Norway.
1998-2012 Professor, Department of Wildlife and Fisheries Sciences and Faculty of Nutrition, Texas A&M University, College Station, TX
1994-2012 Associate Head for Research and Graduate Programs, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX
2006-2007 Interim Head, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX
1993-1998 Associate Professor, Department of Wildlife and Fisheries Sciences and Faculty of Nutrition, Texas A&M University, College Station, TX
1990-1993 Assistant Professor, Faculty of Nutrition, Texas A&M University, College Station.
1987-1993 Assistant Professor, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX
1985-1987 Assistant Professor, Department of Agriculture, University of Arkansas at Pine Bluff, Pine Bluff, AR
1984-1985 Research Associate, Department of Biochemistry, Mississippi State University, Mississippi State, MS

Professional Activities/Awards
2007 Vice Chancellor’s Award in Excellence for Administration, Texas A&M University
2010 Research of the Year, Texas Aquaculture Association Vice-Chair, Committee on Nutrient Requirements of Fish and Shrimp, National Research Council, National Academy of Sciences.
**Selected Grants/Research Funding**

USDA Southern Regional Aquaculture Center, "Effect of nutrition on body composition and subsequent storage quality of farm-raised channel catfish". Total=$825,000/3 yr.; $110,000 TAMUS.

Sea Grant College Program, "Fatty acid and lipid nutrition of red drum: effects on cold adaptation, immunocompetency and product quality". $73,230/2 yr. (W. H. Neill, D. H. Lewis and R. F. Sis Co-PIs).

USDA Southern Regional Aquaculture Center, "Enhancement of the immune response to Edwardsiella ictaluri in channel catfish". Total=$100,000/2 yr.; $49,664 TAMUS. (W. H. Neill Co-PI).


USDA Southern Regional Aquaculture Center, "Improving production efficiency of warmwater aquaculture species through nutrition". Total=$764,500/3 yr.; $195,000 TAMUS. (J. T. Davis, L. V. DiMichele and W. H. Neill Co-PIs).

**Selected Water Publications**

Books


Book Chapters


Journal Articles


Terry Joe Gentry
Assistant Professor
tgentry@ag.tamu.edu

Current Appointment
Assistant Professor of Soil and Aquatic Microbiology, Texas A&M University

Education
2005 Postdoctoral Research Associate, Oak Ridge National Laboratory
2003 Ph.D., Microbiology and Immunology, University of Arizona
1998 M.S., Agronomy, University of Arkansas
1993 B.S., Agronomy, University of Arkansas

Past Appointments
2006-2012 Assistant Professor, Department of Soil and Crop Sciences, Texas A&M University
2003-2005 Postdoctoral Research Associate, Environmental Sciences Division, Oak Ridge National Laboratory
1999-2003 Graduate Research/Teaching Associate, Department of Soil, Water, and Environmental Science, University of Arizona
1995-1999 Research Specialist/Graduate Assistant, Department of Crop, Soil, and Environmental Sciences, University of Arkansas
1993-1995 Research Analyst, Agronomy, Agricultural Experiment Station, University of the Virgin Islands

Professional Activities/Awards
2011 Special Achievement Award for Research, Soil and Crop Sciences Department, Texas A&M University
2008 Special Achievement Award for Teaching, Soil and Crop Sciences Department, Texas A&M University
2002 University of Arizona Foundation Outstanding Teaching Associate Award

Selected Grants/Research Funding
University of Arizona Foundation Outstanding Teaching Associate Award, 2002

Special Achievement Award for Teaching, Soil and Crop Sciences Department, Texas A&M University, 2008

Selected Water Publications
Books


Journal Articles


germination and growth of *Phymatotrichopsis omnivora* (Cotton Root Rot) by oilseed meals and isothiocyanates. Appl. Soil Ecol. 49:68-75


John Richard Giardino
Professor
rickg@tamu.edu

Current Appointment
Professor and Department Head of Geology and Geophysics, Texas A&M University

Education
1979  Ph.D., University of Nebraska, Lincoln, Nebraska
1971  M.A., Arizona State University, Tempe, Arizona
1969  B.S., Colorado State University-Pueblo, Colorado

Past Appointments
2011  Head Department of Geology and Geophysics, Texas A&M University, September 2011 to present
2000-2007  Dean of Graduate Studies, Texas A&M University
1989-1996  Head Department of Geography
1984-1989  Associate Professor, Geology and Geophysics and Geography, Texas A&M University
1978-1984  Assistant Professor, Geography and Geology, Texas Tech University
1972-1974  Lecturer, University of Zambia
1971-1972  Instructor, Southern Colorado State College

Professional Activities/Awards
1996  Distinguished Teaching Award, Association of Former Students, Texas A&M University
1995  Distinguished Teaching Achievement Award, National Council for Geographic Education
1992  E. Guthrie Advisor Award Nominee
1990-1991  Scholastic Advisor’s Award, Corps of Cadets, Texas A&M University
1989  Distinguished Teaching Award, Association of Former Students, Texas A&M University
1989  Almon Fellow, Hockaday School, Dallas, Texas
1989  Meritorious Service Award, Geological Society of America
1995  Award for Support and Encouragement, Hispanic Graduate Student Association of Texas A&M University
1994  Diversity Award, Office of the Senior Vice President and provost for outstanding achievement of promoting diversity among students, faculty and staff of Texas A&M University, Texas A&M University
1994 Visiting Geographic Scientist, Association of American Geographers Visiting Geographic Scientist Program
1993 Elected Member, Phi beta Delta Honor Society for International Scholars.
1992 Outstanding Service Award for 1988-1992, National Council for Geographic Education
1980 Fellow, Geological Society of America
1975 Fellow, Royal British Geographical Society

Selected Grants/Research Funding


Texas Water Development Board, Meander Migration on the Brazos River, $40,000, September 2010-2012.

Texas Water Development Board, Processes and Visualization of Meander Development, $40,000, September 2010-2012.

Texas Water Development Board, Sediment Budget for the Sabine River, Texas, $48,000, September 2011-on going.

Selected Water Publications
Journal Articles


James R. Gilley
Professor
gilley@tamu.edu

Current Appointment
Professor, Department of Biological and Agricultural Engineering, Texas A&M University

Education
1971 Ph.D., University of Minnesota, Minneapolis, Minnesota, Major - Agricultural Engineering; Minor - Fluid Mechanics
1968 M.S., Colorado State University, Fort Collins, Colorado, Major - Agricultural Engineering
1966 B.S., with High Distinction, Colorado State University, Fort Collins, Colorado, Major - Agricultural Engineering

Past Appointments
1988-1993 Head of the Agricultural and Biosystems Engineering Department, Iowa State University
1975-1988 Agricultural Engineering Department, University of Nebraska, Lincoln, Nebraska
1968-1975 Agricultural Engineering Department, University of Minnesota, St. Paul, Minnesota.

Professional Activities/Awards
1998 Awarded the ASAE Massey-Ferguson Educational Award
1993 Elected to the grade of Fellow of ASAE

Selected Grants/Research Funding
Energy Reduction Through Improved Irrigation Practices, supported by Old West Regional Commission, 1975-77, $121,000.

Management of Irrigated Agriculture with a Limited Water and Energy Supply, supported by Old West Regional Commission, 1976-1979, $168,000. With Watts (Ag Eng) and Sullivan (Agronomy).

Energy Reduction in Irrigation, Private Grant, 1977-78, $10,000. Irrigation System Capacity Analysis, Nebraska Foundation, 1979-82, $30,000.

Low Energy Center-Pivot Sprinkler Irrigation Systems, Supported by DOE, 1978-81, $147,000. With Mielke (Agronomy, USDA-ARS) and Wilhelm (Agronomy, USDA-ARS).


Revegetation for Increased Productivity of Abandoned Irrigated and Dry Farm Land. USDA-CSRS, 1983-86, $63,000. With Stubbendieck (Agronomy) and Waller (Agronomy).

Development of Methodology and Criteria for Irrigation Management Under Limited Water Conditions. USGS, 1985-88, $128,000. With Supalla (Ag Economics) and Martin (Ag Eng).

Development of Improved Water Application and Management Techniques for Moving Irrigation Systems. USGS, 1986-89, $117,000. With Martin (Ag Eng) and Norman (Agronomy). January 2012


Preparing Undergraduate Engineers for Research in Biophysical Systems. NSF Undergraduate Research Program, 1988-89, $41,000. With Ag Engineering Faculty.

**Selected Water Publications**

**Books**


**Journal Articles**


Ronald C. Griffin

Professor
ron-griffin@tamu.edu

Current Appointment
Professor of Water Resources Economics, Department of Agricultural Economics, Texas A&M University

Education
1980 Ph.D., Agricultural Economics, University of Wisconsin, Madison
1977 M.S., Economics, Colorado State University
1975 B.S., Mathematics, Colorado State University

Past Appointments
1993-2012 Professor of Natural Resource Economics, Texas A&M University
1986–1993 Associate Professor of Natural Resource Economics, Texas A&M University
1980–1986 Assistant Professor of Natural Resource Economics, Texas A&M University

Professional Activities/Awards
Editor’s Citation for Excellence in Refereeing during 1991, Water Resources Research.

American Agricultural Economics Association Quality of Communication Award for 1992, Honorable Mention.

Selected Grants/Research Funding


Analysis of Municipal Water Demand in Texas 10/2004 - 10/2006 $75,000 Texas Water Development Board


Integrated Water Resource Plan Phase II  

The Practice of Cost-Benefit Analysis for Projects Emphasizing Navigation  
1/1996 - 8/1996 $10,000 Texas Transportation Institute, Center for Ports and Waterways

Valuing and Managing Water Supply Reliability  
9/1995 - 8/1996 $38,920 Texas Water Development Board

An Economic Evaluation of Water Marketing in a Low Transaction Cost Setting  

**Selected Water Publications**

**Books**


**Book Chapters**


Journal Articles


**Inci Guneralp**

Assistant Professor  
iguneralp@geos.tamu.edu

**Current Appointment**  
Assistant Professor Geography Department, Texas A&M University

**Education**

<table>
<thead>
<tr>
<th>Year</th>
<th>Degree</th>
<th>Institution</th>
</tr>
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<tbody>
<tr>
<td>2007</td>
<td>Ph.D., Geography</td>
<td>University of Illinois at Urbana–Champaign</td>
</tr>
<tr>
<td>1999</td>
<td>M.S., Geotechnical Engineering</td>
<td>Istanbul Technical University, Istanbul, Turkey</td>
</tr>
<tr>
<td>1994</td>
<td>B.S., Civil Engineering</td>
<td>Istanbul Technical University, Istanbul, Turkey</td>
</tr>
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</table>

**Past Appointments**

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Institution</th>
</tr>
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<tbody>
<tr>
<td>2006</td>
<td>Instructor Geography</td>
<td>University of Illinois at Urbana–Champaign</td>
</tr>
</tbody>
</table>

**Professional Activities/Awards**

<table>
<thead>
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<th>Year</th>
<th>Award</th>
<th>Details</th>
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<tr>
<td>2012</td>
<td>G.K. Gilbert Award</td>
<td>for Excellence in Geomorphological Research Association of American Geographers, Geomorphology Specialty Group</td>
</tr>
<tr>
<td>2006</td>
<td>Reds Wolman Student Research Award</td>
<td>Association of American Geographers, Geomorphology Specialty Group</td>
</tr>
<tr>
<td>2006</td>
<td>Graduate Teacher Certificate Award</td>
<td>Center for Teaching Excellence, University of Illinois at Urbana–Champaign</td>
</tr>
<tr>
<td>2005</td>
<td>Excellence in Teaching Center</td>
<td>for Teaching Excellence, University of Illinois at Urbana–Champaign</td>
</tr>
<tr>
<td>2005</td>
<td>Best Student Paper Award</td>
<td>AAG, Graduate Student Affinity Group</td>
</tr>
<tr>
<td>2004-2005</td>
<td>Charles S. Alexander Fellowship</td>
<td>University of Illinois at Urbana–Champaign</td>
</tr>
<tr>
<td>2002-2003</td>
<td>Marion G. Russell Graduate Fellowship</td>
<td>University of Illinois at Urbana–Champaign</td>
</tr>
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</table>

**Selected Grants/Research Funding**

Fluvial and coastal ecomorphodynamics: scales, scenarios and management, Ministry of Education, University and Research (Ministero dell’Università, dell’Istruzione e della Ricerca)

Biomorphodynamic Coupling of River Meandering and Riverine Landscapes, NASA Data Grant, ALOS/PALSAR data, Alaska Satellite Facility, University of
Alaska Fairbanks, Geophysical Institute, PI: Güneralp, I.; Co–PIs: Anthony M. Filippi, David Cairns, Award date: 03/22/2011, $9,250.

Channel Morphology based on River Styles Hydraulic and Large Scale Units of the San Antonio River at Instream Flow Selected Study Sites, the Texas Water Development Board, TAMU Project No: 10–0379, PI: Güneralp, I.; Performance period: 05/01/2010–12/31/2012, TAMU, $45,000 (Students supported: X. Zhang, Ph.D. Student, Geography, as GA–R Fall 2011).

Survey and Analysis of Channel Morphology of the Brazos River along the Selected Study Sites for River Assessment, the Texas Water Development Board, Contract No: 0904830966, PI: Güneralp, I., Performance period: 06/01/2010–10/31/2012, TAMU, $40,000 (Students supported: C. Swann, PhD student, Geography, as GA–R in Spring, Summer, and Fall 2010).

Channel Avulsion Processes on the Brazos and the Navasota Rivers, Texas, the Texas Water Development Board, Contract No: 0904830968, PI: Güneralp, I., Co–PI: Filippi, A. M.; Performance period: 06/01/2010–10/31/2012, TAMU, $40,000 (Students supported: L. Chen, MS student, Geography, Spring 2010; J. Heo, PhD student, Geology, as GA–R, Summer and Fall 2010).


Selected Water Publications

Books


Book Chapters

2005 Güneralp, I., and Rhoads, B.L., The spatial structure of planform dynamics of meandering rivers, In Symposium on River, Coastal and Estuarine Morphodynamics, 773–782, International Association of Hydraulic Engineering and Research, Urbana, IL. dx.doi.org/10.1201/9781439833896.ch84

Journal Articles


James L. Heilman
Professor
j-heilman@tamu.edu

Current Appointment
Professor of Environmental Physics Department of Soil and Crop Sciences, Texas A&M University

Education
1977 Ph.D., Agronomy, Kansas State University
1974 M.S., Agronomy, South Dakota State University
1972 B.S., Engineering Physics, South Dakota State University

Past Appointments
1980 Professor, Associate Professor, Texas A&M University
1977-1980 Research Soil Physicist, Remote Sensing Institute, South Dakota State University

Professional Activities/Awards
2003 Fellow, American Society of Agronomy
2002 Big 12 Faculty Fellowship
1989 Award of Commendation for Outstanding Achievement in the field of Water Resources, National Association of Water Institute Directors and National Association of Land Grant Universities.

Selected Water Publications
Books
Shortle, James S. and Ronald C. Griffin, editors. *Irrigated Agriculture and the Environment.*

Book Chapters


Journal Articles


Bruce E. Herbert
Professor
herbert@geo.tamu.edu

Current Appointment
Professor and Holder of the Enron Oil and Gas Teaching Professorship in Geosciences, Geology and Geophysics, Texas A&M University

Education
1992 Ph.D., Soil Chemistry, University of California, Riverside
1988 M.S., Soil Science, University of California, Riverside
1982 B.A., Chemistry, Colgate University

Past Appointments
2004 Member, TAMU Delegation to Universities Council on Water Resources, UCOWR.
2002-2007 Associate Director of Geosciences, Information Technology in Science (ITS) Center for Learning and Teaching, Texas A&M University
2007-2011 Assistant Department Head and Graduate Coordinator, Geology and Geophysics
1998-2003 Coordinator of Undergraduate Programs, Geology and Geophysics, Texas A&M University
1997-2006 Associate Professor, Geology and Geophysics, Texas A&M University
1992-1997 Assistant Professor, Geology and Geophysics, Texas A&M University
1989-1991 DOE Research Associate, Savannah River Ecology Lab, Aiken, SC
1989-1990 Lecturer, Freshman Chemistry and Environmental Geology, University of South Carolina, Aiken, SC

Professional Activities/Awards
2009 Awarded the EOG Teaching Professorship in Geosciences
2006 Big Bend VFT, Recommended resource for iGuide site, Encyclopaedia Britannica
2006 Assessing Technology in Teaching Award, Office of Distant Education, TAMU

Selected Grants/Research Funding
NSF-DUE, The CIRTL Network - Shaping, Connecting, and Supporting the Future National STEM Faculty Continuation. B. Matheiu, PI. B. Herbert, Co-PI among others. $4.96 million. 2012 (award 0717768)


B. Mathieu, PI. B. Herbert, Co-PI among others. $5.2 million. (Award 0717768)?Federal Highway Administration. Aggregate–asphalt interactions: Role of mineral surface chemistry, organic functional groups and competition with water

2006-2011. Flexible Pavements Consortium (Western Research Institute (University of Wyoming), the Texas Transportation Institute (TAMU), the University of Wisconsin, Madison, University of Nevada-Reno and Advanced Asphalt Technologies, LLC at Sterling, Virginia). $57 million (Herbert share $300,000)


Selected Water Publications

Journal Articles


Yongheng Huang
Assistant Professor
yhuang@tamu.edu

Current Appointment
Assistant Professor, Department of Biological and Agricultural Engineering, Texas A&M University

Education
2002 Ph.D., Civil Engineering, University of Nebraska-Lincoln
1999 M.S., Environmental Engineering, Tsinghua University, Beijing, China
1994 B.S., Environmental Engineering, Tongji University, Shanghai, China

Past Appointments
2011-2012 Co-founder and Chief Technology Officer, CAMRIS Technologies Corp., Texas
2005-2006 Postdoctoral Associate, Yale University, Connecticut, USA
2003-2005 Postdoctoral Research Associate/Lecturer, University of Nebraska-Lincoln, Nebraska, USA
1994-1996 Environmental Engineer, Fujian Environmental Protection Administration, Fujian, China

Professional Activities/Awards
1997-1998 Presidential Scholarship, the City University of Hong Kong
2010 Excellent Research Award, Department of Biological and Agricultural Engineering

Selected Grants/Research Funding
Y.H. Huang (PI) Pilot-Scale Field Demonstration of the Hybrid ZVI/FeOx Water Treatment for Treating FGD Wastewater at Plant Wansley. $381k (Initial contract was $268k and an amendment $113k), Southern Company and Electric Power Research Institute (FY2010-2012)

Y.H. Huang (PI), C. Munster, P. Smith, R. Karthikeyan, S. Mukhtar, and M. Pina (Co-PIs) Preparing Underrepresented Scholars for Challenges in Agricultural Biosecurity and Sustainability – A Research and Leadership PhD Program. CSREES, United States Department of Agriculture, $229,500 (2008-2012)

Thomas Abia (PI), Y. Huang (Co-PI). In Situ Arsenic Removal from Groundwater using Iron Oxide Coated Sand. TWRI-USGS, $5,000 (2009-2010).


Selected Water Publications
Journal Articles

Huang, Y.H.; Singh, V.P.; Smith, T.L. (2009) “Mining water from oil and gas production” Louisiana Civil Engineer, May Issue, 2009, page 11-14


Zhang, T.C.; Huang, Y.H.* (2006) “Profiling iron corrosion coating on Fe0 grains in a zero-valent iron system under the influence of dissolved oxygen.” Water Research, 40(12), 2311-2320


Fouad H. Jaber
Assistant Professor
F-jaber@tamu.edu

Current Appointment
Assistant Professor and Extension Specialist, Texas Agrilife Extension, Department of Biological and Agricultural Engineering Texas A&M University

Education
2001 Ph.D., Agricultural and Biological Engineering, Purdue University
1995 M.S., Irrigation, American University of Beirut
1992 B.S., Agriculture/Diploma of Agricultural Engineering, American University of Beirut

Past Appointments
2007-2012 Assistant Professor, Extension Specialist, Biological and Agricultural Engineering, Texas Agrilife Extension, Texas A&M University System, Urban Solutions Center, Dallas, TX
2002–2007 Post-Doctoral Research Associate, Agricultural and Biological Engineering, University of Florida, Southwest Florida Research and Education Center, Immokalee, FL
1999–2001 Environmental Science and Engineering Institute Fellow, Agricultural and Biological Engineering, Purdue University, West Lafayette, IN
1994 Agricultural Development Worker, Save the Children Fund, Beirut, Lebanon

Professional Activities/Awards
1998 Magoon Award for Excellence in Teaching in Engineering, Purdue University,
1999 Research Fellowship from the Environmental Science and Engineering Institute of Purdue University
2001 Best paper award of the Information and Emerging Technologies Division of the American Society of Agricultural Engineers
2008 Best Technical Note Award, Watershed Council, Journal of Hydrologic Engineering
2011 Blue Ribbon Award for best extension publication, American Society of Agricultural and Biological Engineers

Selected Grants/Research Funding
Landscape Water Conservation Demonstration-Urban Solutions Center . TCEQ Trinity River Initiative $9000. FY09 (Dotty Woodson, PI, Fouad Jaber Co-PI)
Rain Gardens as a Stormwater Best Management Practice at Myers Park, Collin County. TCEQ Trinity River Initiative. $8000. FY09 (Fouad Jaber, PI)

Upper Trinity Watershed Green Building Infrastructure for Stormwater Management. TCEQ 319h grant. $644,400. FY10 (Fouad Jaber, PI, Taner Ozdil, Collaborator)

Green Infrastructure for greywater and A/C condensation reuse. Qatar National Research Fund- National Priorities Research Program. $491,045 ($279,545 for my program) FY10 (Fouad Jaber, PI, Hazim Qiblawey, co-PI)

Modeling low impact development for optimal performance in Texas Coastal Zones. Texas Sea Grant/NOAA. $189,595. FY12

Modeling the effect of stormwater control measures on stormwater runoff in League City, TX. City of League City, TX. $30,000. FY12

**Selected Water Publications**

*Journal Articles*


Jaber F. H. and Shukla S. 2012. MIKE SHE: Model use, Calibration and Validation. Transactions of the ASABE. In Review

Shukla S., Jaber F. H., Goswami, D. and Srivastava S. 2012. Evapotranspiration losses for pepper under plastic mulch and shallow water table conditions. Irrigation Science. Accepted


John S. Jacob
Professor
jjacob@tamu.edu

Current Appointment
Professor and Extension Specialist, Department of Recreation, Parks and Tourism, Environmental Quality and Coastal Community Development, Texas A&M University, Director, Texas Coastal Watershed Program

Education
1992 Ph.D., Pedology, Texas A&M University
1984 M.S., Soil Science (Pedology and Mineralogy), Texas Tech University
1981 B.S., Soil Science, Texas Tech University

Past Appointments
2010 Professor and Extension Specialist, Recreation, Parks, and Tourism Sciences Department. Director, Texas Coastal Watershed Program, Houston, TX
2000-2010 Associate Professor, Recreation, Parks, and Tourism Sciences Department. Director, Texas Coastal Watershed Program
1997-2000 Assistant Professor and Extension Specialist, Soil and Crop Sciences Department and Texas Sea Grant, Texas A&M University.
1995-1996 Research Fellow, Environmental Institute of Houston, University of Houston-Clear Lake. Taught graduate course in Wetland Geoecology. Developed and taught environmental short courses in Wetlands and Environmental Site Assessment.
1990-2012 Independent Consultant. Scores of wetland delineations, mainly on the upper Gulf Coast of Texas; Geoarchaeological investigations in U.S. and Central and South America. Natural resource analysis and policy.

Professional Activities/Awards
2011 American Society of Agricultural and Biological Engineering Superior Paper Award

Selected Grants/Research Funding
Analysis of Wetland Loss in the Greater Houston Area, 2011, $5,000 Rice University
Coastal Prairie Wetland Restoration, 2010–2013, $390,538 Texas State Soil and Water Conservation Board


Dickinson Bayou Implementation Project, 2010–2011, $90,000 Texas Commission on Environmental Quality (TCEQ)

**Selected Water Publications**

**Books**


**Book chapters**


**Journal Articles**


Ronald A. Kaiser
Professor
rkaiser@tamu.edu

Current Appointment
Chair Water Management and Hydrologic Science Program (WMHS).

Professor, Department of Recreation, Park and Tourism Sciences, Texas A&M University

Education
1988 LL.M., University of California at Berkeley
1976 J.D., Thomas M. Cooley Law School
1971 M.S., Michigan State University
1969 B.S., Michigan State University

Past Appointments
1980-1995 Assistant/Associate Professor, Texas A&M University
1976-1980 Attorney, Michigan Department of Natural Resources
1971-1973 Environmental Specialist, Michigan Department of Natural Resources

Professional Activities/Awards
2012 Service Award, College of Agriculture and Life Sciences
2005-2012 Chair of WMHS Program
2002-2005 Developed along with colleagues the WMHS program

Selected Grants/Research Funding
2011 Develop Residential Water Budgets, City of College Station, $80,000.
2010 Assessing Urban Water Conservation Strategies, City of College Station, $80,000.
2007 Storm Hazard Natural Resources Recovery Plans, National Park Service, $320,000

Selected Water Publications
Book Chapters


Journal Articles


R. Karthikeyan
Associate Professor
karthi@tamu.edu

Current Appointment
Associate Professor, Biological and Agricultural Engineering Department, Texas A&M University

Education
2001 Ph.D., Engineering; Major: Biological and Agricultural Engineering Kansas State University, Manhattan, KS
1997 M.S., Agricultural Engineering, University of Georgia, Athens, GA
1993 B. Eng., Agricultural Engineering Tamil Nadu Agricultural University, Coimbatore, India

Past Appointments
2011-2012 Biological and Agricultural Engineering Department Water Management and Hydrologic Science (Adjunct), Associate Professor, Texas A&M University
2005-2012 Biological and Agricultural Engineering Department Water Management and Hydrologic Science (Adjunct), Assistant Professor, Texas A&M University
2002-2005 Non-lethal Environmental Evaluation and Remediation Center Kansas State University, Manhattan, KS, Post doctoral Research Associate
2001-2002 Research Associate/Laboratory Supervisor Biological and Agricultural Engineering Department, Kansas State University, Manhattan, KS

Professional Activities/Awards
2011 BP Teaching Excellence Award, College of Engineering, Texas A&M University
Montague Teaching Scholar, Center for Teaching Excellence (CTE), Texas A&M University The Montague-CTE
2009 Excellence in Teaching Award, Biological and Agricultural Engineering, Texas A&M University
2008 Team Award for Superior Service, AgriLIFE Extension, Texas A&M University

Selected Grants/Research Funding
2009-2012 Development of watershed protection plan for Geronimo Creek Watershed, TX $162,000
2009-2012 Attoyoc Bayou water quality assessment and planning, $70,050
2009-2011 Assessment of bacterial loading in Buck Creek using the SELECT, $61,160
2007-2011 Fate and transport of E. coli in rural Texas landscapes and streams, $214,989

**Selected Water Publications**

*Journal Articles*


Ann Lee Kenimer
Professor
a-keimer@tamu.edu

Current Appointment
Associate Provost for Undergraduate Studies

Professor Department of Biological and Agricultural Engineering

Education
1990 Ph.D., Agricultural Engineering, University of Illinois at Urbana-Champaign
1987 M.S., Agricultural Engineering, Virginia Polytechnic Institute and State University
1985 B.S., Agricultural Engineering, Virginia Polytechnic Institute and State University

Past Appointments
2007-2011 Associate Dean for Academic Operations, College of Agriculture and Life Sciences, Texas A&M University
2008-2009 Interim Executive Associate Dean, College of Agriculture and Life Sciences, Texas A&M University

Professional Activities/Awards
2008-2009 College of Agriculture and Life Sciences Outstanding Alumna, Biological Systems Engineering, Virginia Tech
2003-2005 Exemplary Teacher, National Case Study of Learner-Centered Approaches in Colleges of Agriculture, Food, and Natural Resources
2007 Minnie Stevens Piper Professor, Minnie Stevens Piper Foundation
2006 Presidential Professor for Teaching Excellence, Texas A&M University
2006 Association of Former Students Distinguished Teaching Award, Texas A&M University
2005-2006 CTE Faculty Teaching Academy Professor, Texas A&M University Center for Teaching Excellence
2005 Association of Former Students Distinguished Teaching Award, College of Agriculture and Life Sciences
2004 Vice Chancellor’s Award for Excellence in Undergraduate Teaching, College of Agriculture and Life Sciences, Texas A&M University
2001 W. Farrall Young Educator Award, American Society of Agricultural and Biological Engineers
1998-1999 Montague-Center for Teaching Excellence Scholar, College of Agriculture and Life Sciences
**Selected Grants/Research Funding**


**Selected Water Publications**

**Book**


**Journal Articles**


Robert William Knight
Associate Professor
bob-knight@tamu.edu

Current Appointment
Associate Professor of Rangeland Ecology and Management, Texas A&M University

Education
1980 Ph.D., Range Watershed Management, Texas A&M University
1977 M.S., Range Watershed Management, Oregon State University
1975 B.S., Forest Management and Range Management, University of Nevada

Past Appointments
2010-2012 Professor and Extension Specialist. Recreation, Park, and Tourism Sciences Department. Director, Texas Coastal Watershed Program. Houston, TX
2000-2010 Associate Professor. Recreation, Park, and Tourism Sciences Department. Director, Texas Coastal Watershed Program. Houston
1992-2006 Associate Department Head for Academic and Student Affairs
1990-1992 Assistant Department Head for Student Affairs
1981-1987 Assistant Professor of Rangeland Ecology and Management, Texas A&M University
1980-1981 Post Doctoral Research Associate, Texas A&M University

Professional Activities/Awards
2011 American Society of Agricultural and Biological Engineering Superior Paper Award.
2008 Outstanding Undergraduate Teaching Award, Range Science Education Council and Society for Range Management
2006 Honorary Member - Golden Key Honor Society
2005 Outstanding Publication Award, Texas Section Society for Range Management
2005 Melvin and Annette Peters Advising Award, Texas A&M University
2005 Association of Former Students Distinguished College Level Teaching Award
2004 Mentor of the Year, Texas A&M University
2001 National Association of Colleges and Teachers of Agriculture Teaching Award of Merit
Selected Water Publications

Journal Articles


Ronald D. Lacewell
Professor
r-lacewell@tamu.edu

Current Appointment
Professor and Assistant Vice Chancellor for Federal Relations, Department of Agricultural Economics, Texas A&M University

Education
1970 Ph.D., Agricultural Economics, Oklahoma State University
1967 M.S., Agricultural Economics, Texas Tech University
1964 B.S., Statistics, American University
1963 B.S., Agricultural Economics, Texas Tech University

Past Appointments
1973-1978 Associate Professor, Texas A&M University
1970-1973 Assistant Professor, Texas A&M University
1966 Instructor, Texas Tech University
1963-1964 Statistician, Bureau of the Census

Selected Water Publications

Journal Articles


Ming-Han Li
Associate Professor
minghan@tamu.edu

Current Appointment
Associate Professor/Associate Research Engineer of Texas Transportation Institute

Department of Landscape Architecture and Urban Planning,
Texas A&M University

Education
2001 Ph.D., Engineering; Major: Biological and Agricultural Engineering Kansas State
2002 Ph.D., Urban and Regional Science, Texas A&M University
1998 Master of Landscape Architecture, Texas A&M University
1995 M.S., Civil Engineering, University of Texas
1990 B.S., Agricultural Engineering, National Taiwan University

Past Appointments
2003-2009 Assistant Professor, Department of Landscape Architecture and Urban Planning, Texas A&M University
2001-2003 Visiting Assistant Professor, Department of Landscape Architecture and Urban Planning, Texas A&M University
2000 Assistant Lecturer, Department of Landscape Architecture and Urban Planning, Texas A&M University
1996-2000 Associate Research Engineer, Environmental Management Program, Texas Transportation Institute
2003-2010 Assistant Research Engineer, Environmental Management Program, Texas Transportation Institute
2003 Acting Program Manager, Environmental Management Program, Texas Transportation Institute

Selected Grants/Research Funding
2010-2013 Co-PI, Preparing for EPA Effluent Limitation Guidelines. Texas Department of Transportation. With (PI) Jett McFalls (Texas Transportation Institute), Michael Barrett (The University of Texas at Austin) and Ted Cleveland (Texas Tech University). $736,293
2009-2011 Co-PI, Establish Effective Lower Bounds of Watershed Slope for Traditional Hydrologic Methods. Texas Department of Transportation. With (PI) Ted Cleveland (Texas Tech University) and Will Asquith (USGS). $464,600 (26%)
2007-2012 PI, Bioretention for Stormwater Quality Improvement in Texas. Texas Department of Transportation. With Mike Teal (Texas Transportation Institute) and Kung-Hui Chu (TAMU). $564,364 (70%)
2007-2009 Co-PI, Water Retention Techniques for Roadside Vegetation Establishment in Arid Regions of Texas. Texas Department of Transportation. With Jim Schutt (PI, Texas Transportation Institute), Jim Rogers (WTAMU) and Clay Robinson (WTAMU). $183,000 (3%)

2007-2009 Co-PI, Roadside Sediment Control Device Evaluation Program. Texas Department of Transportation. With Jett McFalls (PI, Texas Transportation Institute). $270,000 (5%)

2006-2010 Co-PI, Synthesis and Study of the Establishment and Management of Roadside Vegetation. Texas Department of Transportation. With Jim Schutt (PI) and Jett McFalls (Texas Transportation Institute). $510,000 (5%)

Selected Water Publications

**Book chapters**


**Journal Articles**


Transportation Research Record: Journal of the Transportation Research Board 2262, 155-163.


Li, M.-H., Chibber, P., 2008. Overland flow time of concentration on very flat terrains. Transportation Research Record: Journal of the Transportation Research Board 2060, 133-140.


Michael K. Lindell
Professor
mlindell@archone.tamu.edu

Current Appointment
Professor, Landscape Architecture and Urban Planning,
Texas A&M University

Director of the Hazard Reduction and Recovery Center,
Texas A&M University

Education
1975 Ph. D., Social/Quantitative Psychology,
University of Colorado
1969 B.A., Psychology, University of Colorado

Past Appointments
1997-2001 Professor of Construction Science, Texas A&M University
1996-1997 Associate Professor of Administrative Sciences, George
Washington University
1995-1996 Visiting Associate Professor of Psychology, George Washington
University
1995-1996 Research Associate Professor of Psychology, Michigan State
University
1987-1995 Associate Professor of Psychology, Michigan State University
1986-1987 Visiting Associate Professor of Psychology, Georgia Institute of
Technology
1974-1989 Research Scientist, Battelle Human Affairs Research Centers

Selected Water Publications
Books

Wiley.

Emergency Management Institute.

Lindell, M.K. and Perry, R.W., 2004, Communicating Environmental Risk in
Multiethnic Communities. Thousand Oaks CA: Sage

Tierney, K.J., Lindell, M.K. and Perry, R.W., 2001, Facing the Unexpected: Disaster
Press
Book chapters


Journal Articles


Franco Marcantonio
Professor
marcantonio@tamu.edu

Current Appointment
Robert R. Berg Professor in Geology and Geophysics, Texas A&M University
Assistant Department Head, Department of Geology and Geophysics, Texas A&M University

Education
1994 Ph.D., Geological Sciences, Columbia University, Lamont-Doherty Earth Observatory
1992 MPhil Geological Sciences, Columbia University, Lamont-Doherty Earth Observatory
1988 M.S., Geology, McMaster University
1986 B.S., Double major: Chemistry and Geology, Carleton University

Past Appointments
1996-2002 Assistant Professor, Department of Geology, Tulane University
2002-2006 Associate Professor, Department of Earth and Environmental Sciences, Tulane University
2006-2010 Associate Professor, Department of Geology and Geophysics, Texas A&M

Professional Activities/Awards
2012 Holder of the Robert R. Berg Professorship
1997-2006 Member of the Speaking of Science Program (Louisiana BoRSF)
1997-1998 Oak Ridge Associated Universities Junior Faculty Enhancement Award

Selected Grants/Research Funding
230Th dynamics in the Eastern Equatorial Pacific Ocean: testing the 230Th-normalization method to estimate sediment fluxes. Principal Investigator (co-PI M. Lyle, Department of Oceanography, TAMU), National Science Foundation, 07/01/96/30/12, $401,841.

Principal Investigator (co-PIs E. Grossman, B. Miller, M. Schmidt, D. Thomas), National Science Foundation, Acquisition of a High-Resolution Inductively-Coupled Plasma for Earth and Environmental Science Research at Texas A&M University, 08/01/08-07/31/11, $450,000.

Investigating the He-3/Th-230 ratios as a proxy for deep-sea sediment redistribution National Science Foundation, Principal Investigator (co-PI J. McManus at WHOI), 10/01/05-09/30/08 (in no-cost extension), $136,000 ($211,000 to WHOI).

Millennial variations in Arabian Sea sediment proxies: connection to N. Atlantic climate National Science Foundation (Earth System History Program: Atmospheric and Ocean Sciences Division of the NSF), Principal Investigator (co-PI Tom Bianchi), 5/1/2004-4/30/2007, $204,507.

Collaborative research: An isotope ratio mass spectrometer for biogeoscience research and teaching at the University of New Orleans and Tulane University, National Science Foundation, co-Principal Investigator (PI Jim Sickman at UNO), 09/01/04-08/31/06, $185,612.

Selected Water Publications

Journal Articles


Christopher C. Mathewson
Regents Professor Emeritus
mathewson@geo.tamu.edu

**Current Appointment**
Senior Professor and Regents Professor, Emeritus Engineering Geology, Department of Geology and Geophysics, Texas A&M University

**Education**
1971 Ph.D., Geological Engineering, University of Arizona, Tucson, Arizona
1965 M.S., Geological Engineering, University of Arizona, Tucson, Arizona
1963 B.S., Civil Engineering, Case Institute of Technology, Cleveland, Ohio

**Past Appointments**
2011 Named Regents Professor Emeritus, Texas A&M University
2001 Senior Professor, Geology, Texas A&M University
1982-2011 Professor, Geology (Engineering Geology), Department of Geology and Geophysics
1982-1996 Director, Center for Engineering Geosciences
1992 WES Graduate Institute, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS
1988 WES Graduate Institute, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS
1978-1982 Leader, Engineering Geosciences Research Program, College of Geosciences
1977-1978 Director, Center for Applied Geosciences, College of Geosciences
1976-1982 Associate Professor, Geology (Engineering Geology), Department of Geology
1971-1976 Assistant Professor, Geology (Engineering Geology), Department of Geology

**Professional Activities/Awards**
2011 Christopher C. Mathewson Scholarship
2011 Charles R. Sherman Award
2008 Engineering Geologists
2008 Karl and Ruth Terzaghi Outstanding Mentor Award
2007 Pete Henley Mentor Award

**Selected Grants/Research Funding**
2007 Unusual Sedimentation of a Galveston Bay Wetland, Pine Gully, Seabrook, Texas, City of Seabrook, TX.
2005  Simplified Method for Estimating Scour, Texas Department of Transportation, Austin, TX, 1 September 2005 — 31 August 2007, jointly with Civil Engineering and Texas Transportation Institute, $222,575.00

Selected Water Publications
Book

Lignite, Proceedings, 1980, Texas A&M University Lignite Symposium, Texas A&M University, Center for Energy and Mineral Resources, College Station, TX.


Journal Articles

The Role of the San Antonio River in History, Development and Success of San Antonio, Field trip led for the National Association of State Boards of Geology (ASBOG), 2011, Field Trip Guidebook, 41 p.

Impact of Hurricane Ike on an Engineered Coast, Texas Section of the Association of Environmental and Engineering Geologists, 2010, Field Trip Guidebook, 47 p., with Eric Stiffler


The “Grand Canyon” of Canyon lake: Geologic Risks to Visitors, Texas Section of the Association of Environmental and Engineering Geologists, 2009, Field Trip Guidebook, 22 p., with Benjamin Kolkmeier

Bruce A. McCarl
Regents Professor
mccarl@tamu.edu

Current Appointment
Texas Agrilife Research, Senior Faculty Fellow
Distinguished Professor, Texas A&M University, TAES Fellow
Regents Professor, Texas A&M University
Professor, Agricultural Economics, Texas A&M University

Education
1973 Ph.D., Management Science, Pennsylvania State University
1970 B.S., Business Statistics, University of Colorado

Past Appointments
1982-1985 Professor, Agriculture and Resource Economics, Oregon State University
1980 Visiting Professor, Agriculture and Resource Economics, Oregon State University
1979-1982 Associate Professor, Agricultural Economics, Purdue University
1973-1978 Assistant Professor, Agricultural Economics, Purdue University

Professional Activities/Awards
IPCC Lead Author on Economics of Adaptation for 2013 report IPCC Mitigation Chapter Lead Author and participant in 2007 Nobel Peace Prize
Member NAS America’s Climate Choices Study, Limiting Panel
Member Texas Water Development Board Climate Change Panel
Journal Editor, Associate Editor AJAE 1986-1991; Associate Editor Water Resources Research 1989-2001; Associate Editor Climatic Change, 2001-date; Coordinating Editor, Choices 2004-7

Selected Water Publications
Journal Articles

Koleva, N.G., U.A. Schneider, and B.A. McCarl, "Pesticide and greenhouse gas
effectiveness from US agriculture - The impact of their internalization and climate

Chambwera, M., G. Heal, C. Dubeux, S. Hallegatte, L. Leclerc, A. Markandya, B.A.
McCarl, R. Mechler, and J. Neumann, "Economics of Adaptation", IPCC WG II
Contribution to The Fifth Assessment Report, Climate Change 2013: Impacts,

Gillig, D., B.A. McCarl, L.L. Jones, and F.O. Boadu, "Economic Efficiency and Cost
Implications of Habitat Conservation: An Example in the Context of the Edwards

Koleva, N.G., U.A. Schneider, and B.A. McCarl, "Pesticide and greenhouse gas
effectiveness from US agriculture - The impact of their internalization and climate

Feng, S.J., A.D. Hagerman, J.H. Mu, B.A. McCarl, and W.W. Wang, "Climate
Change and the West: A Multifaceted Issue", Western Economics Forum, Volume IX, 1-
10, 2010.

McCarl, B.A., "Analysis of Climate Change implications for Agriculture and

Chen, C. D. Gillig, B.A. McCarl, "Effects of Climatic Change on a Water Dependent
Regional Economy: A Study of the Texas Edwards Aquifer", Climatic Change, 49,

Chen, C.C., and B.A. McCarl, "Pesticide Usage as Influenced by Climate: A

Chen, C.C., and B.A. McCarl, "Hurricanes and possible intensity increases: Effects
on and reactions from US Agriculture", Journal of Agricultural and Applied

McCarl, B.A., "Vulnerability of Texas Agriculture to Climate Change", Impact of
Global Warming on Texas, Chapter 6, Second Edition, edited by Jurgen Schmandt,
Judith Clarkson and Gerald R. North, University of Texas Press, ISBN: 978-0-292-
72330-6, 2011.

McCarl, B., X. Villavicencio, and X. Wu, "Climate Change and Future Analysis: Is
Stationarity Dying", American J. of Agricultural Economics, Volume 90, Issue 5, 1242-
1247, 2008.
Kevin J. McInnes

Professor
k-mcinnes@tamu.edu

Current Appointment
Professor of Environmental Physics, Department of Soil and Crop Sciences, Texas A&M University

Education
1985 Ph.D., Agronomy, Washington State University
1981 M.S., Soil Science, Washington State University
1979 B.S., Agronomy, Kansas State University

Past Appointments
1994-2000 Associate Professor, Texas A&M University
1988-1994 Assistant Professor, Texas A&M University
1985-1988 Research Scientist, CSIRO, Australia

Selected Water Publications

Journal Articles


James W. Mjelde
Professor
j-mjelde@tamu.edu

Current Appointment
Professor Department of Agricultural Economics, Texas A&M University

Education
1985 Ph.D., Agricultural Economics, University of Illinois
1982 M.S., Applied Economics, Montana State University
1980 B.S., Fish and Wildlife Management, Montana State University
1979 B.S., Premedicine, Montana State University

Past Appointments
1994-1997 Graduate Advisor, Department of Agricultural Economics, Texas A&M University
1990-1995 Associate Professor, Department of Agricultural Economics, Texas A&M University
1985-1990 Assistant Professor, Department of Agricultural Economics, Texas A&M University
1996-2001 Faculty Associate, Bush School of Government and Public Service, Texas A&M University

Professional Activities/Awards
Association of Former Students of Texas A&M University, Distinguished Achievement Award – Teaching, College Level, 2011.

Fellow to the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS), University of Oklahoma, August 1994 - present.

Faculty Recognition Award given by Graduate Students Association - September 1995.

Outstanding Professor in the Department of Agricultural Economics given by the Agricultural Economics Undergraduate Club, 1988 89 and 1989 90 academic years.

Selected Grants/Research Funding

Impacts of Biomass Sorghum Feedstock Production on Carbon Sequestration and Greenhouse Gas Emissions in the South Central Region, USDA, Co-Project Director, (March 2011 - February 2016), $995,100 joint with Prairie View A&M and TAMU AGEC Component $110,011

The Value of Non-Medical Transportation for Improving the Quality of Life for the Rural Elderly: Methodology and Information Considerations, University
Transportation Center for Mobility, Principal Investigator, (January 2011 -August 2012), $119,987

Climate Information for Managing Risk through Agricultural Land and Machinery Contractual Arrangements, National Oceanic and Atmospheric Administration, Co-Principal Investigator (June 2004-September 2008), $187,501

Effect of Climate Change, Forest Certification, Biotechnology and Industrial Concentration on the U.S. Forest Products Industry and Trade USDA CSREES (August 2003 - August 2006). Co-Principal Investigator, $175,000

Development of Climate Forecasts Decision Making Teaching Materials for Junior High School Teachers and Students National Oceanic and Atmospheric Administration, Principal Investigator, (May 2003-April 2006), $229,874

Effects of Seasonal Climate Forecasts on the Competitiveness in the Grain Market National Oceanic and Atmospheric Administration, Principal Investigator, (April 1, 1996 - May, 1999), $214,815

Selected Water Publications

Book chapters


Journal Articles


Jin, Y., J.W. Mjelde, and K.K. Litzenberg., 2011, “Importance of Job Attributes and Location in Undergraduate Students’ Initial Job Selection.”


Binayak P. Mohanty

Professor
bmoohanty@tamu.edu

Current Appointment
Professor, Departments of Biological and Agricultural Engineering and Ecosystem Science and Management, Texas A&M University

Education
1992 Ph.D., Soil and Water Engineering (major) and Environmental Engineering (minor), Iowa State University
1987 M.E., Soil and Water Engineering (major) and Water Resources Engineering (minor), Asian Institute of Technology, Bangkok, Thailand
1985 B.Sc., Agricultural Engineering and Technology, Orissa University of Agriculture and Technology, Bhubaneswar, India

Past Appointments
2001-2004 Associate Professor (Hydrology), Depts. of Biological and Agricultural Engineering and Ecosystem Science and Management, Texas A&M University
1993-2001 Associate, Assistant, and Post-Doctoral Researcher, Dept. of Environmental Sciences, University of California, Riverside; located at U. S. Salinity Laboratory, USDA-ARS
1992-1993 Postdoc, Department of Biosystems and Agricultural Engineering, Iowa State University, Ames, Iowa
1988 Research Associate, Agricultural Land and Water Development Program, Asian Institute of Technology, Bangkok, Thailand

Professional Activities/Awards
2012 TAES Fellow, Texas AgriLife Research
2012 TEES Fellow, Texas A&M Engineering
2012 College of Agriculture Nominee for University Level Association of Former Students (AFS) Distinguished Achievement in Research Award, Texas A&M University
2011 Western Association of Agricultural Experiment Station Directors’ Research Excellence Award as a Member of W-2188 “Characterizing Mass and Energy Transport at Different Vadose Zone Scales” Regional Research Group
2011 TEES Fellow, Texas A&M Engineering
2010 William Keeler Faculty Fellow, Texas A&M Engineering
2010 College of Engineering Nominee for University Level Association of Former Students (AFS) Distinguished Achievement in Research Award, Texas A&M University 2009 Award for Research Excellence, Biological and Agricultural Engineering, Texas A&M University
2007 Ruth and William Neely ’52/Dow Chemical Fellow, Texas A&M Engineering
2007 College of Agriculture Nominee for University Level Association of Former Students (AFS) Distinguished Achievement in Research Award, Texas A&M University

Selected Grants/Research Funding
NSF-S-STEM (Scholarships in Science, Technology, Engineering, and Mathematics), Water Engineering Research Scholars (WATER Scholars), Co-Principal Investigator (PI: Autenrieth, Civil Engineering), 01/10-12/14, $597,978

NASA-THP (Terrestrial Hydrology Program), Multi-Platform Soil Moisture Scaling over the Southern Great Plains Using In Situ, Satellite Retrieval, and Data Assimilation, Principal Investigator. (Co-PI: Jackson, USDA), 01/09-12/12, $872,334

KAUST (King Abdullah University of Science and Technology), Institute for Applied Mathematics and Computational Science (IAMCS) at Texas A&M University, Co-Investigator (Earth Sciences Application) (PI: Calvin, Statistics), 06/08-05/13, $25 million NIH-HIEHS (National Institute for Environmental Health Sciences):

Nitrates, Nitrites, and Nitrosatable Drugs and Risk of Selected Birth Defects, Co-Principal Investigator. (PI: Brender, Health Science), 05/07-04/11, $1.42 million

Selected Water Publications
Book chapters


Journal Articles


Joshi, C., B.P. Mohanty, J. Jacobs, and A.V.M. Ines, Spatiotemporal Analyses of Soil Moisture from Point to Footprint Scale in two Different Hydroclimatic Regions, Water Resources Research, 2011


Georgianne W. Moore
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Current Appointment
Associate Professor, Department of Ecosystem Science and Management, Texas A&M University

Education
2003 Ph.D. Environmental Sciences, Interdisciplinary Program, Oregon State University
1995 B.S. Applied Biology, Department of Biology, Georgia Institute of Technology

Past Appointments
2003–2005 Postdoctoral Research Associate, Texas AgriLife Research, Uvalde, TX

Professional Activities/Awards
Texas Environmental Excellence Award (2008) for the Rio Grande Basin Initiative project. Given by the Texas Commission on Environmental Quality. The TEEA celebrates the efforts of citizens, communities, businesses, and organizations to preserve and protect the Texas environment.


National Science Foundation Long-Term Ecological Research Graduate Assistantship.


Selected Grants/Research Funding
2011 Young Investigator's Award, Awarded to Fan Li. $917. Merit-based award given to support travel and registration for the BASIN 2011 conference on the Roles of Stable Isotopes in Water Cycle Research. Keystone, CO

2009 Regents’ Graduate Fellowship, Awarded to Li Fan. $18,000 Merit-based fellowship given to new graduate students in the College of Agriculture and Life Sciences


USDA National Institute of Food and Agriculture (7/06-6/11) Efficient Irrigation for Water Conservation in the Rio Grande Basin. B. Harris (PI) and 29 co-PI’s, including G. Moore. Six separate awards totaling $6,250,009: 2005 ($1,388,981), 2006 ($1,548,069), 2008 ($1,151,931), 2009 ($1,081,453), and 2010 ($1,079,575). Congressional appropriations. Annually, submit internal competitive proposals to B. Harris.


Wintergarden Groundwater Conservation District. (10/06-9/07) Determining Long-Term Cumulative Effects of Brush Clearing on Soil Water Percolation over a Broad Geographic Area. M. K. Owens (PI) and G. W. Moore. $20,000. External contract.


Selected Water Publications
Journal Articles


Watts, D. A and G. W. Moore. 2011. Water Use Dynamics of Giant Reed (Arundo donax) from Leaf to Stand. Wetlands

Moore, G. W., J. A. Jones, and B. J. Bond. 2011. The role of transpiration in predicting stream flow at hourly to interannual scales in a forested catchment. Hydrological Processes


Moore, G. W., B. J. Bond, J. A. Jones, and F. C. Meinzer. 2010. Thermal-dissipation sap flow sensors may not yield consistent sap-flux estimates over multiple years. Trees: Structure and Function


Miguel A. Mora
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Current Appointment
Professor, Department of Wildlife and Fisheries Sciences,
Texas A&M University

Adjunct Professor, Department of Veterinary Pathobiology,
College of Veterinary Medicine and Biomedical Sciences, Texas A&M University

Adjunct Professor, Intercollegiate Faculty of Toxicology, Texas A&M University

Adjunct Professor, Institute of Environmental and Health Sciences, Texas Tech University

Education
1990 Ph.D., Ecology, University of California, Davis (UCD)
1984 M.S., Ecology, University of California, Davis
1977 B.S., Biochemical Engineering, Instituto Politecnico Nacional, Mexico, D.F.

Past Appointments
1995-2007 Adjunct Professor, Department of Wildlife and Fisheries Sciences, Texas A&M University
1990-1992 Research Associate, Department of Fisheries and Wildlife and Pesticide Research Center, Michigan State University
1991-1992 Consultant, Ropes and Gray Attorneys at Law
1989-1990 Postgraduate Research Associate, Department of Veterinary Pharmacology and Toxicology, School of Veterinary Medicine, UCD. Research Assistant, California Veterinary Diagnostic Laboratory System, School of Veterinary Medicine, UCD.

Professional Activities/Awards
2010 SETAC, Presidential citation for exemplary service. 2010 YouTube blurb on my Research on aplomado falcons, EarthSky Communications, Inc. Austin, TX, www.youtube.com/watch?


2004-2012 Professional career highlighted in University of Michigan web page: www.umich.edu/~meldi/4_profiles_minprof.html

2004 Honorary Member, Science Advisory Board, Instituto Tecnologico de Jiquilpan, Jiquilpan, Michoacán, Mexico.

**Selected Water Publications**

*Book chapters*


*Journal Articles*


Cristine Morgan
Associate Professor
cmorgan@ag.tamu.edu

Current Appointment
Associate Professor, Department of Soil and Crop Sciences,
Texas A&M University

Education
2003 Ph.D., Soil Science, University of Wisconsin-Madison
2003 Minor Law, University of Wisconsin Law School
2000 M.S., Soil Science, University of Wisconsin-Madison
1998 B.S., Plant and Environmental Soil Science, Texas A&M
University Magna Cum Laude

Past Appointments
2003-2010 Assistant Professor of Hydropedology, Texas A&M University

Professional Activities/Awards
American Association of Agricultural and Biosystems Engineering. Superior Paper Award 2009.

Young Scholar Award. 2009. Soil Science Society of America Division S-6.

Honored Professor Award. 2010. College of Agriculture and Life Sciences Undergraduate Student Council.


Selected Grants/Research Funding
Analysis of Wetland Loss in the Greater Houston Area, 2011, $5,000 Rice University

Coastal Prairie Wetland Restoration, 2010–2013, $390,538 Texas State Soil and Water Conservation Board


Dickinson Bayou Implementation Project, 2010–2011, $90,000 Texas Commission on Environmental Quality (TCEQ)

Selected Water Publications
Book chapters


Journal Articles


Saqib Mukhtar

Professor
mukhtar@tamu.edu

Current Appointment
Professor and Extension Agricultural Engineer, Texas
AgriLife Extension and Research

Associate Department Head and Extension Program Leader
for Biological and Agricultural Engineering, Texas AgriLife Extension

Education
1989 Ph.D., in Agricultural Engineering with a Minor in Water
Resources, Iowa State University
1984 M.S., in Agricultural Engineering, Iowa State University
1981 B.S., in Agricultural Engineering, University of Agriculture,
Faisalabad, Pakistan

Past Appointments
2010-2012 Interim Associate Department Head and Extension Program
Leader for Biological and Agricultural Engineering, Texas
AgriLife Extension
2004-2010 Associate Professor and Extension Agricultural Engineer, Texas
AgriLife Extension and Research, Texas A&M System
1998-2004 Assistant Professor and Extension Agricultural Engineer, Texas
AgriLife Extension and Research, Texas A&M System
1993-1998 Agricultural Engineering Field Specialist, Iowa State University
Extension
1991-1993 Civil Engineer, USDA-Natural Resources Conservation Service,
Engineering Project Office
1990-1991 Civil Engineer, USDA-Natural Resources Conservation Service,
Fort Dodge Area Office

Professional Activities/Awards
National Excellence in Multistate Research Award, Experiment Station Committee
on Organization and Policy (ESCOP), June 2011. (USDA-NIFA Multistate Research
Committee S-1032)

The Livestock and Poultry Environmental Learning Center Community of Practice
(web-based educational program) was named Outstanding Community of Practice
for by National Extension Team Award. Eight member Leadership Team included
faculty from Rutgers, University of Georgia, and University of Nebraska, Texas
AgriLife Extension, Washington State University, and Montana State University.
June 2011.

Regional Excellence in Multistate Research Award, Southern Association of
Agricultural Experiment Station Directors, April 2011. (USDA-NIFA Multistate
Research Committee S-1032).
The 2010 American Society of Agricultural and Biological Engineers (ASABE) G. B. Gunlogson Countryside Engineering Award for outstanding achievements and leadership through extension education and cutting-edge research in environmental quality management of animal production operations. June, 2010.

The 2010 Texas Commission on Environmental Quality (TCEQ) Texas Environmental Excellence Award in Agriculture. Team included members from Texas AgriLife Research, Texas AgriLife Extension Service, West Texas A&M University, Kansas State University, and USDA-Agricultural

**Selected Grants/Research Funding**


**Selected Water Publications**

Book chapters


Journal Articles


Clyde L. Munster

Professor
c-munster@tamu.edu

Current Appointment
Professor, Agricultural Engineering Department, Texas A&M University

Education
1992 Ph.D., Biological and Agricultural Engineering, North Carolina State University
1982 M.S., Civil Engineering, Virginia Polytechnic Institute and State University
1980 B.S., Civil Engineering, Virginia Polytechnic Institute and State University

Past Appointments
1999-2012 Peer Review of Teaching Committee
1998-2012 Promotion and Tenure Committee
2008-2012 Development Coordination Committee
2003-2012 Agricultural Systems Management Undergraduate Program
2007-2008 Ad Hoc Curriculum Review Committee
1992-2008 Graduate Programs Committee and Computer and Educational Aids Committee
1998-2008 Instructional Fees
2003-2012 Ad Hoc Water Task Group
1996-2001 Soil and Water Teaching Work Group

Professional Activities/Awards
2011 College of Agriculture and Life Science Vice Chancellor’s Excellence Award for Team Research
2010 Bush Excellence Award for International Education
1997 Invited by the U.S. EPA to be a member of the Peer Review Panel to evaluate grant proposals for a Bioremediation Request for Proposals. Over 100 bio remediation proposals were evaluated for $6,000,000 in funding at the National Science Foundation in Arlington, VA, May 19 – 22

Selected Grants/Research Funding
Drought Decision Making Tool for Agricultural Producers, USDA – NIFA, PI, C. Munster, co-PIs, T. Cothren and R. Schumacher, 2010-2014, $498,649
Best Management Project (BMP) Assessment Using Rainfall Simulation – Ft. Hood, TX, USDA – NRCS, PI, B. Fox, co-PIs, C. Munster, B. Wilcox, and B. Harris, 2010-2013, $299,700

Enhancing the Quality of Marketable Products Derived from Mobile Fast Pyrolysis of Lignocellulosic Biomass, Texas AgriLife Research Bioenergy Initiatives, Lead PI, Sergio Capareda, co-PIs, Clyde Munster, Sandun Fernando, Don Vietor, Tony Provin and Marco Palma, 2009-2011, $350,000

Optimizing the Logistics of a Mobile Fast Pyrolysis System for Sustainable Bio-Crude Oil Production, DOE North Central Sun Grant Program, Lead PI, S. Capareda, co-PIs, C. Munster, D. Vietor, T. Provin and M. Palma, 2009-2011, $700,000

**Selected Water Publications**

*Journal Articles*


William Harold Neill

Professor Emeritus
neill@tamu.edu

Current Appointment
Senior Professor and Professor Emeritus of Wildlife and Fisheries Sciences, Texas A&M University

Education
1971 Ph.D., Zoology, with a minor in Mathematical Statistics, University of Wisconsin
1967 M.S., Zoology, University of Arkansas
1965 B.S., Zoology, University of Arkansas

Past Appointments

Professional Activities/Awards
2011 Professor Emeritus, Texas A&M University
2007 Association of Former Students of Texas A&M University, Distinguished Achievement Award (College Level) for Teaching
1995 WFSC Nominee for Award in Excellence for Team Research (West Texas Aquaculture Project)
1974 Outstanding Texas Fisheries Worker Award, in Education, Texas Chapter of the American Special Achievement Award from the National Marine Fisheries Service
1965-1966 National Science Foundation Cooperative Graduate Fellowship

Selected Grants/Research Funding


Sea Grant Program, "Effects of Environmental Variation and Feed Quality on Juvenile Red Drum Performance." $154,928 (Co-PI with Del Gatlin and Robert Vega); 2004-2006.

TAMU-CONACyT Collaborative Research Program, "Strategic Research to Increase Fisheries Productivity and Strengthen the Tuna Aquaculture Industry in Northwest
Mexico: the Yellowfin Tuna Plan." $25,000. (Co-PI with Alejandro Buentello); 2003-2004.


**Selected Water Publications**

*Journal Articles*


John William Nielsen-Gammon
Regents Professor
n-g@tamu.edu

Current Appointment
Regents Professor and Texas State Climatologist, Department of Atmospheric Sciences, Texas A&M University

Texas State Climatologist

Education
1990  Ph.D., Meteorology, Massachusetts Institute of Technology
1987  M.S., Meteorology, Massachusetts Institute of Technology
1984  B.S., Earth and Planetary Sciences, Massachusetts Institute of Technology

Past Appointments
2000-2011  Professor of Meteorology, Texas A&M University
2008-2009  Acting Executive Associate Dean and Associate Dean for Research, College of Geosciences, Texas A&M University
2003-2007  Associate Director, The Center for Atmospheric Chemistry and the Environment
1997-1998  Deputy Speaker, Texas A&M Faculty Senate
1996-2000  Associate Professor of Meteorology, Texas A&M University
1991-1996  Assistant Professor of Meteorology, Texas A&M University
1990-1991  Postdoctoral Research Associate, State University of New York at Albany

Professional Activities/Awards
2011  Weather Hero, John C. Freeman Weather Museum
2011  Regents Professor, Texas A&M University System
2011  Newsmaker Image Award, Texas A&M University
2011  The Woody Guthrie Award Presented to a Thinking Blogger
2011  Fellow, American Meteorological Society
2007  Certificate of Recognition, National Aeronautics and Space Administration
1997  Editor’s Award, American Meteorological Society
1996  Faculty Distinguished Achievement Award in Teaching, Texas A&M University Association of Former Students,
1995  Presidential Faculty Fellow, National Science Foundation/White House
1995  Distinguished Teaching Award, College of Geosciences and Maritime Studies, Association of Former Students

Selected Grants/Research Funding

“Climate Change and Water in Texas: Projections and Sustainability”, 36 months, $1,216,000, National Science Foundation, Bruce McCarl, PI (portion $379,000)

“Development of a High Resolution Drought Trigger Tool (HiRDTT) for the United States”, January 2011, 36 months, $496,000, United States Department of Agriculture, RF 409011.

“Drought Decision Making Tool for Agricultural Producers”, November 2010, 36 months, $499,000, United States Department of Agriculture, Clyde Munster, PI, RF 501021-02001.

“Climate Change, Drought and Policymaking in the U.S. Southern Region”, September 2005, 3 years, $800,000, National Oceanic and Atmospheric Administration, NA05OAR4311121, A. Vedlitz, P.I.


Selected Water Publications

Book


Book chapters


Journal Articles


Gerald R. North
Distinguished Professor
g-north@tamu.edu

Current Appointment
Distinguished Professor Department of Atmospheric Sciences,
College of Geosciences, Texas A&M University

Adjunct Professor of Geography, Texas A&M University

Education
1966 Ph.D., Physics, University of Wisconsin
1960 B.S., Physics, University of Tennessee

Past Appointments
2003-2009 Holder of the Harold J. Haynes Endowed Chair in Geosciences
1995-2003 Head, Department of Atmospheric Sciences, Texas A&M University
1986-1999 Director of Climate System Research Program, Texas A&M University
1986-1993 Senior Consulting Scientist, Applied Research Corporation, Landover, MD
1987-1993 Senior Consulting Scientist, Applied Res. Corp. Technologies, College Station, TX
1978-1986 Physical Scientist, AST (GS-15), Climate/Radiation Branch, NASA/GSFC, Greenbelt, MD
1980-1986 Lecturer/Adjunct Prof., Department of Meteorology, University of Maryland College Park, MD
1977-1980 Professor, Department of Physics, University of Missouri
1972-1977 Associate Professor, Department of Physics, University of Missouri
1974-1975 Senior Fellow, National Center for Atmospheric Research, Boulder, CO
1968-1972 Assistant Professor, Department of Physics, University of Missouri
1966-1968 Research Associate, Department of Physics, University of Pennsylvania

Professional Activities/Awards
2008 Recipient of the Jule G. Charney Award from the American Meteorological Society
2006 Editor’s Citation for Outstanding Referee for Geophysical Research Letters, American Geophysical Union.
2005-2010 Editor in Chief, Reviews of Geophysics
2003-2008 Holder of the Harold J. Haynes Endowed Chair in Geosciences
1995-1996 Interim Editor, Journal of Atmospheric Sciences
1993-1996 Associate Editor, Journal of Atmospheric and Oceanic Technology
Selected Water Publications

Book chapters


Journal Articles


Hong, Gang, Ping Yang, Patrick Minnis, Yong X. Hu, and Gerald North, 2008: Do contrails significantly reduce daily temperature range? 35, doi:10.1029/2008GL036108


Francisco Olivera
Associate Professor
foliver@civilmail.tamu.edu

Current Appointment
Associate Professor of Civil Engineering, Texas A&M University
Division Head of E&WR Engineering, Texas A&M University

Education
1996 Ph.D., Civil Engineering, University of Texas
1988 M.S., Hydraulic Engineering, International Institute for Hydraulic and Environmental Engineering at Delft, Netherlands
1981 Professional Degree in Civil Engineering, Catholic University of Peru at Lima, Peru

Past Appointments
1995-2001 Lecturer, University of Texas at Austin – Department of Civil Engineering
1981-1992 Professor, Catholic University of Peru – Department of Engineering

Professional Activities/Awards
2011 TAMU Civil Eng. - Dick and Joyce Birdwell Endowed Teaching Award
2008-2010 TAMU Civil Eng. - Wiley Developmental Professorship
2007 TAMU Civil Eng. - Dick and Joyce Birdwell Endowed Teaching Award
2003 ASCE - Excellence in Civil Engineering Education Fellow
1999 Texas DOT - Top Ten Research Findings and Innovations Award

Selected Water Publications
Journal Articles


Kathleen O’Reilly
Associate Professor
koreilly@geos.tamu.edu

Current Appointment
Associate Professor, Department of Geography, Texas A&M University

Faculty Member, Asian Studies Program, Texas A&M University

Faculty Member, Women and Gender Studies Program, Texas A&M University

Education
2002 Ph.D., Geography, University of Iowa
1996 M.S., Geography, University of Alabama
1989 B.M., Westminster Choir College
1986 Pre-engineering, Oregon State University

Past Appointments
2006-2011 Assistant Professor, Department of Geography, Texas A&M University
2004 -2006 Visiting Assistant Professor, Department of Geography, University of Illinois at Urbana-Champaign Associate Member, Program in South Asian and Middle Eastern Studies
2002-2004 Women in Under-Represented Areas Postdoctoral Fellow, Department of Geography, University of Kentucky

Professional Activities/Awards
2012 Presidential Professor for Teaching Excellence Award, Nominee, Graduate Student Council and College of Geosciences Nominee, Texas A&M University
2003 J. Warren Nystrom Competition Finalist, Association of American Geographers
2002-2004 Post-Doctoral Fellowship for Women in Under-Represented Areas (1 of 3), University of Kentucky

Selected Grants/Research Funding
2011-2013 Successful Sanitation Habits in Rural India ($353,000), Bill and Melinda Gates Foundation, Global Development, Water, Sanitation, Health Program
2010-2015 CAREER Award # BCS-0956022 ($435,944) ‘Human Waste and Human Welfare: A Political Ecology Approach to Sanitation in Rural India’ National Science Foundation
2008 Senior Short Term Fellowship ($10,000), Drinking Water Sustainability’, American Institute of Indian Studies
2007 Glassock Center Stipendiary Faculty Fellow ($1500), Texas A&M University

Melburn G. Glasscock Center for Humanities Research and Department of Geography

2005-2009 Grant # BCS-0734156 ($99,944), ‘Women Fieldworkers in NGOs’ National Science Foundation

2000 Junior Fellowship for Doctoral Research in India ($12,000) American Institute of Indian Studies

**Selected Water Publications**

*Journal Articles*


O’Reilly, K. “They are not of this house: the gendered cost of water’s commodification.” 2011, Economic and Political Weekly April 30, XLVI (18):49-55.

O’Reilly, K. “We are not contractors: professionalizing the interactive service work of NGOs in Rajasthan, India.” 2011, Economic Geography 87(2): 207-226.


Suresh D. Pillai
Professor
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Current Appointment
Professor and Texas AgriLife Faculty Fellow, Food Safety and Environmental Microbiology Program, Poultry Science and Nutrition and Food Science Departments, Texas A&M University

Director, National Center for E-Beam Research, Texas A&M University

Member of Graduate Faculties of Poultry Science, Food Science and Technology, Biotechnology, Veterinary Pathobiology, Toxicology, Soil and Crop Sciences

Education
1989 Ph.D., Microbiology and Immunology, University of Arizona
1985 M.S., Industrial Microbiology, University of Madras, India
1983 B.S., Botany, University of Madras, India

Past Appointments
2004-2010 Chair, Graduate Biotechnology Program, Texas A&M University
2000-2005 Associate Director, Institute of Food Science and Engineering, Texas A&M University
2000-2004 Associate Professor and TAES Faculty Fellow - Food Safety and Environmental Microbiology Program, Poultry Science Dept. Texas A&M University
1998-1999 Associate Professor, Texas A&M Univ. Research Center, El Paso, and Soil and Crop Sciences, Texas A&M University

Member, Graduate Faculty, Biology Dept., New Mexico State University

Member, Graduate Faculty, Biology Dept., University of Texas

1992- 1998 Assistant Professor, Texas A&M Univ. Research Center, El Paso, and Soil and Crop Sciences, Texas A&M University
1991-1992 Research Scientist - Accelerated Products Development Program, Naval Medical Research Institute, Bethesda, MD.

Professional Activities/Awards
2012 President’s Travel Fund Award- Society for Applied Microbiology (SFAM)
2011-2012 Member, Board of Directors, Avanti MediClear, Tijuana, Mexico
2010-2012 Member, Science Advisory Board, BCR Environmental, Jacksonville, FL
2008 President’s Travel Fund Award- Society for Applied Microbiology (SFAM)
2007-2010 Distinguished Lecturer, Institute of Food Technologists (IFT)
2007 State of Texas Environmental Excellence Award (Team-member)
2006-2010  Member, Scientific Advisory Board, Department of Homeland Security Center for Advanced Microbial Risk Assessment (CAMRA)

2006-2012  Expert Panel Member, Govt. Accountability Office (GAO), Washington, DC.

**Selected Grants/Research Funding**
Utilization of the National Center for Electron Beam Research Facility and Texas A&M To Produce Irradiated Food Products. NASA-Wyle Principal Investigator (May 2011- Sept 2012)

Surfactant-Modified Zeolite (SMZ) Filter Technology To Control Waterborne Pathogen Transmission in the Mekong River Basin, Cambodia. IERC. S. Korea. Principal Investigator (Jan 2011- Dec 2011)

National Center for Electron Beam Food Research-food Safety. (Federal Initiative) USDA-NIFA Principal Investigator (9/09-8/10)


Development of Wide Area Radiation Sources for Wastewater Treatment – Co-Principal Investigator. National Science Foundation –SBIR

**Patents**
Combined chemical oxidant and E-Beam irradiation for biosolid disinfection and stabilization Suresh D. Pillai and Robert S. Reimers (*US patent pending*)


**Selected Water Publications**
**Books**


Book chapters


Pillai, S.D. (2011) Empowering billions with food safety and food security In: In Food and Agriculture, Thematic Volume- International Conference on Peaceful Uses of Atomic Energy-2009 (Eds. Arun Sharma and S.F. D'Souza), Published by Bhaba Atomic Research Centre, Department of Atomic Energy, India


Steven M. Quiring
Associate Professor
squiring@tamu.edu

Current Appointment
Associate Professor, Texas A&M University, Department of Geography

Associate Member of the Environmental Faculty, College of Geosciences, Texas A&M University

Education
2005 Ph.D., Climatology, University of Delaware. Newark, DE, USA
2005 Higher Education Teaching Certification, Center for Teaching Effectiveness, University of Delaware. Newark, DE
2001 M.S., Geography, University of Manitoba. Winnipeg, MB, Canada
1999 B.A., (Honors) Geography, University of Winnipeg. Winnipeg, MB, Canada

Past Appointments
2005–2011 Assistant Professor, Texas A&M University, Department of Geography
2003–2004 Graduate Research Assistant, University of Delaware, NSF-funded project: Development of a bias-corrected precipitation database and climatology for Arctic regions (PI: Dr. David Legates)
2002-2004 Lecturer, University of Delaware, Department of Geography
2002 Lab Instructor, University of Delaware, Department of Geography
2001 Lecturer, University of Manitoba, Department of Geography
1999 GIS Programmer/Analyst, Centre for Earth Observation Science, University of Manitoba, NSERC-funded project: Developing a geospatial framework for the North Water Polynya Study (PI: Dr. David Barber)

Selected Grants/Research Funding
2012 Co-Principal Investigator: College of Geosciences, Texas A&M University: Enhancing Research Intensive Capstone Courses with more Fieldwork (01/01/12-5/31/14; $61,000); with Co-PIs: D. Cairns, D. Collins, O. Frauenfeld, C. Houser, A. Klein, C. Lafon, S. Quiring and B. Roark.


2008 Co-Principal Investigator: Department of Energy, Collaborative Proposal: Climate-Induced Changes in Hurricane Winds, Surge, and Risk to Electric Power Systems (09/01/08–08/31/11; $450,000); with S. Guikema (PI) and J. Irish (PI) (Grant No. DE-FG02-08ER64644).


**Selected Water Publications**

*Journal Articles*


Daniel L. Roelke
Professor
droelke@tamu.edu

Current Appointment
Professor, Departments of Wildlife and Fisheries Sciences, and Oceanography, Texas A&M University

Education
1997-98 Post-Doctoral Fellow, Consortium of Oceanographic Research and Education, Naval Research Laboratory, Stennis Space Center, Mississippi
1993-97 Ph.D., Oceanography, Texas A&M University
1990-93 M.S., Oceanography, Texas A&M University
1985-89 B.S., Earth Science, Minor in Chemistry, Millersville University, PA

Past Appointments
2004-2011 Associate Professor, Department of Wildlife and Fisheries Sciences and Department of Oceanography, Texas A&M University
1998-2004 Assistant Professor, Department of Wildlife and Fisheries Sciences and Department of Oceanography, Texas A&M University

Professional Activities/Awards
2010 Nominated for Vice-Chancellor’s Award for Excellence in Research (Texas A&M University, College of Agriculture and Life Sciences)
2010 Elected to the National Harmful Algal Bloom Committee (USA)
2010 Invited to serve a second term on the editorial board of The American Naturalist
2009 Invited to serve as “Opponent” in the dissertation defense of Andreas Brutemark (E. Graneli, Chair), University of Kalmar Sweden.
2009 Invited to organize a special session for the 30th Annual Conference of the Society of Environmental Toxicology and Chemistry (SETAC), New Orleans, LA, USA focused on ecohydrology and the fate of phycotoxins.
2008 Invited to write a chapter for the multivolume Treatise on Estuarine and Coastal Science (vol. 9, Elsevier) focused on incidence of hypoxia in coastal waters.
2008 Elected to the Faculty Senate, Texas A&M University
2007 Invited to join the editorial board of The American Naturalist
1998 Invited to participate in the International Council for the Exploration of the Sea: Young Scientists Conference on Marine Ecosystem Perspectives (limited to 2 participants per country)
**Selected Grants/Research Funding**

2010-2012  Approaches to Golden Algae control, Federal-Level Initiative, Department of Defense, Texas AgriLife Research, $850,000 ($450,000 FY11, $300,000 FY12). – lead PI [all of this award was passed through these agencies to support research in which I was involved (see below)].

2006-2009  Toxic Golden Alga in Texas (Understanding and Managing the Problems), Federal-Level Initiative, Department of Energy, Texas Agriculture Experiment Station, $1,100,000 ($500,000 FY07, $600,000 FY09). – lead PI [portions of this award were passed through these agencies to support research in which I was involved (see below)].

2005-2006  Conservation of Caddo Lake, TX, Federal-Level Initiative, US Fish and Wildlife, Caddo Lake Institute, Texas Water Resources Institute, $300,000. – co-PI [this initiative led to an RFP administered through the Caddo Lake Research Institute].

2002-2004  Golden Algae Blooms in Texas, State-Level Initiative, Texas, Texas Parks and Wildlife Department, $1,200,000. – co PI [this initiative led to RFPs administered through TPWD, and funding through the state with additional RFPs has continued through the 08-10 bi-annum].

**Selected Water Publications**

*Journal Articles*


W. Douglass Shaw
Professor
wdshaw@tamu.edu

Current Appointment
Professor, Department of Agricultural Economics, Texas A&M University

Education
1985 Ph.D., Economics, University of Colorado
1977 B.A., Geography, University of Colorado

Past Appointments
2002-2003 Visiting Associate Professor, Division of Economics and Business, Colorado School of Mines, Golden, CO 80401
1995-2004 Associate Professor, Dept. of Applied Economics and Statistics and Faculty member of the Graduate Program in Hydrologic Sciences, University of Nevada – Reno. Tenure received in Spring 1999
1994 Temporary Special Programs Lecturer, Economics Institute, Boulder, CO
1987-1991 Vassar College, Assistant Professor of Economics

Professional Activities/Awards
Research Fellow Hazard Reduction and Recovery Center

Selected Grants/Research Funding
$314,000 “Perceived Risks from Arsenic in Drinking Water.” U.S. Environmental Protection Agency, PI, Fall, 2005 to December 31, 2007 [Co-PI’s are Mary Riddel, Paul Jakus, Mark Walker].


$900,000 – Funded Consulting Project – Co-P.I. and co-manager on Natural Resource Damage Assessment of the Kalamazoo River and for Saginaw Bay and River, for Michigan Department of Natural Resources, 1993-1995.
$300,000 – Funded Consulting Project – Assessment of the Impacts of Reservoir Level Changes for the U.S. Army Corps of Engineers, Bonneville Power Administration and U.S. Bureau of Reclamation, 1993-1994 (Co-manager of project)

**Selected Water Publications**

**Book**


**Book chapters**


Journal Articles

“Does Climate Change Information Affect Stated Risks of Pine Beetle Impacts on Forests? An Application of the Exchangeability Method.” With Simone Cerroni (University of Trento, Italy), Forthcoming, Forest Policy and Economics, accepted March 2012.

Do Travelers Pay for Managed Lane Travel as They Claimed They Would?: A Before-After Study of Houston Katy Freeway Travelers. Prem Chand Devarasetty, M. Burris, and W.D. Shaw. Accepted for publication, Transportation Research Record: the Journal of the Transportation Research Board, February 2012.


Vijay P. Singh

Professor
vSingh@tamu.edu

Current Appointment
Caroline and William N. Lehrer Distinguished Chair in Water Engineering, Professor of Biological and Agricultural Engineering, and Professor of Civil and Environmental Engineering.

Department of Biological and Agricultural Engineering

Education
1998 D. Sc., Environmental and Water Resources Engineering, The University of the Witwatersrand, Johannesburg, South Africa
1974 Ph. D., Civil Engineering with specialization in Hydrology and Water Resources, Colorado State University, Fort Collins.
1970 M. S., Engineering with specialization in Hydrology, University of Guelph, Guelph, Ontario, Canada
1967 B. S., Engineering and Technology with emphasis on Soil and Water Conservation Engineering, U.P. Agricultural University, Pant College of Technology, Pantnagar, Nainital, U.P., India

Past Appointments
2004-2006 Adjunct Professor, School of Renewable Natural Resources, Louisiana State University
2001-2006 Coordinator of Environmental and Water Resources Systems Engineering Program, Louisiana State University
1983-1998 Professor of Civil and Environmental Engineering (from August 1983 to present), and Coordinator of Water Resources Program, Louisiana State University
1984-1986 Director, Louisiana Water Resources Research Institute, College of Engineering
1978-1981 Associate Professor of Civil Engineering, and Member, Graduate Faculty Department of Civil Engineering, Mississippi State University, Mississippi State, Mississippi
1977-1978 Associate Research Professor of Civil Engineering, School of Engineering and Applied Science, George Washington University, Washington, D.C.

Professional Activities/Awards
Caroline and William N. Lehrer Distinguished Chair in Water Engineering (from July 1, 2006-present), Department of Biological and Agricultural Engineering, Texas A&M University

Arthur K. Barton Endowed Professor Emeritus (June 2006-present), Louisiana State University
**Selected Grants/Research Funding**

A Water Quality Decision Model for the Identification of Priority Sites for the Implementation of Best Management Practices to Maintain Dissolved Oxygen Levels in the Ouachita River Basin. This project was funded by Louisiana Department of Environmental Quality for about $654,000 for a period of 3 years beginning with January 15, 2002. It is in cooperation with Ms. E. Roider, Dr. D.D. Adrian, Dr. G. Hammitt, and Dr. J. Pardue.

Assessment and Remediation of Public Health Impacts due to Hurricanes and Major Flooding Events. This project was funded by Millennium Trust Health Excellence Fund for $3,685,490 for a period of 5 years beginning with January 1, 2002. It is in cooperation with Drs. I. Van Heerden and 14 others.

**Selected Water Publications**

**Books**


**Book chapters**


Journal Articles


Patricia Kay Smith
Associate Professor
patti-smith@tamu.edu

Current Appointment
Associate Professor, Department of Biological and Agricultural Engineering, Texas A&M University

Education
2000 Ph.D., Biological and Agricultural Engineering, North Carolina State University
1996 M.S., Biosystems and Agricultural Engineering, Oklahoma State University
1992 B.S., Management, Oklahoma State University

Past Appointments
2000–2006 Assistant Professor, Department of Biological and Agricultural Engineering, Texas A&M University

Professional Activities/Awards
2012-2015 Cintron University Professor for Undergraduate Teaching Excellence
2011 American Society of Agricultural and Biological Engineering Superior Paper Award.

Selected Grants/Research Funding
Preparing Underrepresented Scholars for Challenges in Agricultural Biosecurity and Sustainability USDA CSREES National Needs, $229,500
Preparing Underrepresented Scholars for Research Careers in BAEN and Veterinary Medicine, USDA Multicultural Scholars Program, $144,000

2004-2006 Water in the Environment, Information Technology in Science (ITS) Center for Teaching and Learning (NSF funded center), $40,000

Effects of Urbanization on Ecological Services In a Semi-Arid Region of the United States NASA Land Cover-Land Use Change Program (NRA-00-OES-8), 2001-2004, $33,000

Selected Water Publications

Book Chapters


Journal Articles


Raghavan Srinivasan

Professor
r-srinivasan@tamu.edu

Current Appointment
Professor Texas A&M University and Texas AgriLife Research
Director of Spatial Sciences Laboratory, Texas A&M University
Adjunct Professor, School of Rural Public Health, Health Science Center, Texas A&M University

Education
1992 Ph.D., Agricultural Engineering, Purdue University,
1989 M.S., Agricultural Engineering, Asian Institute of Technology (Bangkok)
1984 B.E., Agricultural Engineering, TNAU (India)

Past Appointments
1999-2004 Associate Professor, Texas A&M University and Texas Agricultural Experiment Station
1999-2000 Assistant Director of Mapping Science Laboratory, Texas A&M University
1996-1999 Assistant Professor, Texas Agricultural Experiment Station
1992-1996 Agricultural Engineer and Associate Research Scientist, Texas Agricultural Experiment Station

Professional Activities/Awards
2009 Texas AgriLife Extension Superior Service Team Award
2008 American Society of Agronomy Extension Educational Materials Award for the Southern Region Water Quality Regional Web site (srwqis.tamu.edu)
2004 AWRA Boggess Award for paper “Simulated Impacts of El Nino/Southern Oscillation on United States Water Resources”
2001 Vice Chancellor’s Award in Excellence in recognition of outstanding contributions and performance as a member of a research team (Soil and Water Assessment Tool Team)
1998 Awarded Scientist of the Year at Blackland Research Center

Selected Water Publications
Journal Articles


John D. Vitek
Professor Emeritus
jvitek@neo.tamu.edu

Current Appointment
Adjunct Professor in Geology and Geophysics and Geography,
Texas A&M University

Education
1973 Ph.D., Geography, University of Iowa, Iowa City
1970 M.A., Geography, University of Iowa, Iowa City
1964 B.S., Mathematics and Geography, Wisconsin State University,
Stevens Point

Past Appointments
2008 Adjunct Professor in Geology and Geophysics and Geography,
Texas A&M University
2005-2008 Assistant Dean, Office of Graduate Studies, Texas A&M
University
2003-2005 Professor of Geology, Oklahoma State Univ.; retired from OSU.
2002-2003 Interim Executive Vice President, August 2002 through June
2003
1997-2002 Associate Vice President for Academic Affairs, July 1997
1992-1995 Professor of Geology (inc. a 50% appointment with the NASA
Aerospace Education Services Project)
1989-1992 Associate Dean, Graduate College, Oklahoma State
1982-1988 Assistant Dean, Graduate College, Oklahoma State (50%)
1982-1992 Coordinator of Environmental Sciences, Oklahoma State
1984-1986 Professor of Geography, Oklahoma State University

Professional Activities/Awards
2007 Recipient of Mel Marcus Distinguished Career Award,
Geomorphology Specialty Group AAG
2004 Named Outstanding Faculty Advisors for Residential Life (along
with Peggy Vitek), Oklahoma State University, May 2004
2004 Named Senior Editor for Special Issues of Geomorphology
2001 Binghamton Geomorphology Symposium Achievement Award

Selected Grants/Research Funding
1996-2001 Marks, S. and Vitek, J.D., Knowledge of the Environmental
System: Student Contributions to Data Collection and
Interpretation; NASA EPSCoR, Oct. 1, 1996 to September 30,
1999 ($326,997). Renewed through September, 2001 ($216,000).
1993 Mills, T.J. and Vitek, J.D., Environmental Sciences: An Interdisciplinary Perspective of Science, Technology, and Societal Interactions; Summer Academy for High School Students, Oklahoma State Regents for Higher Education ($37,379).

Selected Water Publications

Books


Book chapters


Journal Articles


**Bradford P. Wilcox**

Professor  
bwilcox@tamu.edu

**Current Appointment**  
Professor, Department of Ecosystem Science and Management, Texas A&M University

**Education**

1986  
Ph.D., Rangeland Hydrology, Department of Animal and Range Science, New Mexico State University

1982  
M.S., Rangeland Ecology, Department of Range and Wildlife, Texas Tech University

1978  
B.S., Rangeland Management, Department of Range and Wildlife, Texas Tech University

**Past Appointments**

2004–2006  
Professor, Rangeland Ecology and Management, Texas A&M University

2000–2004  
Associate Professor, Rangeland Ecology and Management, Texas A&M University

1996–2000  
Chief Scientific Officer, Inter-American Institute for Global Change Research, Sao Jose dos Campos, Brazil

1991–1996  
Research Hydrologist, Los Alamos National Laboratory, Los Alamos, New Mexico

1988–1991  
Research Hydrologist, USDA-Agricultural Research Service, Boise, Idaho

1985–1988  
Visiting Assistant Professor, Watershed Science, Department of Earth Resources, Colorado State University, Fort Collins, Colorado

**Professional Activities/Awards**

2011  
Outstanding Contribution to Rangeland Management Award, Texas Section of the Society for Range Management

2011  
Ming Ko Woo Lecturer for the Canadian Geophysical Union

2010  
Outstanding Technical Publication, Texas Section of the Society for Range Management

2008  
Outstanding Technical Publication, Texas Section of the Society for Range Management

2005  
Outstanding Technical Publication, Texas Section of the Society for Range Management

2004  
Outstanding Undergraduate Teaching Award in the Department of Rangeland Ecology and Management, Texas A&M University

2002  
Outstanding Technical Publication, Texas Section of the Society for Range Management
Selected Grants/Research Funding
Wilcox, B. P. (PI), M. Sorice, W. Fox, C. Hart, and J. Angerer. Managing rangeland watersheds for enhanced ecosystem services: learning from the past and planning for the future. USDA CSREES Managed Ecosystems, 20010–2013, $400,000.

Krutovsky, K. (PI), B. P. Wilcox (Co-PI), et al. A graduate program in forest resources: developing integrated expertise in forest resource management, conservation and restoration, USDA CSREES National Needs Fellowship Program, 2010–2013, $234,000.


Wilcox, B. P. (Co-PI), and others. Los Alamos National Laboratory Environmental Restoration Project. Ecological and hydrological processes in semiarid ecosystems: implications for long-term contaminant mobility and landfill cover design. Fiscal Years 1991–1996, $400,000–$800,000 per year.

Selected Water Publications
Book chapters


Journal Articles


Richard T. Woodward

Professor
r-woodward@tamu.edu

Current Appointment
Professor, Department of Agricultural Economics, Texas A&M University

Education
1997 Ph.D., Agricultural and Applied Economics, University of Wisconsin, Madison
1994 M.S., Agricultural Economics, University of Wisconsin, Madison
1984 B.A., Economics, Middlebury College, Middlebury, VT

Past Appointments
2003-2011 Associate Professor, Department of Agricultural Economics, Texas A&M University
1997-2003 Assistant Professor, Department of Agricultural Economics, Texas A&M University
1994-1994 Consultant, World Resources Institute
1988-1991 Research Associate for the World Resources Institute, Washington DC and San José, Costa Rica
1985-1987 Peace Corps Volunteer, Costa Rica

Professional Activities/Awards
1998 Outstanding Ph.D. Dissertation Honorable Mention, American Agricultural Economics Association
1995-1996 Joseph L. Fisher Fellowship from Resources for the Future
1991-1992 Wisconsin Alumni Research Foundation Fellowship,

Selected Grants/Research Funding
Center for Teaching Excellence Incentive Grant ($650) for the purchase of the National Geographic on CD-ROM and supporting software. Images from the CD-ROM are integrated into lectures for AGEC 350. 1998. (Internal, competitive)

NSF IGERT: Applied Biodiversity Science - Bridging Ecology, Culture, and Governance for Effective Conservation. PIs L. Fitzgerald (WFSC) and A. Stronza (RPTS). Applied Biodiversity Science - Bridging Ecology, Culture, and Governance for Effective Conservation Lee Fitzgerald (WFSC) and Amanda Stronza (RPTS) PIs, three Co-PIs and 15 Faculty Participants. $3,002,038 (External, competitive)

**Selected Water Publications**

Books


Book chapters


Journal Articles


Ralph A. Wurbs
Professor
r-wurbs@tamu.edu

Current Appointment
Arthur McFarland Professor of Civil Engineering, Texas A&M University

Education
1978 PhD., Civil Engineering, Water Resources Systems Planning and Management Program, Colorado State University
1974 M.S., Civil Engineering, Water Resources Engineering Program, University of Texas
1971 B.S., Civil Engineering, Texas A&M University

Past Appointments
1971-1980 U.S. Army Corps of Engineers Fort Worth District
1969-1970 Texas Department of Transportation

Professional Activities/Awards
2009-2012 Freese and Nichols Faculty Fellow
2008 Truman R. Jones Excellence in Graduate Teaching Award
2000 National J. M. Robbins Teaching Excellence Award from Chi Epsilon Honor Society
1999 Southwest Region Teaching Excellence Award from Chi Epsilon Honor Society
1993 Association of Former Students Distinguished Teaching Award
1991/1992 Zachry Award for Excellence in Teaching
1996/2005 Texas Section ASCE John B. Hawley Award for Best Paper

Selected Grants/Research Funding
U.S. Army Corps of Engineers (USACE) Fort Worth District, 1988-1989, 2001-2005


**Selected Water Publications**

**Books**


**Book chapters**


**Journal Articles**


Hongbin Zhan
Professor
zhan@geos.tamu.edu

Current Appointment
Endowed Ray C. Fish Professor in Geology, Department of Geology and Geophysics, Texas A&M University

Education
1996 Ph.D., Hydrology/Hydrogeology, University of Nevada
1993 M.S., Physics, University of Nevada
1989 B.S., Physics, University of Science and Technology of China

Past Appointments
2002-2007 Associate Professor, Department of Geology and Geophysics, Texas A&M University
1996-2002 Assistant Professor, Department of Geology and Geophysics, Texas A&M University
1995-1996 George B. Maxey Fellow of Water Resource Center, Desert Research Institute

Professional Activities/Awards
2010-2013 Distinguished Endowed Chang-Jiang Scholar, Ministry of Education, China
2010 Endowed Ray C. Fish Professor in Geology, Texas A&M University
2009 Dean’s Distinguished Achievement Award in Faculty Teaching
2006 Fellow of Geological Society of America
2004 Distinguished Oversea Young Scientist Award, National Science Foundation of China
2002 Fred Burggraf Award, Transportation Research Board (TRB), The National Academics
2001-2002 Big 12 Faculty Fellowship, Texas A&M University
1999-2000 Montague Scholar, Center for Teaching Excellence, Texas A&M University

Selected Grants/Research Funding
Giardino, J.R., Marcantonio, F., Everett, M., Zhan, H., and Pope, M., Pathways to Doctorate. Texas A&M University, $38,000, 2011-1012.

Hu, B., Zhan, H., Study on the rheological mechanism and the long-term stability of weak joint rockmass of reservoir bank high slopes under the influence of periodic large-scale water level fluctuation, National Science Foundation of China (No. 41172281), RMB 800,000 (equivalent to $125,000), 2012-2015.

Zhan, H., and Sparks, D., “Is water table a "material" free surface?”, Advanced Research Program (ARP), Texas Higher Education Coordinating Board, $120,000, 2008-2010.
Qian, J., Zhan, H., Theoretical and experimental study of solute non-Fickian transport in fractured media, National Science Foundation of China, #40872166, RMB 390,000, 2009-2011.

Zhan, H., and Huang, G., “Non-Darcian flow and transport in soils and aquifers”, National Science Foundation of China, RMB 400,000 ($50,000), 2005-2008.

**Selected Water Publications**

**Book chapters**


**Journal Articles**

Mieles, J, and Zhan, H., Analytical solutions of one-dimensional multispecies reactive transport in a permeable reactive barrier-aquifer system, Journal of Contaminant Hydrology, in press,


You, K., Zhan, H., and Li, J., Gas flow to a barometric pumping well in a multilayered unsaturated zone, Water Resources Research, 47, W05522, 2011.


APPENDIX B

Research Areas of Water Faculty

Our faculty work in the following areas.

Agricultural Water Management

Kelly Brumbelow, Sam Feagley, James Gilley, Ronald Lacewell, Clyde Munster, Vijay Singh, Patricia Smith

Coastal Studies

Bruce Herbert, Daniel Roelke, Sam Brody, Mike Lindell

Climate Variability/Change

Kelly Brumbelow, Bruce McCarl, James Mjelde, Gerald North, Steven Quiring

Contaminant Detection, Transport, Remediation

Bruce Herbert, Karthi Karthikeyan, Cristine Morgan, Jacqueline Ann Aitkenhead-Peterson, Suresh Pillai, Terry Gentry, Robin Autenrieth, Bill Batchelor, Sam Feagley, Ann Kenimer, Francisco Olivera

Ecohydrology

Binayak Mohanty, Georgianne Moore, Clyde Munster, Jacqueline Ann Aitkenhead-Peterson, Bradford Wilcox

Economics of Water

Ronald Griffin, Ronald Kaiser, Ronald Lacewell, Bruce McCarl, James Mjelde, Douglas Shaw, Richard Woodward

Hydrology

Tony Cahill, John (Rick) Giardino, Chris Mathewson, Georgianne Moore, Clyde Munster, Francisco Olivera, Vijay Singh, Patricia Smith, John (Jack) Vitek, Bradford Wilcox, Ralph Wurbs, Hongbin Zhan

Hydrogeology

John (Rick) Giardino, Bruce Herbert, Chris Mathewson, Kevin McInnes, Binayak Mohanty, Clyde Munster, John (Jack) Vitek, Hongbin Zhan, Inci Guneralp
Infomatics and Geographic Information Systems

John (Rick) Giardino, Francisco Olivera, Steven Quiring,
Raghavan (Sri) Srinivasan

Modeling (Groundwater)

Bruce Herbert, Kevin McInnes, Binayak Mohanty, Cristine Morgan, Vijay Singh,
Hongbin Zhan

Modeling/Surface Water

Tony Cahill, Clyde Munster, William Neill, Francisco Olivera, Steven Quiring,
Daniel Roelke, Vijay Singh, Patricia Smith, Raghavan (Sri) Srinivasan,
Ralph Wurbs

Riparian/Stream Restoration

Sam Feagley, John (Rick) Giardino, Ming Han Li, Mike Lindell, Francisco Olivera,
Jacqueline Ann Aitkenhead-Peterson

Stormwater Management

Sam Brody, Kelly Brumbelow, John Jacob, Ming Han Li, Mike Lindell,
Francisco Olivera

Water Conservation

Kelly Brumbelow, James Gilley, Ronald Griffin, Ronald Kaiser,
Ronald Lacewell, Douglas Shaw, Richard Woodward

Water Management/Policy Analysis

Robin Autenrieth, Sherry Bame, Sam Brody, Kelly Brumbelow, Ronald Griffin,
Ronald Kaiser, Mike Lindell, Douglas Shaw, Richard Woodward, Ralph Wurbs

Watershed Management

Sam Brody, Kelly Brumbelow, Sam Feagley, John (Rick) Giardino, John Jacob,
Ronald Kaiser, Georgianne Moore, Patricia Smith, Bradford Wilcox, Ralph Wurbs

Water Resources Planning

Sam Brody, Kelly Brumbelow, Ronald Kaiser, Ming Han Li, Mike Lindell,
Georgianne Moore, Kathleen O'Reilly, Ralph Wurbs
Water Recreation

Ronald Kaiser, Douglas Shaw, Richard Woodward

Wetland Science Management

Sam Brody, Bruce Herbert, John Jacob, Ann Kenimer, Robert Knight, William Neill, Daniel Roelke, Georgianne Moore
## APPENDIX C

### Characteristics of Texas Doctoral Programs

<table>
<thead>
<tr>
<th>Texas A&amp;M University</th>
<th>18 Characteristics of Texas Public Doctoral Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Intercollegiate Faculty of Water Management &amp; Hydrological Sciences</td>
</tr>
<tr>
<td>Doctoral Degree Program</td>
<td>Water Management &amp; Hydrological Sciences</td>
</tr>
<tr>
<td>Contact Name</td>
<td></td>
</tr>
<tr>
<td>Contact Phone Number</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Degrees Per Year</th>
<th>2007-2008</th>
<th>2008-2009</th>
<th>2009-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average, 2007-2009</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Three-year average of the number of degrees awarded per academic year</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3 Year Average</td>
<td></td>
<td></td>
<td>1.33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Graduation Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Cohorts: 1998-2000</td>
</tr>
<tr>
<td>Three-year average of the percent of first-year doctoral students who graduated within ten years. First-year doctoral students: Those students who have been coded as doctoral students by the institution and have either completed a master's program or at least 30 SCH towards a graduate degree.</td>
</tr>
<tr>
<td>% Graduating within 10 Years</td>
</tr>
<tr>
<td>Years with Cohort greater than 0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Average Time to Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students Starting 1998-2000</td>
</tr>
<tr>
<td>Three-year average of the registered time to degree[3] of first-year doctoral students within a ten year period. [3] Registered time to degree: The number of semesters enrolled starting when a student first appears as a doctoral student until she completes a degree, excluding any time taken off during graduate study. The number of years is obtained by dividing the number of semesters by three.</td>
</tr>
<tr>
<td>Average Years to Degree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>(In field within one year of graduation). For each of the three most recent years, the number and percent of graduates by year employed, those still seeking employment, and unknown</td>
</tr>
<tr>
<td>Employed</td>
</tr>
<tr>
<td>Number</td>
</tr>
<tr>
<td>2007-2008</td>
</tr>
<tr>
<td>2008-2009</td>
</tr>
<tr>
<td>2009-2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Admissions Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of admission factors</td>
</tr>
<tr>
<td>Follow University Criteria and process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percentage Full-time Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTS/number of students enrolled for the last three fall semesters.</td>
</tr>
<tr>
<td>Fall 2008</td>
</tr>
<tr>
<td>Fall 2009</td>
</tr>
<tr>
<td>Fall 2010</td>
</tr>
<tr>
<td>3 yr average</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Average Institutional Financial Support Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>For those receiving financial support, the average monetary institutional financial support provided per full-time graduate student for the prior year, from assistantships, scholarships, stipends, grants, and fellowships. Does not include tuition or benefits.</td>
</tr>
<tr>
<td>$15,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percentage Full-time Students with Institutional Financial Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the prior year, the number of full-time students with at least $1,000 of actual support/the number of full-time students</td>
</tr>
<tr>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Core Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of core faculty in the prior year</td>
</tr>
<tr>
<td>41</td>
</tr>
</tbody>
</table>
### Student-Core Faculty Ratio

Three-year average of full-time student equivalent (FTSE) / three-year average of full-time faculty equivalent (FTE) of core faculty. Core Faculty: Full-time tenured and tenure-track faculty who teach 50 percent or more in the doctoral program or other individuals integral to the doctoral program who can direct dissertation research.

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2008</td>
<td>.2</td>
</tr>
<tr>
<td>Fall 2009</td>
<td>.3</td>
</tr>
<tr>
<td>Fall 2010</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

### Core Faculty Publications

Three-year average of the number of discipline-related refereed papers/publications, books/book chapters, journal creative/performance accomplishments, and notices of discoveries/filed/patents issued per year per core faculty member.

<table>
<thead>
<tr>
<th>Year</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

### Core Faculty External Grants

Three-year average of the number of core faculty receiving external funds, average external funds per faculty, and total external funds per program per academic year. All external funds received from any source including research grants, training grants, gifts from foundations, etc., reported as expenditures.

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of the Number of Core Faculty receiving external funds</td>
<td>25</td>
</tr>
<tr>
<td>Average External Funds per Faculty</td>
<td>$400,000</td>
</tr>
<tr>
<td>Total External Funds</td>
<td>$10,000,000</td>
</tr>
</tbody>
</table>

### Faculty Teaching Load

Total number of semester credit hours in organized teaching courses taught per academic year by core faculty divided by the number of core faculty in the prior year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25.1</td>
</tr>
</tbody>
</table>

### Faculty Diversity

Core faculty by ethnicity (White, Black, Hispanic, Other) and gender, updated when changed.

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>33</td>
<td>9</td>
</tr>
<tr>
<td>Black</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

### Student Diversity

Enrollment headcount by ethnicity (White, Black, Hispanic, Other) and gender in programs in the prior year.

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Black</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

### Date of Last External Review

Date of last formal external review, updated when changed.

WMHS program is only 5 years old—no external review conducted to date.

### External Program Accreditation

Name of body and date of last program accreditation review, if applicable, updated when changed.

NA

### Student Publications/Presentations

For the three most recent years, the number of discipline-related refereed papers/publications, journal creative/performance accomplishments, book chapters, books, and external presentations per year by student FTE.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5</td>
</tr>
</tbody>
</table>
APPENDIX D

WMHS Recruitment Brochure