

# COMMUNIQUE

Summer 2015

A newsletter for alumni and friends of the  
School of Civil Engineering and Environmental Science  
at the University of Oklahoma

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UNIVERSITY  
— of —  
OKLAHOMA

*Gallogly College of Engineering*

School of Civil Engineering  
and Environmental Science



# From the Director

## Hello, Alumni and Friends!

Time flies. It seems like just yesterday that I was drafting a letter for last year's edition of the *Communiqué*. Either it is a sign of getting older, or it was a year chock full of CEES activities... or both, as can be confirmed by looking at my picture and by examining the diverse content found on these pages.

With this issue, we are pleased to unveil our new publishing layout. After an extensive review of other templates, we settled on this one because of the clean lines and consistent professional look. We hope you enjoy it. More importantly, we sincerely hope you are excited about the content of the newsletter, as this issue is packed with CEES highlights from the last year, including the following:

- the announcement of our Fourth International WaTER Prize-winner, Peter Lochery, for his 30 plus years of service to the WASH (Water, Sanitation, Hygiene) community, most recently with CARE;
- a recap of student competition teams, capstone projects and awards won by our outstanding students;
- an update on a campus-wide multidisciplinary service-learning opportunity in Uganda and Rwanda, involving faculty from engineering, law, architecture, business, arts and sciences, international studies, and medicine;
- a tribute to four long-serving CEES Visiting Council members;
- and announcement of a major research award from NIST that will allow CEES and other engineering faculty to participate in the National Community Resilience Center of Excellence, as well as updates on many other research activities.

The new layout of the *Communiqué* is just part of our strategic plan to refresh and expand alumni communications. To that end, we have created three ways for you to stay connected with CEES: 1) a LinkedIn group, "University of Oklahoma CEES Alumni and Friends"; 2) a Facebook page open to all Facebook users, "OU Civil Engineering and Environmental Science"; and 3) a blog on our website where we archive current events ([cees.ou.edu](http://cees.ou.edu) and then click on the "News and Media" link). We are systematically reaching out to alumni through our database, so some of you may have already been contacted about joining the LinkedIn group. If you have not been contacted yet, but you would like to join, please send a request via LinkedIn. In addition to general announcements and updates, we will also use these outlets to post job listings that come through our office. So, don't miss out on the fun – ask to join today!



Development and fund-raising will also continue to be a CEES priority, as we strive for excellence in all of our educational and research offerings in an era of shrinking state support. A heartfelt thanks to all of you who have supported CEES in the past, including those who responded to our "Live On" campaign letter that was sent out in the spring. The campaign fliers are also included at the end of this newsletter; please consider supporting your alma mater.

In preparing the new layout and content for this edition of the *Communiqué*, we dug through archived issues dating back to 1982. What a historical treasure chest! After reviewing these, I have a renewed appreciation for all of the faculty, staff and students who have preceded us in CEES; their hard work, vision and dedication laid the foundation for the many successes we have achieved over the last decade. But we are not resting on our laurels – this program is great, but it has room for more growth. A slogan started by President Boren when I first arrived (20 years ago, now) keeps running through my head: "CEES Excellence. Don't keep it a secret!" I truly believe we have a gem of a school, so help us to get the word out to employers, prospective students and the profession in general.

As OU celebrates its 125th anniversary this year, I encourage you take the time to reflect on your days at OU and use this as an opportunity to reconnect with friends and the school. I hope to hear from many of you during the upcoming year!

Sincerely,

Randall L. Kolar, Ph.D., P.E.  
David Ross Boyd Professor  
Austin Presidential Professor  
Director, School of Civil Engineering  
and Environmental Science

(P.S. — At press time, we learned of the passing of CEES and OU icon, Professor Joakim Laguros. A brief eulogy is included on page 7.)

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## CEES Administrative Team

**Randall L. Kolar**  
Director

**Gerald A. Miller**  
Associate Director

**Elizabeth C. Butler**  
**Kianoosh Hatami**  
**Jeffery S. Volz**  
Committee A

**Mark A. Nanny**  
Undergraduate Studies

**Amy B. Cerato**  
Graduate Studies

**Audre L. Carter**  
Administrative Assistant

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**Visit our blog at**  
**[cees.ou.edu/blog](http://cees.ou.edu/blog)**



## CEES Visiting Council

**Kyle Arthur**  
Chesapeake Energy

**K. Michelle Barnet, P.E.**  
ENERCON Services

**Jim Benson, P.E.**  
Poe & Associates, Inc.

**Jesse Berdis**  
John F. Kennedy Space Center

**Michael Graves, P.E.**  
Garver

**Geri Hart, P.E.**  
Tinker Air Force Base

**Martin Hepp, P.E.**  
CEC Infrastructure Solutions

**Stacy Loeffler, P.E.**  
BKL, Inc.

**Bryan Mitchell, P.E.**  
CH2M Hill

**Nasir Marakah, P.E.**  
Midwest Engineering and Testing Corp.

**M. Gene Phillips, P.E.**  
Wallace Engineering

**Alan Soltani, Ph.D., P.E.**  
Olsson Associates

**David Streb, P.E.**  
Poe & Associates, Inc.

**Scott Sturtz, P.E.**  
City of Norman

**Tim Tegeler, P.E.**  
Oklahoma Department of Transportation

**Rory Victor**  
ExxonMobil Development Company



## Sooners Without Borders Return to El Salvador



SWB students and advisers spent their Thanksgiving week in El Salvador working on several water projects for a second year in a row. The 11 students spent most of their time installing a solar-powered water pump system and digging and preparing a garden for a school in San Hilario. Because of the new well and pump, the school can now grow fruits and vegetables year-round, even during the dry season. The tank, well, pump and solar panels were purchased using donations from two Rotary clubs in California.



In addition to the work at San Hilario, SWB students collected data on a major water system that provides water to about 400 families scattered over four to five villages. They plan to model the system and make recommendations on extending well water to a second storage tank to meet additional water demands. This work is being led by the Engineers Without Borders professional chapter in Iowa City, Iowa. Both tanks were funded by a Rotary Foundation Global Grant.

## Environmental Capstone Students Develop Stormwater Plans for City of Grove

The Spring 2015 Environmental Science/Engineering capstone project addressed a stormwater management problem in Grove Springs Park near Grove, Oklahoma, where the runoff combines with spring flow. The actual spring still flows crystal clear, but its water quality is impacted in the park by urban drainage that is full of nutrients, sediments, trash and algae. The combined flow works its way out to Wolf Creek Park and ultimately to Grand Lake. The project involved collecting and analyzing upstream and downstream samples on both drainages and the combined flow. The resulting data were used to develop a low-impact development, best-management practice for the park to address urban storm water quality. Student design teams worked with Sam Grasso (an active local citizen leader) and the Grove city manager and Public Works director, as well as other staff. The students presented their results to the City of Grove City Council on April 21.





## Concrete Canoe

The OU-ASCE Concrete Canoe Team won the following awards for Concrete Canoe at the ASCE Mid-Continent Student Conference, held in Lawrence, Kansas, April 23-25. The theme of this year's canoe was a tribute to the World War II battleship, the U.S.S. Oklahoma.

- 1st place Final Product
- 1st place Women's Endurance Race
- 2nd place Men's Endurance Race
- 3rd place Women's Sprint Race
- 3rd place Coed Sprint Race
- 3rd place Overall

Led by co-captains Amy Crone and Daniel Velazquez, the 2015 OU-ASCE Concrete Canoe members included:

Lexis Allen  
Douye Allison  
Michelle Basham  
Jacob Choate  
Becky Franz  
Megan Gelderman  
Kristen Hayden  
Samantha Heinrich  
Amelia Joly  
Bryce Lawson

Charlie McDaniel  
Rex McLauchlin  
Saleh Mullayousef  
Grant Rilling  
Shauna Snyder  
Kylie Tommaney  
Owen Watley  
Landon Watson  
Rachel Wesson



*Photos taken by Saleh Mullayousef*



## Steel Bridge

The steel bridge team successfully completed the construction and lateral load phases of their competition. During the load test, at about 1700 lbs. of load, a connection plate buckled, which caused the bridge to exceed the allowable deflection and was thus disqualified. It should be noted that none of the steel bridge team had

taken Steel II, the course that deals with this issue. Steel Bridge Team members included:

Chase Angier  
Ivan Lopez

Marcus Dixon  
Andrew Newberry-Davis



## Architectural Engineering Capstone Students Design OU Research Building

The Spring 2015 Architectural Engineering capstone students designed a new building for the south OU research campus. The approximately 40,000-square-foot building would house the Water Innovation Research Laboratory, which will combine water research programs across the university, operate as a collective laboratory to provide water-related public services and serve as a visible “front door”

to the university’s water-related education, research and outreach programs. In addition to the architectural layout, the students designed the structural, lighting, and HVAC systems, as well as the foundation. Final presentations were held on April 30 on the OU campus in front of some of the lab’s constituents.

## Civil Engineering Capstone Students Design New Bridge

The Spring 2015 Civil Engineering capstone project involved the design of a new bridge to replace the 76-year-old James C. Nance Memorial Bridge located between the towns of Lexington and Purcell, Oklahoma. This 3,600-foot-long bridge is one of the longest bridges in Oklahoma, and it has suffered severe deterioration as



it reaches the end of its service life. Located above the South Canadian River, the Oklahoma Department of Transportation plans to replace the existing two-lane bridge with a new four-lane structure, which presented a variety of challenges to the capstone groups by requiring them to address the structural, hydrological, environmental, and construction aspects. Final presentations were held April 30 on the OU campus, with members of ODOT in attendance.

## Fourth OU International Water Prize-winner Announced

On Sept. 26, 2014, the OU WaTER Center hosted its Fourth Biennial Water Symposium at Gaylord Hall on the OU campus, where Peter Lochery was announced as the winner of the 2015 OU International Water Prize. Since 1995, Lochery has led the expansion of CARE’s Water Team strategies to include action, learning, partnership and advocacy. An environmental engineer with over 30 years of WASH experience, Lochery has worked in the private sector, most recently CARE, and also with the World Bank’s Water and Sanitation Program. He currently serves on the board of Building Partnerships for Development in Water and Sanitation, Water/WASH Advocates and the Millennium Water Alliance, both of which he was a founding father.



Lochery will formally receive the Water Prize and give the plenary lecture at the OU International WaTER Conference, scheduled for Sept. 21-23, 2015, in Norman, Oklahoma. The conference theme, “Off the Grid: Sustainable Water and Sanitation in a Non-Networked World,” is designed to bring together participants from multiple disciplines responding to the UN Millennium Development Goals of bringing water and sanitation to developing countries. Attendees will include water and sanitation experts from academia, industry, NGOs, government and foundations; we anticipate over 200 participants from 20 or more countries. For further details go to [WaTER.ou.edu](http://WaTER.ou.edu). We look forward to seeing you there!





## CEES and WaTER Center Offer New Minor in WASH

CEES and the OU WaTER Center are now offering students a minor in Water and Sanitation for Health and Sustainable Development. The “WaTER Minor” is designed for engineering and non-engineering majors who have an interest in development work in emerging regions, particularly the sectors of water, sanitation and health. Participating students pursue a well-rounded curriculum of courses in engineering and technology, social entrepreneurship, cultural anthropology or related fields. The underlying philosophy is that sustainable solutions for WaSH are found at the intersection of these three core focal points.

Developed by faculty and staff of the OU WaTER Center in collaboration with colleagues from across the OU campus, the purpose of the minor is to prepare students for work in international development as participants and leaders in social

service organizations and institutions, such as the Peace Corps, USAID, the U.S. Department of State, WaterAid, and Engineers Without Borders. Even for those who do not go on to professional service work, the minor will increase awareness in tomorrow’s societal leaders on specific challenges and opportunities facing developing countries.

Since its inception in fall 2014, the minor has already attracted eight students, three of whom travelled to Nagpur, India, this summer: Environmental engineering junior Jennifer Salvo, environmental sustainability senior Kyle Mattingly and geography junior Amelia Schwartz worked as research assistants at the National Environmental Engineering Research Institute in Nagpur. For further details about the minor, including course requirements, go to [http://www.ou.edu/content/coe/cees/undergrad\\_programs/water-minor.html](http://www.ou.edu/content/coe/cees/undergrad_programs/water-minor.html)

## CEES Co-Hosts Water Reuse Public Forums

Water reuse in Oklahoma was the topic for three educational outreach forums held in April, May and June that were free and open to the public. In addition to their informational nature, meetings were designed to allow participants to provide input on Oklahoma’s future water resource planning. Wastewater



recycling, reclamation and reuse may be an option for many communities to augment their drinking water supplies, especially in areas where fresh water resources are limited.

Participants included representatives from the Oklahoma Water Resources Board, Department of Environmental Quality, City of Norman, CEES, Garver, North Texas Municipal Water District, City of Wichita Falls, Carollo Engineering, and Water Reuse Association.

The forums were sponsored by the Oklahoma Water Survey together with CEES faculty, the Oklahoma Water Resources Board, Oklahoma Department of Environmental Quality, the City of Norman, and Garver.

## David Sabatini Joins University of Oklahoma Team in Uganda and Rwanda



CEES professor and WaTER Center director David Sabatini joined an interdisciplinary team of OU colleagues on an exploratory trip to Gulu, Uganda and Kigali, Rwanda in April. The team consisted of representatives from the colleges of Architecture, Arts and Sciences, Business, Education, Engineering, International Studies, and Medicine and the Center for the Creation of Economic Wealth. Sabatini represented CEES, the WaTER Center and the College of Engineering.

The first objective of the trip was to explore options for OU students to participate in interdisciplinary service learning projects at St. Monica's Vocational School in Gulu, while also connecting with the local university, local water companies and area NGOs. The second objective, while in Kigali, was to explore similar project opportunities with representatives of the local university, NGOs and government organizations.

The group was hosted by "2014 TIME 100 Most Influential" and "2007 CNN Hero" Sister Rosemary Nyirumbe and the Saint Monica's Vocational School in Gulu, which

also visited Atiak, about an hour north of Gulu, to explore potential water and sanitation projects where Sister Rosemary is establishing a new school.

After five days in Gulu, four team members traveled on to Kigali, where they visited with a number of different entities: representatives from Bridge2Rwanda, a training program to assist high school graduates who want to attend college in the United States; several University of Rwanda faculty members from engineering, architecture and business; native Rwandan graduates of Oklahoma Christian College who have returned to their homeland to pursue their careers; a sanitation/biofuel startup installation initiated

Potential projects identified while at St. Monica's include a master plan for the school that would include water and sanitation facilities, with a water/sanitation/health kiosk built into an exterior wall that also would serve the community, as well as solar and biofuel potential.

is a six-hour van ride north of the capital of Kampala and located near the hotbed of terror imposed by the infamous Joseph Kony and the Lord's Resistance Army.

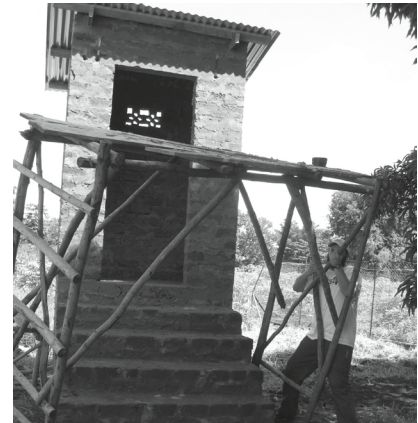
Potential projects identified while at St Monica's include a master plan for the school that would include water and sanitation facilities, with a water/sanitation/health kiosk built into an exterior wall that also would serve the community, as well as solar and biofuel potential. The team

by a UC-Berkeley graduate; an architecture firm designing learning/health centers in rural villages; the minister of Infrastructure; and the Water/Sanitation Corp. Many needs and opportunities for water and sanitation initiatives were identified. Certain elements look more advanced, such as roads and businesses, but others show that great needs still exist in such basic areas as wastewater treatment and availability of drinking water.



While in Kigali, the team also took the opportunity to visit the Kigali Genocide Memorial Centre and ate dinner at Hotel Des Mille Collines, the hotel featured in the movie *Hotel Rwanda*.

“The trip was very illuminating, said Sabatini. “Representatives in both countries expressed great interest in collaborating with OU, and the team identified many opportunities to engage our students in service-learning opportunities, while also meeting needs and advancing development in these countries through capacity-building, student/faculty exchanges and training courses, among others.” The OU team is in the process of evaluating the range of opportunities and developing a plan for next steps. Stay tuned!



## Professor Joakim G. Laguros Passes Away

We learned at press time that CEES, the College of Engineering and the entire university community lost a dear teacher, colleague and friend when CEES professor emeritus Joakim G. Laguros passed away on July 25. Laguros, who joined CEES in 1963, served the school, the college and the university for more than four decades in various capacities, including acting director of CEES and acting and interim dean for Academic Programs. He was named a David Ross Boyd Professor in 1983, the highest honor the university bestows. He officially retired in 1994, but continued teaching and conducting research until moving to Houston in 2010.

Many former students and colleagues recalled Laguros' deep commitment to students and their success. Roozbeh Ghabchi, former geotechnical doctoral student and current CEES post-doc said, “I had the chance to work with him on



a paper as well as take a class. He is always very kind. The first day I came to OU, Dr. Laguros warmly welcomed me into his office – and in Turkish! I felt immediately at home.”

In 1996 Laguros and his wife, Vivian, established the Joakim G. Laguros Civil Engineering Endowed Scholarship fund to assist civil engineering students who are Oklahoma residents with good academic performance and with financial need.

CEES professor David Sabatini, also a David Ross Boyd Professor, said “I am proud to have known professor Laguros – as a colleague, as a fellow alum (he was a proud Cyclone from Iowa State) and as a friend. He made the world a better place – may we all learn from and seek to follow his example.”

Laguros is survived by his wife; son, George; daughter-in-law, Virginia; and grandsons, Michael and Daniel.

## 2014-2015 Graduates

### Summer 2014

#### **B.S. Civil Engineering**

Brandon L. Hankinson  
Chase W. Iddings  
Daniel B. Magesa

#### **B.S. Environmental Engineering**

Erin K. Thornton

#### **M.S. Civil Engineering**

Jacquelyn Baker  
Debaroti Ghosh  
Maryam Varsei

#### **M.S. Environmental Engineering**

Jingling Hu

#### **M.S. Environmental Science**

Elmira Nazar

### Fall 2014

#### **B.S. Architectural Engineering**

Rocio D. Najera

#### **B.S. Civil Engineering**

Luke W. Brandherm  
Jeremy B. Brazel  
John K. Ngoka  
Jeremy D. Penry

#### **B.S. Environmental Engineering**

Spencer P. Shanbour

#### **B.S. Environmental Science**

Cynthia M. Baker  
Kendrick M. Feller

#### **M.S. Civil Engineering**

Eric Agossou

Edmund Chan

Samuel Fadipe

Juan Marcelo Pereira Villarroel

Kavitha Sadhasivam

#### **Ph.D. Civil Engineering**

Danial Esmaili

#### **Ph.D. Environmental Engineering**

Lili Hou

#### **Ph.D. Environmental Science**

Laura Brunson

### Spring 2015

#### **B.S. Architectural Engineering**

Jacob G. Choate  
Mariam G. Halata  
Erik B. Reyes

#### **B.S. Civil Engineering**

Troy M. Bowser  
Ryan C. Campbell  
Brian N. Hiney  
Jenna R. Jacoby  
Jason T. Laubacher  
Catherine D. Lesser  
Tarek A. Maarouf  
George S. Mallett  
Austin Messerli  
Ambika Narayan  
Grant A. Rilling  
Colton C. Roberts  
Andre Guzman Rocha

Kalynn L. Scott

Felix Solis

Patrick A. Thurmond

Daniel M. Velazquez

Owen D. Watley

Landon J. Watson

Diana E. Welch

Bobby R. Williams

Amy M. Wisecarver

#### **Environmental Engineering**

Eli A. Adair

Carolyn B. Arens

Ellen E. Fielding

Sara R. Fielding

Joel W. Harrison

Jessica M. Johnston

Daniel A. Koehler

Vivien A. Rivera

Travis L. Stevens

Torri N. Triplett

Morgan M. Tucker

#### **B.S. Environmental Science**

Kody T. James

#### **M.S. Civil Engineering**

Roy Doumet

#### **M.S. Environmental Engineering**

Brandi Dittrich

Michael Rice

Cameron Spriggs

#### **Ph.D. Environmental Engineering**

Russell Dutnell





**Pierre-Emmanuel Kirstetter, Ph.D.**, has joined the CEES faculty as an adjunct professor. Kirstetter earned his doctoral degree in hydrometeorology at the Université Joseph Fourier, Grenoble, France. To date, Kirstetter has

published 31 articles in peer-reviewed journals and has an additional five articles accepted. He serves on AGU's Precipitation Technical Committee and NASA's Precipitation Measurement Mission science team. He has been science principal



**Darrell E. Townsend II, Ph.D.**, has joined the CEES faculty as an affiliated faculty member. Townsend currently serves as assistant general manager for Ecosystem and Lake Management with the Grand River Dam Authority. He holds a doctorate in rangeland and wildlife ecology (Department of Natural Resource Ecology and Management) from

Oklahoma State University. His expertise lies in development and coordination of new and innovative approaches to multifaceted watershed management, focusing on broad-scale conservation and restoration throughout a complex multi-jurisdictional watershed.

## CEES approved a new policy document in 2014-15 to encourage collaborative appointments with external researchers

investigator on three Earth Science-funded research projects and co-investigator on four other federally funded projects. In addition to his research accomplishments, Kirstetter has actively co-supervised several graduate and undergraduate students, leading to a dozen peer-reviewed publications. He has taught hydrometeorology and hydraulics at the undergraduate and graduate levels, as well as given presentations on meteorology and risk management to various high schools.

Internationally, Kirstetter has made efforts to bridge research collaboration networks over different continents, including Europe, North and South America, and Africa and different communities (satellite, ground radar, hydrology and meteorology). In 2012, he actively led a team to transport a mobile radar from Norman to France and operated the radar during the hydrological cycle in the Mediterranean Experiment (HyMeX), which subsequently inspired a stream of French graduate students to join our research team in Norman

"We are excited to have Dr. Kirstetter join CEES as an adjunct professor," said CEES director Randy Kolar. "Dr. Kirstetter is an exceptional scientist, and his expertise complements the work being done by CEES faculty in the area of hydrometeorology. It further strengthens the research collaboration that exists between CEES and the National Weather Center."

Townsend's vision and technical expertise have been instrumental in developing a successful long-term relationship between CEES faculty and students and his water-quality program at the GRDA Ecosystems and Education Center. Selected examples of ongoing efforts include:

- GRDA OU Graduate Assistantship Program, which provides dedicated long-term (10-year) funding for student stipends and significant in-kind support services for those students;
- Professional internship opportunities through GRDA's Ecosystem Management program, which offers exceptional real-world experiences for undergraduate students;
- Extensive laboratory analytical services, sampling vessel availability, public presentation venue support and other forms of assistance for four environmental science and engineering capstone classes since 2010.

Townsend also has served as an external member on CEES graduate student committees.

"We are very pleased to have Dr. Townsend join CEES as an affiliated faculty member," said CEES director Randy Kolar. "CEES values the professional relationship with GRDA, which was initiated nearly a decade ago, and we view this as another step in the evolution of that partnership. We are confident that this appointment will benefit our faculty by expanding OU-GRDA research opportunities and benefit our students by being able to tap into Dr. Townsend's expertise."

## Understanding the Behavior of Prestressed Girders After Years of Service

After consistently ranking near the bottom of the national list of structurally deficient bridges in the early 2000's, the state of Oklahoma is making a push to eliminate structurally deficient bridges by the year 2020. To address shear capacity concerns related to additional bridges not currently classified as deficient, assistant professor Royce Floyd and associate professor Jin-Song Pei are working with the Oklahoma Department of Transportation on a comprehensive study of two American Association of State Highway and Transportation Officials Type II girders. The girders were obtained from the I-244 bridge over the Arkansas River in Tulsa after its replacement in 2013 after about 47 years in service. The shear capacity of the prestressed girders used for this bridge and others built during the same time period is a concern because the AASHTO Standard specifications used to design these girders employed a less conservative design methodology than what is specified in the current AASHTO Load and Resistance Factor Design specifications. Approximately one-fourth of the bridges (not including culverts) in Oklahoma are precast prestressed concrete girder and slab bridges, and of these, approximately



*Jin-Song Pei*



*Royce Floyd*

10 percent (400) were designed and put in service in the 1960s and 1970s, leaving them potentially vulnerable to concerns with shear capacity. As the state makes a major push to replace structurally deficient bridges, it is important to have a clear understanding of the actual capacity of in-place

bridges designed under the past specifications when rating using the current specifications. This understanding could potentially have a major influence on whether a particular bridge requires load posting or replacement.

The two girders examined in this project are representative of separate designs for 30-foot and 46-foot spans. Both girders are being subjected to a battery of non-destructive testing to assess the effects of damage over time and to destructive shear testing at each end. The project includes a detailed

study of the contribution of the bridge deck and entire bridge system to shear capacity through testing the real-world girders with a section of the original deck and diaphragms intact, through construction and testing of a scaled composite bridge section, and through detailed structural analysis. The effects of end region deterioration on aged girders also are being examined in conjunction with a project sponsored by the Southern Plains Transportation Center. This research will provide ODOT with important information on the structural and composite behavior of aged prestressed girder bridges critical to shear. This information can then be used to inform the rating decisions made for these bridges using the current version of the AASHTO Manual for Bridge Evaluation. The research results have the potential to prevent a significant number of bridges from being added to the structurally deficient list by providing evidence that the actual shear capacity exceeds current requirements. Results obtained to this point indicate actual capacities in excess of the design values and in line with the current specifications, and final conclusions will be made when testing is completed in 2016.





## New Project to Address Mine Water Quality at Tar Creek



CEES professors Robert W. Nairn and Robert C. Knox, along with OU biology professor William J. Matthews, recently were awarded a \$1.6 million grant from the Oklahoma Department of Environmental Quality for design, construction and initial evaluation of a full-scale passive treatment system to address mine drainage contamination in Ottawa County, Oklahoma. This project is an outgrowth of the success of the Mayer Ranch system, the first and only full-scale passive treatment system implemented in the Tri-State Lead-Zinc Mining District and Tar Creek Superfund Site. Completed in 2008 by the OU Center for Restoration of Ecosystems and Watersheds, the Mayer Ranch passive treatment system has successfully addressed metal-contaminated flows of abandoned mine waters for nearly six years by decreasing elevated iron, zinc, lead, cadmium and arsenic concentrations in a series of specifically designed ponds, wetlands and bioreactors.

The overall goal of the new project is to continue to “unlock the black box” of passive treatment by understanding and exploiting specific biogeochemical processes. The objectives are to demonstrate improvement in mine drainage water quality prior to discharge to the receiving waters, evaluate ecosystem development in the



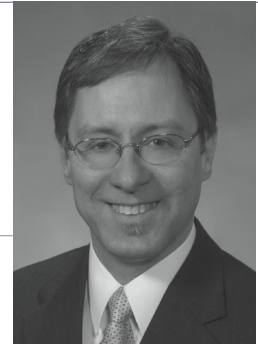
system itself, and document biogeochemical and ecological changes in the receiving waters. The new system will address a major source of mine water discharging to a small first-order tributary to Tar Creek in Commerce, Oklahoma. Since implementation of the first system, limited stream water-quality improvement and ecological recovery (e.g., fish community development) have been documented. The

new system will address four objectives: i) effectively remove iron via aerobic processes, concurrently removing some trace metals via sorption or co-precipitation and degassing carbon dioxide; ii) sequester zinc, lead and cadmium via reductive mechanisms in vertical flow bioreactor substrates; iii) re-aerate the

water to strip hydrogen sulfide and add oxygen; and iv) polish the waters (removal of remaining dissolved and suspended solids) before final discharge. Off-the-grid aeration devices for initial oxidation process units, as well as for the re-aeration process unit, are proposed. Given the proximity of the proposed treatment system to schools, residential areas and commercial districts, the system will be designed to serve as both a functioning ecologically engineered treatment system and an aesthetically pleasing addition to the local landscape.

The overall goal of the new project is to continue to “unlock the black box” of passive treatment by understanding and exploiting specific biogeochemical processes.

## Research Project on Fiber-reinforced Polymer Bridge Decks



Jeffery Volz

The deterioration of our nation's infrastructure is an almost daily news item that attracts passionate political, economic and socio-economic discussions. One of the leading causes of this deterioration is the "bare roads policy" adopted by the majority of state highway agencies during the 1960s. This policy involves the application of deicing salts on state roads during winter months to reduce traffic accidents, injuries and fatalities. An unfortunate side effect of this policy is that deicing salts attack the steel embedded in reinforced concrete bridges, leading to premature deterioration. In 2001, a study sponsored by the Federal Highway Administration predicted that the United States will spend an estimated \$8.3 billion dollars annually over the next 10 years in an effort to repair or replace bridges exhibiting corrosion-related damage,

with indirect costs exceeding 10 times that amount.

Although still in their infancy, fiber-reinforced polymer bridges have shown great promise in eliminating corrosion concerns and meeting or exceeding FHWA's goal of 100-year life spans for bridges. While FRP bridges are cost-effective in terms

Although still in their infancy, fiber-reinforced polymer bridges have shown great promise in eliminating corrosion concerns and meeting or exceeding FHWA's goal of 100-year life spans for bridges.

of life cycle analyses, the combination of higher initial costs and limited state department of transportation budgets has restricted their use. One area that has shown some headway is the use of FRP for bridge decks, focusing on the location where the majority of corrosion-related damage normally occurs. However, first costs still hamper widespread use of this approach.

FRP bridge deck panels offer superior corrosion resistance, at one-fifth the weight of reinforced concrete. However, current FRP bridge deck panels typically rely on an intricate geometric honeycomb system between the top and bottom layers of the sandwich panel. This labor-intensive honeycomb construction doubles the cost of FRP panels compared to reinforced concrete. Although

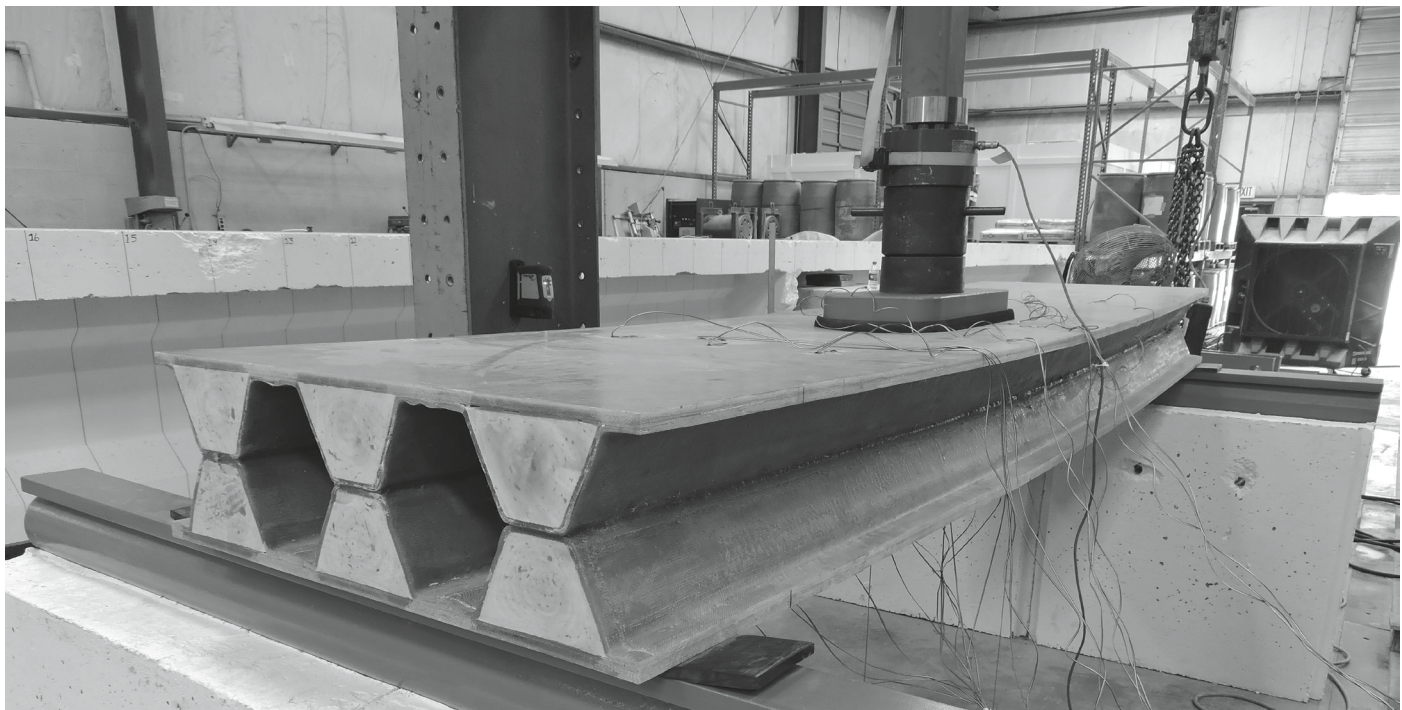


Fig. 1



cost-effective in terms of longevity of the bridge and overall reductions in weight, the lower first cost of reinforced concrete precludes the use of FRP bridge decks in the majority of situations.

Working with a composite manufacturing company in Florida, several state departments of transportation, and Bayer MaterialScience, associate professor Jeffery Volz's research team developed a novel FRP bridge deck configuration that incorporates a new two-part, thermoset, polyurethane resin. This combination of simplified configuration and manufacturing with the new resin system has resulted in a bridge deck panel that is very nearly competitive with reinforced concrete on an initial cost basis. After several years in development, the research team recently completed fabrication and testing of a full scale deck panel, shown in Figure 1. The panel has a depth of 9'-1/4", width of 2'-6", length of 9'-8", and span length of 9'-2". The panel supported a peak

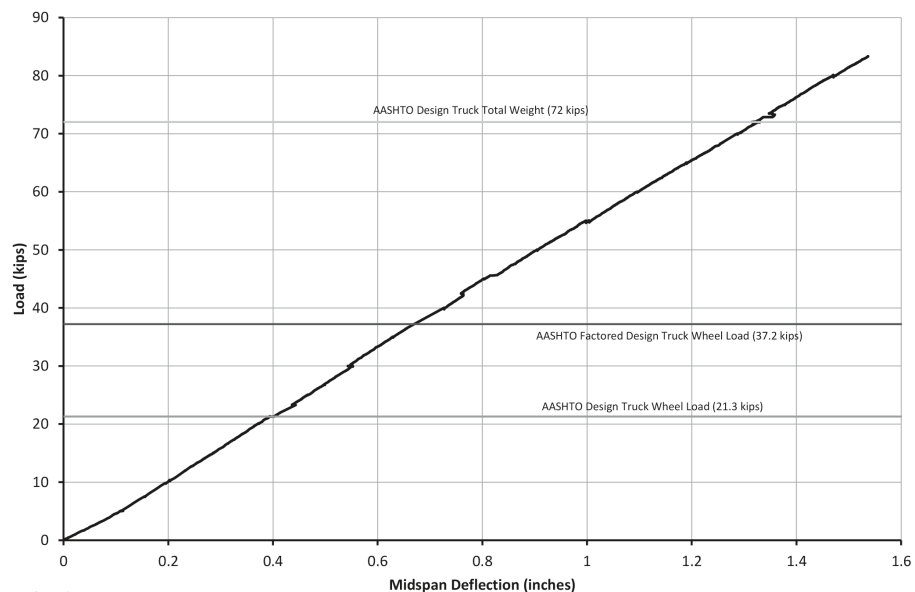


Fig. 2

load of 83.3 kips (83,300 lb) or very nearly four times the AASHTO design truck wheel load of 21.3 kips. A plot of load versus deflection during the test is shown in Figure 2. The panel performed exceptionally well during the load test with failure precipitated by buckling of the sloping webs of the panel.

The research team is currently developing and testing construction details necessary to implement FRP deck panels on an actual bridge, including panel-to-panel connections, panel-to-girder connections, bridge skew, roadway crown, bridge rail attachment, and deck drainage.

## OU Day Declared at Tsinghua University, Beijing

CEES faculty members David Sabatini, Robert Nairn, Yang Hong and Naiyu Wang represented CEES as part of an OU delegation to Tsinghua University (Beijing, China) led by vice president of Research Kelvin Droegemeier. Faculty members from OU Microbiology and Plant Biology, and Meteorology also were present. June 9 was declared "OU day" on the Tsinghua campus and included a full day of research presentations by OU and Tsinghua faculty as well as a ceremonial signing of a Memorandum of Understanding between the universities to facilitate scholarly collaboration. Further discussions identified several areas of mutual strength in the Environmental Sciences and developed preliminary plans for more formal research partnerships, student and faculty exchanges, and establishment of an OU presence in Beijing.



## OU CoE Faculty Members Named Key Participants in Recently Announced \$20M NIST Community Resilience Center of Excellence

The U.S. Department of Commerce's National Institute of Standards and Technology announced Feb. 19 that it has awarded a \$20 million cooperative agreement extending over five years to Colorado State University to establish the Community Resilience Center of Excellence. The centers' multi-disciplinary team includes experts from 10 universities in the fields of engineering, economics and social sciences and data and computing. Co-directed by professors John W. van de Lindt and Bruce Ellingwood in CSU's Department of Civil and Environmental Engineering, the team includes OU College of Engineering faculty members assistant professor Naiyu Wang and associate professor Amy Cerato of CEES and assistant professor Charles Nicholson of Industrial and Systems Engineering. All will play key roles in the centers' research program.

The new center will collaborate closely with NIST to achieve its long-term goal of developing science-based tools and guidelines that individual communities can use to assess their resilience.

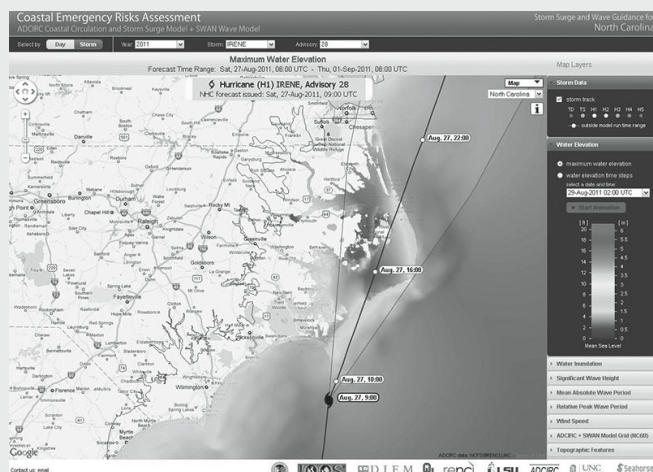
The new center will collaborate closely with NIST to achieve its long-term goal of developing science-based tools and guidelines that individual communities can use to assess their resilience. This includes evaluating the effectiveness of alternative measures intended to improve

performance, minimize post-disaster disruption and recovery time, and target public and private investments in resilience enhancement. The centerpiece of the centers' effort will be NIST-CORE — the NIST-Community Resilience Modeling Environment. NIST-CORE

will provide the measurement technology for developing resilience metrics and decision tools to enhance the resilience of the built environment. In addition to physics-based models of civil infrastructure systems, it will integrate models of social and economic systems that

## OU Receives Grant to Support Computing Center

In summer 2014, CEES faculty members Kendra Dresback and Randy Kolar led a successful proposal to support an Intel® Parallel Computing Center (Intel® PCC), which seeks to modernize key application codes in different areas of science and engineering. In particular, the Intel® PCC at OU focuses on performance optimization of the Advanced CIRCulation model by taking advantage of the architectures of Intel® Xeon processors and Intel® Xeon Phi™ coprocessors. ADCIRC's development is largely driven by real-world, time-critical applications, such as developing FEMA's flood inundation maps for the coastal areas of the United States, designing New Orleans' hurricane protection system for the U.S. Army Corps of Engineers and producing real-time flood predictions due to tropical and extra-tropical storms in the North Carolina region (nc-cera.renci.org). The adjacent figure shows maximum water elevations from the real-time forecast system in the North Carolina region for Hurricane Irene. Hurricane



location is denoted by the black hurricane symbol with the forecast track shown by the black line. At press time, we received notice that the center was renewed for a second year.





Amy Cerato



Naiyu Wang



Charles Nicholson

are vital to the functionality and recovery of communities, such as health care delivery, education, social services, financial institutions and others, and it allows the synergies between essential systems to be examined rationally and quantitatively. Built on an open-source platform, NIST-CORE, with its associated software, databases and transparent user-interfaces, will incorporate a risk-based approach to decision-making that will enable quantitative comparisons of different resilience strategies. As NIST-CORE is developed, its performance will be tested against data gathered from past disasters. Ultimately, NIST-CORE will be able to learn from one analysis to the next — a capability that does not exist in any other risk or disaster resilience model in the world.

**Wang will be responsible for research tasks related to:**

- developing resilience metrics for buildings;
- inventorying buildings and highway systems;
- examining the impact of climate change on natural hazard modeling;
- analyzing uncertainties in the underlying risk-informed decision framework;

- optimizing investments for risk mitigation and community recovery for building inventories and transportation infrastructure networks.

**Cerato will focus on:**

- geo-system integrity of transportation and utility systems;
- research related to underground pipeline behavior, foundation modeling and foundation system fragility analysis.

**Nicholson will conduct research tasks related to:**

- stochastic network analysis;
- modeling interdependencies between infrastructure systems;
- developing novel and efficient meta-heuristic optimization algorithms that support the decision framework by permitting efficient and intelligent searches for solutions in complex decision spaces that involve hundreds or thousands of decision variables.

“This is an incredible opportunity for the University of Oklahoma to play a central role in addressing a problem of national significance,” said Wang. “My colleagues and I are very excited about the prospects of collaborating with leading researchers in many disciplines nationwide to advance the state-of-the-art in community resilience assessment.”

## Research Notes

■ **Scott Harvey and Kanthasamy “Muralee”**

**Muraleetharan** are part of a team that will develop protocols for ODOT engineers to conduct bridge inspections following earthquakes. More specifically, the researchers will implement ShakeCast (a computer code developed by the USGS and Caltrans that identifies vulnerable bridges following an earthquake) for Oklahoma bridges and earthquakes.

■ In March, **Robert Nairn** and **David Sabatini** led an OU delegation to visit Corix headquarters in Canada to explore ways to partner with Corix on water and energy research.

■ **Elizabeth Butler** and **David Sabatini** received a grant from the National Science Foundation to investigate sustainable drinking water adsorptive materials for arsenic and fluoride removal in emerging regions.

■ **Robert Dreifelbis** received a grant from the London School of Hygiene and Tropical Medicine to investigate a life course approach for exploring the impact of sanitation access

and menstrual hygiene management on psychosocial stress, behavior, and health among girls, women, and neonates in Odisha (Orissa), India.

■ **Kianoosh Hatami** and **Gerald Miller** received a grant from the Oklahoma Department of Transportation to conduct a feasibility study of GRS systems for bridge abutments.

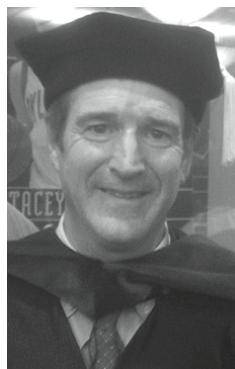
■ **Tohren Kibbey** received a grant from the National Science Foundation to investigate the effect of dynamic surface-associated phase change on environmental mobility in unsaturated environments.

■ **Robert Knox** received a grant from the Grand River Dam Authority to investigate the development of structural and environmental guidelines for habitable structures.

■ **Mark Nanny** received a grant from the OU Biocorrosion Research Center Consortium to investigate the impact of naphthenic acids on the biocorrosion of carbon steel by sulfate reducing bacteria.

■ **Chris Ramseyer** received a grant from the National Science Foundation to investigate the lateral load resistance of residential housing exposed to extreme wind events.

## Russell Dutnell Receives Third Engineering Degree From OU



Russell C. Dutnell (Ph.D., Environmental Engineering, 2015) was born in Lubbock, Texas. As an “Air Force brat,” he went to 10 schools in 12 years before graduating from Norman

High in 1976. He went to work, first on a land survey crew for a local engineering firm, and later as an engineering tech for the City of Norman, where he assisted in conducting land surveys and did drafting (using ink on mylar) for the department. While employed by the city, Dutnell returned to OU, enrolling as a part-time student. In the fall of 1979, he left the city, enrolled full time and found a part-time job as the draftsman for the College of Engineering. Dutnell worked and supported himself through college and received his bachelor of science degree in mechanical engineering from OU in 1983.

Upon graduation, Dutnell went to work for the Air Force as a production engineer, rebuilding turbo-jet engines at Tinker Air Force Base. In 1986, he was hired as the contract manager for Beale Air Force Base in northern California. He liked the job, and the people, and loved the hiking, climbing

and skiing opportunities provided by the Sierras and Lake Tahoe, but the call to return to Oklahoma was too strong. Dutnell returned to Norman and began looking for a job that would allow him to apply his engineering skills to protect the environment. In 1988 he was hired by the Oklahoma State Department of Health (now the Oklahoma Department of Environmental Quality) to conduct waste-load allocation modeling for National Pollutant Discharge Elimination System permitting. Thus began a career of studying creeks and rivers that has spanned more than 25 years. While at ODEQ, he obtained his P.E. license and continued his education, taking evening courses almost every semester (predominantly in CEES).

In 1994, Dutnell went to work for the Oklahoma Conservation Commission, where he was introduced to fluvial geomorphology and natural channel design, and went on to win an EPA Environmental Excellence Award for his efforts in the field. With the support of his OCC supervisor, he continued his education and received his masters of science degree in civil engineering in 2000. Also in 2000, Dutnell left OCC and formed Riverman Engineering. An opportunity to co-teach a park design course in 2007 in Landscape Architecture at OU re-kindled Dutnell’s interest in teaching and learning, and with the help of a

“If you would have told me after I received my bachelor’s degree that I would one day get a master’s degree, much less a Ph.D., I would have told you that you were nuts. But, when you are doing something that you really like doing, you want to know more about it, and it is easy to work hard on it, because it is not really work. I feel that I got lucky and found my niche in life.”

— Russell Dutnell

Graduate Assistance in Areas of National Need Fellowship from the U.S. Department of Education, and financial assistance from the Chickasaw Nation, Dutnell completed his doctoral degree in environmental engineering (sediment transport) in spring 2015.

“It has been my pleasure to co-advise (with Dr. Nairn) Dr. Dutnell during his graduate studies,” says Kolar. “Russ’ passion and enthusiasm for all things environmental is contagious, which translates to a self-motivated student who is eager to learn. It is not easy to complete a Ph.D. as an ‘older’ student, but Russ persevered against all obstacles, including the persistent drought that nearly caused him to change his research plan of studying sediment transport in the Little River watershed. We are proud of his accomplishments, and wish him well in the next phase of his career.”

## Class Notes

**Danial Esmaili** (PhD, Civil Engineering, 2014) accepted an NRC Postdoctoral Research Associate position with the Federal Highway Administration, Turner-Fairbank Highway Research Center in McLean, Virginia, immediately after graduation in December 2014.

**Brendan Furneaux** (MSES, 2014) accepted a doctoral position in ecological mapping/modeling at Uppsala University in Sweden. His doctoral work will take him to Benin as well.



## Four Long-Serving CEES Visiting Council Members Step Down; Alums Given Special 'Emeritus Status'

**Ted A. Kritikos** (BSCE, '51), **Dillard S. Hammett** (BSCE, '54), **Charles E. Lampkin** (BSCE, '56) and **David M. Pierce** (BSCE, '61) have stepped down as active members of the CEES Visiting Council. But their long service to CEES (Hammett joined the council in 1992 and also served as chair, Kritikos joined in 1994, Lampkin in 1997, and Pierce in 1999) was recognized by creating a special "emeritus" status for this group, which allows the visionary alumni to participate in an advisory fashion without the obligation of attending regular meetings.

The CEES Visiting Council was established in 1982 under then-director Leele Streebin. The purpose of the council is to advise CEES faculty, the director and the dean of the College of Engineering on a range of issues relating to academics and school stature, fundraising and communications with other schools within the OU College of Engineering. Members are selected from individuals whose business and/or professional careers have brought them recognition for sound judgment, creativity, decisive action and integrity.

During the four mens' tenure on the council, CEES has witnessed explosive growth in enrollments and scholarships awarded annually. Both Kritikos and Hammett established scholarship funds in their names, while Pierce and Lampkin have generously supported CEES general scholarship funding with annual contributions. All told, the dollar amount of CEES scholarships awarded increased from \$7,000 in 1992 to \$90,000 in 2014, while undergraduate enrollments increased from 217 in fall of 1992 to 312 in fall of 2014. In addition, Kritikos generously endowed a faculty chair in CEES that is currently held by former director Robert C. Knox.

Among its many advisory functions, the CEES Visiting Council also makes recommendations related to undergraduate programs and curricula. During the time these outstanding alumni served on the council, CEES re-established the architectural engineering program, moved the curriculum toward experiential-based learning models, and revamped the capstone class toward a practitioner-directed experience that garnered an award from the American Society of Engineering Education.

Hammett spent 47 years working in the energy industry, including Shell Oil and Sedco, where he specialized in



*Ted A. Kritikos*



*Dillard S. Hammett*



*Charles E. Lampkin*



*David M. Pierce*

new techniques for ultra-deepwater drilling and production in ice-covered oceans. He is named on 20 patents on technical methods associated with his work, and he has given technical presentations worldwide. In 2004, Hammett was elected to the OU College of Engineering's Distinguished Graduate Society. He and his wife, Georganna, whom he met while a student at OU, always enjoyed returning to campus for the Visiting Council meetings; to them, "it felt like coming home." Hammett has always placed an emphasis on giving back to students, and the scholarship luncheons with students were always one of the meeting highlights for him.

Kritikos followed his oldest brother (William, BSCE, '43) to OU, and started working for the oil industry upon graduation. In 1962, Kritikos and John Owensby (BSCE, '53, a former Visiting Council member who passed away in 2002) formed Owensby & Kritikos, Inc., which specialized in providing inspection and testing services to the maritime, petroleum, petrochemical and offshore industries; the company has regional offices in New Orleans and Lafayette. In 2008, Kritikos was elected to the OU College of Engineering's Distinguished Graduate Society. He never forgot the financial stress of college and the help he received along the way, especially from the GI bill and income from working at the Copper Kettle, a longtime, popular campus eatery. Thus, it was an easy decision for him to establish a scholarship fund to help students in need. He sincerely hopes that the current generation of students who receive support from alumni will show their appreciation by thanking the sponsors and by regularly participating in annual fund drives for the school.

Lampkin literally followed in the footsteps of his father, an engineer for the Texas Highway Department; Lampkin began carrying stakes for his father's survey crew at the age of 11. His pathway toward an engineering career continued into the Army, where he was a platoon leader in a combat engineering company during the Korean War. After the war, he and two partners formed an architectural engineering partnership in 1960. He notes how proud he is of the projects he helped design – projects that will benefit the public for years in the future. Of his service on the council, Lampkin said, "I have served on the council for over 15 years. During that

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# ALUMNI NEWS

*continued from previous page*

time, I have seen significant improvements in CEES. The new professors are an outstanding addition, the capstone and WaTER programs are unique among civil engineering schools, and the architectural engineering program will continue to grow. My tenure on the council has been fulfilling, and I see a great future for CEES.”

Pierce’s career was spent in the offshore production segment of the energy industry. Beginning in 1968, after two years in the military and five years in graduate school earning master’s and doctoral degrees in civil engineering, he joined the research company of what is now ExxonMobil Corp. He served as a team leader on the design of the first deepwater offshore platform (Hondo in the Santa Barbara Channel). In following years, he moved into floating production and subsea technology. He served as president of Neptune Engineering in the 1980s and subsequently consulted for several major oil companies. He has authored and presented several technical papers relating to various offshore production systems. “Being a member of the council has been a very rewarding experience,” Pierce said. “It has been a pleasure interacting with fellow board members, and I have been impressed with the students I

have met. My interactions lead me to conclude that OU is placing quality graduates into the workforce.”

Of their service, director Randall L. Kolar said, “CEES greatly appreciates the time and effort given to the school by the council members. These gentlemen are all exceptional individuals who have demonstrated time and time again their dedication to their alma mater and their continuing commitment to its excellence. And it is gratifying to see that subsequent members of the Visiting Council have continued to carry on their standard of service.” Former director Robert C. Knox notes: “The Visiting Council would not have survived and thrived without the efforts of Kritikos (and his business partner Owensby), Hammett, Lampkin and Pierce. I know for a fact that they helped ensure the academic future of the school by actively participating in the revolutionary ABET 2000 assessment process, which required full-fledged engagement of alumni in order to secure accreditation. Also, it cannot be over-stressed how important they were in helping shape the future of CEES during my tenure as director by actively participating in the recruitment and retention of the very talented group of faculty members that we have today. We owe them a debt of gratitude that simply cannot be repaid.”

## AWARDS/HONORS

### Student Awards and Honors

#### Student Recognitions

**Shivani Rani** received a five-year Alumni Fellowship award from the University of Oklahoma and the 2014 Most Inspiring Engineering/Scientist Women in India award from Engineering Watch

**Julie LaBar** received a \$1,000 Robberson Conference Presentation & Creative Exhibition Travel Grant to support her attendance at the annual meeting of the American Society of Mining and Reclamation in Lexington, Kentucky.

**Noah Berg-Mattson** and **Brandon Holzbauer-Schweitzer** received first place for the best graduate student poster presentation at the 2015 Oklahoma Clean Lakes and Watersheds

Association Conference. Their poster detailed performance of low-impact development best management practices for urban stormwater at the Trailwoods residential development in Norman.

**Cameron Murray** received the 2014 Boggs Graduate Fellowship and took second place in the 2014 poster competition at the Oklahoma Transportation Research Day.

**Anisha Nijhawan** received a Robberson Research Grant from the Graduate College. The title was “Development of porous ceramic materials to treat fluoride impacted drinking water.”

**Bryan Page** won the American Society of Mining and Reclamation

Memorial Scholarship at the master’s level. He received the award at the Annual Meeting of the American Society of Mining and Reclamation in Lexington, Kentucky, in June.

**Wassim Tabet** received 2015 SYMPC and Geo-Institute Organizational Member travel grants.

**Teshome Yami** received second place at the 2014 University of Oklahoma Student Research and Performance Day.

**Hessam Yazdani** received the Best Paper Award at the 10th Annual Conference in Computer Science and won a 2015 NSF Travel Award to the Engineering Mechanics Institute Conference at Stanford University.



## Student Awards and Honors

### Ferraro Named 2015 Outstanding Senior in Architectural Engineering

Nathan Ferraro of Pittsburgh was named the 2015 Outstanding Senior in Architectural Engineering. He will remain at the University



of Oklahoma for one more year to pursue a master's degree in civil engineering, with an emphasis in geotechnical engineering under his adviser, Amy Cerato. Ferraro has been the recipient of numerous honors and awards, including the Roland Lehr Phi Kappa Phi Award for Distinguished Undergraduate Research, Penn State President's Freshman and President Sparks Awards, the President's Outstanding Transfer Student, PE-ET - Top 10 Senior Honor Society, and the Letzeiser Honor List. He also is the recipient of various scholarships, including the Society of American Military Engineers, the Guy Bradford Treat, the McNair Scholars Program, and the Terracon Foundation Scholarships.

Ferraro is a veteran of the U.S. Navy, having accumulated over 1,000 flight hours on the E-6B Mercury aircraft from 2008 to 2012. He currently serves as the program director of OU's Warrior-Scholar Project, which serves as a gateway program for college-bound veterans by preparing them for the rigors of a four-year degree. He also is active in multiple CEES organizations, including the Architectural Engineering Institute and American Society of Civil Engineers Student Chapters, the ASCE Concrete Canoe Competition Team and Chi Epsilon, the Civil Engineering honor society.

### Johnston Named 2015 Outstanding Senior in Environmental Engineering

Jessica Johnston of Ponca City, Oklahoma, was named the Outstanding Senior of 2015 in Environmental Engineering. "I chose environmental engineering as my major in order to combine my love of math, science and protecting the environment," she said. While at OU, Johnston has been the secretary of Chi Epsilon, the Civil Engineering honor society, as well as a member of Tau Beta Pi, Phi Kappa Phi, Sooners Without Borders, and the OU Cube Club. She also was the recipient of the Oklahoma Regents', Jimmy F. Harp, Joakim G. Laguros and Guy Bradford Treat scholarships. Johnston volunteered at Manos Juntas, a free health clinic in Oklahoma City, as well as Angel Food Ministries in Norman. She enjoys playing clarinet and piano, backpacking, archery and occasionally sword-fighting and acting on the human chessboard at the Norman Medieval Fair. After graduation, Johnston will attend UC-Berkeley in California for graduate school, where she will continue studying environmental engineering.



### Messerli Named 2015 Outstanding Senior in Civil Engineering

Austin Messerli of Norman, Oklahoma, was named the 2015 Outstanding Senior in Civil Engineering. Messerli grew up in Norman and graduated from Norman North High School in 2007. He played both basketball and baseball, participating in multiple state tournaments in both sports. He earned both academic and athletics scholarships to attend Oklahoma City



University, where he was the first graduate with a bachelor of science degree in environmental studies and also played for two baseball national championships. While at OU, Messerli was an active member of Chi Epsilon and served as the 2014-2015 president of the ASCE student chapter. After graduation, Messerli plans to work under the guidance of Jeffery Volz in pursuit of his master's degree, and he will continue to work for Garver.

## Student Awards and Honors

### Civil Engineering and Meteorology Student Ben Toms Named Goldwater Scholar and Astronaut Scholar



University of Oklahoma honors student Ben Toms was named one of two 2015 Goldwater Scholars from OU, placing OU in the top ranks of universities nationally with 48 Goldwater Scholars since the competition began in 1991. The prestigious scholarships are awarded on the basis of potential and intent to pursue careers in mathematics, the natural sciences or engineering.

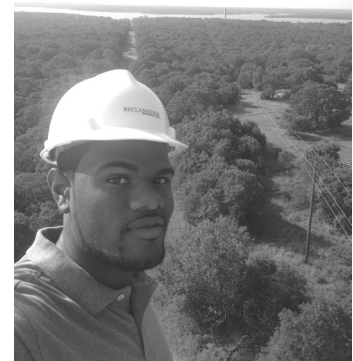
The national scholarship competition is conducted by the Barry M. Goldwater Scholarship and Excellence in Education Program. This year, 1,206 college sophomores and juniors across the country competed for the 260 scholarships. “The University is extremely proud of Brandon Curd and Ben Toms,” said OU President David L. Boren. “They are continuing OU’s winning tradition nationally in the competition for Goldwater Scholars.”

Toms also received the Astronaut Scholarship, awarded by a foundation formed by 80 former astronauts to encourage talented students to pursue STEM fields. Toms was one of only 37 students selected for the award, which emphasises academic excellence and undergraduate research.

Toms, a junior from Aurora, Colorado, maintains a 4.0 grade-point average and is pursuing degrees in civil engineering and meteorology. He has extensive research experience, including: a project detecting black ice on Oklahoma roads with Jeffrey Basara, OU associate professor of meteorology and director of research for the Oklahoma Climatological Survey, and Yang Hong, professor of civil engineering and environmental science; test cases for fire flow with Randall J. McDermott, National Institute of Standards and Technology; the effects of a flood at the Colorado Front Range with Basara; an ongoing project at the National Severe Storms Laboratory, where he works with its director, Steven Koch, and David Turner of its Forecast Research and Development Division; and a mobile X-radar system for mountainous areas in Colorado with Pierre Kirstetter, research scientist with the National Weather Center (Advanced Radar Research Center) and adjunct faculty member in CEES.

Toms’ summer plans include two projects, one with Turner researching the environment of convective precipitation during the nighttime, and another with Kirstetter to place a mobile X-band radar within the Rio Grande National Forest in southern Colorado. His future plans include obtaining a doctorate in hydrometeorology and conducting research on terrestrial hydrometeorology while teaching at the university level.

### Darion Mayhorn Receives FEWM Award



Civil Engineering master’s degree student Darion Mayhorn was part of a team from the Oklahoma-Texas Area Office of the Bureau of Reclamation that received a Federal Energy & Water Management Award from the U.S. Department of Energy. Mayhorn and his team created a reservoir drought forecast model to estimate future water availability for Tom Steed Reservoir. The use of the model led to implementation of significant water conservation measures, resulting in a 37 percent reduction in usage from FY 2012 to FY 2013.

Mayhorn is from St. Louis, Missouri, and is pursuing his degree under the direction of Royce Floyd. His research is focused on the effects of corrosion on prestressed concrete girders and potential rehabilitation methods.



## Faculty and Staff Awards and Honors



*Hatami*



*Hong*



*Kirstetter*



*Knox*



*Sabatini*



*Strevett*



*Williams*

The 2015 University of Oklahoma Tribute to the Faculty ceremony was held on April 9 in the Sandy Bell Gallery of the Fred Jones Jr. Museum of Art. Four CEES faculty members were recognized for their achievements in the areas of professional and university service, technology development, support for the university's international mission and good teaching. In addition, three faculty members were honored for their years of service.

**Robert C. Knox** received the 2015 Regents' Award for Superior Professional and University Service. The Regents' Award is an annual university-funded award that is presented for superior accomplishment. Knox is the first CEES faculty member in the history of the school to receive this honor. Knox also was recognized for 30 years of service to the university. **Kianoosh Hatami** received the OU Office of Technology Development Patent Recognition Award for a second U.S. Patent (Patent No. 8,752,438) on Sensor Enabled Geosynthetics.

**Randy Kolar** was recognized for 20 years of service to the university. **David Sabatini** received the David L. Boren Award for Outstanding Global Engagement. The purpose of the award is to recognize OU faculty who have exhibited outstanding commitment to and support for the university's international mission. This is another "first" for a CEES faculty member. **Keith Strevett** received the 2015 Good Teaching Award, which recognizes excellence in teaching performance at the undergraduate level. Strevett also was recognized for 20 years of service to the university.

**Yang Hong** was elected to the Executive Committee of the American Geophysical Union's Natural Hazard Focus Group. NHFG is the only group within AGU that focuses on

studies of geophysical hazards. AGU is an international non profit scientific association of earth and space scientists with more than 62,000 members worldwide.

**Yang Hong** and **Pierre Kirstetter** were awarded NASA Goddard Space Flight Center's Robert H. Goddard Award for Exceptional Achievement in Science, citing their contributions to the success of the Global Precipitation Measurement Ground Validation and algorithm development. The distinguished award is given annually at NASA after an extensive nomination and review process.

**Susan Williams**, CEES Graduate Programs assistant, was honored for her 20 years of service at the 2015 Staff Awards Ceremony, which was held April 22 in the Oklahoma Memorial Union.

### We'd Love to Hear From You!

If you have news to share in the next issue of **Communiqué**, please contact us:

**334 Carson Engineering Center  
202 W. Boyd St.  
Norman, OK 73019-1024  
or cees@ou.edu**

## 2014-2015 Scholarship Recipients

The Fall 2014 CEES Scholarship Awards Luncheon was held Nov. 7 in the ExxonMobil Rawl Engineering Practice Facility on the Norman campus. On-hand were scholarship recipients, donors, members of the CEES visiting council, and CEES faculty and staff members.

For the academic year 2014-2015, the CEES scholarship committee was able to award a total of over \$90,000 to 42 students. Of the total awarded, \$70,000 came from 24 endowed scholarships and \$20,000 from additional donations from CEES alumni and friends. CEES students, faculty and staff are extremely thankful to all of our donors for their generous support through the years.

### **ASCE Scholarship**

Emily Averyt, Christopher Luckert

### **BP Corporation North America Environmental Scholarship**

Shauna Snyder, Travis Stevens

### **CEC Infrastructure Solutions Scholarship**

Marco Gomez, Amy Sikora

### **CEES Endowed Scholarship**

Nathan Bowser

### **Dillard S. Hammett Civil Engineering Scholarship**

Chandler Funderburg

### **Ebeling Family LTD Partnership Scholarship**

Emily Averyt

### **Eckart-Pontius Scholarship**

Jason Laubacher

### **Fred and Katie Cobb and Robert H. Cobb Scholarship**

Benjamin Colbert

### **George W. Tauxe Endowed Memorial Scholarship**

Lexis Allen, Brittany Cranor

### **Georges Yannieh Endowed Scholarship**

Stephen Roswurm

### **Guy Bradford Treat Memorial Scholarship**

Nathan Ferraro, Jessica Johnston

### **J.F. Brookes Memorial Scholarship**

Eli Adair

### **James M. Robertston Scholarship**

Vivien Rivera

### **Jimmy F. Harp Civil Engineering Scholarship**

Chandler Funderburg

### **Joakim G. Laguros Endowed Scholarship**

Austin Messerli

### **Joe Keeley Endowed Memorial Scholarship**

Cameron Spriggs

### **John and Dolores Owensby Family Scholarship**

Paige McIlroy, Uriah Nichols, John Ngoka, Jacob Roswurm, Stephen Roswurm, Travis Stevens, Paul Theberge, Amy Wisecarver

### **John H. Marsh Family Scholarship**

Vivien Rivera

### **The Khoury Brothers Scholarship**

Jenna Jacoby

### **Larry Canter Scholarship**

Amirata Taghavi

### **Larry A. Lowrance Civil Engineering Scholarship**

Amy Crone

### **ODOT Director/Poe & Associates Scholarship**

John Ngoka, Uriah Nichols, Amy Wisecarver

### **OK Structural Engineering Robert Conforth Scholarship**

Stephen Roswurm

### **Ronald L. Sack Scholarship**

Amy Crone

### **Rory Victor Scholarship**

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For more information contact:

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**334 Carson Engineering Center**  
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