CIVIL & ENVIRONMENTAL ENGINEERING
UNIVERSITY of WASHINGTON

THE BRIDGE

SPRING 2015

PURSUING EXCELLENCE: CEE'S STRATEGIC MANAGEMENT PLAN

by Greg Miler, Professor & Chair

I recently began my second term of appointment as department chair for CEE, and so this provides a good opportunity to look ahead to the next phase within the department. The primary strategic objective continues to be sustaining growth to meet student, professional, and societal demand while providing world-class educational and research experiences for all our students, and of course targeting excellence across the full range of what we do.

To support these objectives, we recently completed a departmental strategic management plan to help optimize our activities and guide our decision-making and investments for the near-term future. This plan was put together with input from students, faculty, staff, our Visiting Committee, and other departmental partners, and thus reflects both bottom-up and top-down initiatives and ideas. The next several years will bring important opportunities and challenges both with UW-specific realities and with the general changing world of higher education, so we want to ensure we know where we are going and what we will do to help get us there.

Relevant to the management plan, I had a discussion with a CEE alumnus who noted the commonality of managing people, funds, and facilities for just about anyone in a leadership position. I had to agree, and in fact many aspects of our plan map directly onto these categories. However, in the academic world there is uncommonly broad variation across these categories.

At the departmental level our people include students (graduate and undergraduate), staff (academic and business), faculty, alumni, and a broad range of affiliates and partners. Our funding

CONTINUED ON PAGE 2 →

MESSAGE FROM THE CHAIR

sources are similarly diverse, with tuition, self-sustaining program fees, and state support providing the major support for our core instructional programs, augmented in key ways by endowments and gifts, while research funding drives the core activities of our academic graduate programs. CEE facilities need to support various kinds of instruction (classroom, lab, and computational) and research, from the nanoscale to the megascale, the latter reflecting the global reach and scope of our field research and use of satellite data. And of course we ultimately are driven by our academic mission of education, discovery, and innovation, which brings with it the matters of curriculum management, accreditation, and coordination with funding agencies at all levels.

In short, the strategic management plan is an extensive document, due to its breadth and level of detail, and includes identification of the who, what, when and costs of making things happen across the various categories described above. For that reason, it will be most effective to communicate about what we are doing as we do it, which continues to be the primary role of this newsletter and these Chair's messages. To emphasize, we are not being merely reactive to the things around us, nor are we struggling to maintain some kind of barely sustainable status quo, but rather being the engineers we are, we have ideas, plans, tools, and mechanisms to continue building a great department. And in my mind the department includes our entire community, so we always welcome participation and collaboration from beyond the walls of More Hall.

↑ *GREG MILER, PROFESSOR & CHAIR*

WE ARE NOT BEING MERELY REACTIVE TO THE THINGS AROUND US, NOR ARE WE STRUGGLING TO MAINTAIN SOME KIND OF BARELY SUSTAINABLE STATUS QUO, BUT RATHER BEING THE ENGINEERS WE ARE, WE HAVE IDEAS, PLANS, TOOLS, AND MECHANISMS TO CONTINUE BUILDING A GREAT DEPARTMENT.

One final note concerning planning and the future: the College of Engineering recently released its own strategic plan, and this included the identification of five areas of strategic technical focus: Engineering and the Environment; Engineering and Human Health; Smart Cities and Infrastructure; Engineering and Energy; and Manufacturing. These areas of emphasis reflect both UW and regional strengths, and ongoing national and international initiatives. It is clear infrastructure and the environment are directly in CEE's wheelhouse, as is the front end of human health as manifested in the management of water, air, waste, safe transportation, etc. We also have a role to play in the scale-up and management of current and next-generation energy systems, and to the degree construction can be thought of as a branch of manufacturing, we should have participation in this initiative, as well.

Even in this era of "info-nano-bio" as a buzzword indicating the hot areas of engineering, it is clear the core CEE mission of designing, building, maintaining, and operating the infrastructure that makes civilization possible both now and sustainably into the future remains fundamentally important independent of the latest gadgetry and tech wizardry of the day. It's a great time to be involved in civil and environmental engineering.

THE BRIDGE **SPRING** / 2015

Greg Miler, Professor & Chair
EDITING: Elysse Reyna
CONTRIBUTORS: Tim Gould, Joe Mahoney, Jill Dalinkus, Katie Frisbie Bunten

www.ce.washington.edu
TEL 206.543.2390 FAX 206.543.1543

AWARDS & ACCOLADES

FACULTY

Roeder Honored with 2015 Tewksbury Award

Dr. Charles Roeder, professor of structural engineering and mechanics, was selected by the Structural Engineering Institute of ASCE to receive the 2015 Dennis L. Tewksbury Award. The award recognizes outstanding professional leadership in and service to SEI. Roeder has served in leadership roles and as an active member in many committees including the Dynamic Effects, Seismic Effects, and Flexural Members and Composite Construction committees, the SEI Technical Activities Division Executive Committee, and the SEI Awards Committee.

Hossain Receives AMS Editor's Award

Dr. Faisal Hossain, associate professor of hydrology and hydrodynamic, received the 2014 Journal of Hydrometeorology Editor's Award from the American Meteorological Society (AMS) for "numerous detailed, constructive, and timely reviews, often submitted well before the due date." The Editor's Award recognizes an individual who contributed a referee's report of outstanding merit on a manuscript submitted for publication in one of the Society's journals.

Miller Receives 2015 Academic Engineer of the Year Award

Dr. Greg Miller, CEE chair and professor of structural engineering and mechanics, was selected as the 2015 Academic Engineer of the Year by the Puget Sound Engineering Council in recognition of "his exceptional career in education and research into structural fatigue and computational mechanics for modeling landslides and debris flows." The award honors individuals who have advanced the state of the engineering art, participated in interposing new technologies in society, and improved the level and scope of engineering education.

STUDENTS

CEE Students Attend Kiewit Women's Construction Leadership Seminar

Three CEE undergraduates, Clarissa Dougherty, Roxanna Kharrazi, and Elisa DeVita, were selected to attend the 2014 Kiewit Women's Construction Leadership Seminar. Qualified candidates are undergraduates studying in the construction or engineering fields who have demonstrated leadership skills through extracurricular and community involvement. Dougherty's team won the bidding simulation, competing against ten teams.

Kristian Henrickson Named Student of the Year

CEE PhD student Kristian Henrickson received the 2014 PacTrans Student of the Year award. At the 2015 Transportation Research Board Annual Meeting, the US DOT honored the most outstanding student from each participating University Transportation Center for his or her achievements and promise for future contributions to the transportation field. Students of the Year are selected based on accomplishments in such areas as technical merit and research, academic performance, professionalism, and leadership.

↑ *KRISTIAN HENRICKSON (CENTER) RECEIVES THE STUDENT OF THE YEAR AWARD WITH SHASHI NAMBISAN, CUTC PRESIDENT (LEFT), AND GREG WINFREE, ASSISTANT SECRETARY, OST-R (RIGHT).*

AWARDS & ACCOLADES

Six CEE Students Awarded Mary Gates Research Scholarship

"I loved spending time hiking and skiing in the mountains as a kid, but I never thought I would be able to work in that kind of environment while simultaneously studying engineering."

Colin Butler is among six CEE students who were recently awarded the Mary Gates Research Scholarship for 2014-2015. These competitive scholarships allow undergraduates at the University of Washington to deepen their inquiry into a project or discipline while guided by faculty.

Working with associate professor Jessica Lundquist, Colin's research has him taking a different approach to measuring energy transfer between the snow surface and local atmosphere. "Using a vertical array of temperature and wind speed sensors instead of a sonic anemometer (3D wind speed instrument), I will be able to collect more reliable data than is currently available from the existing instrument, which doesn't work well in wet or icy conditions," Colin said. The ultimate goal will be to better predict snowmelt timing and runoff.

CEE student James Neher, working with associate professor Alex Horner-Devine and active in both the Ecohydrology and Environmental Fluid Mechanics research groups, is researching the mechanics of salt wedge estuaries. "Salt wedges modify the hydrodynamic behavior of the estuary. Most notably, they divert the lighter, faster moving freshwater away from the river bed, preventing uplift of sediments," said James. This can be a concern in rivers such as the Duwamish, where highly contaminated sediments can be uplifted and enter the Puget Sound.

Both students have found their research experience to be challenging and rewarding. While unforeseen setbacks can be discouraging, "I find them slightly thrilling," said James. "Each time I wonder if I could have stumbled across something truly new and unobserved in the scientific world." For Colin, "the last six months have pushed me harder to learn more and adapt to new situations than ever before."

Students can also get a glimpse into graduate studies by engaging in undergraduate research. "Getting the chance to observe a number of different research pathways within hydrology has opened my mind up to new interests in the field," said Colin.

Undergraduate research has bridged the gap between academics and personal hobbies for Colin.

↑ *COLIN BUTLER AT FOREST STATION NEAR SNOQUALMIE PASS.*

"Starting out I wasn't sure what to expect from a job that had me doing so many different and challenging tasks, but after climbing trees in the Olympic Mountains, hiking around Snoqualmie Pass, and tinkering with instruments on campus I discovered that work can be just as fun and exciting as play when you're doing something that interests you in a place you would choose to be in your free time."

Colin Thomas Butler
Alternative Method for Measuring Turbulent Flux: Implications for Snowmelt and Water Resources
Faculty Sponsor: Jessica Lundquist

Xuzhi (Mark) Fang
Quantification of antibiotic resistant gene degradation during chlorine treatment
Faculty Sponsor: Michael Dodd

Alan Hai Guo
Photochemical activaion of free chlorine for enhanced inactivation of chlorine-resistant pathogens
Faculty Sponsor: Michael Dodd

James Michael Neher
Dynamic Coupling in Salt Wedge Estuaries
Faculty Sponsor: Alex Horner-Devine

Theodore Thorson
Snow Water Equivalent: A Predictive Model Based on Snowfall Depth and Ambient Temperatures
Faculty Sponsor: Jessica Lundquist

Benjamin Wright
Travel Time Reliability of HOV and HOT Lanes during Traffic Incidents
Faculty Sponsor: Yinhai Wang

NEW FACULTY

Meet Mari Winkler

Mari Winkler joined the CEE department as assistant professor in environmental engineering this April. Settling in to her new city of Seattle, Winkler most recently hails from Belgium where she worked in the Biosystems Engineering Department at Ghent University with the prestigious Marie Curie post-doctoral fellowship.

Originally from Germany, Winkler's scientific career has brought her around the world. She studied at the University Duisburg Essen, University of British Columbia, Columbia University, and the University of New South Wales, and received her PhD in Environmental Biotechnology at Delft University of Technology. After her PhD, Winkler went into industry, working with engineering companies to build and construct wastewater treatment plants, upgrading plants and finding new technologies to make treatment processes better.

CEE and the Seattle area felt like a natural fit for Winkler. "I felt very comfortable coming here. When I came here, the people were so nice, and the students were very happy, and they are a very good indicator if the environment is really good." Her partner of eleven years, a software engineer, also finds Seattle a great location for his career and their shared love of surfing.

Winkler brings a strong background of process engineering, microbiology, resource recovery and innovative wastewater and sludge treatment. Her research will include enhanced nitrogen removal processes, such as the new Anammox technology, which, according to Winkler, is "saving a lot of costs in treatment plants and footprint, and it's environmentally friendly."

Winkler will also focus on aerobic granular sludge. While implemented full-scale in Europe, the technology has yet to be executed in the United States. Wastewater treatment plants "consume a lot of space, and this technology narrows it down to 25% of what it was before," explains Winkler. "It consumes less energy due to its compact structure, about 25%, and saves 35% of the costs for construction because it's more compact." Her research will additionally extend to phosphorus removal and recovery, biosolid treatment, such as end-of-pipe wastewater treatment, and microbial ecology.

In her free time, she enjoys music, running, and capoeira. But for Winkler, having fun and engaging in research are one and the same. "Part of my hobby is research; I'm very passionate about my research and I love to see young people doing research and supporting them."

Watch Mari Winkler's Tedx Talk, "How can we benefit from human waste?", on resource recovery: http://bit.ly/MariTedTalk

VISITING COMMITTEE

CEE welcomed two new co-chairs, Linda De Boldt and Gary Griggs, this past fall to lead the CEE Visiting Committee. The Visiting Committee convenes twice a year and offers external advice and feedback to the department chair. As co-chairs, Linda and Gary will coordinate closely with other committee members to provide requested support to Chair Greg Miller and the department.

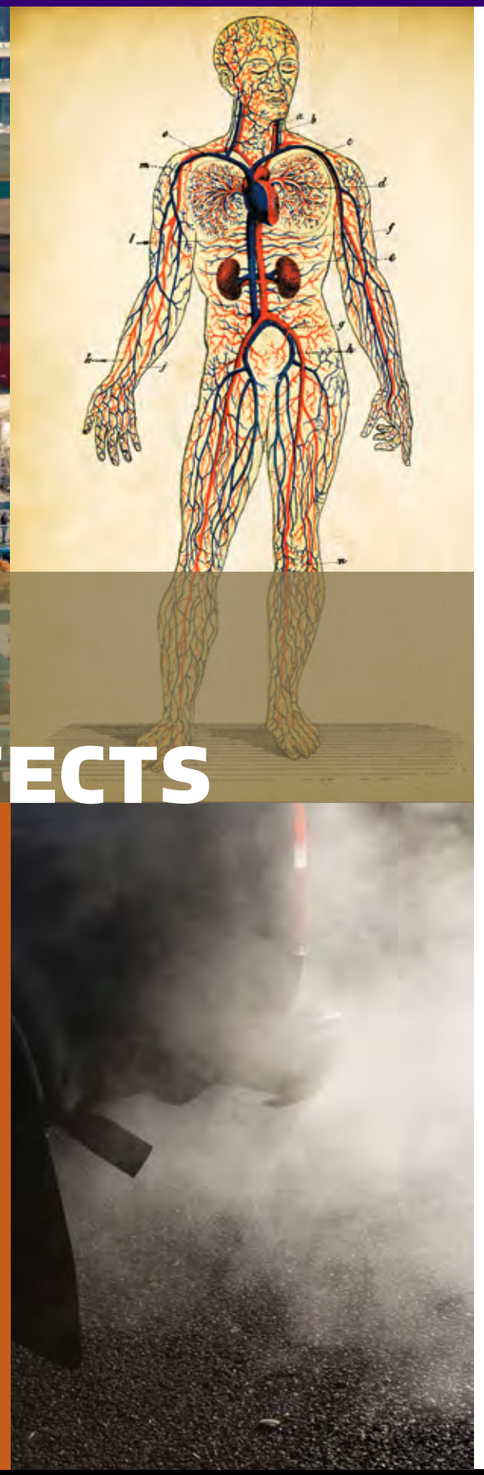
Linda is a professional civil engineer with 30 years of experience in public works and engineering management. She graduated from the UW with a degree in Civil Engineering in 1983 and has enjoyed working in a variety of public works arenas. Linda spent most of the past 30 years working for the City of Seattle where she last served as the Chief Engineer for SPU, overseeing the delivery of SPU's large capital improvement program. She now works as the Public Works Director for the City of Redmond.

"I'm looking forward to giving back to my profession and UW CEE by serving as co-chair of this committee. It's an honor and a great opportunity to engage with so many terrific professionals to assist in the mission of advancing our next generation of civil engineers," says Linda.

Gary received his BS and MS in Civil Engineering from the UW and is a registered professional engineer with over 40 years of global infrastructure experience. He has served as project manager and held senior management positions with several firms, including the last 23 years with Parsons Brinckerhoff where he was President of the Infrastructure Company from 1996 to 2003. He is currently a Senior Vice President with the firm and Project Manager on a $900 million extension of the Bay Area Rapid Transit (BART) system. Gary is also a Consulting Professor at Stanford University.

"I am very appreciative of the opportunity to serve with Linda and our other colleagues on the Visiting Committee. We want to support UW CEE to the fullest extent possible in producing the future leaders of the profession," says Gary.

The department would like to thank Bill Dehn and Jon Magnusson for their service as co-chairs from 2010 to 2014.



COMMUTE TRAFFIC EXPOSURE AND HEALTH EFFECTS

The on-road concentrations of some air pollutants can be dramatically higher than concentrations of the same pollutants even a short distance from a major roadway. This makes one's time spent commuting or in traffic a significant source of exposure to traffic-generated pollutants. Recent observations demonstrate that traffic-related air pollutants acutely trigger changes in the human cardiovascular system, such as increased blood pressure.

The UW Center for Clean Air Research (CCAR), a multi-disciplinary group of researchers from CEE, Environmental & Occupational Health Sciences, Biostatistics, and Epidemiology, is investigating the impacts of short-term exposure to traffic-derived air pollution in its study Effect of Commute Traffic on Vascular Function. In this study, the team is conducting in-vehicle monitoring for air pollutants and assessing health measurements for a study subject during three sampling periods, one of filtered air and two unfiltered commute drives. The route followed while monitoring inside the vehicle includes I-5 between S. Spokane St. and Northgate through downtown Seattle, and the Harbor Island freight truck terminals.

The study utilizes questionnaires, physiological measurements, biological samples, and in-vehicle monitoring in order to determine the effect of traffic-related air pollution on the subject's cardiovascular system.

"A lot of work has been on the short-term effects on the lung and breathing, especially if you have some compromised lung function, like an asthma sensitivity," said Tim Larson, CEE professor and co-PI. "But not much has been done historically on the cardiovascular system in terms of the effects of on-road pollutant exposures on the heart and the arteries."

The air monitoring system inside the vehicle is adapted from a mobile monitoring study conducted by CCAR in five cities throughout the nation from 2011 to 2013. Both particle and gaseous pollutants are characterized, with different analyzers connected to the inlet lines to measure the following pollutants of interest:

- Fine particulate (less than 2.5 micrometers diameter) mass concentration
- Particle number count per volume of sampled air
- Black Carbon particulate matter concentration
- Particle-bound polycyclic aromatic hydrocarbons (PAHs)
- Nitrogen dioxide (NO_2)
- Total oxides of nitrogen (NO_x)
- Ozone
- Carbon monoxide
- Carbon dioxide (CO_2)

"We observe similar variation among many of these pollutants," said CEE research scientist Tim Gould. "The patterns detected in different cities are quite similar even if the absolute levels are very different."

"A LOT OF WORK HAS BEEN ON THE SHORT-TERM EFFECTS ON THE LUNG AND BREATHING, ESPECIALLY IF YOU HAVE SOME COMPROMISED LUNG FUNCTION, LIKE AN ASTHMA SENSITIVITY, BUT NOT MUCH HAS BEEN DONE HISTORICALLY ON THE CARDIOVASCULAR SYSTEM IN TERMS OF THE EFFECTS OF ON-ROAD POLLUTANT EXPOSURES ON THE HEART AND THE ARTERIES."

TIM LARSON, CEE PROFESSOR

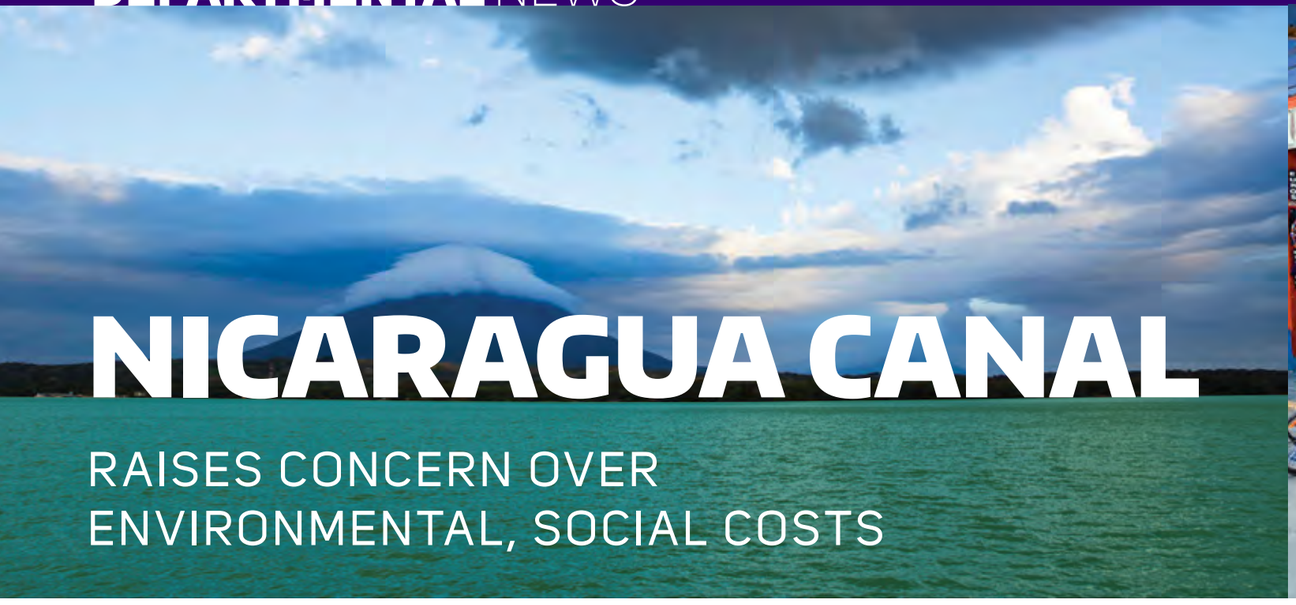
These analyzers save their results in a data acquisition system at 10 second intervals so the team can observe rapid changes due to nearby traffic and varying engine load of those adjacent vehicles. A GPS unit records position and speed so data can be referenced to specific locations along the highway and potential high emission sources identified from the camera-recorded visual record.

These commute exposure drives will continue through the summer of 2015 and the research team will be analyzing the health effects and air pollution data to test the hypothesis that traffic-derived aerosols exert vascular effects in human subjects. These short-term effects may provide insight into the mechanisms that explain pollution induced health effects.

The EPA recently established air quality standards that are short duration for nitrogen dioxide, and is actively monitoring near-road air sheds for pollution levels. The results of this study will continue to impact the way we think about commuting and health and inform national EPA standards.

"You need information that says it's worth doing," said Larson of the regulatory requirements. "It's not just because the [pollution levels] are high, but because there's some reason to lower it."

Many UW alumni and students have contributed to the success of this project, including Jim Stewart, Nick McEwen, Dan Slater, Ji Hyun Park, Hui Cheng, and Mengyu Cai.



NICARAGUA CANAL

RAISES CONCERN OVER ENVIRONMENTAL, SOCIAL COSTS

One of the largest civil engineering and construction projects in the world has just begun in Nicaragua. The interoceanic canal, or the Grand Canal, as it has been called, will link the Pacific and Atlantic Oceans and include a 105 kilometer swath across Lake Nicaragua, the largest lake in Central America. Among the poorest countries in the Americas, President Daniel Ortega and supporters of the project say it will provide great economic benefit to Nicaragua.

However, critics from around the world, including CEE professor Michael Brett, question the economic viability and worry the canal may cause negative long-term environmental and social impacts. While international best practices call for environmental assessments before work begins, protestors and scientists note the Nicaraguan government and HKND, the Chinese company building the canal, have bypassed this step. Brett and an international group of scientists are insisting that these ecological impact studies be completed and released for public debate.

WORKSHOP IN MANAGUA

For Brett, the UW connection to Nicaragua reaches back to Benjamin Linder, a mechanical engineer and UW alumnus, who was assassinated by the Contras while developing hydroelectric systems for rural Nicaraguan communities in the 1980s. When an international workshop to discuss issues associated with the canal was announced in Managua, Nicaragua, the Linder Foundation, established to provide scholarships for Nicaraguan students in Linder's name, called on the UW to participate. Brett, who was also investigating projects in Nicaragua for the UW chapter of Engineers Without Borders chapter, seized the opportunity to join the workshop.

Twenty international and Nicaraguan scientists attended the workshop, sponsored by the Academy of Sciences of Nicaragua, in November 2014. Led by Jorge Huete-Perez, the panel identified technical and scientific questions regarding the canal project and focused discussion around three general issues: water and sediments, biodiversity, and socioeconomic issues.

Among the many issues and questions raised, the scientists concluded the channel through the lake will severely impact the ecology of the system due to sediment resuspension, leading to decreased oxygen levels and degraded fisheries. While Lake Nicaragua has good water quality now, the canal construction and operation will likely lower the quality and impair its usefulness. Additionally, the canal route, which cuts through nature reserves and tribal homelands, will displace thousands of people who do not have adequate property deeds.

While HKND has commissioned an environmental impact study from British firm Environmental Resources Management, neither organization has released information from the assessment.

"They haven't disclosed what they're going to do to protect the interests of the people, how they're going to protect the nature reserves, how they're going to protect indigenous rights, whether they're going to protect the rights of the people who are in the path of [the canal]," said Brett.

WORLDWIDE SUPPORT

After returning from the workshop, Brett initiated an effort to rally the scientific community and speak out against the canal. Brett, along with Alan Covich of the University of Georgia and Katherine Vammen of the Nicaraguan Research Center for Water Resources, drafted a petition to call for the cessation of the project until environmental assessments are completed and publicly debated.

"There's going to be potentially tremendous environmental impacts, but in a lot of cases, we don't know what those are, because they haven't been specified," said Brett.

So far, the statement has received nearly 230 signatures from scientists spanning 32 countries.

For a project of this magnitude, Brett explains, it is critical that information from an environmental impact statement be disclosed and openly vetted. "Ultimately, what you have to do with an environmental impact statement is ask yourself whether potential impacts outweigh potential benefits. None of that's been done. There's a complete lack of transparency."

DEPARTMENTAL NEWS

NASA Applied Sciences Grant to Drive Innovation in Water Resources Management

The NASA Applied Sciences Program awarded Faisal Hossain, CEE associate professor, with a four year, $1.48 million grant for improving the capacity of South Asian nations for sovereign water resources management using satellite and geodetic remote sensing. Dr. Hossain received the grant for his proposal titled "Towards Operational Water Resources Management in South Asia Exploiting Satellite Geodetic and Remote Sensing Technologies."

Dr. Hossain and his team aim to empower South Asian nations to independently manage their water resources by 2019 using satellite tools and modeling systems developed at the University of Washington, which will be transferred via capacity building efforts. The systems and tools will involve a combination of basic research on hydrologic monitoring to overcome conventional hurdles, assimilating user feedback from water agencies, and iteratively design intuitive and robust tools that can be independently operated without long-term incubation.

Using new satellite sensors, these tools will reduce operating costs for managing water and allow long-range forecasting of water availability and flooding. Consequently, Pakistan, Nepal, Bhutan and Bangladesh will be able to make independent, better and earlier decisions to improve their resiliency to the forces of nature.

Wild Horse Wind Facility

Just east of Ellensburg, many CEE undergraduate and graduate students have found themselves staring up at the massive wind turbines located at the Wild Horse Wind Facility. Owned and operated by Puget Sound Energy, a number of field trips have brought students, along with faculty and staff, for an inside look at the wind project. Students receive technical briefings from PSE staff, enter an operating wind turbine, visit the maintenance center for the project, and get a hands-on feel for turbine blades, the electrical generator and transformers required to produce electricity.

CAREER FAIR

9th Annual CEE Career Fair

Hundreds of undergraduate and graduate students attended the 9th Annual CEE Career Fair, held on January 21, 2015 at the Husky Union Building. Students from the CEE department and College of Engineering met with fifty organizations to discuss internship and job opportunities.

Thank you to all the employers who participated. We look forward to seeing you next year!

Amec Foster Wheeler
American Public Works Association (APWA)
Aspect Consulting, LLC
Atkinson Construction
BCRA, Inc.
BergerABAM
Brown and Caldwell
Coast & Harbor Engineering, a Division of Hatch Mott MacDonald
Collins Engineers, Inc.
Coughlin Porter Lundeen
DCI Engineers
Epic
Federal Aviation Administration (FAA) Engineering Services
Fehr & Peers
Gray & Osborne, Inc.
Harder Mechanical
Harriott Valentine Engineers
Hart Crowser
HDR Engineering, Inc.
HNTB Corporation
KBA, Inc
Kennedy/Jenks Consultants
KIEWIT
King County Department of Natural Resources and Parks
KPFF Consulting Engineers
KPG, Inc.
Magnus Pacific Corporation
Magnusson Klemencic Associates
Morrison Hershfield
Murray, Smith & Associates, Inc.
OAC Services, Inc.
Orion Marine Group
PACE Engineers, Inc.
Pacific Engineering Technologies
Parsons Brinckerhoff
Perteet, Inc.
Pierce County Public Works
Reid Middleton, Inc.
Shannon & Wilson, Inc.
Tacoma Water
Transpo Group
U.S. Bureau of Reclamation
U.S. Forest Service
U.S. Navy Recruting Seattle
US Army Corp of Engineers, Seattle District
UW Department of Military Science
Walsh Pacific
Washington State Opportunity Scholarship (WSOS)
WHPacific, Inc.
Women's Transportation Seminar (WTS)

ALUMNI NEWS

1965 Reunion

The class of 1965 50th reunion will take place on Sunday, June 14. The 50th reunion class will join the 2015 CEE Graduation Celebration and are invited to take part in the ceremony, as well as attend a brunch prior to the celebration.

Contact Jill Dalinkus with questions or to RSVP: jmd4@uw.edu or 206-616-0403

ALUMNI UPDATES COMING SOON

WE'RE LAUNCHING A NEW BRIDGE FEATURE, AND WE WANT TO HEAR FROM YOU!

Connect with the CEE alumni community and share your updates on items such as career moves, publications, campus visits, professional projects, and more.

Please submit your news, updates, and photos to elysse@uw.edu

CIVIL & ENVIRONMENTAL ENGINEERING
UNIVERSITY of WASHINGTON

More Hall, Box 352700, Seattle, WA 98195-2700
www.ce.washington.edu / TEL 206.543.2390 / FAX 206.543.1543

RETURN SERVICES REQUESTED

Send address correcetions, questions, and comments by email to comments@ce.washington.edu or to the return address above.

UPCOMING EVENT

Suzanne Lacasse to Deliver 2015 Evans Lecture

Hazard, Risk and Reliability in Geotechnical Practice

THURSDAY, MAY 14 AT 4:30 P.M.

Dr. Suzanne Lacasse, Technical Director at the Norwegian Geotechnical Institute (NGI), will speak at the Daniel L. and Irma Evans Lecture on Thursday, May 14 at 4:30 p.m. (location to be announced). Since the mid-80s, Dr. Lacasse has developed and applied statistics, probabilistic analysis and reliability and risk concepts to assist in the foundation design and decision process and is well known for her contributions on hazard and risk assessment and risk management. Her talk, "Hazard, Risk and Reliability in Geotechnical Practice," examines these concepts through case studies, drawing on a wide realm of geotechnical problems, and outlines issues such as tolerable and acceptable risk.

The CEE community is encouraged to attend this free lecture and the following reception. For additional details regarding the Evans Lecture, please visit ce.washington.edu/news/lecture.