The Department of
CIVIL ENGINEERING
Newsletter
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Civil Engineering • Environmental Engineering • Bioresource and Agricultural Engineering

Professor Terry Podmore Reports from Indonesia

Terry Podmore

In early June I was asked to join a team of engineers from Engineering Ministries International (eMi), a Christian volunteer group from Colorado Springs, to go to Indonesia to work on tsunami relief. eMi had been requested to undertake the mission by Food for the Hungry International (FHI), an aid organization with a full time relief operation in Sumatra.

In mid July we traveled to Meulaboh, on the northwest coast of Sumatra, to study a drainage problem that occurred after the tsunami on December 26, 2004. Meulaboh is situated approximately 100 miles from the epicenter of the earthquake, and so it was hit very hard by the resulting tsunami. The city lies on the coastal edge of a flat alluvial plain about ten miles wide and only slightly above sea level and is subject to tidal fluctuations.

Arriving in Meulaboh, we were struck with the extent of the devastation caused by the tsunami. Eye witnesses estimated that the three waves caused by the tsunami were between 60 and 100 feet high. The waves arrived about an hour apart, so that there was no time for one wave to recede before the next arrived. After the third wave the water swept back to the Indian Ocean, causing most of the damage. It has been estimated that about 40,000 people in the Meulaboh area died in the event.

In Ujong Baroh, the area in which we were working, there was standing water remaining seven months after the event. In some areas which had previously been home sites, water was two to three feet deep. It was our job to investigate the situation and to determine what might be done to correct it. That area of Sumatra receives a lot of rainfall, approximately 130 inches per annum, distributed fairly uniformly throughout the year. However, it was difficult to get information about the previous drainage system since most of the records had been destroyed.

We were able to meet with local officials, the Mayor of Meulaboh, the Lura, or village head, of Ujong Baroh, and members of the city staff including a water resources engineer and surveyor. A survey of our area had been completed before we arrived. The staff members were able to fill in many details since it was hard for the team to comprehend what had been in place before the tsunami. The existing drainage system, consisting of open channels to carry runoff from the interior areas to the sea, were largely still in place with some local damage. However, due to the extent of the current inundation, it was obvious that they were not functioning as previously.

By examining the extent of the tidal encroachment, and observing the tidal range, we were able to determine that the entire area has subsided by approximately two and a half feet. This has meant that some areas that were barely above sea level previously are now under water, and other areas are experiencing tidal inundation due to overtopping of the drainage channels. Parts of the local market are flooded at high tide and roads which were previously dry have become flooded. This also accounts for the standing water on the home sites in the area.

Clockwise from top: What remains on the ground - the sign indicates where a house was, who owned it, and how big the site was. A shattered building in Meulaboh and typical living conditions in the area.

After establishing a decision matrix to evaluate potential solutions, it was determined that the most appropriate approach was to extend the side walls of the existing drainage channels, reestablish that coastal barrier wall which had been badly damaged in the tsunami, and to elevate the area by bringing in fill material. Costs and a timeline were developed. The report produced by the team will provide information to FHI for an application to the United Nations Development Program (UNDP) to provide funding to carry out the project.

Observations

The people of Meulaboh are attempting to go on with their lives. Most of them have lost family members, homes, and businesses. They are living in tents, shacks constructed from material scavenged from ruined buildings, and partially destroyed buildings that are still standing. All of them have stories about their experiences in the tsunami and the ones that we heard were heart wrenching. In some areas life appears to be almost normal. The damaged areas have been "softened" by rapidly growing tropical vegetation. There are more than fifty aid organizations active in the area. However, it is going to take years of effort at reconstruction to put shattered lives and communities back together.

Colorado State University

Knowledge to Go Places

Alumni News

Charles Brown, B.S. 1954 Civil Engineering, is semi-retired in Colorado Springs, and enjoying his consulting work.

Ray Chamberlain, Ph.D. 1955 Civil Engineering, was awarded the ACEC/CO George Washington Award. The award is given to a member for outstanding service to the community, the progress of Colorado, and the advancement of the public image of consulting engineering as a profession. The receipient must exhibit leadership and must have had an impact on public policy making and general societal issues. Dr. Chamberlain received the award at the ACEC Annual Meeting on April 29, 2005.

Dale Heerman, M.S. 1964, Ph.D. 1968 Agricultural Engineering, retired on May 3, 2005 after more than 41 years of Federal service, 38 of those with the USDA-ARS in Fort Collins. He joined ARS in August 1968 and became Research Leader of the Water Management Unit in 1981.

Trevor Dickinson, Ph.D. 1967 Civil Engineering, is Professor Emeritus, Water Resources Engineering, at the University of Guelph in Ontario, Canada.

Paul Beebe, Ph.D. 1972 Civil Engineering, has retired after 32 years with General Motors, where he worked on vehicle aerodynamic development and management of resources in that field. Since retiring, Paul and his wife Judith have enjoyed traveling and Paul has been able to focus on his much-neglected fishing habit and has been riding his first-ever motorcycle. He reports that all is well in Michigan.

Vijay Gopu, M.S. 1973, Ph.D. 1975 Civil Engineering, is the department chair of Civil Engineering at Tulane University in New Orleans. He reports that all of his faculty are well and safe after Hurricane Katrina. He hopes that the University will be up and running again for the spring semester.

Mark Haynes, B.S. 1973 Civil Engineering, is with the Safety of Dams Program at the Colorado Division of Water Resources in Denver.

The Colorado Performance Excellence (CPEx) program awarded the Timberline Award to the Transportation Expansion (T-REX) Project in 2004. The Timberline was awarded after the project was evaluated on key management processes including project direction, quality audit program, project controls, public information, contract change control and partnering. The project director is **Laurence Warner**, B.S. 1977 Civil Engineering.

Thomas Anzia, B.S. 1981 Civil Engineering, is a principal at Felsburg Holt & Ullevig in Centennial, Colorado.

Peter Brothers, Ph.D. 1984 Civil Engineering, is the Dean of Engineering at the University of Auckland in New Zealand.

Henry H. Smith, Ph.D. 1985 Civil Engineering, is Vice Provost for Research and Public Service at the University of the Virgin Islands.

Dr. Simon Lorentz, M.S. 1986, Ph.D. 1995, Agricultural Engineering, is a professor of Process hydrology in the School of Bioresources Engineering and Environmental Hydrology at the University of KwaZulu-Natal, in Pietermaritzburg, South Africa. On April 14, Dr. Lorentz gave a seminar at Colorado State entitled Process Hydrology Research in South Africa with an emphasis on Quantifying Low Flows.

Carl Baylor, B.S. 1987 Civil Engineering, is a structural engineer at Washington Group International, Inc., in Englewood, Colorado. He recently attended a shake table demonstration at CSU's Engineering Research Center (*read more about this structural research on page 8*).

Jaeeung Yi, M.S. 87, Ph.D. 1996 Civil Engineering, is an Associate Professor, Division of Environment, Construction and Transportation Engineering, at Ajou University in Korea.

Paul Fischer, B.S. 1988 Civil Engineering, has been promoted to vice president at Burns & McDonnell Engineering. A 17-year firm veteran, Fischer has led the Denver office for three years as a regional manager and is currently leading efforts on the city of Thornton's Columbine Water Treatment Plant expansion.

Perry Cabot, pictured in Summer 2004, explaining how retaining walls work to fellow workers on a project re-burying a waterline after it was exposed by an abandoned construction project.

Alumni Focus: Kent K. Mao, M.S. 1985, Ph.D. 1990, Civil Engineering

Dr. Kent K. Mao is founder and Chairman/CEO of North America Industrial Investment Co. (NAIIC), Ltd., a business development and investment firm based in Seattle, Washington. The combination of an undergraduate degree from China's Tsinghua University and his masters and doctorate from Colorado State provides a strong basis for United States-China business development. Dr. Mao's professional experience and connections with individuals, companies, and agencies in China makes him a unique resource for firms interested in doing business in both the U.S .and China.

Dr. Kent Mao visits with CSU President Larry Penley during his September trip to meet with several university presidents in Beijing and Tianjin China to promote CSU's international initiatives in key research areas such as environmental science and small engines research.

As an investor and consultant in the fields of energy, public utility and infrastructure, telecommunications, commercial real estate, environmental pollution control and medical and health care industries, Dr. Mao's firm and partners have successfully invested millions in China for acquisitions of thermal power plants and thermal supply utilities as well as State-owned enterprises. NAIIC currently owns, operates and manages these utility facilities in China with 4,000 local employees.

Dr. Mao visited Colorado State in July to meet with President Penley and other University leaders to discuss a CSU-China Initiative. CSU's goal is to establish deeper relations with China because of it's importance as a global economic power and to explore collaborations in areas of interest to China in which Colorado State is a recognized global knowledge leader. President Penley visited Dr. Mao in September to continue discussions.

Alumni: We want to hear your news!

E-mail civil@engr.colostate.edu with your recent promotions, honors, publications, research, speaking engagements, and photos, so we can keep your classmates informed about important changes in your life. If you have questions regarding submissions or comments about this newsletter, please contact the editor, Kathleen Seligmann, at 970-491-5049. Visit us on the web at www.engr.colostate.edu/ce.

Dan Gessler, B.S. 1988, M.S. 1993, Ph.D. 1995, Civil Engineering, is now director of numeric modeling at Alden Research Laboratory, Inc. in Holden, Massachusetts.

Perry E. Cabot *(shown at left)*, B.S. 1994 Civil Engineering, completed an M.S. in Environmental Engineering in 1999 at the University of Illinois at Urbana-Champaign and will complete a Ph.D in Agricultural Engineering and Land Resources in 2005 at the University of Wisconsin-Madison. His areas of expertise include water resources, nonpoint source pollution, soil conservation, and agricultural waste management. He is active with Engineers Without Borders and one project he is involvecd with is in Muramba, Rwanda. They are working with all levels of government to improve water supply and reduce contamination. Cabot is a professional engineer and will be looking for a faculty position at a university in Fall 2006.

Roy Watts, B.S. 1994 Civil Engineering, is a project manager for the city of Wichita Falls, Texas.

Justin Beckner, B.S. 1996 Civil Engineering, has joined Nolte Associates in Fort Collins.

William Chmelir, B.S. 1996 Civil Engineering, left Colorado State and worked for several firms in Fort Collins before moving to Oregon. He currently works for John Chmelir's Sons LLC in Grants Pass, Oregon, as a project manager, and is developing housing subdivisions and building custon homes. He completed Army Helicopter Flight School as a Warrant Officer in 2004 and serves in the Oregon National Guard as a Blackhawk Medevac Pilot. Chmelir married Dr. Natasha Nair, a graduate of CSU's Veterinary Medical School. They have a 16-month-old son, Calvin, and are expecting a daughter.

Joseph Delich, B.S. 1997 Civil Engineering, is a traffic/transportation engineer in Loveland. His son, Jackson, was born in March 2003. Aside from time with his son, Joseph also enjoys mountain biking and the outdoors.

Momcilo Markus, Ph.D. 1997 Civil Engineering, was selected as a Faculty Fellow of the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign. Dr. Markus' research is on "Data fusion, data mining, pattern recognition, and regional classification of the water quality data in the midwestern United States." In addition Dr. Markus has recently co-authored the book, *Hydroinformatics: Data Integrative Approaches in Computation, Analysis, and Modeling*, by P.Kumar, M. Folk, M. Markus, and J.C. Alameda, CRC Press, October 2005. Dr. Markus works for the Illinois State Water Survey, Champaign, Illinois.

Andrew Brandt, B.S. 2000 Civil Engineering, recently made a visit to the Colorado State campus. He is working for the California Department of Transportation with several other CSU Civil Engineering alums.

Humberto Gallegos, M.S. 2001 Civil Engineering, is a hydraulic engineer with the U.S. Army Corps of Engineers in Los Angeles. Gallegos has been a job recruiter for the Corp, a support program manager for the Hispanic Employment Program, and has also been working with CSU to recruit students for the University.

On July 30, Professors John Labadie and Darrell Fontane enjoyed a dinner in Seoul, Korea with civil engineering alumni. Front row: Boosik Kang, Ph.D. 2003, Professor Fontane, Professor Labadie. Back row: Jeongkon Kim, M.S. 1994, Jaeeung Yi, M.S. 87, Ph.D. 1996, Ick Hwan Ko, Ph.D. 1997, Kyu-Cheoul Shim, Ph.D. 1999.

Becki Oline Atadero, B.S. 2002 Civil Engineering, is a graduate research assistant in the Deparment of Structural Engineering at the University of California, San Diego. She returned to Colorado State to give a seminar entitled "Development of Reliability Based Design for FRP Strengthening of Reinforced Concrete Structure" on August 29.

Jason Bartels, B.S. 2002 Civil Engineering, is now a Lieutenant in the Air Force stationed at Misawa Air Base, Japan. He is currently the Chief of Host Nation Funded Construction for the 35 Civil Engineering Squadron at Misawa. He is responsible for a $700M program with more than $100M in on-going construction projects. The Japan Facilities Improvement Program (JFIP) is an entirely voluntary program where the government of Japan provides money to US Forces Japan to build facilities for the base. He has a staff of six Japanese nationals (five engineers, one architect) and two non-commissioned officers that work directly for him in support of all phases from programming to design and construction. Currently they have a $30M airfield taxiway renovation that is nearly complete, a $44M Base Civil Engineering complex just starting construction, and over $85M in infrastructure upgrade projects.

Matthew Noteboom, M.S. 2002 Civil Engineering, of Richard P. Arber Associates, was presented with an ACEC New Faces of Engineering award. The program highlights the interesting and unique work of young engineers and the resulting impact on society. The program recognized 65 nominees out of 1.8 million engineers in the United States. Noteboom has been involved with projects for the City of Alamosa, the City of La Junta, and the Cortez Sanitation District.

Brian Herbolsheimer, B.S. 2003 Civil Engineering, and **Carrie Fitzgerald**, B.S. 2003 Civil Engineering and Mathematics *(shown below)*, were married on July 30, in Franktown, Colorado. Brian works at A. G. Wassenaar, a geotechnical firm in Denver. Carrie is working at the Denver office of Ayres Associates. The two met at Colorado State, having many classes togehter and they both lived in Allison Hall, where Carrie was a resident assistant.

Morgan McDermott, B.S. 2003 Civil Engineering, is a design engineer at Jones and Boyd, Inc. in Dallas.

Jeffrey Olsson, B.S. 2003 Civil Engineering, is working for HKM Engineering in Billings, Montana. He has been working on diversion dam replacements in western Montana.

Ron Manske, M.E. 2004 Engineering Science, recently transferred to JVA, Incorporated's Fort Collins office in Old Town Square.

Richard Mulledy, B.S. 2004 Civil Engineering, is an Engineer I at CECO Concrete Construction in Florida.

Tristan Burm, B.S. 2005 Civil Engineering, is a project engineer with the Weitz Company in Denver, and has been working out of Telluride.

Dillon Cowan, B.S. 2005 Civil Engineering, is pursuing graduate studies in the Environmental & Water Resources Systems Engineering program at Cornell University.

Brandon Currey, B.S. 2005 Civil Engineering, is a specialist in the United States Army.

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CSU's Civil and Environmental Engineering Graduate Programs — Move Up On the List of America's Best

Both Colorado State's civil and environmental engineering programs advanced on the *U.S. News and World Report* America's Best Graduate Schools 2006 list. The civil engineering program which consistently ranks among the best in the U.S. moved from 28th to 26th in the nation, and 17th among public institutions. Also, the environmental engineering program moved from 30th to 26th, and ranks first in Colorado. Of all public schools, the environmental engineering program ranked 16th in the nation and of all Western states, the program ranked 7th.

Faculty News

Steven Abt

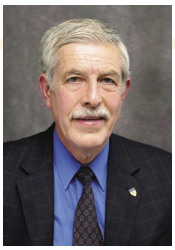
Dr. Steven Abt received the General Palmer Award from the American Council of Engineering Companies of Colorado. The award honors Dr. Abt's contributions to the engineering community, significant contributions to research, and dedication to both Colorado State and the U.S. Army.

An American Association for Wind Engineering Distinguished Service Award was presented to **Dr. Bogusz Bienkiewicz** during the 10th Americas Conference on Wind Engineering, in June. Awarded only once every four years, the award honored Dr. Bienkiewicz for his tireless efforts to create a national windstorm hazard reduction program. This goal was realized in November 2004 when President Bush signed legislation authorizing its creation. Dr. Bienkiewicz also attended the joint meeting of the US-Japan Panel on Wind and Seismic Effects. He delivered a paper presenting findings of a comparative study of wind damages in Japan and in the U.S, resulting from collaboration with Dr. H. Kikugawa, during his sabbatical at CSU. Dr. Bienkiewicz visited the National University in Yokohama and Tokyo University of Polytechnics in Atsugi, where he presented seminars on wind engineering research and education initiatives in the U.S. and at Colorado State.

Bogusz Bienkiewicz

Bienkiewicz and **John van de Lindt** serve as Co-PIs for the NSF Major Research Instrumentation (MRI) Grant to aid collaborative wind/structural engineering research involving facilities at CSU's Wind Engineering and Fluids Lab and Structural Engineering Lab.

Dr. Marvin Criswell has been appointed Assistant Dean for Accreditation and Assessment, in addition to his role as Associate Department Head and Professor. This is a part-time position reporting to Associate Dean Tom Siller. This position will be in place through the conclusion of the ABET visit Fall 2007. Dr. Criswell has 20 years of experience as an ABET evaluator and has been a member of review teams at ten different institutions. Dr. Criswell's responsibilities will include coordination of the College of Engineering's preparation of ABET self-study documents, alignment of CSU's assessment (PRISM) process and the ABET goals and outcomes, critical evaluation of draft self-studies prepared by individual departments, and coordination of the College's preparation for the ABET visit.

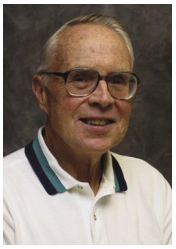


Marvin Criswell

Dr. Neil Grigg received the 2005 Engineering College Abell Faculty Award and the Office of International Programs Distinguished Service Award. He was also highlighted by *APWA Reporter Magazine* for their Member Profile and featured in the *Water and Wastes Digest Magazine's* career section. Dr. Grigg also published a book entitled *Water Manager's Handbook: A Guide to the Water Industry,* published by Aquamedia Publishing in Fort Collins.

Neil Grigg

David Neff



Robert Meroney

During Spring 2005, **Research Scientist David Neff** and **Professor Emeritus Robert Meroney** completed wind tunnel and computational fluid dynamic analysis of flow, dispersion and cooling tower drift in the Century City area of Los Angeles. The purpose was to estimate transport of hazardous gases and drift over the Beverly Hills High School complex.

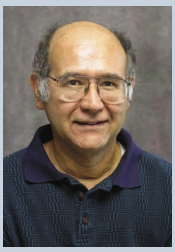
In April and July, **Dr. Meroney** made presentations to the Fort Collins Rotary Club "Aerodynamics of the Golf Ball" and a multimedia talk on the fluid behavior of tornadoes, dustdevils, whirl pools and galaxies. Dr. Meroney also chaired a session on air pollution aerodynamics and presented a companion paper titled "CFD Validation of Cooling Tower Drift" at the America Conference on Wind Engineering held at Louisiana State in Baton Rouge. In August, Dr. Meroney attended the PHYSMOD05 Workshop (Physical Modeling of Flow and Dispersion Phenomena) at the University of Western Ontario, London, Ontario. He chaired a workshop session on validation of numerical modeling and presented a paper titled "Particle Drift from Idealized Cooling Towers." In November, he will provide a dinner presentation, "Fire Whirls, Fire Tornadoes, and Fire Storms," for the ASME Centennial Session. In December, Dr. Meroney will provide a set of lectures on "Air Pollution Aerodynamics" for the Croucher Advanced Study Institute held at HKUST (Hong Kong University of Science and Technology). Dr. Meroney and his wife, Joan, will participate in a preconference tour visiting Beijing, Xian, the Yangtze river, Chengdu, Lhasa, and Hong Kong.

Professor John D. Nelson is presenting a series of short courses on the Design of Foundations for Expansive Soils. These courses present updated information on Foundation Design for Expansive Soils, that are based on Dr. Nelson's experience over the past 13 years. In North America expansive soils are found primarily in the Western United States and Canada. Recently, however, Dr. Nelson served as a consultant on two projects in Eastern Minnesota about 50 miles south of Minneapolis. The short courses are being presented in Minneapolis, Reno, Walnut Creek (CA), Orange County, Las Vegas, Houston, and Denver.

John Nelson

Dr. Terry Podmore was in Uzbekistan in early June working on a USAID-funded project. He was investigating salinity and high water table problems caused by extensive irrigation for cotton production. Dr. Podmore's stay in Uzbekistan was cut short when the US Embassy received a "credible terrorist threat" against US interests and personnel, causing

Salas Awarded "Antorcha de Habich"



José Salas

Commemorating its 129th anniversary as an Engineering School and its 50th anniversary as a university, the National University of Engineering of Lima, Perú awarded the "Antorcha de Habich" to Dr. José D. Salas, Professor of Civil Engineering of Colorado State University for his outstanding professional, academic, and personal achievements. The "Torch of Habich" is a symbol representing the vision of the University's founder, Ing. E. Habich, in creating an institution that has excelled in teaching, applied research, and technological development in the various branches of engineering and architecture.

The awards ceremony took place on July 22, 2005, at Lima's Marriott Hotel where other graduates of the University also received the award, among them current and former Ministers of the country, current and former Presidents of universities, and a few members of the academic and scientific community for their professional, academic, cultural, and social contributions to the country and the University. About 500 people attended the awards ceremony, among them members of the government such as a former President of Peru.

Dr. Salas obtained his undergraduate degree in Civil Engineering from the National University of Engineering of Lima and M.S. and Ph.D. degrees from Colorado State University. He joined CSU as a faculty member in 1976 and specializes in Hydrology and Water Resources. Since 2002, Dr. Salas has held the Borland Professorship in Hydrology. Dr. Salas has taught classes and presented invited lectures and seminars at several European universities, at several agencies and universities in Egypt, India, Thailand, Japan, and Korea, and in most countries in North and South America, and the Caribbean. While at CSU, Dr. Salas has been Principal Investigator of numerous research projects awarded by the National Science Foundation, the U.S. Geological Survey, the U.S. Bureau of Reclamation, the Agriculture Research Service of the Department of Agriculture, USAID, and the U.S. National Oceanic and Atmospheric Administration (NOAA).

all non-essential personnel to be sent home. Dr. Podmore *(shown at right talking with a group of farmers about irrigation problems)* anticipates returning to Uzbekistan to complete the project when the situation in the country stabilizes.

Dr. Amy Pruden received an education and research grant from the National Science Foundation Course, Curriculum, and Laboratory Improvement (CCLI) program entitled, "Molecular Biology for Environmental Engineers." This grant will support the further development of Pruden's experimental course, CE580 Biomolecular Tools for Engineers, and will strengthen education and research opportunities integrating biotechnology and engineering. This grant will also support collaboration with five other universities teaching similar experimental courses and will allow the Universities to write a unified text on the subject. The ultimate goal will be to educate students in how advances in biotechnology can help to improve engineered processes, such as environmental clean-up or detection of harmful pathogenic bacteria, so that they may help to bring these advances to more extensive application in engineering practice. This grant will also build on recent support from the Colorado Institute of Technology, "Biotechnology for Engineers in the 21st Century."

Amy Pruden

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2005 Departmental Awards

Faculty Award for Excellence in Teaching _____ Deanna Durnford
Faculty Award for Excellence in Research _____ John Labadie
Faculty Award for Excellence in Service _____ Darrell Fontane
Outstanding Faculty Performance Award _____ Chuck Shackelford
Staff Award for Excellence _____ Kathleen Seligmann
In appreciation for their years of service
to the department _____ Beth Mitchell and Bernie Shepard

The Simons Family after the sign unveiling at the dedication ceremony.

Building Dedicated to Daryl B. Simons

On Saturday, August 27, the main building at the Engineering Research Center was dedicated in honor of Daryl B. Simons. More than 200 family members, friends, colleagues, and former students attended the ceremony, which included featured remarks by A. R. Chamberlain, former president of Colorado State and close friend of Dr. Simons.

A Celebration of Life was then held at the Lory Student Center, where colleagues E.V. Richardson and Maury Albertson shared their memories; Jack Simons shared thoughts on his brother's childhood; Dr. Neil Grigg, a Simon's advisee, offered a student perspective; and community leader Robert S. "Bob" Everitt, Chairman and CEO of the Everitt Companies, offered his thoughts on Daryl's leadership and his impact on the community.

At dinner, Mary Jo Simons accepted a posthumous award for Dr. Simons from the American Academy of Water Resources Engineers (AAWRE). Dr. Simons was selected to be in the first class of Honorary Diplomates, named at the World Water and Environmental Resources Congress in May. The award was presented by Jeffrey B. Bradley (Ph.D. 1986), AAWRE president, and Darell Zimbelman (B.S. 1964, M.S. 1966), AAWRE past president.

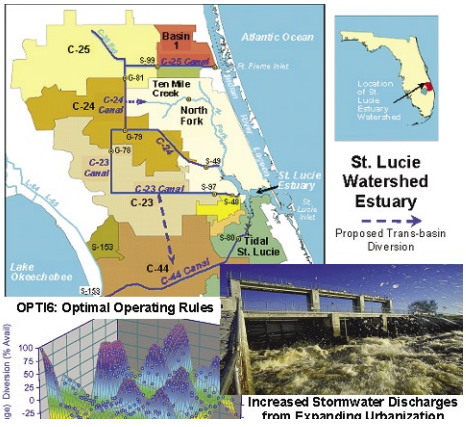
Faculty Focus: John Labadie

Providing Design and Operating Rules for $1 Billion Stormwater Management Project

John Labadie

John Labadie has contracted with the South Florida Water Management District to develop the OPTI6 software package for providing optimal sizing and operation of stormwater detention facilities for protecting the ecosystem of the St. Lucie Estuary (SLE), located on the east coast of south Florida. Many coastal ecosystems have been adversely impacted by increased stormwater drainage due to expanding urbanization. Restoration of the SLE ecosystem is a major component of the Comprehensive Everglades Restoration Plan (CERP) undertaken by the South Florida Water Management District (SFWMD) and the U.S. Army Corps of Engineers (USCOE). The proposed restoration plan includes a budget of about $1 billion for SLE restoration, centering on recapturing the hydrologic characteristics of the pre-drained or natural watershed using stormwater detention reservoirs to aid in the recovery and protection of salinity sensitive biota.

The OPTI6 software package has been developed for optimal sizing and operation of multipurpose stormwater detention reservoirs to provide for hydrologic restoration to natural hydrologic conditions, as well as supplemental irrigation water and pollution control through connected stormwater treatment areas. The optimization is challenging since the ecological goal is for mean monthly stormwater discharges to the SLE to coincide with the desired natural frequency distribution, rather than simply attempting to control individual extreme events. The OPTI6 optimization model applies a genetic algorithm, coupled with a daily simulation model of the stormwater drainage network, to optimize the sizing and fuzzy operating rules of reservoirs for controlling stormwater discharges to the SLE. Results indicate that the desired frequency distribution is closely matched and the level of service for the supplemental irrigation demand is met under reduced detention basin storage requirements, resulting in significant cost savings.



Student News

In May, the Northern Colorado Branch of ASCE named seniors **Mike Flick** and **Mike Dunham** as the two recipients of the 2005 Outstanding Student Awards. Coincidentally, both Mikes are now CSU graduates, and were classmates and friends at the same high school.

Dr. Richard Gutkowski and M.S. student **Misty Butler** co-authored a paper presented at and published in the Proceedings of SAFE 2005, the First International Conference on Safety and Security Engineering held June 13-15, 2005 in Rome, Italy. The paper was entitled "Preliminary Impact Testing of Portable Safety/Securtiy Barriers." The event was organized by Wessex Institute of Technology, UK and the University of Rome "La Sapienza," Italy, and was sponsored by numerous Italian government agencies, including the Vatican City State, the Senate of the Republic, and Presidency of the Council of Ministers.

Masters student **Lauren Glushik** is working on an oil and gas development project on Sakhalin Island in the Russian far east. She is a contractor and senior environmental specialist to Sakhalin Energy Investment Company doing environmental monitoring and surveying, oil spill response planning and coastal sensitivity mapping.

Ph.D. student **Jonathan Goode** was awarded a fellowship from the American Institute of Steel Construction sponsored by the AISC Education Foundation and the Rocky Mountain Steel Construction Association.

A team of students from Colorado State won 2nd place at the 2005 Society of Hispanic Professional Engineers (SHPE)/NASA National Academy Olympiad. Team members included Civil Engineering seniors **Andrea Menchaca** and **Rob Suarez**. Students are quizzed with questions ranging from multi-disciplin-

Spring 2005 Undergraduate Commencement

Front row (left to right): Minhchau Le (CE), Tracey Farrow (CE), Jennifer Davis (CE). **Second row:** Heath Prow (CE), Sara Natelli (CE), Karol Miodonski (CE), Tony Zancanella (CE), John Treacy (CE), Tristan Burm (CE), Jennifer Romano (CE). **Third row:** Kyle Donovan (CE), Craig Kopasz (CE), John Erickson (CE), Liz Kidner (CE), Ashley Meyer (CE), Dan Schiltz (CE), Jonathan Herman (ENV), Steve Pitton (CE), William Welborn (CE), Adam Prior (CE), Brendan Hines (CE), Victoria Rupp (CE), Jason Mapes (CE), Zach Thode (BAE), Paul Espinoza (CE), Matt Monger (CE). **Fourth row:** Adam Green (CE), Cara Shonsey (CE), Dave Beiswenger (CE), Clayton Richards (CE), James McKelvie (CE), Ryan Flick (CE), Mike Dunham (CE), Eric Schey (CE), Ryan Fleming (CE), Ryan Kennedy (CE), Eric Johnson (CE), Luke Ringenberg (CE), Brandon Currey (CE). **Fifth row:** Michael Geenen (CE), Michael Tauchen (ENV), Gavin Woo (ENV), Kyle McKay (ENV), Andrea Menchaca (CE), Julia Majkrzak (CE), John Meyers (CE), Dan Ferrin (CE), Greg Schram (CE). **Sixth row:** Brian Thielen (CE), Matt Bolling (CE), David Johnson (CE), Ryan Gray (CE), Noah Friesen (CE), Josh Johnson (CE), Nick Jackson (BAE), Dillon Cowan (CE), Chris Hessek (CE), Sean Stellish (CE), Luke Myers (CE). **Seventh row:** Steve Patterson (CE), Travis Rounsaville (CE), Mikel Olander (BAE), Laurie Howard, Matt Tripler (CE), John Cullor (ENV). **Back row:** Dr. Amy Pruden, Dr. Ramchand Oad, Dr. Terence Podmore, Dr. Sandra Woods, Dr. Darrell Fontane, Dr. Neil Grigg, Dr. Johannes Gessler, Dr. Marvin Criswell.

ary engineering theories and complex equations to SHPE/Hispanic history and NASA knowledge. Their student chapter was also named regional outstanding chapter for 2003-2004.

In April ASCE announced that **Liz Kidner** had been named Outstanding Senior Student for CSU by the Colorado Section of ASCE. **Mike Flick** and **Mike Dunham** were named runner ups for the award.

Ph.D. student **Luciana Pereya** *(shown above)* won 2nd place in the student paper competition for her conference paper and oral presentation given at the American Society of Mining and Reclamation (ASMR) national conference. The title of her paper was "Comparison of Inocula Applied in the Remediation of Acid Mine Drainage by Sulfate Reduction." Pereya is working with Dr. Amy Pruden.

Senior **Melissa Robson** was awarded the Jack Bruce Memorial APWA Scholarship from the American Council of Engineering Companies of Colorado.

Many Civil Engineering students worked in internships over the summer. This year, every CSU Civil Engineering applicant for the North Front Range-Transportation Research Internship Program (NFR-TRIP) was placed in an internship. This program is a joint activity of Mountain-Plains Consortium and the North Front Range Metropolitan Planning Council. **Takao Sawahata** worked with Weld county Public Works; **Ethan Ford** worked with Loveland in Storm-water; **Steven Bell** worked with the North Front Range MPO; **Elizabeth Kidner** worked Weld County Public Works; **Che Yun Chan** worked with the City of Fort Collins; and **Kris Weist** worked with Larimer County Public Works.

The Department's new state-of-the-art soil testing system is up and running in the A9 Graduate Geotechnical Lab under the direction of Dr. Antonio Carraro. **Erdem Onur Tastan**, a new Ph.D. student from Turkey, is already working with the system as the device will be an invaluable tool in his doctoral research. Among other things, Onur will be investigating the effect of principal stress rotation on the liquefaction resistance of transitional soils (i.e., materials whose mechanical behavior is not yet completely understood). These soils have been associated with extensive damage during recent earthquakes such as the ones that took place in Turkey, Japan and Taiwan in the last few years.

2005 Undergraduate Student Awards

Outstanding Civil Engineer of the Future ..... Ryan Fleming
Civil Engineering Achievement Award ..... Andrea Menchaca
Civil Engineering Student Leadership Award..... Dillon Cowan
Ralph Parshall Award..... Noah Friesen
Environmental Engineering Achievement Award .....S. Kyle McKay
Environmental Student Leadership Award ..... Leigh Neary

E-Days Project Awards:

1st Place: Spring Canyon Community Park Design; Seth Samsell, Cathy Huang, Jason Krall, Luke Myers, Adam Prior, Heath Prow, Greg Schram, Sean Stellish.

2nd Place: Rodeo Arena Structural Assessment; Luke Ringenberg, Chris Hessek, Paul Espinoza, Mathew Monger.

3rd Place: "Vines at Vail" Water Supply, Distribution and Wastewater Systems; Adam Green, David Beiswenger, Mike Geenen, Swaroop Kadur.

Alumni:

If you are looking for student interns or employees, consider attending the

Engineering Career & Internship Fair

January 31, 2006

For more information and for a registration form, please see www.engr.colostate.edu/ce/PR/internship_fair.shtml or call 970-491-5049.

Engineers Without Borders Update

In 2005, members of Colorado State University's chapter of Engineers Without Borders (EWB-CSU) traveled to El Salvador and India to share their time, talents, and knowledge with those in need of assistance.

Engineers Without Borders (EWB) is a non-profit organization established in 2000 to help developing areas with their engineering needs by involving and training internationally responsible engineering students. The students' goal is to incorporate and train the community in all phases of the sustainable project to ensure ownership, appropriateness and long-term effectiveness of their project.

EWB-CSU has traveled twice to the villages of La Laguneta and El Chile in El Salvador. For five months out of the year the people of La Laguneta and El Chile have a very limited local water supply. Each family in La Laguneta has access to approximately five to ten gallons of water per day during this time, which they may use for cleaning, cooking and bathing. In contrast, the average person in Fort Collins will use 150 gallons of water per day. In the two trips made to El Salvador EWB-CSU has developed a sustainable relationship with the village, decided on a viable option for a new water supply system, conducted a hydrogeologic study, and much more. The El Salvador project team is planning on drilling three new shallow wells, constructing two new storage tanks, and building a distribution system for the villages in 2006.

In June of 2005, students **Rachel Hanson** and **Linda Vandamme**, and **Dr. Fred Marinelli**, Ph.D. 1996 Civil Engineering and faculty affiliate, of EWB-CSU traveled to Purulia, India to perform ground water reconnaissance and to conduct a public health survey in the villages of Juri and Pitati. It is not uncommon for village wells to be completely dry by May, forcing women to walk more than four kilometers twice each day to get water from a nearby river for their families. EWB-CSU is working with the villages of Juri and Pitati to provide a safe, adequate water supply, and to create a solution that is locally acceptable, appropriate, and sustainable, and to ensure ownership by the villagers. Following the site assessment trip, the India project team has identified several options for a sustainable water supply system in each village and is currently working on determining which option will be the most feasible. EWB-CSU plans to send another team of students to India in 2006 to begin implementation of a new water supply system for the villages of Juri and Pitati.

Engineers Without Borders at CSU would like to thank the people that have contributed financially or with the donation of airline miles to its projects. *If you are interested in helping EWB-CSU make an impact on the lives of villagers in developing countries please visit our website at www.engr.colostate.edu/ewb/.*

Faculty News *continued from page 5*

Professor Jorge Ramírez received the College of Engineering's George T. Abell Outstanding Mid-career Faculty Award. Ramírez also received grants from the National Science Foundation and the Army Research Office to study the complex hydrologic and geomorphologic response of ephemeral systems in arid environments. This project includes the instrumentation and long-term monitoring of a basin in Arizona. Instrumentation includes two eddy covariance towers for monitoring of turbulent fluxes of energy, water vapor and CO2, several pan evaporimeters, six additional meteorological stations, soil moisture sensors, stream stage sensors, and sap flow sensors for monitoring transpiration fluxes. Geosciences Professor **Stan Schumm**, and **Susan Howe**, a Civil Engineering Ph.D. student, are also involved in the project.

Dr. Ramírez, **Michael Hobbins** (M.S. 2000, Ph.D. 2004), and Tom Brown, USDA Rocky Mountain Research Station, published two important journal papers in the prestigious Geophysical Research Letters. In the publications, they provide theoretical and observational evidence to resolve the so-called "pan evaporation paradox" and provide first-time observational evidence supporting Bouchet's Hypothesis on regional evapotranspiration, therefore transforming the hypothesis from conjecture to an observational fact. Ramírez was invited to deliver a keynote lecture, "The Pan Evaporation Paradox, Global Warming, Global Dimming, and the Complementary Relationship," during International Engineering Week at the University of Medellin, Colombia.

Dr. Chuck Shackelford has been invited to serve as a member of the Committee to Assess the Performance of Engineered Barriers for the Board on Earth Sciences and Resources, Division on Earth and Life Science of The National Academies, Washington, D.C. The committee will convene several times in Washington D.C. to assess the performance of engineered barriers that are used for waste containment and environmental protection and to make appropriate recommendations regarding their use.

The 1st Invitational Workshop on Performance-Based Design of Woodframe Structures was held at CSU in July. The workshop was attended by 15 experts from industry and academia and is part of the Structural Engineering Institute Special Project entitled "The Next Step for ASCE 16: Performance-based Design of Woodframe Structures." This project is being executed by the Committee on the Reliability-Based Design of Wood Structures. For more information on the workshop or the committee, contact **John W. van de Lindt** at jwv@engr.colostate.edu.

Ted Yang received a grant from Taiwan's Water Resources Agency through the Bureau of Reclamation. This is part of a four-year effort to solve Taiwan's erosion, sedimentation, river morphology, and river restoration problems. Ted Yang and **Chester Watson** gave a short course on ecosystem and river restoration in Taiwan in August.

Chester Watson

Ted Yang

Dr. Sandra Woods is currently serving as interim dean of the College of Engineering at CSU. The University conducted an engineering dean search, but based on feedback from the process, university officials decided not to offer the permanent position at the time. A search will be reopened by the Provost. **Dr. Luis Garcia** has been named Acting Civil Engineering Department Head.

Faculty Focus: John van de Lindt

CSU Conducts Series of Shake Table Tests

John van de Lindt

Performance-Based Design (PBD) is an engineering paradigm that gives flexibility to the designer allowing them to go beyond current code standards by proving performance adequacy under prescribed loading conditions at the system level. Associate Professor John W. van de Lindt recently conducted a series of shake table tests at Colorado State University's Structural Engineering Laboratory on a woodframe structure designed with that very philosophy. That was a preliminary test leading up to the benchmark shake table test of a two-story woodframe townhouse in Buffalo, New York, in early 2006 which is part of a five-university NSF-sponsored project entitled "NEESWood: Development of a Performance-Based Seismic Design Philosophy for Mid-Rise Woodframe Construction." That project, led by van de Lindt, will develop a design philosophy to safely increase the height of woodframe structures in active seismic regions of North America to six (or more) stories. Verification of the design approach will consist of a series of shake table tests on a six story woodframe apartment building in Miki City, Japan, in early 2009. That is the world's largest shake table and the final test on the apartment building in Japan will be a full collapse test with a specially-designed steel frame to protect the shake table from damage. Van de Lindt's research team, the *Hazards Loading on Structures* Research Group, also investigates the effect of wind loading on structures including reliability-based design to wind loading, and is applying a genetic algorithm to optimize wall placement in commercial buildings subjected to human-induced loads. Additional details and project abstracts are available on van de Lindt's web page at www.engr.colostate.edu/~jwv/.

Alumni News

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Paul Espinoza, B.S. 2005 Civil Engineering and Construction Management, is a graduate student at Texas A&M in the structural engineering program.

Michael Geenen, B.S. 2005 Civil Engineering, is working for MMLA Psomas as a water resources designer. He has also been enjoying mountain biking in Arizona and playing on his company's basketball team.

Adam Green, B.S. 2005 Civil Engineering, is pursuing a dual masters in business administration and finance at University of Colorado at Denver.

David A. Johnson, B.S. 2005 Civil Engineering, is working at Anderson & Hastings Consulting Engineers in Lakewood, while pursuing graduate studies in structural engineering at University of Colorado-Boulder.

Craig Kopasz, B.S. 2005 Civil Engineering, is an engineer in training with PMPC Civil Engineers in Saratoga, Wyoming.

Minh-Chau Le, B.S. 2005 Civil Engineering and Mathematics, is a graduate student in structural engineering at University of Colorado-Boulder.

Julia Majkrzak, B.S. 2005 Civil Engineering, is serving in the Peace Corps in Panama.

Ashley Meyer, B.S. 2005 Civil Engineering, is working at URS Corporation in Tucson, Arizona and will be attending law school at University of Arizona in Fall 2006.

Mikel Olander, B.S. 2005 Bioresource and Agricultural Engineering, has purchased a pickle harvesting company with his family in Texas.

Kyle McKay, B.S. 2005 Environmental Engineering, is pursuing a graduate degree in Hydraulics at the University of Illinois Urbana-Champaign.

Jeff Murcer, B.S. 2005 Civil Engineering, is working for MWH in Colorado Springs on sanitary sewer rehabilitation.

Cara Shonsey, B.S. 2005 Civil Engineering, is pursuing a graduate degree at Michigan Tech in civil Engineering - International Development.

Seminare "Semi" Taafua, B.S. 2005 Civil Engineering, is working as a structures engineer with Southeast Corridor Constructors in Denver.