

GEOMORPHIC RECLAMATION AND NATURAL STREAM DESIGN AT COAL MINES

SPEAKER BIOGRAPHIES

Dr. Carmen Agouridis P.E. is currently Assistant Research Professor, Biosystems and Agricultural Engineering Department at the University of Kentucky. Her research interests include stream restoration and assessment, mined land reclamation, riparian zone management, hydrology of surface waters, environmental impacts of animal agriculture. She is the recipient (as PI and Co-PI) of over \$2.5 million in grants. She is an instructor for “Introduction to Stream Restoration (senior-level and graduate-level course),” Stream restoration training “Rosgen Levels I-IV courses at North Carolina Stream Restoration Program River Courses” and various conference workshops. She holds a Ph.D. in Biosystems and Agricultural Engineering and is a Professional Engineer.

George Athanasakes, PE has a broad range of experience in Ecological Restoration including the use of natural channel design, stream and wetland restoration, watershed master planning and dam removal. Over the past 15 years, George has served as Project Manager on numerous stream restoration projects throughout the United States. George also led the development of the RIVERMorph Stream Restoration Software and is responsible for software content, new releases and training. His career began with FMSM Engineers, where he led FMSM’s Ecosystem Restoration Group. In 2007, FMSM Engineers was acquired by Stantec Consulting Services. George now serves as the Ecosystem Restoration Practice Leader for Stantec and is responsible for leading these services throughout North America. He holds a Bachelor’s of Science and Master’s of Engineering Degrees from the University of Louisville. He is also a Registered Professional Engineer in several states.

Dr. Chris Barton is an Associate Professor of Forest Hydrology and Watershed Management in the Department of Forestry at the University of Kentucky. As a Research Hydrologist with the USDA Forest Service (1999 – 2003), his research focused on hydro-chemical processes associated with restoration and remediation of disturbed and/or contaminated areas at the US DOE Savannah River Site, SC. Dr. Barton is currently focusing on work in the areas of ecosystem restoration and remediation primarily in stream and wetland habitats that have been altered by human-use activities. In addition, improved methods for preventing water quality degradation from logging and mining activities are currently being examined. Dr. Barton is currently serving as the co-Team Leader of the ARRI Science Team.

Mike Boulay is a registered Professional Geologist with 23 years of regulatory compliance experience within mining, oil & gas exploration and production, and manufacturing industries. Currently he is employed as an Environmental Protection Specialist for the Division of Reclamation, Mining and Safety for the State of Colorado, where his responsibilities include permit and mine plan review and approval, inspection, and enforcement for the coal mining industry. He holds a Bachelor of Science in Applied Geology, from Northern Arizona University, and a Master of Environmental Policy and Management, from the University of Denver.

Ramona Briggeman is currently the Reclamation Biologist with the Indiana Division of Fish and Wildlife. She serves as a field biologist in Indiana Division of Fish and Wildlife but is assigned to the technical services section of the Indiana Division of Reclamation. Prior to serving as the Reclamation Biologist, she was a Reclamation Specialist for the Indiana Division of Reclamation. With over 17 years experience with mining and reclamation, she is responsible for reviewing coal mining operations to evaluate environmental impacts, including effects on fish and wildlife resources (streams, wetlands, endangered species). She received her Bachelor of Science degree in Life Sciences from Indiana State University.

Nicholas Bugosh is presently the GeoFluv Technical Director for Carlson Software. He resides in Fort Collins, Colorado and is responsible for the development and promotion of the Natural Regrade fluvial geomorphic landform design module and Hydrology module worldwide. Natural Regrade is used across the United States, in Canada, Australia, and Romania. He has conducted field research on bedload transportation in mountain streams, worked for state agencies in South Dakota, Montana, and Idaho with mining and water quality regulation, worked as a hydrologic consultant on projects across the United States, and worked as Senior Hydrologist for the New Mexico operations of the largest mining company in the world. Mr. Bugosh has developed a new approach to land grading that returns disturbed lands to natural function and appearance that he calls GeoFluv™. This approach forms the heart of the new Carlson Software “**Natural Regrade**” module. His training in geology and hydrology includes a Bachelor of Science in Geology and a Master of Science in Earth Sciences.

Julian Calabrese works for the Montana Department of Environmental Quality, Industrial and Energy Minerals Bureau, as a Soil Scientist Reclamation Specialist. He has six years experience with the MDEQ Permitting and Compliance, two years in private environmental consulting; and is an Instructor for ArcPAD and mobile computing applications. He holds a B.S. Abused Land Rehabilitation from Montana State University.

Marcelo Calle is a Project Manager from the Wyoming Department of Environmental Quality – Abandoned Mine Land (AML) Program. Prior to employment with the Wyoming AML Program he provided technical support as a surface water hydrologist for Wyoming’s Mine Regulatory Program. Currently, he works with environmental engineers and construction contractors to mitigate hazards and environmental degradation associated with historic mining. He is a graduate of the Watershed Science Program at Colorado State University in Fort Collins, Colorado.

Dave Clark is employed by the New Mexico Mining and Minerals Division. He is an Ecologist/Inspector with 17 years of experience regulating coal mines in New Mexico and

Montana. He holds a BS in Fish and Wildlife Management and a MS in Biological Sciences (Plant Ecology, Statistics, and Range Science) from Montana State University.

Jackie T. Davis is the Director of the Division of Mined Land Reclamation (DMLR), one of six divisions within the Virginia Department of Mines, Minerals and Energy (DMME). He has worked for the Department of Mines, Minerals and Energy for over 26 years as a Reclamation Inspector, and an Administrative services Manager. In 2008, he came back to the coal mine reclamation program as the reclamation services manager for inspection and enforcement activities and was promoted to his current duties in January 2009. He also worked in the Va. State Parks system for 8.5 years before transferring to DMLR. He is a 1974 graduate of Berea College, Berea KY, where he earned a degree in Agriculture.

Lance DeBord is an Environmental Scientist with D.R. Allen & Associates in Abingdon, VA. His current responsibilities there include fish and benthic macro-invertebrate assessments, fluvial geomorphic surveys, terrestrial plant and wildlife surveys, wetland delineations, mitigation design, and environmental permitting. Mr. DeBord has been involved with various natural resource issues in southwest Virginia since 1998. He holds a bachelor's degree in Environmental Science from University of Virginia's College at Wise.

Dr. Keith N. Eshleman is Professor at Appalachian Laboratory, University of Maryland Center for Environmental Science in Frostburg, Maryland. His professional expertise is in the field of watershed hydrology, having completed his doctorate in Water Resources at M.I.T. (Dept. of Civil Engineering) in 1985. He has published more than 40 journal articles in his career and is co-author of an undergraduate textbook entitled *Elements of Physical Hydrology* (with former colleagues from the University of Virginia, where he served on the faculty from 1988 through 1995). Dr. Eshleman's current research interests are in the areas of watershed and wetlands hydrology, groundwater/surface water interactions, biogeochemical processes in upland and wetland ecosystems, hydrochemical modeling, and ecosystem responses to disturbance and land use change.

Tom Golnar is the Surface Water Hydrologist for the Coal Regulatory Program of the Montana Department of Environmental Quality, and has been working with the Montana coal program, the mines, and the ephemeral drainages of Southeastern Montana for a little over 20 years.

Tom's academic interest in hydrology developed at Colorado State University in the late 1970's and early 80's, where he completed his Bachelor's degree in Watershed Sciences in 1982. He grew up in and loved the Colorado mountains, but Montana's remote siren call first lured him north in 1981 where he worked with chainsaws and high school kids as a stream rehabilitation crew leader in drainages torn apart by winter rain-on-snow flood events in the Kootenai National Forest. During the mid-1980's, Tom worked and studied in the mountain valleys, streams and lakes of northwestern Montana as a research assistant for the Flathead Lake Biological Station of the University of Montana, where he earned a Masters degree working in Limnology and Aquatic Ecology in 1986. During and afterwards he put in several years of fieldwork, analysis and lab time monitoring and studying a variety of lakes and streams with the Biological Station and the Flathead National Forest.

Dr. J. Steven Kite has taught in the Department of Geology and Geography at West Virginia University since 1983. His WVU courses include Geomorphology; Fluvial Geomorphology; Applied Fluvial Geomorphology, and Field Geology. He co-taught a series of workshops on Natural Stream Principles through the West Virginia Chapter of the American Council of Engineering Companies from 2002 to 2004, and also co-taught a series of workshops on Stream Processes and Ecology offered by the Canaan Valley Institute in 2007 and 2008.

His research interests include applied fluvial geomorphology, geoarcheology, and the late Cenozoic history of the Appalachian Mountains. He has authored 27 refereed articles, 70 published abstracts, and two lab manuals. He has supervised nearly 40 Masters and PhD. Degrees at WVU. He was a founder of the Southeastern Friends of the Pleistocene, and a former Chair of the Quaternary Geology and Geomorphology Division of the Geological Society of America and the West Virginia University Faculty Senate. A native Virginian, Kite earned a B.S. in Geology at James Madison University, a M.S. in Geological Sciences at the University of Maine, and a Ph.D. in Geology & Geography at the University of Wisconsin.

David A. Lamb, PE is the President of Associated Engineers, Inc in Madisonville, KY. He has over twenty years of consulting engineering experience related to the mining industry. He has been involved in reserve evaluation, mine planning, and all aspects of mine related environmental permitting ranging from DMRE to USACE. This broad base of experience founded on long term relationships with multiple coal company clients and regulatory agencies has served as the basis for the development of a unique perspective of past and present, policies, views, and operating procedures both the industry and the regulatory agencies who are charged with overseeing environmental compliance of mining operations in Kentucky. He is the Past President of Kentucky Society of Professional Engineers, Green River Chapter and member of the American Society of Civil Engineers and the West Kentucky Coal Association. In 2000, he was awarded Achievement in Mining Engineering Award Kentucky Society of Professional Engineers. He holds a B.S. in Civil Engineering from the University of Kentucky.

Scott D. McGarvie is Senior Environmental Manager for Peabody Energy's Midwest Operations in Evansville, Indiana. He worked for the USGS Water Resources Division from 1979 to 1981. In 1981, he began work as a hydrologist with Peabody Coal Company's Eastern Division and has worked for Peabody affiliated companies since then. Scott has worked with coal mining regulations since the early years of SMCRA and been involved in many aspects of environmental regulations and permitting including CWA Sections 401, 402 and 404. Scott is a registered Professional Geologist in IL, IN, KY, MO, TN and WI. He graduated with an MS Degree in Hydrology/Hydrogeology from Mackay School of Mines, University of Nevada - Reno in 1979.

Jack Nawrot is a Senior Scientist with the Cooperative Wildlife Research Laboratory's Mined Land Reclamation program at Southern Illinois University. Jack has been on staff with the Lab since 1974 BC (*before computers*). His professional responsibilities included the statewide inventory of Illinois mined lands, implementation of wetland mitigation and restoration practices, geochemical characterization of coal processing by-products, and direct vegetation establishment practices for coal slurry and gob. Jack has supervised Wildlife Lab students whose projects have assessed waterfowl, grassland birds, and Illinois threatened marsh birds and mammals that use Illinois' reclaimed mines. More than 25 years ago the Lab's students and staff

conducted the first evaluations of temporary diversions and permanent stream restorations established on southern Illinois' mined lands. He holds a Bachelor's in Ecology from Blackburn College in 1972 and a Masters in Wildlife Ecology from Southern Illinois University at Carbondale in 1974 and is currently working on a doctorate in Reclamation Ecology at SIUC.

Darrin S. Parrent, EIT is a civil/environmental engineer with T.H.E. Engineers, Inc. in Lexington, KY. He has over 7 years experience with the KY Transportation Cabinet, Division of Environmental Analysis and 5 years experience with T.H.E. Engineers, Inc. He has completed the design of over 40 stream restoration/mitigation projects utilizing natural stream channel design concepts for KYTC highway and commercial/residential development projects. In addition, he has completed the design of over 30 miles of streams on a watershed scale for several large coal surface mining projects. His stream related experience also includes construction observation and monitoring. He has experience preparing USACE Section 404 and KY Division of Water/KY Department of Mine Permits Section 401 permit applications. He has also prepared cumulative impact analysis and alternative analysis reports for several large surface mining projects. He holds a B. S. in Civil Engineering with Environmental Certificate from the University of Kentucky.

Daphne Place is an Environmental Specialist with BHP Billiton in Farmington, New Mexico. Her current role supports the development of a SMCRA permit for the Navajo Mine Extension Project in the areas of hydrology, reclamation, and geomorphic surface stabilization. In her previous role, she provided engineering and design support to the completion of geomorphic reclamation at La Plata Mine. She participates on closure planning and geomorphic reclamation implementation teams for BHP Billiton's New Mexico operations. Prior to working with BHP Billiton, Ms. Place worked for a consulting company as an Environmental Engineer and a domestic coal mining company as a Mining Engineer. She has enjoyed living and working in West Virginia, Virginia, Kentucky, Illinois, Wyoming, Colorado, and New Mexico. She holds a BS in Mining Engineering and Environmental Science, along with her MS in Environmental Science and Engineering. She is a member of the Society of Mining Engineers.

Mike Ricketts is West Section Chief for the US Army Corps of Engineers, Louisville District. His office is located in Newburgh, Indiana. His responsibilities include supervising a staff of seven technical professionals while managing section 404 and section 10 permit processing in western Kentucky, southeastern Illinois and southwestern Indiana. Prior to becoming West Section Chief in 2007, Mike served as a Senior Project Manager with both Louisville and St. Louis Districts since 1994. Prior to that, Mike worked for Soil Conservation Service as a Soil Scientist in Eastern and Northern Kentucky and as a cartographer with Defense Mapping Agency. Mike graduated from the University of Kentucky with a degree in Soil Science and Eastern Kentucky University with a degree in Remote Sensing/Cartography.

Melissa Robson, E.I. is a project engineer at Water & Earth Technologies, Inc. in Fort Collins, Colorado. Melissa has technical experience in watershed hydrology, hydraulics and surface water monitoring. She has worked with several different mining companies in the United States, Central and South America to develop post-mining geomorphic surfaces and runoff control systems using multiple software tools. Melissa has become proficient at developing solutions for a variety of reclamation challenges, including hard-rock mining with pits and waste-rock piles,

and surface coal strip mining with trenches and extensive spoil piles. Her education background includes a bachelor's degree in Civil Engineering from Colorado State University.

Tim Sandefur is a managing partner of Wetland Services, Inc. He has been active in wetlands ecology either recreationally or professionally for over 23-years. Tim incorporated Wetland Services in 1997, and now maintains a wide range of regulatory services and clients. Wetland Services has conducted wetland and stream delineation, functional assessment, permitting and restoration (mitigation) on over 80,000-acres. He currently serves as a board member of the Pond Creek Watershed Conservation District, and is a board member and managing partner of Cypress Agricultural Services, LLC (a land trust company) and the Cypress Foundation (a 501c3 not-for-profit organization). His degree is a Bachelors of Science in Wetland Ecology from the University of Kentucky.

Tim Slone is president & CEO of IRTEC, Innovative Reclamation Technologies and Engineering Company, Incorporated. Permitting, reclamation plans and surveying are the mainstay of the company. He has a strong background in mining, especially underground mining where he worked from a general laborer up to Mine Foreman before becoming more involved with the engineering aspect. His underground experience includes coal seams ranging from 20" to 24 feet in thickness and involves working in mining operations in Western Kentucky, Eastern Kentucky, Virginia and Tennessee. Tim is a licensed professional engineer and land surveyor in several states and has numerous certifications associated with his extensive period of involvement with coal mining. He is a graduate of the University of Kentucky, College of Engineering.

Lois J. Uranowski, PE is Chief of the Ecological Services and Technology Transfer Branch, Technology Support Division, OSM in Pittsburgh, PA. Lois runs the Appalachia Region Technology Transfer initiative. She has spent 20 years working in coal mining reclamation covering both AML and active mining, and has provided technical assistance in the areas of slope stability, mine subsidence and as an instructor for several TIPS classes. Lois also has worked for an engineering consulting company. She holds a MS in Civil and Environmental Engineering.

Dr. Richard Warner is currently Extension Professor, Biosystems and Agricultural Engineering, at the University of Kentucky. He is the co-author of SEDCAD and has co-authored numerous books, chapters and publications. His research interest includes design and implementation of stormwater, erosion and sediment control systems for mining and construction sites with large scale land disturbance. He is a consultant/advisor to major mining corporations with mines in South America, Africa, Indonesia, South Pacific and throughout North America. He holds a Ph.D. in Environmental Systems Engineering from Clemson University.

Sam Werner is employed by U.S. Army Corps of Engineers since 2003 as a regulatory specialist administering Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Duties include reviewing project and mitigation plans, giving technical assistance, issuing permits, ensuring compliance with permit terms and conditions, and pursuing enforcement activities for violations. He was previously employed by USDA as a soil scientist, conducting on-site soil investigations, soil survey activities and publishing soil surveys throughout East Central Illinois (1998-2003); and Chestnut Ridge Consulting, Inc. as a soil

scientist, contract mapping soil properties for use in growing timber for the paper pulpwood industry in KY, MO, and TN (1997- 1998). He graduated from Purdue University in 1997 with a Bachelor of Science Degree in Natural Resources and Environmental Science.

Dr. Peter R. Wilcock has taught at Johns Hopkins University for 22 years, specializing in erosion and sedimentation processes and their application to stream restoration and watershed management. He leads the Stream Restoration Project of the National Center for Earth-surface Dynamics, a Science and Technology Center funded by the National Science Foundation. He contributes to stream restoration and channel design classes taught at The University of Maryland, Utah State University, and The University of California Berkeley. He received his PhD in Earth Science at MIT in 1987.

Dr. Charles Yuill is Associate Professor at West Virginia University – Natural Resource Analysis Center (NRAC) and is also a partner in ShipShaper LLP , a consulting firm that specializes in areas including mine reclamation and water quality planning and high fidelity visualization with tools such as laser scanning. He has over 30 years of experience with surface mine planning and reclamation.